

Work Place 2A



WORK PLACES GAMES & ACTIVITIES

Unifix Cube Growing Patterns

This Work Place basket will need

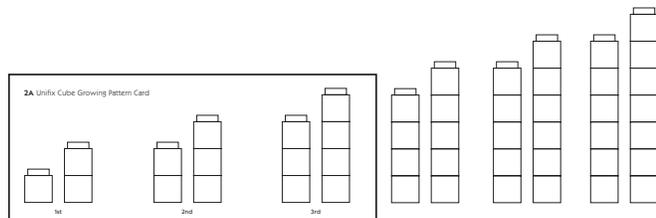
- ★ Unifix cubes
- ★ Unifix Cube Growing Pattern Cards

Skills

- ★ copying and extending growing patterns
- ★ exploring functions

Work Place Instructions

1. Take one of the Unifix Cube Growing Pattern Cards. Copy what's on the card with Unifix cubes.
2. Use your cubes to build the next 2 or 3 arrangements in the sequence. Can you explain what's going on with this pattern to someone else?



Student 1 It goes 1, 2; then 2, 3; then 3, 4; so I figured it had to get bigger every time.

Student 2 It's kind of like counting, so I built 4, 5; then 5, 6; then 6, 7.

3. See if you can build or imagine what the 10th arrangement in the sequence would look like and tell someone else.

Student 2 The 10th one? I'm not sure, but I could keep going until I got to the 10th. Hey, maybe it would have 10 and 11. I'll build it and see.

4. Repeat the process with a different card. You can do as many as you like, but you need to try at least 2 or 3 different cards.

Instructional Considerations

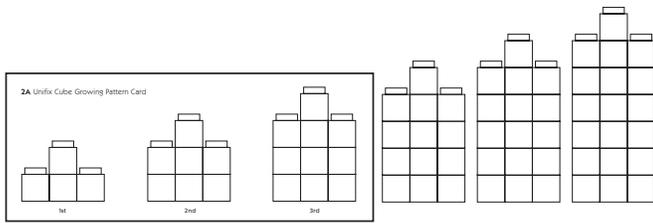
We have found in our own classrooms that we've needed to spend more time at this Work Place than some of the others, talking with children about what they're doing and offering challenges as needed. You'll probably want to have them explain to you why they have built the 4th, 5th, and 6th arrangements as they have, understanding that their extensions might not match what you would have done.

Depending on the child and the level of interest, you might also ask what the 10th arrangement of a particular sequence would look like. A few of your students may be able to make generalizations well enough to tell you without actually building the arrangement. Others won't be able to, but may be interested enough to actually build out the 7th, 8th, 9th, and 10th.

In looking at their work, see if you can help them spot trends. What seems to be going on each time? Is there any relationship between the design and its arrangement number? One possible way to look at the pattern below is that if the 1st arrangement goes 1, 2, 1; the 2nd goes 2, 3, 2; and the 3rd goes 3, 4, 3, the 4th might go 4, 5, 4. If this were the case, what would the 5th and 6th arrangements look like? Sometimes if you help children verbalize what they see in each arrangement, they can come to some sort of generalization more easily.

(Continued on back.)

Work Place 2A (cont.)



Student It goes 1, 2, 1; 2, 3, 2; 3, 4, 3 on the card. Every time, it does the number, and then one up, and then back down—1, 2, 1, see? So the 4th one has to be 4, 5, 4. The 5th one is 5, 6, 5. The 6th one would be 6, 7, 6. The 10th one would probably be 10, 11, 10. I'd have to build up that far to be sure. (Even when they've made a solid generalization, many second graders like to "build it out, just to be sure.")

Work Place 2B



WORK PLACES GAMES & ACTIVITIES

Race You to 50¢

This Work Place basket will need

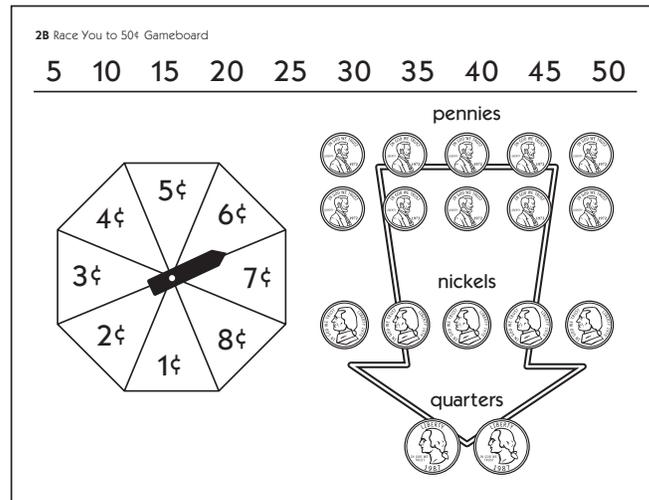
- ★ 6 Race You to 50¢ gameboards
- ★ 3 containers, each holding 40 pennies, 10 nickels, and 4 quarters

Skills

- ★ counting by 5's and 1's
- ★ recognizing coins and their worth
- ★ regrouping by 5's and 25's

Work Place Instructions

1. Get a partner, two gameboards, and a container of coins to share.
2. Take turns spinning and setting the appropriate number of pennies on your board.
3. Each time you have 5 or more pennies, you can trade 5 for a nickel. When you collect 5 nickels, you can trade them in for a quarter.
4. The first person to get 2 quarters wins the game. It's okay to have a few pennies over 50¢.



Instructional Considerations

Because children will have just played a whole-group version of this game in Session 7, you probably won't need to do any extensive modeling. We do find it helpful to take two gameboards out of the Work Place basket, along with a container of coins and play through the first few spins with one of our students while the others watch. This is enough to get some youngsters started, and often they'll be able to help the children who aren't quite sure what to do when they go out to Work Places.

Work Place 2C



WORK PLACES GAMES & ACTIVITIES

Match the Beetle Game

This Work Place basket will need

- ★ a wall display made up of the beetle glyphs children made and the Beetle Glyph Key
- ★ beetle glyph clue cards made by children (see page 28)
- ★ Match the Beetle record sheets (Blackline 1.14, run 30 copies and store in a folder)

Skills

- ★ reading and interpreting glyphs
- ★ using attributes to eliminate and select items

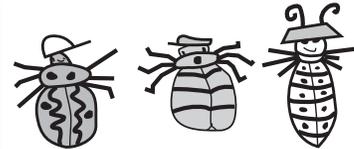
Note Unless you have a very small class, you might want to display only half the beetle glyphs at a time, simply because it's very difficult to consider more than 10–15 at once. If you decide to do this, put the corresponding clue cards in the Work Place basket and save the others for later when you change the beetles on display. Another advantage of displaying only half the beetles is that a new collection midway through this round of Work Places may lure some children to come back and try the activity again.

Work Place Instructions

1. Choose a clue card from the Work Place basket. Read it carefully and then take it over to the beetles on the wall. Can you find the beetle that matches all three clues? (Actually, you have four clues because the name on the clue card tells you whether the person who made the beetle is a boy or a girl.)

Beetle Clue Card Jason

1. I love summer.
2. My birthday is in January.
3. There are 3 people in my house.



Student Let's see. Jason made this card, so the beetle has to be round for a boy. It has to be yellow for summer, and have one dot for a birthday in January. I already know which beetle it is! It's the one in the middle!

2. When you think you have matched a beetle with its clue card, write a description of the beetle, along with the name of the person who made it on a Match the Beetle record sheet. (There is an example already done for you on the sheet, and room for you to do three more of your own.)

NAME _____ DATE _____

Match the Beetle record sheet

Beetle Clue Card Amy

1. There are 5 people at my house.
2. My birthday is in August.
3. I like summer.

Name	Beetle Color	Number of Dots	Number of Stripes	Hat Color
Amy	yellow	8	5	blue

3. Be sure to return the clue cards to the Work Place basket as you finish with them; other children will need them.

4. Store your completed sheet in your work folder.

(Continued on back.)

Work Place 2C (cont.)

Instructional Considerations

This Work Place is challenging but entertaining; many children are thrilled to see their own beetle glyphs up on the wall and enjoy matching clue cards with beetles to discover who made the other beetles. You'll want to model the recording step carefully; in fact, it might be worth identifying and recording at least two beetles before moving on. If you find that children are having trouble matching the beetles and clue cards as they work on their own, reduce the number of beetles on display and the number of corresponding clue cards in the Work Place basket.

Work Place 2D



WORK PLACES GAMES & ACTIVITIES

Geoboards & Records The 7-Band Challenge

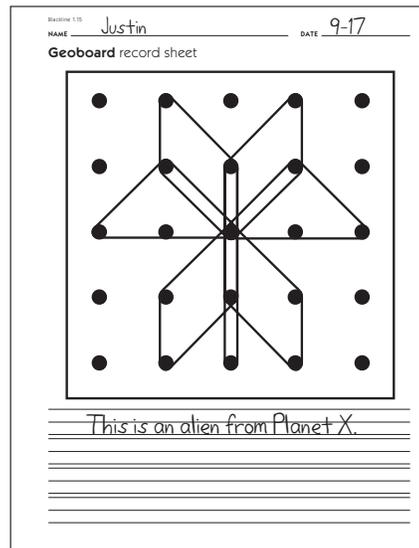
This Work Place basket will need

- ★ 8 geoboards
- ★ geobands
- ★ Geoboard record sheets (Blackline 1.15, run 30 copies and place in a folder)
- ★ 6 clear rulers

Skills

- ★ using shapes to create pictures
- ★ recording visual information

Note Normally, we set up Work Places for 6 children. Geoboards are so popular, however, that things go more smoothly if we have enough materials to accommodate 8 children.



Work Place Instructions

1. Using just 7 rubber bands, create a picture on your geoboard. The challenge here is to come up with something that looks like a picture rather than an abstract design!
2. Once your picture is made, use a ruler to help record it as accurately as possible on a Geoboard record sheet.
3. Decide on a name for your picture and write it at the bottom of the sheet. Don't forget to put your name at the top of your paper too! Store your completed sheet in your work folder.

Work Place 2E



WORK PLACES GAMES & ACTIVITIES

Geoblocks

This Work Place Basket will need

- ★ 5 or 6 bags of geoblocks mixed together to make one large set

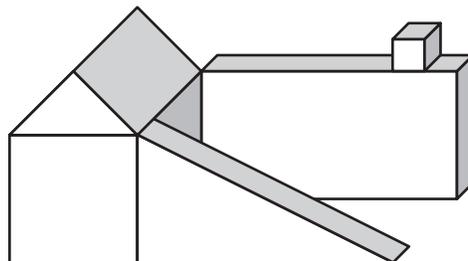
Skills

- ★ exploring the properties of 3-dimensional figures
- ★ exploring the relationships between 3-dimensional figures

Note Mark your geoblocks as shown in Getting Started, page 37, before you mix the sets.

Work Place Instructions

1. Take a batch of the geoblocks. What can you build with them? What do you notice about the blocks as you are building?
2. Are the other children creating things that are the same as or different than yours? Talk to each other about the things you are building; it may be that you decide to work together to build something really special.



Instructional Considerations

Each set of geoblocks contains a wealth of cubes and prisms in varying sizes; 5 or 6 sets combined are a real treasure trove. These blocks are a fabulous tool for exploring many geometrical concepts, but at this point in the year, children simply need time to build with them. One of the reasons the blocks are so satisfying to build with is that they relate well to each other—2 rectangular prisms fit together to make a cube; 2 triangular prisms fit together to make a rectangular prism; there are 3 or 4 different sized cubes. These relationships make it possible to build structures of striking balance and symmetry.

As they work, children may discover some of the properties of these blocks, even if only intuitively. The more time they can spend with the blocks now, the more productive your geometry lessons will be later. You might even consider leaving the geoblocks out for continued free play after this set of Work Places has been put away; they will not resurface in a more formal way until Unit 4.

Work Place 2F



WORK PLACES GAMES & ACTIVITIES

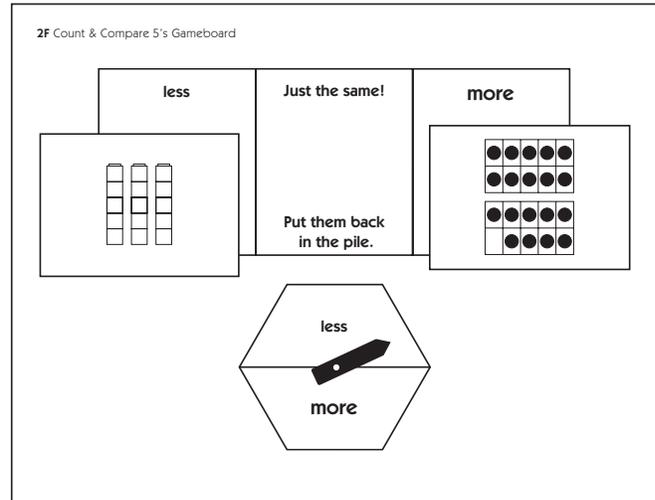
Count & Compare 5's

This Work Place basket will need

- ★ 3 Count & Compare 5's gameboards
- ★ 3 sets of Count & Compare 5's cards

Work Place Instructions

1. Find a partner.
2. Get a gameboard and a set of cards from the Work Place basket. Shuffle the cards and place them face down between you and your partner.
3. Draw 1 card from the top of the pile and have your partner do the same.
4. Read the number on your card or count by 5's (or 5's and 1's) to determine the worth of your card.
5. Place your cards where they belong on the gameboard—1 card in the “more” box, the other in the “less” box. (If the 2 cards are equal, put them both back into the stack and draw again.)
6. Spin the spinner at the bottom of the gameboard to determine who gets to take both cards. If it lands on “more,” the person who had the card that was worth more gets to take both the cards. If it lands on “less,” the person who drew the card that was worth less gets both cards.



Child Your card is 19 and mine is 15. You have more, but look! The spinner landed on less. That means I get to take both cards this time.

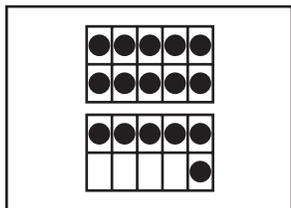
7. Take turns drawing cards, counting and then comparing the quantities shown, and spinning until you are out of cards. The winner is the one with the most cards at the end. (Or, if you like, you can let the spinner determine the overall winner of the game. If it lands on “less,” the person with fewer cards wins. If it lands on “more,” the person with more cards wins.)

Instructional Considerations

This game provides practice counting by 5's and 1's using several different models, including nickels and pennies, stacks of 5 Unifix cubes, and the ten-frames, which you have introduced during the Number Corner. Even with careful modeling, you'll probably find some of your students counting the dots and squares one by one to determine the quantities on the cards; while many of them may know how to count by 5's, counting by 5's (Continued on back.)

Work Place 2F (cont.)

and 1's is more difficult. You can help by emphasizing the Daily Number Chart during Number Corner and also by nestling in during Work Places and helping some of your students individually as they play this game.



Teacher *It's true that you can count one by one to find out how many dots are on this card. Can you think of a different way?*

Child *By 5's?*

Teacher *Let's try it. 5, 10, 15...now what?*

Child *We can't keep going by 5's. There is only 1 dot left.*

Teacher *What comes right after 15 if you're counting by 1's, then?*

Child *16.*

Teacher *Okay—here we go...5, 10, 15, 16. That's it!*

Work Place 3A



WORK PLACE GAMES & ACTIVITIES

Pattern Block Growing Patterns

This Work Place basket will need

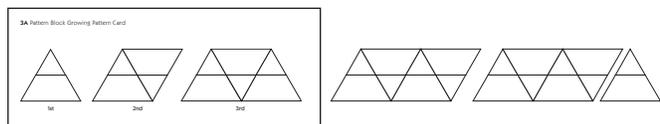
- ★ pattern blocks
- ★ Pattern Block Growing Pattern Cards

Skills

- ★ copying and extending patterns
- ★ exploring functions

Work Place Instructions

1. Take one of the Pattern Block Growing Pattern Cards. Copy what's on the card with pattern blocks.
2. Use your blocks to build the next 2 or 3 arrangements in the sequence. Can you explain your thinking to someone else?



Student Every time, it adds a big triangle—see how a red block and a green block fit together to make a big triangle? So the 1st arrangement has 1 big triangle, the 2nd has 2, the 3rd has 3, the 4th has 4, and I'm putting the 5th together right now.

3. See if you can build or imagine what the 10th arrangement in the sequence would look like and tell someone else: "The 10th one? I'm pretty sure it would have 10 of those big triangles."
4. Repeat the process with a different card. You can do as many as you like, but you need to try at least 2 or 3 different cards.

Instructional Considerations

We have found in our own classrooms that we've needed to spend more time at this Work Place than some of the others, talking with children about what they're doing and offering challenges or support as needed. You'll probably want to have them explain why they have built the 4th, 5th, and 6th arrangements as they have, understanding that their extensions might not match what you would have in mind.

Depending on the child and the level of interest, you might also ask what the 10th arrangement of a particular sequence would look like. A few of your students may be able to make generalizations well enough to tell you without actually building the arrangement. Others may not know, but may be interested enough to build the 7th, 8th, 9th, and 10th. In looking at their work, see if you can help them spot trends. What seems to be going on each time? Is there any relationship between the design and its arrangement number?

Work Place 3B



WORK PLACE GAMES & ACTIVITIES

An Hour or Bust!

This Work Place basket will need

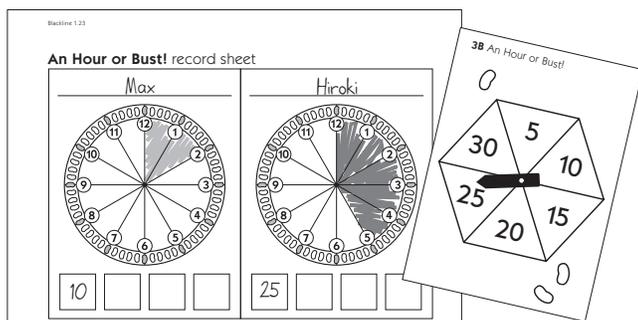
- ★ 3 An Hour or Bust! spinners
- ★ An Hour or Bust! record sheets (Blackline 1.23, run 30 copies and place in a folder)
- ★ crayons

Skills

- ★ counting by 5's
- ★ reading a clock face

Work Place Instructions

1. Get a partner, a spinner, one record sheet, and some crayons (4 different colors each). Put your name on one side of the record sheet and have your partner write her name on the other side. *You will both use the same record sheet.*
2. Decide who gets to spin first. Take your first spin, color in the number of minutes you spun starting from the 12 on your clock face. Write that number in the first box below your clock. Have your partner take a turn.



3. Take turns spinning and coloring until each of you has had 2, 3, or 4 turns. *Be sure to record each new spin with a different color crayon.* You can stop taking new turns whenever you'd like. You don't want to color in more than 60 minutes. For instance, if you spin 25 minutes on your first turn and 20 minutes on your second turn, you'll have

to think hard about whether you want to stay put on your third and fourth turns or take a chance of going over 60 minutes.

4. The player closest to coloring in an hour *without going over* wins.
5. If one player goes "bust," mark an X over the number on his record sheet that caused him to go over 60 minutes.
6. Circle the winning player's clock and begin again. There is room to play 2 games on the same sheet.
7. Be sure, either now or at a later time, to play the game again so that both you and your partner will have a record sheet to put in your work folder.

Instructional Considerations

This is a fairly complex game, and it's possible that some of your children won't quite know what to do when they get around to it. Consider playing An Hour or Bust! again with your whole group as you get started with Work Places next session. You might also try playing the game against small groups of three or four children during Work Places in much the same manner as you played against the whole group. Playing in the context of a small group may be just the step some children need in order to be able to handle the game more independently.

Work Place 3C



WORK PLACE GAMES & ACTIVITIES

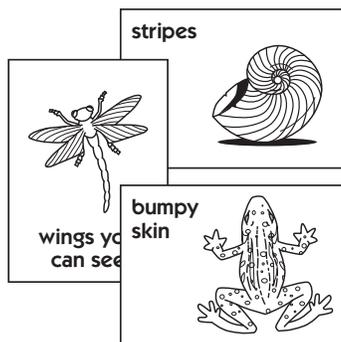
Math Bucket Mystery Patterns

This Work Place Basket will need

- ★ the math buckets—buttons, frogs, bugs, and shells
- ★ a set of sorting cards for each math bucket

Skills

- ★ sorting and patterning objects in a variety of ways
- ★ analyzing likenesses and differences
- ★ making generalizations



Work Place Instructions

1. Take a handful of items from one of the math buckets. Find a way to sort them other than by color, and then line them up in a pattern. You can either think of your own way to sort the items or use the sorting cards for that bucket to help. Here's an example. These buttons have been sorted by the number of holes and then patterned accordingly.



Teacher This arrangement does not look much like a pattern unless you really study it carefully, and that's what you want to create—something tricky.

2. After you've made a mystery pattern, find a friend to come figure it out.

Instructional Considerations

Following the Math Bucket Sorting lessons presented in Sessions 13 and 14, this Work Place encourages students to combine their sorting and patterning skills. The idea is to set up a pattern that isn't obvious at first glance using items from one of the buckets. If you sort by attributes other than color, size, or shape, this is quite possible to do. Here's an example:



In order to decipher the pattern, you have to figure out what's alike and what's different from button to button. (This pattern is ridged, non-ridged, ridged, non-ridged, and so on.)

Second graders really seem to delight in the idea of making patterns that are "mysterious" enough to stump their teachers and friends. They will often persevere at this Work Place for quite a long time, setting up pattern after pattern, each a little trickier than the one before.

We demonstrate the activity by taking a handful of items from one of the buckets, sorting carefully for the ones that match in color, setting up an absolutely obvious pattern, and telling them that if they were a year or two younger, we'd think such a pattern was a brilliant creation. Then we look through the sorting cards for the collection with which we're working. When we hit on a card or two that helps us sort in a less obvious way (say, shanks and ridges for the buttons), we use the idea to create a pattern that doesn't look much like a pattern unless carefully analyzed. This brief demonstration is enough to get most students started. Those who don't understand at first often "catch on" by watching their classmates for a bit.

Work Place 3D



WORK PLACE GAMES & ACTIVITIES

Which One Doesn't Belong?

This Work Place basket will need

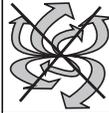
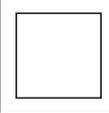
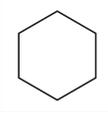
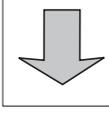
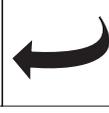
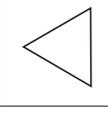
- ★ Which One Doesn't Belong? record sheets (Blacklines 1.24–1.29, run 10 copies of each sheet and place in pocket folders)

Skills

- ★ finding likenesses and differences
- ★ using attributes to eliminate and select group members

Work Place Instructions

1. Choose one of the sheets. Study the first group of 4 items carefully. Decide which one of the 4 you think doesn't belong and cross it out. Then write an explanation of why you crossed out that particular item on the lines below the 4 pictures.
2. Repeat with the other set of 4 items on the page.

NAME <u>Briana</u>		DATE _____	
Which One Doesn't Belong? Why?		Which One Doesn't Belong? Why?	
			
			
<u>The top because</u> <u>there is more than</u> <u>one arrow.</u>		<u>The circle because</u> <u>all the rest have</u> <u>corners and it doesn't.</u>	

Instructional Considerations

This Work Place is an independent version of the activity you did with your class in Session 15 and you probably won't need to do a lot of modeling. You may want to establish a minimum number of pages to be completed with each visit to this Work Place—we ask our students to do 2 sheets (4 problems) each time.

Work Place 3E



WORK PLACE GAMES & ACTIVITIES

Which One Doesn't Belong? Invent a Sheet

This Work Place Basket will need

- ★ Which One Doesn't Belong? Invention Sheets (Blackline 1.30, run 30 copies and place in a folder)
- ★ Which One Doesn't Belong? Clip Art (Blacklines 1.31–1.33, run 6 copies of each sheet and place in folders)
- ★ scissors, glue sticks

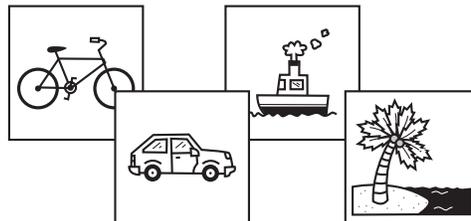
Skills

- ★ finding likenesses and differences
- ★ using attributes to eliminate and select certain items

Work Place Instructions

1. Get a Which One Doesn't Belong? Invention Sheet, a pair of scissors, a glue stick, and a sheet of clip art.
2. Look through the clip art pictures carefully and choose 4 to create a challenge for someone else in class.
3. Cut out the 4 pictures you've selected and glue them into the boxes on your invention sheet. Find 4 more for the second set of blank boxes. When you're finished, show your sheet to several classmates and see if they can solve your puzzles. Fill in the answers and explanations on the lines below each puzzle after you've had a few friends guess.

Student *I chose the hamburger, the hot dog, the ice cream cone, and the orange for my first puzzle. You know why? It's because my mom says they're all junk food except for the orange!*



Instructional Considerations

You may want to introduce this Work Place a couple days after the others so children have a little time to work with the premade puzzles before they create their own. To do this, just leave one of the Work Places from the last round in Basket 3E and explain to the children that you'll introduce the new activity soon.

In our own classrooms, we found that the children tended to create very obvious puzzles for the first week or so; things like 3 vehicles and 1 food item, or 3 alphabet letters and a truck. Their work became a little more thoughtful on return visits and also as we encouraged them to "test" their puzzles on a friend or two before pasting the pictures down. Second graders really do enjoy challenging one another and will try hard to come up with good puzzles once they've had some experience. Remind your students to fill in the answers and explanations for their puzzles after they've shared them with a few classmates.

Work Place 3F



WORK PLACE GAMES & ACTIVITIES

Count & Compare 2's

This Work Place basket will need

- ★ 3 Count & Compare 2's gameboards
- ★ 3 sets of Count & Compare 2's cards
- ★ 3 Count & Compare 2's Counting Guides

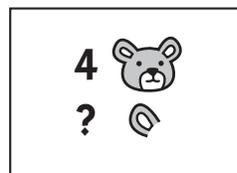
Work Place Instructions

1. Find a partner.
2. Get a gameboard, a set of cards, and a counting guide from the Work Place basket. Shuffle the cards and place them face down between you and your partner.
3. Draw one card from the top of the pile and have your partner do the same.
4. Count by 2's, add the two numbers, or solve the problem to determine the worth of your card. (Some of the problem cards, like "13 boys, how many eyes?" are challenging. If you need help, use a Counting Guide.)
5. Place your cards where they belong on the gameboard—one card will be placed in the "more" box, the other in the "less" box. (If the two cards are equal, put them both back into the stack and draw again.)
6. Spin the spinner at the bottom of the gameboard to determine who gets to take both cards. If it lands on "more," the person who had the card that was worth more gets to take both the cards. If it lands on "less," the person who drew the card that was worth less gets both cards.
7. Take turns drawing cards, determining and comparing the quantities shown, and spinning until you are out of cards. The winner is the one with the most cards at the end. (Or, if you like, you can let the spinner determine the overall

winner of the game. If it lands on "less," the person with fewer cards wins. If it lands on "more," the person with more cards wins.)

Instructional Considerations

This game provides practice counting by 2's using several different prompts: dots on the ten-frames, counting sequence cards, addition facts and picture problems similar to the ones children encountered in Session 12. Even with careful modeling, you'll probably find some of your students counting the dots on the ten-frames one by one to determine the quantities on the cards. Some may also have difficulty with the picture problems, even though they've encountered similar challenges earlier in the month. We found that the counting guide helped some of our students work more effectively; be sure to model its use when you demonstrate the game the first time through.



Child *I'm not sure how to do this card.*

Teacher *What does it say?*

Child *I think it means 4 bears—how many ears? It's like one of those problems we got when we were doing 2's on the hundreds grid. But I don't remember the answer.*

(Continued on back.)

Work Place 3F (cont.)

Teacher Try looking at the counting guide.

Child Oh, I see. If I count 4 frogs, then I can go back and count how many eyes they have.

3F Count and Compare 2's Counting Guide

 1	 2	 3	 4	 5
2	4	6	8	10
 6	 7	 8	 9	 10
12	14	16	18	20
 11	 12	 13	 14	 15
22	24	26	28	30

Work Place 4A



WORK PLACE GAMES & ACTIVITIES

Shake, Reach & Record

This Work Place basket will need

- ★ Shake, Reach & Record record sheets (Blacklines 3.8–3.12, run 15 copies of each and place in a folder)
- ★ 6 probability containers, each filled with 10 yellow tile and 10 green tile (Use the green and yellow tile from your sets of base ten pieces as they are just a little smaller than the square inch tile and slightly easier to pick up.)

Skills

- ★ seeing and recording all the 2-addend combinations for 6, 7, 8, 9, and 10 using standard notation
- ★ recording data on a graph
- ★ exploring probability

Work Place Instructions

1. Choose a sheet and take a container of tile.
2. Shake the container well, reach in, and draw out the number of tile shown on your sheet. Record the number of greens and the number of yellows in the column that matches the combination you pulled out. That is, if you're working on 7's and you pull out 3 greens and 4 yellows, you would record $3 + 4$ in the correct column. Remember to always record the greens first and then the yellows.
3. Put the tile back in the container, give it a good shake to mix them up, and draw out your tile number again. Continue in this manner until two of your columns reach the top. Mark the first and second place winners as they come in, if you like.



Instructional Considerations

In this Work Place version of the whole group activity you've already done with your students, the children can choose the number with which they wish to work. There are sheets for 6's, 7's, 8's, 9's, and 10's. You, of course, can also assign sheet levels to particular students, but we find that given the choice children make pretty wise decisions for themselves. Youngsters who aren't very solid with facts for 6's and 7's tend to choose those sheets. Children more confident with addition facts will usually go for the 8's, 9's, and 10's.

You might want to have children begin each sheet by placing a star at the top of the column they believe will fill first. Even though some are likely to erase their stars and switch them to the winning column midway through, the mere act of making a prediction about the column that's most likely to fill to the top first leads to some nice intuitive thinking about probability.

You can emphasize or downplay the probability angle, depending on the needs and interests of your class. Children who are still grappling with standard notation and facts to 10 may need to concentrate on the basic activity. Children who are quite proficient with addition facts may enjoy collecting data from their own records and those

(Continued on back.)

Work Place 4A (cont.)

of their classmates to ferret out trends and patterns. They can be challenged to try to figure out whether some combinations really are more likely to be pulled out of containers loaded equally with green and yellow tile. Changing the tile proportions may further student thinking too. A container of tile with 10 green and 10 yellow seems to yield lots of $2 + 4$'s, $3 + 3$'s, and $4 + 2$'s if you're pulling out 6 at a time. What would happen if all the tile in the container were green? What if the container had twice or three times as many green as yellow tile (14 greens and 7 yellows, for instance, or 15 greens and 5 yellows)? These are explorations that may transform an otherwise humdrum activity into a very meaningful investigation for some of your more able students.

Work Place 4B



WORK PLACE GAMES & ACTIVITIES

Make the Sum

This Work Place basket will need

- ★ 3 decks of Number cards

Skills

- ★ practicing addition combinations for the numbers 5 through 15

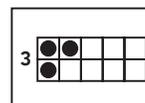
The purpose of Make the Sum is to provide practice with addition combinations for the numbers 5 through 15. There is a certain amount of problem solving to this drill and practice game as children are continually searching for the combinations to make a particular number rather than responding to the number facts in a rote fashion.

Note When you introduced this game earlier in the session, students played in groups of three or four. In the Work Place version of the game, they can play in pairs.

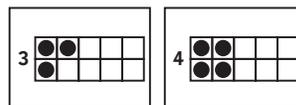
Work Place Instructions

1. Start by talking with your partner about your target sum. You can play for 5's all the way through 15's. Once you've agreed on a sum, prepare the deck by setting aside all the cards higher than your sum. If, for instance, you decide to play for 7's, you'll need to go through the deck and discard all the 8's, 9's, and 10's. If you play for 10's or above, you'll need the full deck—no discards are necessary.
2. Once your deck is set, take turns drawing cards and placing them face up beside the deck. The object of the game is to combine cards to make your target sum. If the sum you've chosen is 7 and you draw a 7, you may keep it. If you draw a 3, you'll have to place it face up beside the deck where it will be available to you or your

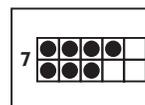
partner. If your partner then draws a 4, she may combine it with your 3 and take both cards. A sample sequence of play is shown below:



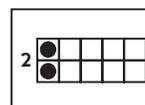
Partner A draws a 3. She has to leave it face up and can't use it.



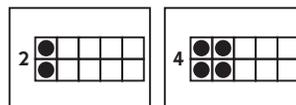
Partner B draws a 4. She can combine it with the 3 and take both cards.



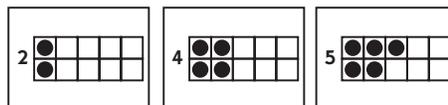
Partner A draws a 7, which she's allowed to keep.



Partner B draws a 2, which she has to leave face up.



Partner A draws a 4, which she has to leave face up also—she can't make a 7.



Partner B draws a 5, which she can combine with the 2, and is able to take the 2 cards. So far, she's the lucky one.

(Continued on back.)

Work Places 4B (cont.)

3. Play continues back and forth until no more cards can be combined to make the target sum. It's important to note that no one gets extra turns—if you win a set of cards, play still reverts to your partner. It's also important to know that combinations can be made with more than two cards. Seven, for instance might be made with a 1, a 2, and a 4, or even two 1's, a 2, and a 3.
4. When as many as possible of the cards have been used, partners count their cards to determine the winner. It is possible that a few cards may remain at the end because they can't be combined to make the target sum.



Teacher We'll have to leave the last 2 cards, but at least we can put the 1, 2, and 4 together to make 7.

Work Place 4C



WORK PLACE GAMES & ACTIVITIES

Spin & Add

This Work Place basket will need

- ★ 6 Spin & Add spinners
- ★ Spin & Add record sheets (Blackline 3.13, run 30 copies and place in a folder)

Skills

- ★ counting on as a strategy for adding numbers
- ★ practicing addition combinations for the numbers 5 through 15
- ★ recording data on a graph
- ★ exploring probability

The object of Spin & Add is to provide more practice with addition facts for the numbers 5 through 15. Children are encouraged to use counting on as a means of figuring the combinations they don't already know. Like Shake, Reach & Record, Spin & Add offers an opportunity to explore probability, as there is a greater likelihood of spinning some sums than others.

Work Place Instructions

1. Get a double spinner and a record sheet. Spin both spinners and figure the sum. If you already know the answer, just record it on the record sheet. If you don't, say the number shown on the upper spinner and count on from there, using the dots shown on the bottom spinner.

The record sheet is intended to be used as a graph, and answers should be recorded from the bottom to the top of each column.

2. Continue spinning and adding in this fashion until at least three columns are filled. You can keep track of the winners by marking them "1st," "2nd," and "3rd."

Instructional Considerations

An alternative to having children record the totals on their record sheets is to have them write the full number sentences. Students who are just becoming proficient with counting on may do better recording just the totals, but youngsters who seem to know some of the facts easily, and count on quickly to find the ones they don't, can certainly handle writing the full number sentences each time.

NAME Jeffery I. DATE 11/13

Spin & Add record sheet

					★									
					$\frac{6}{+3}$	$\frac{5}{+5}$								
		$\frac{4}{+3}$	$\frac{6}{+2}$	$\frac{7}{+2}$	$\frac{6}{+4}$									
5	6	7	8	9	10	11	12	13	14	15				

As with Shake, Reach & Record, the probability aspect of this game can be played up by encouraging children to place a star at the top of the column they think will fill first. Children who are already proficient with facts might enjoy collecting class results as their friends do this activity. Are there any columns that appear to fill first on a regular basis? Why? (Second graders are likely to think it's all in the flick of the spinner, but you might nudge them a bit by asking them to figure out how many different ways there are to spin a 5, a 15, a 10, and an 11. Are there more combinations for some of the numbers than others? Why?)

Work Place 4D



WORK PLACE GAMES & ACTIVITIES

Spin & Subtract

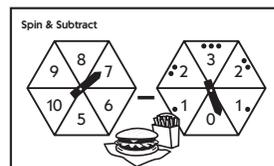
This Work Place Basket will need

- ★ 6 Spin & Subtract spinners
- ★ Spin & Subtract record sheets (Blackline 3.14, run 30 copies and place in a folder)

Skills

- ★ counting backwards as a strategy for subtracting 1, 2, or 3 from a larger quantity
- ★ practicing subtraction facts to 10
- ★ recording data on a graph
- ★ exploring probability

The object of this activity is to provide more practice with subtraction facts to 10, using “count backs” as a strategy to figure the differences if they're not already known.



2	3	4	5	6	7	8	9	10	

Work Place Instructions

1. Get a double spinner and a record sheet. Spin both spinners and figure the difference between the two numbers. Record the result on your sheet, working from bottom to top.
2. Continue spinning, figuring, and recording until at least three of your columns fill to the top.

Work Place 4E



WORK PLACE GAMES & ACTIVITIES

Cats & Mice

This Work Place basket will need

- ★ 3 Cats & Mice spinners
- ★ crayons or colored pencils
- ★ Cats & Mice record sheets (Blackline 3.15 and/or 3.16—see note below and Instructional Considerations, run copies of one or both sheets and place in a folder.)

Skills

- ★ exploring subtraction as a process of differencing
- ★ recording data on a graph
- ★ adding strings of numbers and comparing the totals

Note The version of the game explained below is fairly challenging. Read through the directions here to decide whether or not you want to model this version or the “getting started” version described under Instructional Considerations.

Work Place Instructions

1. Decide with your partner which of you is going to represent the mice and which of you will represent the cats. Take turns spinning the spinner, coloring in the number indicated on your ten strip, and recording it to the side.
2. When you’ve each taken three turns, total your points and color in the two trains near the bottom of the sheet to compare the quantities. Record the results at the very bottom of the sheet with a subtraction sentence.
3. Play the game a second time, so each player will have a record sheet to put in his or her folder.

Blackline 3.15
 NAME Ali NAME Sarah
Cats & Mice record sheet

		7
		4
		5
		6
		7
		4
points	$7 + 5 + 7 = 19$	
points	$4 + 6 + 4 = 14$	

totals $19 - 14 = 5$ won by 5 points.

Instructional Considerations

If you feel that this record sheet is just too hard for your children to handle independently, you might use the “getting started” version (Blackline 3.16). The record sheet on Blackline 3.16 simply requires the children to spin, color, and record the difference as a single number rather than in the form of a subtraction sentence. Perhaps you’ll want to offer both sheets 3.15 and 3.16 at the Work Place and give students the option of choosing the easier or the more challenging version of this game.

Work Place 4F



WORK PLACE GAMES & ACTIVITIES

Bucket O'Bugs Subtraction

This activity has two main purposes. One is to provide practice with standard subtraction notation. The other is to teach and review the process of subtraction. There are two ways to model the activity, however. One way teaches subtraction as a process of taking away, and might be considered the more basic of the two. The other teaches subtraction as a process of determining differences. You'll probably want to consider both and choose the one that best suits the needs of your class. If most of your children seem fairly confident with "take aways," you might want to give serious thought to trying the difference model. (We don't recommend modeling both formats unless you want to cause mass confusion among your students.)

Option 1 The Take Away Model

This Work Place basket will need

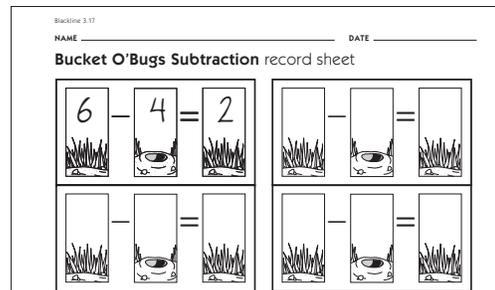
- ★ Bucket O'Bugs record sheets (Blackline 3.17, run 30 copies and place in a folder)
- ★ math bucket of bugs
- ★ Bucket O'Bugs Subtraction cards
- ★ 6 pieces of 8" x 12" green felt or other fabric (green construction paper will work too)

Skills

- ★ understanding subtraction through story problems
- ★ practicing subtraction facts

Work Place Instructions

1. Choose a set of Bucket O'Bugs Subtraction cards. These cards will help you tell some simple story problems. Get a piece of green felt from the tub and a handful of bugs.
2. Read the first card in your set and tell a story to match the number sentence.
3. Act out the story with your bugs and green felt. (The felt will serve as grass and the bugs going underground can just zip right under it.)
4. Record the entire subtraction sentence on your record sheet.



5. Work your way through the set of cards you've chosen.

Instructional Considerations

When you model this activity for your class, be sure to actually tell a story for each card in the set. After you've told two or three, have the children read the number sentences with you and take turns telling stories to match. (Even though the action is the same each time, there are all sorts of reasons why the bugs might crawl into their holes, including wind, rain, enemies, or mothers calling them home for dinner.) When students do this activity on their own, they can either tell stories to themselves or work with partners, taking turns setting up the bugs and telling the stories as they each record on their own sheets.

(Continued on back.)

Work Place 4F (cont.)

Option 2 The Difference Model

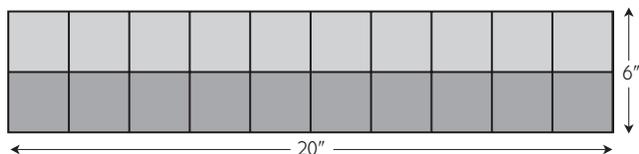
You'll need

- ★ Bucket O'Bugs record sheets (Blackline 3.17, run 30 copies and place in a folder)
- ★ the math bucket of bugs
- ★ Bucket O'Bugs Subtraction cards
- ★ 6 graphing mats (See Note below)

Skills

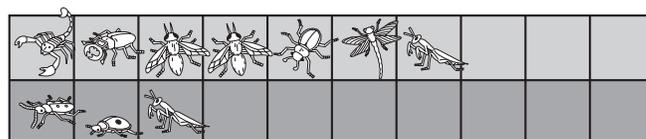
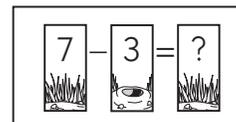
- ★ exploring subtraction as a process of determining differences
- ★ practicing subtraction facts

***Note** If you want to try the difference model for Bucket O'Bugs Subtraction, you'll need to make your own graphing mats. For each mat, just take a 6" x 20" strip of brown construction paper, glue a 3" x 20" strip of green construction paper on top, and mark it off into 2" x 3" rectangles.*



Work Place Instructions

1. Choose a set of Bug Subtraction cards. These will help you tell some simple story problems. Get a differencing mat from the tub and a handful of bugs.
2. Read the card and set up a graph to match the number sentence.



“There were 7 bugs in the grass (set 7 bugs on the green side of the graph) and 3 bugs in the dirt (set 3 bugs on the brown side of the graph). How many more bugs were in the grass than in the dirt?”

3. Record the entire subtraction sentence on your record sheet.
4. Work your way through the set of cards you've chosen.

Instructional Considerations

The tricky part of this activity will be for the children to understand why subtraction is used as a way to note difference. They'll surely be able to lay out the graph each time and figure the difference. However, recording the results as an outcome of subtraction when they've mostly experienced subtraction as a process of take away will probably be a bit of a stretch. It may help them to say something like “The difference between ___ and ___ is ___” as they record each number sentence.

When children do this activity on their own, they can either set up the graphs themselves or work with partners, taking turns setting up the bugs on the graphs as they each record on their own sheets.

Work Place 5A



WORK PLACE GAMES & ACTIVITIES

Turn Them Over

This Work Place basket will need

- ★ 6 sets of Turn Them Over cards
- ★ 3 dice numbered 3–8
- ★ 3 dice numbered 4–9

Note To make these dice, number the sides of wooden cubes with a black permanent fine felt-tip marker.

Skills

- ★ practicing addition combinations for the numbers 7–17
- ★ searching for combinations to equal certain target numbers
- ★ figuring out strategies to win a game

This is an interesting strategy game in which children search for combinations for certain target numbers. The game has been very popular with many of our second graders over the past few years.

Work Place Instructions

1. You and your partner will each need a set of number cards. When you're ready to start, lay your number cards face up in front of you, in order from 1 to 10. Have your partner do the same.
2. Take turns. When it's your turn, roll the dice. Add the two numbers that come up. Then figure out how you could turn over some of your number cards to equal that same sum. Here's an example: Suppose you roll a 4 and a 9. Your total is 13. You could turn over your 4 card and your 9 card, or you could turn over a different combination of cards that equals 13, such as 7 and 6, or 5 and 8, or even 2, 7, and 4. The object of the game is to be the first to turn all your number cards face down. *You can turn more than two cards face down with each turn.*

3. There may come a point in the game where you or your partner is stuck. For instance, suppose you have only your 7, 8, and 9 cards left face up and you roll an 8 and a 4 on the dice.



Your total is 12, and there's no way you can make that total with your remaining cards. You are now stuck. In one version of the game, each partner simply stops playing at the point he or she gets stuck. If one of the players gets stuck before the other, she stops while the other continues to play until she also gets stuck. Partners then add the numbers they're stuck with and the person with the lowest total wins.

Another version is to keep playing until all your cards have been turned over. In this version, if you get stuck, you simply let the other person roll the dice. You keep passing the dice back and forth, rolling each time, until one of you is able to turn over all of her cards. Many second graders seem to favor the second version of this game. In any event, it's good fun, and after they've played a few times, children begin developing strategies like trying to use up their larger numbers first and saving their smaller numbers for last.

Work Place 5B



WORK PLACE GAMES & ACTIVITIES

Crossing the Pond

This Work Place basket will need

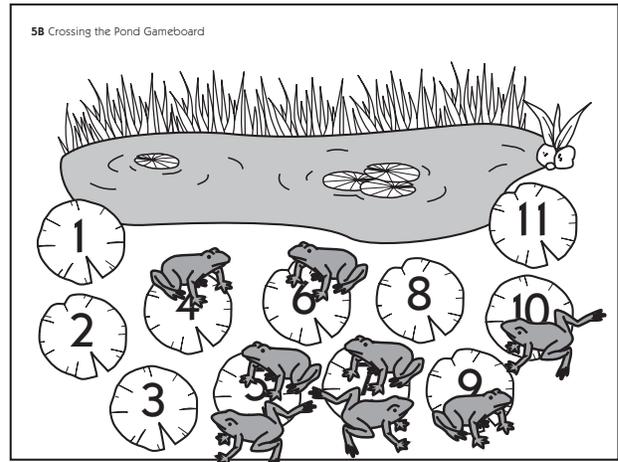
- ★ 3 Crossing the Pond spinners
- ★ 6 Crossing the Pond gameboards
- ★ Crossing the Pond record sheets (Blackline 3.30, run 30 copies and place in a folder)
- ★ math bucket of frogs

Skills

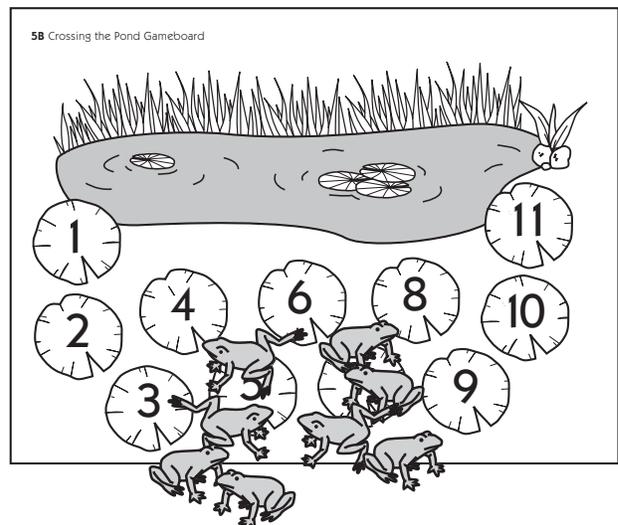
- ★ practicing subtraction facts
- ★ graphing data
- ★ making decisions based on collected data
- ★ exploring probability

Work Place Instructions

1. Find a partner. You will each need your own gameboard, 8 frogs, a record sheet, and a pencil. You will also need 1 double spinner to share.
2. Before you begin the game, place your frogs on the lily pads you want them to start on. You can put more than 1 frog on a particular lily pad, and you'll probably want to take the information you got during Session 16 into consideration. Did differences of 1, 2, or 3 come up very often? Which differences did come up the most? If you can remember, you'll want to place your frogs on some of the numbers that seemed to come up most frequently.



***John** I put two of my frogs on lily pad 5 and two on 7 because we kept spinning 5's and 7's yesterday. But I still want to spread them out a bit, just in case we get some other numbers, like 4 and 6. And I put one frog on 10 because it's my lucky number.*

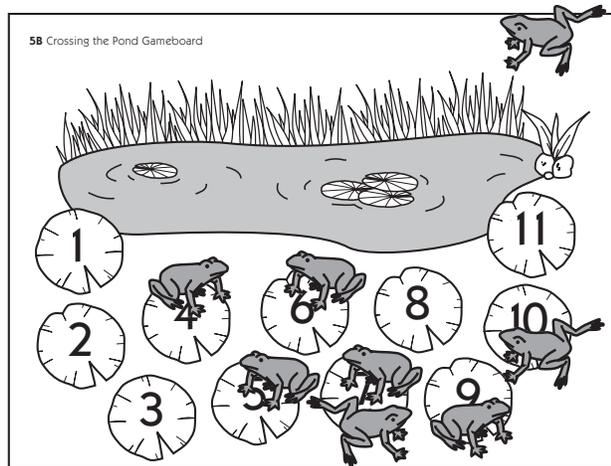
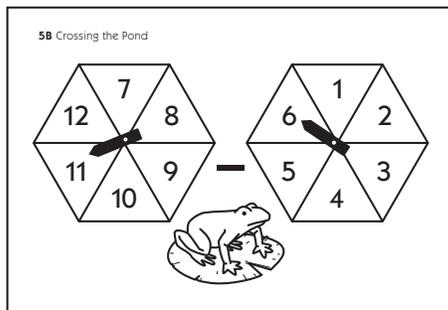


***Andrea** Not me! I put half my frogs on 5 and half on 7 because that's mostly what we got. I'm not going to waste my frogs anywhere else!*

(Continued on back.)

Work Place 5B (cont.)

3. Take turns spinning. If you spin and the difference between the two numbers matches one of the numbers where you have a frog, you can move him across the pond to safety on the other side. You can only move 1 frog at a time, though. If you have 2 or 3 frogs on a particular number, you have to wait until you spin that difference again to move one of the others.



John Hey, look! I got $11 - 6$. That's 5! I get to move one of my frogs across the pond already. I knew we'd get more 5's today!

4. As you and your partner spin, keep track of the differences both of you get on the record sheet. Keeping track may help you make better and better decisions about where to place your frogs.

5. When you get about halfway through the game—to the point where either you or your partner has moved 4 frogs across the pond—you can relocate your remaining frogs. This is where your record sheet will come in handy. What differences seem

to have come up frequently? Are there any that haven't come up at all?

6. Once you've repositioned your frogs, keep playing until one of you has moved them all across the pond. The first to do so is the winner.

Instructional Considerations

When you introduce this game as a Work Place, be sure to remind students that they have the option of repositioning their frogs halfway through. Being able to change midway through motivates children to graph the differences as the game proceeds, and to consider their data carefully. Most will continue to respond to the data they collect in a very concrete manner for some time to come, choosing to station most of their frogs at the one or two differences that come up most frequently. It will be the rare child who distributes his or her frogs evenly among the middle numbers, understanding that in the long run, 6 and 8 are at least as likely to be spun as 5 and 7, even if they haven't come up yet. Again, this game is intended to give children an opportunity to base decisions on experimental data—to begin to explore the realm of probability—while practicing basic subtraction facts.



Work Place 5C



WORK PLACE GAMES & ACTIVITIES

Battling Bugs

This Work Place basket will need

- ★ 3 Battling Bugs spinners
- ★ Battling Bugs record sheets (Blackline 3.42 or Blackline 3.43, the Getting Started Version. Read the Instructional Considerations before you decide which blackline to use. In either case, run 30 copies and place in a folder)
- ★ crayons or colored pencils

Skills

- ★ learning to record differences as subtraction sentences
- ★ practicing subtraction facts to 10
- ★ recording information on a graph
- ★ adding strings of numbers and comparing the totals

Work Place Instructions

1. Decide with your partner which of you is going to represent the spiders team and which of you will represent the flies. Take turns spinning the spinner, coloring in the numbers indicated on your ten-strips, recording them to the side, and then writing the subtraction sentence to reflect the difference each time. *Work on the same sheet together, coloring in your own ten-strips and recording your own scores. Take turns writing the subtraction sentences.*

		6	8
		8	$\frac{8}{2}$

2. When you've each taken three turns, help each other total the points for each team. Color in these totals on the ten-strip trains at the bottom of your sheet. Figure the difference by comparing the two trains and then record it in the form of a number sentence in the boxes at the very bottom of the sheet.

3. When you're finished, play the whole game through again and use a second record sheet. That way, you and your partner will both have sheets to put in your folders. (We've had better luck working this way than having children try to keep each other's records on their own sheets.)

Blackline 3.42
NAME _____ NAME _____

Battling Bugs record sheet

		6	8
		8	$\frac{8}{2}$
		7	7
		4	$\frac{7}{3}$
		7	9
		9	$\frac{9}{2}$
	Points	6 + 7 + 7 =	20
	Points	8 + 4 + 9 =	21
			
			
		$21 - 20 = 1$	 won by 1 points.

(Continued on back.)

Work Place 5C (cont.)

Instructional Considerations

Like *Cats & Mice*, this game is quite challenging for many second graders. They're fine spinning, coloring in the ten-strips, recording the scores, and *seeing* the differences each time. The difficulty comes in writing the differences in the form of subtraction sentences. For some children, all will be well as long as the spider score is greater than the fly score. Looking at the second round on the sheet above, they'd be able to tell you that the score is 7 to 4, the spiders are ahead by 3, and the subtraction sentence to show the difference is $7 - 4 = 3$.

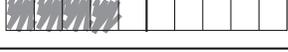
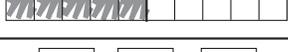
When the fly score exceeds the spider score on a particular round, though, the fragility of their understanding shows through. On the first round shown above, they'd tell you that the score is 6 to 8, the flies won by 2, and the subtraction sentence to show the difference is $6 - 8 = 2$. They do understand that the difference is 2; it's just that the finer point of writing the larger of the two numbers first escapes them. When we find children in our classes who are writing "upside down" subtraction sentences, we chat with them to make sure they understand the idea of subtraction as finding differences, and then we help them write their subtraction sentences correctly, knowing that it may take a long time before they can do so independently.

If this version of the game seems impossibly hard for some of your children, you might want to introduce it at a slightly easier level, using Blackline 3.43 instead of Blackline 3.42. This Getting Started Version of the game shown below asks children to spin, record the scores on ten-strips, and write the scores and the differences, *without having to show the differences as subtraction sentences*.

Blackline 3.43 Getting Started Version

NAME _____ DATE _____

Battling Bugs record sheet

		5
		6
		7
		4
		8
		5
	Points $5 + 7 + 8 = 20$	
	Points $6 + 4 + 5 = 15$	

 won by 5 points.

If, after a week or so of play, you feel that your children are becoming confident with the game at this easier level, you can then introduce the form that requires them to record the differences with subtraction sentences.

Work Place 5D



WORK PLACE GAMES & ACTIVITIES

Scout Them Out

This Work Place basket will need

- ★ Scout Them Out 6–10 (Blacklines 3.36–3.40, run 15 copies of each and place in pocket folders)
- ★ red, blue, green, and purple crayons or colored pencils

Skills

- ★ practicing various addition and subtraction strategies, including adding and subtracting 0's, 1's, 2's, 9's, 10's, doubles, and neighbors
- ★ looking for relationships between various combinations
- ★ looking for relationships between addition and subtraction

Work Place Instructions

1. Look through the folder and find a sheet that you want to do. Read the instructions and get the colors you'll need to circle facts, as well as a regular pencil.
2. Following the instructions on your particular sheet, circle the first set of facts with the required color. Then go back and do them in pencil. Then go through a second time, following the second instruction. Some of the sheets even ask you to go back a third time, searching for different types of facts. Be sure to follow the instructions carefully.

Scout Them Out 9, Subtraction

1. Circle all the Take Away 10's in blue. Then take a pencil and go back and do them.
2. Circle all the Run Away 1's in red. Then take a pencil and go back and do them.

$\begin{array}{r} 16 \\ -10 \\ \hline \end{array}$	$\begin{array}{r} 17 \\ -7 \\ \hline \end{array}$	$\begin{array}{r} 10 \\ -10 \\ \hline \end{array}$	$\begin{array}{r} 12 \\ -2 \\ \hline \end{array}$	$\begin{array}{r} 12 \\ -10 \\ \hline \end{array}$	$\begin{array}{r} 13 \\ -3 \\ \hline \end{array}$	$\begin{array}{r} 13 \\ -10 \\ \hline \end{array}$
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$\begin{array}{r} 11 \\ -10 \\ \hline \end{array}$	$\begin{array}{r} 11 \\ -1 \\ \hline \end{array}$	$\begin{array}{r} 18 \\ -10 \\ \hline \end{array}$	$\begin{array}{r} 18 \\ -8 \\ \hline \end{array}$	$\begin{array}{r} 15 \\ -5 \\ \hline \end{array}$	$\begin{array}{r} 15 \\ -10 \\ \hline \end{array}$	$\begin{array}{r} 17 \\ -10 \\ \hline \end{array}$
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$\begin{array}{r} 14 \\ -4 \\ \hline \end{array}$	$\begin{array}{r} 16 \\ -6 \\ \hline \end{array}$	$\begin{array}{r} 12 \\ -2 \\ \hline \end{array}$	$\begin{array}{r} 20 \\ -10 \\ \hline \end{array}$	$\begin{array}{r} 19 \\ -9 \\ \hline \end{array}$	$\begin{array}{r} 11 \\ -1 \\ \hline \end{array}$	$\begin{array}{r} 16 \\ -6 \\ \hline \end{array}$
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Instructional Considerations

Do you want your students to complete more than one sheet per visit? If you want them to try more than one of these sheets, you might require that they do two or even three per visit. That way, if they only get around to this Work Place once, they'll have completed several sheets instead of just one. Know, also, that the sheets get more challenging as children move through the set.

Work Place 5E



WORK PLACE GAMES & ACTIVITIES

Cover Up

This Work Place basket will need

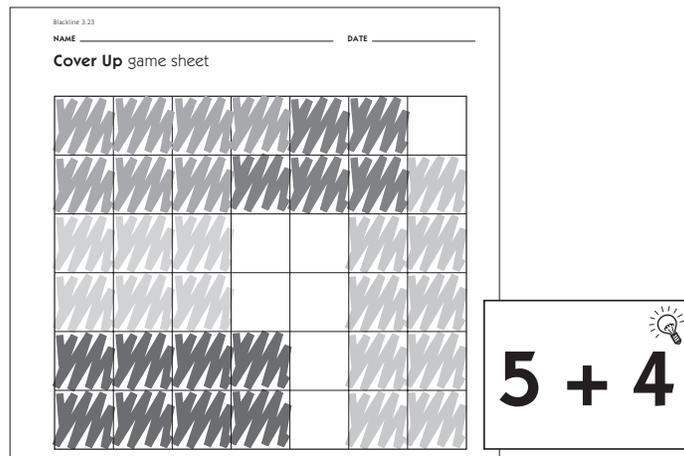
- ★ 3 sets of Cover Up cards and 3 sets Cover Up Challenge cards
- ★ Cover Up game sheet (Blackline 3.23, run 30 copies and place in a folder)
- ★ green and yellow tile from the base ten pieces (about 30 of each—these are optional, but may help some children plan their moves)
- ★ crayons

Skills

- ★ exploring a visual model for the doubles and neighbors
- ★ practicing doubles and neighbors addition combinations
- ★ exploring a visual model for odd and even numbers
- ★ searching for visual and number patterns
- ★ linking number and geometry

Work Place Instructions

1. With your partner, choose the set of regular or challenge cards you plan to use. Each of you will also need a record sheet and 6 to 8 crayons in different colors. Shuffle the deck of cards you've chosen and place it face-down between you.
2. Take turns. When it's your turn, pick a card, read the combination, and find a place on your record sheet to color in that shape.
3. Continue to play back and forth, each taking cards from the top of the pile and coloring in the appropriate shapes on your own record sheets. If you come to a card you cannot use because your record sheet won't accommodate the shape, put it back at the bottom of the pile and let your partner take his turn. You may find that toward the end, you're missing quite a few turns.



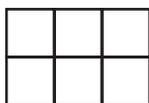
Student I can't use $5 + 4$. All I have room for is $3 + 2$ or something smaller, and I really need that $1 + 0$ card! I'll have to put this card back in the pile and skip my turn."

4. If you get to the end of the card deck and neither of you has been able to fill your record sheet yet, shuffle the deck, place it face-down between you and continue to draw cards and color in shapes on your sheets until someone wins. Reuse the deck as many times as necessary until one of you fills your record sheet completely. (If this seems too tedious, you or your students might develop an alternative ending, such as declaring the game over if either player draws more than 5 cards in a row that can't be used. In this case, the player with the fewest boxes left to color on his or her sheet would win.)

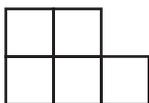
Instructional Considerations

By the time you introduce this round of Work Places, your students will have played this game as a whole-group activity. You may want to review briefly by having them build some of the doubles and neighbors combinations in the form of rectangles and "school buses" with 1" square tile. (Continued on back.)

Work Place 5E (cont.)



“Here’s how you build $3 + 3$. It’s a 2×3 rectangle.”



“And here’s the shape for $2 + 3$. It really does look like a school bus with that nose sticking out!”

You might also show a few counter-examples:



Teacher *Why can’t I build $2 + 2$ like this?*

Susannah *Because in this game, you have to make rectangles.*

Teacher *But this is a rectangle. It’s a 1×4 .*

Bryce *You have to make your rectangles be 2-by’s. That way you can see if it’s a neighbor because if it is, it’ll have that nose sticking out.*

Once you’ve reviewed the “acceptable” shapes, you might remind students that the regular cards actually show the shapes of the combinations, whereas the challenge cards just give the numbers. Children who are feeling less secure with the shapes might use the regular cards for awhile before they move to the more challenging set.

Finally, don’t be dismayed if some of your students color in the combinations incorrectly for awhile. In the heat of the game, even some of our more able students will color in $2 + 3$ as a line of 5, instead of using the “school bus” formation, if they need a long skinny shape to complete their sheet. At the very least, children are practicing addition facts and creating visual models of them. Consistent use of 2-by rectangles and school bus arrangements may be a while in coming. This is not the last time children will see these models.

Work Place 5F



WORK PLACE GAMES & ACTIVITIES

Kids in the House

This Work Place basket will need

- ★ Kids in the House, sheets 1–6 (Blacklines 3.24–3.29, run 30 copies of each and place in folders)
- ★ round plastic game markers (Make 6 sets of 20. Place each set in its own ziplock or other container.)

Skills

- ★ searching for combinations for numbers 1 through 15
- ★ practicing addition facts in a problem-solving context

Work Place Instructions

1. Choose a sheet to do. You have already done sheet 1, and may also have done sheet 2. If you want to try these sheets again, that's fine, but you'll also need to pick at least one other sheet. In addition to a sheet, you'll need a crayon, a pencil, and some plastic counting disks.

2. Read the first number in the set below the house. Can you place that many counting disks in the windows shown and still follow the rule that if you use one pane in the window, you have to use all of them? If so, put a check above the number and color in the boxes below to show which window(s) you've used to make the number.

3. Continue in this fashion until you've tried to make all the numbers on the sheet. You'll find that a few of them are impossible on some of the sheets, but don't give up too easily—be sure to use your counting disks and try all kinds of possibilities before you cross anything out.

Note The only combinations that can't be made are the following: Sheet 3 (11), Sheet 4 (5, 12), Sheet 5 (15), Sheet 6 (4, 7, 12, 15).

Blackline 3.24
 NAME _____ DATE _____
 Kids in the House sheet 1

✓	1	2	3	4	5	6	7	8	9	10
	1	1	1	1	1	1	1	1	1	1
	2	2	2	2	2	2	2	2	2	2
	3	3	3	3	3	3	3	3	3	3
	4	4	4	4	4	4	4	4	4	4

Instructional Considerations

Do you want your students to complete more than one sheet per visit? If you want them to try more than one of these sheets, you might require that they do two or even three per visit. That way, if they only get around to this Work Place once, they'll have completed several sheets instead of just one.

Work Place 6A



WORK PLACE GAMES & ACTIVITIES

Faces of Mystery

This Work Place basket will need

- ★ 2 sets of geoblocks
- ★ Faces of Mystery sheets 1–4 (Blacklines 4.7–4.10, run 15 copies of each and place in a folder)

Skills

- ★ observing and describing 3-dimensional shapes
- ★ exploring some of the relationships between 2- and 3-dimensional shapes
- ★ sorting
- ★ exploring the ideas of similarity and congruence

Work Place Instructions

1. Choose a sheet from the folder and spread out a set of geoblocks where you can see them easily.
2. Take a good look at the faces shown on the sheet. Can you find the block in the set that matches all of the faces shown? Take a good look through the collection of blocks. When you think you've found the mystery block, test it by setting it directly on the paper to see if it fits. Don't forget to test all of the faces!
3. When you're positive you've found the right block, record the letter on the answer line. Repeat until you've figured out all the blocks on the sheet. (Some of the sheets have 2 and some have 3 mystery blocks.)

Instructional Considerations

There are four sheets in this set, and you'll need to decide how many sheets you want to require for each visit. That is, you might want to have children do at least two sheets before they color in the star that indicates they've visited this Work Place once. Here is the answer key for the four sheets:

Answer Key for Faces of Mystery Sheets

Sheet 1

Box 1: B

Box 2: D

Box 3: H

Sheet 2

Box 1: A

Box 2: M

Box 3: F

Sheet 3

Box 1: I

Box 2: X

Box 3: J

Sheet 4

Box 1: U

Box 2: W

Work Place 6B



WORK PLACE GAMES & ACTIVITIES

How Can You Build It?

This Work Place basket will need

- ★ 8 sets of geoblocks, mixed together (Children will need to have free and easy access to at least 8 of the same geoblock at times, so you should go ahead and dump all 8 sets together.)
- ★ How Can You Build It? sheets 1–4 (Blacklines 4.11–4.14, run 20 copies of each and place in a folder)

Skills

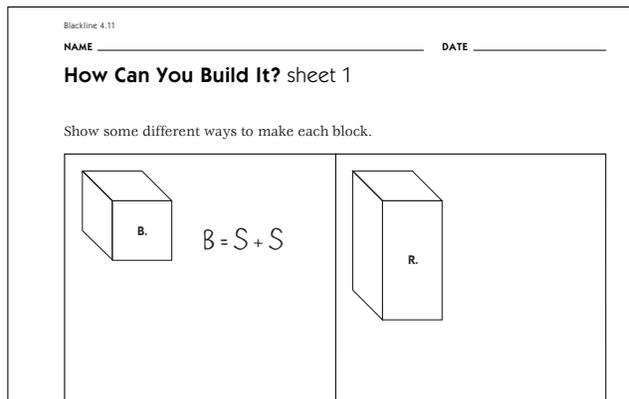
- ★ combining shapes to make other shapes
- ★ exploring similarity and congruence
- ★ exploring the relationships between various 3-dimensional shapes

Work Place Instructions

1. Choose one of the four building sheets.
2. Find the first block pictured and set it in front of you.
3. Find some other blocks that you can put together to replicate the size and shape of the first block. You will be combining other blocks to make a shape that is congruent to the first. Here is an example: you can place 2 S blocks side by side or stack them on top of each other to make a shape that is just the same as, or congruent to, the B block.



Once you find a way to build the first block with other blocks, find a way to record your discovery in the appropriate box on your sheet.



4. There are many, many ways to build each block shown on the four sheets. See if you can record at least four or five different ways for each block on the sheet you choose. You may have to experiment a bit to come up with ideas once you're past the first two or three, but that's part of the fun!

Instructional Considerations

This Work Place can be very exciting, especially if you encourage children to persevere and think beyond the obvious. While some students will draw or trace the blocks to show their discoveries, others may prefer to use letters. Here's a list of some of the solutions and notation methods we've seen students use as they tried to find block combinations for cube B.

- | | | |
|----------------|-----------------|---------------------|
| $S + S = B$ | $U + U + S = B$ | $U + U + U + U = B$ |
| $4U = B$ | $2H + S = B$ | $4H = B$ |
| $8J = B$ | $4J + S = B$ | $K + K + K + K = B$ |
| $R \div 2 = B$ | $8C = B$ | $S + 4C = B$ |

***Note** We don't require children to do more than one sheet each time they visit this Work Place. It's quite challenging!*

Work Place 6C



WORK PLACE GAMES & ACTIVITIES

Last Shape In Wins

You'll need

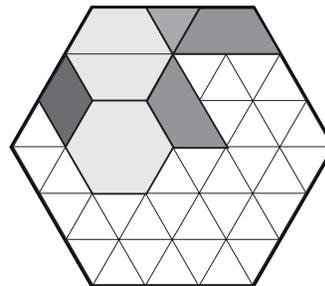
- ★ pattern blocks—hexagons, trapezoids, triangles, and blue rhombuses only (You may want to organize sets of pattern blocks into 3 ziplock bags so partners can reach into the Work Place basket easily and get what they need. Each set should have about 10 hexagons and 20 each of the other shapes.)
- ★ 3 Last Shape In Wins gameboards

Skills

- ★ exploring some of the relationships between various 2-dimensional shapes
- ★ combining shapes to make other shapes
- ★ developing strategies for winning a game

Work Place Instructions

1. Get a partner, some pattern blocks, and a gameboard. Decide who will go first and who will go second.
2. Take turns placing blocks on the gameboard. Each time it's your turn, you get to place one block anywhere on the gameboard you want. You may use any of the four shapes. You must take your turn every time, down to the very end. The object of the game is to be the person who gets to complete the big hexagon by fitting in the final shape.



Instructional Considerations

The strategizing that may go on in the last few moves of this game is similar to chess in that a player needs to envision several different possibilities, imaging what will happen if she places a trapezoid on the board instead of a diamond, or a triangle instead of a hexagon. Not all of your students will spend a lot of time agonizing over the last few moves, although more might if you continue to challenge them to develop winning strategies.

Work Place 6D



WORK PLACE GAMES & ACTIVITIES

Caterpillar Fill & Add

This Work Place basket will need

- ★ pattern blocks—hexagons, trapezoids, triangles, and blue rhombuses only (You may want to organize sets of pattern blocks into 3 ziplock bags so partners can reach into the Work Place basket easily and get what they need. Each set should have about 10 hexagons and 20 each of the other shapes.)
- ★ 6 Caterpillar Fill & Add gameboards
- ★ Caterpillar Fill & Add record sheet (Blackline 4.15, run 30 copies and place in a folder)
- ★ 3 pairs of dice (1 of each pair should be numbered 0–5, the other 1–6)
- ★ red, green, yellow, and blue crayons

Skills

- ★ exploring the idea of area
- ★ exploring fractions ($\frac{1}{2}$, $\frac{1}{6}$, $\frac{1}{3}$)
- ★ exploring equivalent fractions ($\frac{3}{6} = \frac{1}{2}$)
- ★ exploring addition of fractions ($\frac{1}{6} + \frac{1}{3} = \frac{1}{2}$)
- ★ adding numbers to 24

Work Place Instructions

1. Get a partner, two gameboards, *one record sheet to share between the two of you*, a pair of dice, some pattern blocks, and some crayons.
2. Each of you needs a gameboard and some pattern blocks right in front of you; the record sheet should be placed between you so that you can take turns recording your moves. You will both work on the same record sheet.
3. Take turns rolling the dice, adding the two numbers that come up, and taking that many pattern blocks in triangles or their equivalent in other shapes (if you roll $2 + 4$, you can take 6 triangles, 1 hexagon, 3 diamonds, 2 trapezoids, or

any combination of blocks equivalent to 6 triangles). Place the blocks on your gameboard, and record your move on the record sheet each time it's your turn. The object of the game is to be the first to fill the caterpillar exactly.

Here's what someone who rolled $5 + 4$ on his or her first turn might do:

Blackline 4.15

NAME Alyssa DATE 4/11

Caterpillar Fill & Add record sheet

"I got $5 + 4$ on my first roll. That's 9. I'm going to take a hexagon—that's 6, and a trapezoid—that's 3. I'll put those blocks on my gameboard, and then color in what I did on the record sheet."

4. Keep playing back and forth until one of you fills the caterpillar exactly. Once you're down to 6 or fewer triangles to fill, you can opt to roll only one die instead of two. If you roll more than the number of triangles you have left to fill, you lose your turn and you don't write anything down. In the end, you may have to trade the dice (or die) back and forth a few times until someone finally gets the number he or she needs. Be sure to record your score each time you can make a play, and total the numbers at the end, even if you don't make it to 24.

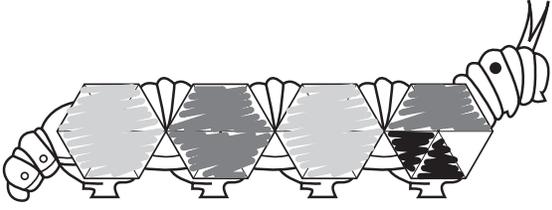
(Continued on back.)

Work Place 6D (cont.)

Blackline 4.15

NAME Alyssa DATE _____

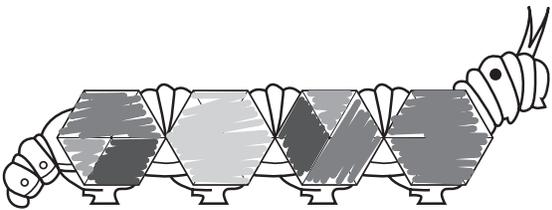
Caterpillar Fill & Add record sheet



9 + 6 + 8 = 23

NAME Colby DATE _____

Caterpillar Fill & Add record sheet



4 + 10 + 7 + 3 = 24 Colby won

first section. Some children, of course, will want to fill their caterpillar sections completely as they go, and may even opt to take all of their scores in triangles each time. You might want to spend some time observing at this Work Place or looking over children's record sheets to see whether they stick with triangles or move into taking equivalent amounts with larger blocks.

5. When you're finished, dump the pattern blocks off your gameboards and play the game again so that both you and your partner have a record sheet to put in your folders.

Instructional Considerations

Although children will have played this game once at a whole-group level, you may have to model it more than once as a Work Place. This is partly because there are several steps. Players have to roll the dice, figure the total, and take an equivalent amount in pattern blocks. Then they have to set the blocks on their gameboards, and finally, color in their record sheets each time it's their turn.

It will be very important for children to understand that *they don't have to fill each section of the caterpillar before they move on to the next*. If, for instance, they have 5 triangles filled in on the first section of their caterpillar and they roll a 6, they can take the 6 as a hexagon and fill the second section, waiting until their third or fourth turn to go back and fill in the remaining triangle on the

Work Place 6E



WORK PLACE GAMES & ACTIVITIES

Build-4-Less

This Work Place basket will need

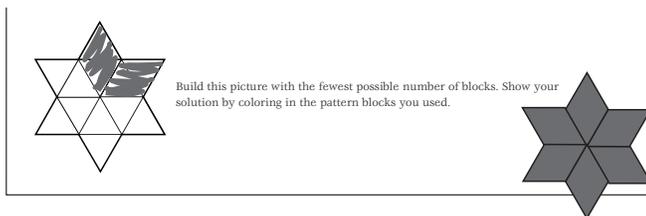
- ★ pattern blocks—hexagons, trapezoids, triangles, and blue rhombuses only
- ★ Build-4-Less sheets 1–6 (Blacklines 4.16–4.21, run 15 copies of each sheet and place in a folder)
- ★ red, green, yellow, and blue crayons

Skills

- ★ exploring the idea of minimal collections
- ★ exploring the idea of changing units of area (e.g., I can build this picture with 8 triangles, but I can also cover it with 4 blue rhombuses.)
- ★ solving spatial problems
- ★ combining shapes to make other shapes

Work Place Instructions

1. Get some pattern blocks and one of the problem sheets from the folder. Work with the blocks until you figure out how to make the shape(s) on the sheet with the fewest blocks possible. You will probably have to experiment for awhile and try several different arrangements until you find the one that uses the fewest blocks. You can build directly on the sheet itself or off to the side.



2. When you think you have found a way to make the shape with the fewest blocks, record your solution by coloring in the picture on the sheet. If you have built directly on the shape, you may remove your blocks one at a time, coloring as you go, so you don't forget your own arrangement. You

may also slide your blocks to the side and rearrange them so you can copy from the blocks to the sheet.

Instructional Considerations

There are six sheets in this set, and you'll need to decide how many sheets you want to require for each visit. Some of the sheets are fairly challenging, and each requires a fair amount of work in building and rebuilding, and then coloring to show a solution. Perhaps you'll want to vary the requirement depending on the student. Here is the answer key for the six sheets. Please note that there are two solutions for one of the problems.

Answer Key for Build-4-Less sheets

Sheet 1

The trapezoid: 4 (4 trapezoids)

The star: 6 (6 rhombuses *or* 3 trapezoids and 3 triangles)

Sheet 2

The large rhombus: 5 (4 trapezoids and 1 hexagon)

Sheet 3

The dog: 9 (5 rhombuses, 2 hexagons, 1 trapezoid, and 1 triangle)

Sheet 4

The large trapezoid: 7 (2 hexagons and 5 trapezoids)

Sheet 5

The large hexagon: 12 (6 hexagons and 6 trapezoids)

Sheet 6

The large star: 13 (7 hexagons and 6 triangles)

(Continued on back.)

Work Place 6E (cont.)

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Note You might want to post a chart that simply states the minimum number blocks for each shape. We find that some of our students are able to find the solutions above more easily if they know how many total blocks a figure requires, without knowing exactly how many triangles, hexagons, trapezoids, and/or rhombuses are needed for that figure.
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Work Place 6F



WORK PLACE GAMES & ACTIVITIES

Triangle Draw

This Work Place basket will need

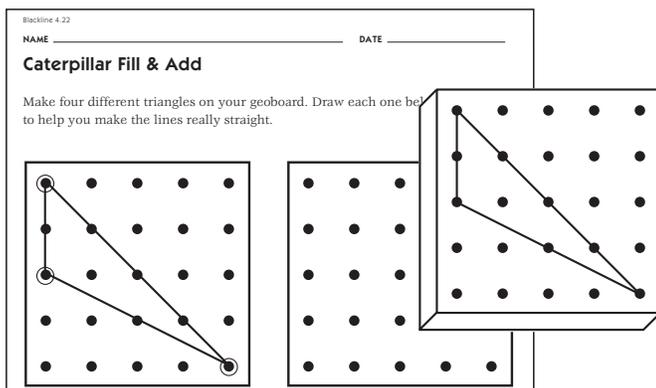
- ★ 6 clear geoboards
- ★ rubber bands
- ★ 6 clear rulers
- ★ Triangle Draw record sheet (Blackline 4.22, run 30 copies and place in a folder)

Skills

- ★ exploring the properties of triangles by constructing and drawing them

Work Place Instructions

1. Get a geoboard, some rubber bands, a pencil, a ruler, and a Triangle Draw record sheet.
2. Use your rubber bands to create a triangle on the geoboard. Record your work carefully, using your ruler to help get the lines straight. You might even want to circle the correct dots on the record sheet before you start drawing lines so that you'll be sure to get the lines where you want them.



3. Make 3 more triangles on the geoboard, recording your work each time. Be adventurous—remember that triangles must have 3 sides and 3 corners, but the sides don't all have to be equal. Be sure to work carefully too, because the triangles you draw will be used for a lesson later in the unit.

Instructional Considerations

Most second graders are familiar with the idea that triangles have 3 straight sides and 3 “points” or corners. It may still be news to some that triangles are not all equilateral. If you used the geometric shape calendar markers in December, though, your students will have seen several different types of triangles. Even so, they might not yet believe that these are “real” triangles. This Work Place will give them a chance to experiment with various sorts of triangles firsthand.



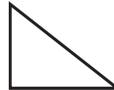
equilateral triangle

(all 3 sides and angles are equal)



isosceles triangle

(at least 2 out of the 3 sides and angles are equal)



right triangle

(1 of the angles is a right angle)



scalene triangle

(none of the sides and none of the angles are equal)

Do encourage your students to be bold in creating and recording various kinds of triangles. It's not particularly important that they know the names of the different sorts of triangles, but this is a good opportunity for them to learn that triangles have 3 straight sides, 3 corners, and can be oriented in any direction. It's fun for them to see that if they pick any 3 pegs on the geoboard, none of which lie along the same line, and connect them, they'll get a triangle.

Work Place 7A



WORK PLACE GAMES & ACTIVITIES

Geoblock Architecture

This Work Place basket will need

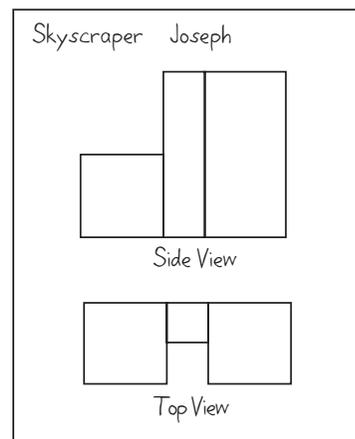
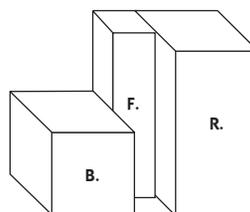
- ★ 6 sets of geoblocks
- ★ Geoblock Architecture Cards

Skills

- ★ observing and describing 3-dimensional shapes
- ★ exploring some of the relationships between 2- and 3-dimensional shapes
- ★ exploring relationships among 3-dimensional shapes
- ★ building structures using top and side-view plans

Work Place Instructions

1. Choose one of the architecture cards and spread out a set of geoblocks where you can see them easily.
2. Take a good look at the drawings on the card. Each one shows a structure made of geoblocks drawn from the side and from the top. Working from these plans, can you build the structure with geoblocks?
3. When you think you've built the structure pictured on the card, check it with someone else who is working at this activity to see if he or she agrees with you.
4. Build at least four of the structures shown on the cards while you're here. If you work with other students, you might be able to create a whole geoblock city.



Instructional Considerations

In addition to having students build the structures pictured on the Geoblock Architecture Cards, you might let them design new cards for one another. To do this, they'll need to build simple structures using no more than three or four blocks and then draw plans by tracing the sides and tops of their blocks onto $8\frac{1}{2}$ " by 11" paper or cardstock. Their architectural drawings can then be added to the Work Place basket for others to build.

Work Place 7B



WORK PLACE GAMES & ACTIVITIES

No More Than 80

This Work Place basket will need

- ★ pattern blocks—hexagons, trapezoids, blue rhombuses, and triangles
- ★ No More Than 80 record sheets (Blackline 4.35, run 30 copies and place in a folder)
- ★ blue, green, yellow, and red crayons

Skills

- ★ combining shapes to make other shapes
- ★ measuring area
- ★ writing number sentences
- ★ figuring totals by adding and/or multiplying

Work Place Instructions

1. Take a record sheet and build a picture or design with pattern blocks, taking care that your creation is no bigger than the surface area of the record sheet in any direction. You can either build right beside the sheet or directly on top of it.
2. Once you have a picture or a design that pleases you, record it on the sheet, using color crayons. (If you built your design directly on the sheet, do your recording on a second sheet.)
3. Finally, figure out the area of your pattern block creation, using the green triangle as your unit of measure. Show your work in the box at the bottom of the sheet.

Instructional Considerations

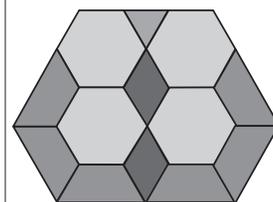
Although the calculations shown directly above are fairly sophisticated, you will see similar work from some second graders. Most will be inclined to use counting methods, however. If you want to push for something a little bit beyond counting up the triangles that fit into the design, you might encourage children to write the worth of each pattern block directly on their recorded design. By now, many will know that the rhombus has an area of 2 triangles, the trapezoid 3, and the hexagon 6. From there some children may go back to counting one by one, but some can be pulled in the direction of working in chunks. These students might tell you, “I can see that $6 + 6$ is 12. That’s 2 of the hexagons. Then there’s another $6 + 6$ for 12 more. If you can get them to write these observations in the box at the bottom of their sheet, they’re on their way.

NAME Anne DATE _____

No More Than 80

If = 1 unit of area, what is the area of your picture? Add it up.

Hexagons $6 + 6 + 6 + 6 = 24$	$\begin{array}{r} 30 \left\langle \begin{array}{l} 24 \\ + 18 \end{array} \right\rangle 12 \\ \hline 42 \\ + 4 \\ \hline 46 + 1 = 47 \end{array}$
Trapezoids $3 + 3 + 3 + 3 + 3 + 3 = 18$	
Rhombuses $2 + 2 = 4$	
Triangles 1	



If = 1 unit of area, what is the area of your picture? Add it up.

Hexagons $6 + 6 + 6 + 6 = 24$	$\begin{array}{r} 30 \left\langle \begin{array}{l} 24 \\ + 18 \end{array} \right\rangle 12 \\ \hline 42 \\ + 4 \\ \hline 46 + 1 = 47 \end{array}$
Trapezoids $3 + 3 + 3 + 3 + 3 + 3 = 18$	
Rhombuses $2 + 2 = 4$	
Triangles 1	

Anne I knew that $12 + 12$ was 24, and then I just kept counting to get the rest. I went $24 - 25, 26, 27, 28, 29$ and kept counting and counting until I got to 47.

Work Place 7C



WORK PLACE GAMES & ACTIVITIES

Halves & Half-Nots

This Work Place basket will need

- ★ Halves & Half-Not sheets 1–4 (Blacklines 4.36–4.39, run 15 copies of each sheet and place in a folder)
- ★ 1" construction paper squares

Skills

- ★ measuring area
- ★ adding halves
- ★ exploring fractions as parts of wholes
- ★ exploring fractions as parts of sets

Work Place Instructions

1. Choose one of the work sheets. Using the 1" construction paper squares or any other counting method you choose, figure the areas of the white and gray regions on the first quilt block. Be sure to number the shapes on the paper, or use number sentences that will let someone else understand your results; the answer alone is not enough. Record your totals in the box below the quilt block and circle the sentence that best describes the block. Is it half gray and half white, more gray than white, or more white than gray?

2. Do the same thing with the second quilt block on the sheet.
3. Share your sheet with someone in class. Do they understand your work? Do they agree with your results?

Instructional Considerations

You may want to require students to do two sheets per visit to this Work Place. There are four sheets total, and each is a little harder than the next, although children certainly don't have to do them in order. Some may choose to do all four at once, some may choose to make a second visit, and some may just do the two required.

NAME Jensen DATE 1/23

Halves & Half-Nots sheet 1

What is the area of the gray region? 12 What is the area of the white region? 12

This quilt block is $\frac{1}{2}$ gray and $\frac{1}{2}$ white.
 This quilt block is more than half gray.
 This quilt block is more than half white.

What is the area of the gray region? _____ What is the area of the white region? _____

This quilt block is $\frac{1}{2}$ gray and $\frac{1}{2}$ white.
 This quilt block is more than half gray.
 This quilt block is more than half white.

Work Place 7D



WORK PLACE GAMES & ACTIVITIES

Design Your Own Mini-Quilt

This Work Place Basket will need

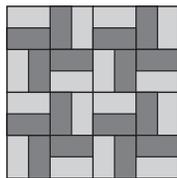
- ★ 4" and 8" squares of white copier paper
- ★ 2" squares of construction paper in several different colors
- ★ glue and scissors
- ★ the Symmetry Graph students created during Session 12 (optional)

Skills

- ★ exploring line and rotational symmetry
- ★ exploring geometrical transformations—turns and slides (rotations and translations)



block



mini-quilt

Work Place Instructions

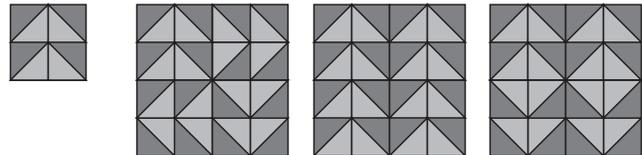
1. Choose four 2" squares of construction paper, 2 in one color and 2 in another. Cut each of the 4 squares in half to form 8 triangles or 8 rectangles.
2. Arrange your 8 triangles or your 8 rectangles on a 4" square of white copier paper in such a way that you leave no holes or gaps. Use your shapes to create an entirely new quilt block or to copy one from the Symmetry Graph. When you find an arrangement that pleases you, glue it down.



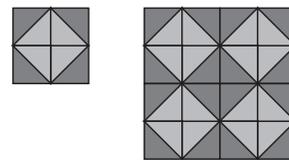
"The tree is my favorite. I've been wanting to make one ever since we did our first quilts."

3. Make 3 more copies of the first block. Remember that the colors and shapes have to be identical. Pretend you are a copy machine!

4. Slide and rotate your 4 blocks until you find the most interesting mini-quilt arrangement. (There are blocks that will only make one arrangement no matter how you turn them. Why is this?) When you've found the arrangement that pleases you the most, glue the 4 blocks to the 8" square of white copier paper. Set your mini-quilt aside to dry and then take it home to show your family.



"I started with the tree block and made 4 copies. Look at all the different ways I can arrange my 4 blocks!"



"I started with the diamond block and made 4 copies. No matter how I turn my blocks, my mini-quilt keeps turning out the same way!"

Work Place 7E



WORK PLACE GAMES & ACTIVITIES

Find the Area

This Work Place basket will need

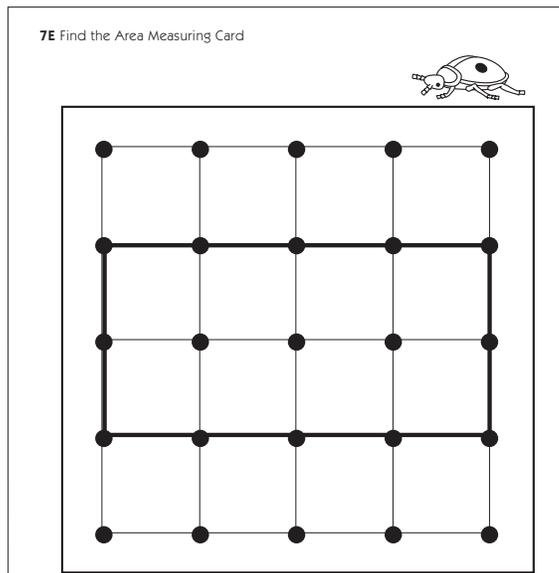
- ★ 6 clear geoboards
- ★ rubber bands
- ★ 6 Find the Area Measuring Cards
- ★ Find the Area sheets 1–4 (Blacklines 4.40–4.43, run 15 copies of each sheet and place in a folder)
- ★ beans or buttons or some other small markers

Skills

- ★ exploring area
- ★ using squares as units to measure the area of other shapes
- ★ exploring the relationship between a square and a right triangle
- ★ identifying and adding halves on the geoboard

Work Place Instructions

1. Choose a worksheet from the folder. They're arranged in order of difficulty and you can start with any sheet you want.
2. Find the area of each shape on the sheet, using the smallest square bounded by four pegs as your unit of measure. You can do this by reproducing each shape on your geoboard and using a Measuring Card to help you find the area, or by drawing and counting the squares and triangles on the worksheet in some fashion. Be sure to show something besides the answer on your worksheet so people will understand how you got your answers.



"If I build the first rectangle on my geoboard and put it on top of the measuring card, I can see that it has 8 squares."

Blackline 4.40

NAME Cora DATE 1/25

Find the Area sheet 1

Find the area of each shape below. Be sure to show how you got each answer

= 1 unit of area

area = 8 units

area = units

"I can just draw lines right on the worksheet to see the 8 squares. See? I numbered them to show the 8 squares."

(Continued on back.)

Work Place 7E (cont.)

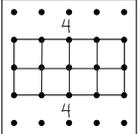
Blackline 4.40

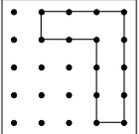
NAME Jonah DATE 1/25

Find the Area sheet 1

Find the area of each shape below. Be sure to show how you got each answer

 = 1 unit of area

 area = 8 units

 area = units

$4 + 4 = 8$

“I like to draw lines on the worksheet too.
I can see 4 squares in the top row and 4 in
the bottom row, and $4 + 4$ is 8.”

Instructional Considerations

Again, you will need to decide how many sheets you want children to complete with each visit. We’re inclined to think that one is adequate for most second graders. Although they have done sheets like this before, it will still be a challenge for some students to find the areas of some of the shapes, even on the first worksheet. Some will make heavy use of their geoboards and measuring cards and may still need something tangible to mark each square—a bean, a button, or even a square inch tile. The triangles may throw some of your students too. A few will persist in counting each triangle as one rather than one-half, and others will run into trouble trying to combine them accurately, particularly on some of the more complex shapes. Be available to help and encourage students to help one another. While you might not see perfect performance on this task from all your children, it will be a valuable experience and certainly not their last encounter with area this year, or in the years to come.

Work Place 7F



WORK PLACE GAMES & ACTIVITIES

Make the Area

This Work Place Basket will need

- ★ 6 clear geoboards
- ★ rubber bands
- ★ 6 clear rulers
- ★ Make the Area sheets 1–4 (Blacklines 4.44–4.47, run 15 copies of each sheet and place in a folder)
- ★ 6 Make the Area Measuring Cards

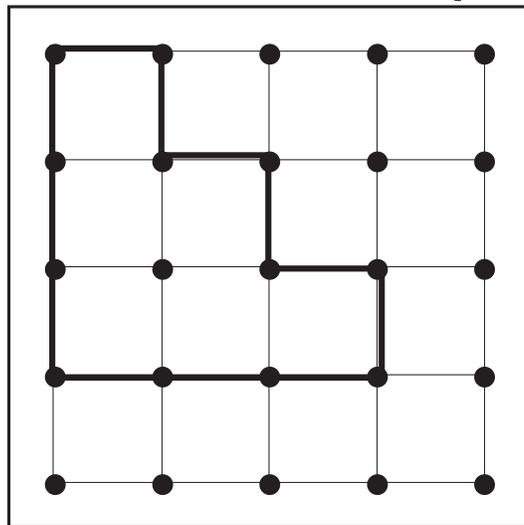
Skills

- ★ exploring area
- ★ using squares as units to measure the area of other shapes
- ★ exploring the relationship between a square and a right triangle
- ★ identifying and adding halves on the geoboard

Work Place Instructions

1. Get a geoboard, some rubber bands, a pencil, a ruler, and a Make the Area sheet. There are four sheets available. Each asks you to create shapes with a different area—6, 7, 8, or 9 square units respectively.
2. Use rubber bands on your geoboard to create four shapes, each having the area stated on the sheet. Use a Measuring Card to check the area for accuracy before you record each shape on your sheet. Record your work carefully, using your ruler to help get the lines straight. Just as you did with Work Place 7E, Find the Area, mark your paper in some way to prove that you've actually created shapes of the correct area.

7F Make the Area Measuring Card

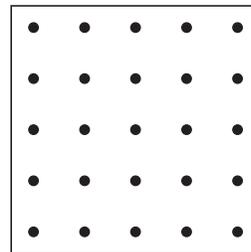
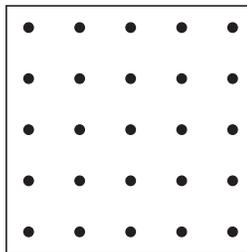
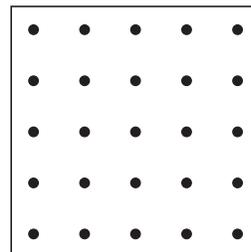
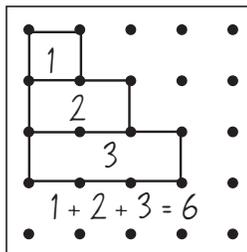


Blackline 4.44

NAME Abdul DATE 1/29

Make the Area 6 Square Units

Make 4 different shapes on your geoboard. Each one should have an area of 6 square units. Use a ruler to copy your shapes below.



Work Place 8A



WORK PLACE GAMES & ACTIVITIES

25¢ or Bust!

This Work Place Basket will need

- ★ 3 sets of 25¢ or Bust! cards
- ★ 25¢ or Bust! record sheets (Blackline 5.16, run 30 copies and place in a folder)

Skills

- ★ counting sums of money to 25¢
- ★ mental arithmetic

Work Place Instructions

1. Choose a partner; then get a pack of game cards out of the basket and two record sheets. Both you and your partner will need your own sheet. Be sure to put your name on your sheet.
2. Shuffle the cards and place the deck face down between you. Draw a card from the top of the pile, take a peek at it, and place it face down in the first space on your record sheet so your partner cannot see it. Have your partner do the same.
3. After both of you have taken your first card, decide whether or not you want to draw any more cards in an attempt to get closer to 25¢ without going over. If you do decide to draw more cards, take turns pulling them off the top of the pile until neither of you wants any more cards. You can't take any more than four, no matter what, and you have to display any other cards you take so that both you and your partner can see them. (It's fair to peek at your own first card if you happen to forget what's on it!)

Blackline 5.16
NAME Kellie DATE 2/14
25¢ or Bust! record sheet

The record sheet for Kellie is divided into four quadrants. The top-left quadrant is shaded grey. The top-right quadrant contains a small car icon and a single coin. The bottom-left quadrant contains two coins. The bottom-right quadrant is empty.

Kellie (thinking to herself) I'd better not take any more cards. I have 8¢ on the card that doesn't show. 10 more cents makes 18, and then 6 more on the third card is 24. I'm really close to 25¢!

Blackline 5.16
NAME Mark DATE Feb. 14
25¢ or Bust! record sheet

The record sheet for Mark is divided into four quadrants. The top-left quadrant is shaded grey. The top-right quadrant contains a small car icon and three coins. The bottom-left quadrant contains three coins. The bottom-right quadrant is empty.

Mark (thinking to himself) Oh no! If only I hadn't taken any more cards after that second one. I had 10¢ on the card that's face down, and after my second card I had 17. I thought I'd be safe taking another card but 12 more cents is too much. I'm way over!

(Continued on back.)

Work Places 8A (cont.)

4. After you've both taken all the cards you're going to take, you each need to turn your first card over and report the total to the other. The person who gets closest to 25¢ without going over is the winner of the first round. If you both get 25¢ on the nose, you both win; if you both go over the mark, neither of you wins. Finally, use the first small box at the bottom of the page to record a number sentence about the cards you got on the first round. If you were the winner, circle your number sentence.

Blackline 5.16
 NAME Kellie DATE 2/14
 25¢ or Bust! record sheet 

	
	
<div style="border: 1px solid black; border-radius: 15px; display: inline-block; padding: 2px 10px;"> $8 + 10 + 6 = 24¢$ </div>	<input style="width: 100%; height: 20px;" type="text"/>
<input style="width: 100%; height: 20px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>

Instructional Considerations

This game is very much like Make the Sum in that students are trying to find combinations that will add to a target number. One difference is that they're working in coins instead of numbers, and hopefully thinking in 10's, 5's, and 1's, instead of single 1's. Another difference is that they're trying to get as close as possible to the target number (25¢) without going over. By the time you introduce this Work Place, they will have played a whole-group version of the game. You probably won't need to demonstrate much more than how to use the record sheet, and they'll be ready to try it on their own.

5. Once you've recorded the results of your first round, clear your sheets, setting the cards you've already used off to the side, and begin again. Continue playing until you've completed all four rounds. If you run out of cards, just reshuffle and reuse the ones you've set aside.

Work Place 8B



WORK PLACE GAMES & ACTIVITIES

Handfuls of Treasure

This Work Place Basket will need

- ★ 3 probability containers, each filled with 90 glass blobs from your Glass Blob Math Bucket
- ★ Handfuls of Treasure record sheets (Blackline 5.17, run 30 copies and place in a folder)
- ★ base ten pieces (3 collections of 9 strips and 20 units, place each collection in a ziplock bag)

Skills

- ★ exploring double-digit subtraction with and without regrouping using a visual model
- ★ explaining solutions and strategies

Work Place Instructions

1. Choose a partner. You and your partner will need one probability container with 90 glass blobs inside, a collection of base ten pieces, and two record sheets.

2. Have one partner remove a handful of glass blobs from the container. Then work together, using your base ten pieces, to determine how many blobs remain in the container. Record the results on your own sheet. Be sure to prove your answer, using sketches, numbers, and/or words. It's okay if you and your partner use different methods of proving the answer, but a number sentence alone (e.g., $90 - 24 = 66$) is not sufficient.

Blackline 5.17
 NAME Sarah DATE 2/15

Handfuls of Treasure

How many pieces of treasure are in the container to start? 90

1 Handful 1 24

How many are left in the container? 66

Prove it! |||||***

3. Repeat Step 2 as many times as necessary to empty the container. Take turns reaching into the

container for a handful. Record the results on your own sheet each time. If you haven't emptied the bag in 6 handfuls, turn your sheets over and keep working.

Instructional Considerations

Although we encourage children to use the base ten pieces to figure the differences and ask that they use sketches of the pieces to prove the answers on their sheets, we aren't opposed to the use of other methods. If you are doing the Base Ten Bank lessons during Number Corner, you may have students who have developed other strategies for subtracting double-digit numbers. A few of the more common methods we've seen children invent are shown below.

<p>The Take-the-Number-Apart Method</p> $\begin{array}{r} 90 \\ -17 \\ \hline 80 \\ -7 \\ \hline 73 \end{array}$ <p>90 minus 10 is 80. I'll do that first 'cause it's easy. Then 80 minus 7 is 73. I know that because 10 minus 7 is 3, so 80 minus 7 must be 73.</p>	<p>The Take-Away-Too-Much-and-Put-Some-Back Method</p> $\begin{array}{r} 90 \\ -17 \\ \hline 70 \\ +3 \\ \hline 73 \end{array}$ <p>This is too hard. I'll change it to 90 minus 20, 'cause that's easier and 17 is near 20. Then I have to add 3 back in because I was only supposed to take away 17, not 20.</p>
<p>The Negative Number Method</p> $\begin{array}{r} 90 \\ -17 \\ \hline 80 - 7 = 73 \end{array}$ <p>Zero minus 7 is negative 7 and 90 - 10 is 80. 80 - 7 is 73.</p>	

If one or both children in a pair want to skip the base ten pieces in favor of sketches or invented algorithms, that's fine. About the only time we insist that they use the pieces is if they have invented the idea of subtracting upside down (e.g., $90 - 17$ is 87 because $0 - 7$ is 7 and $90 - 10$ is 80). In this case, we want them to see that they can't subtract 7 from 0 and wind up with 7.

Work Place 8C



WORK PLACE GAMES & ACTIVITIES

Scoop 100

This Work Place Basket will need

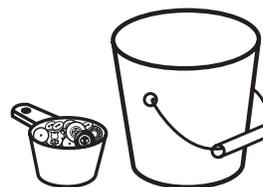
- ★ 3 math buckets—buttons, glass blobs, & shells
- ★ 3 scoops, such as the ones found in some boxes of laundry soap, or $\frac{1}{4}$ -cup measures with handles
- ★ Scoop 100 record sheets (Blackline 5.12, run 30 copies and place in a folder)
- ★ base ten pieces (3 collections of 1 mat, 10 strips, and 20 units)

Skills

- ★ estimating quantity using benchmarks
- ★ organizing materials and then counting them by 10's and 1's
- ★ finding differences

Work Place Instructions

1. Select a math bucket and a scoop. Record the name of the item you are scooping in the first box at the top of the record sheet.
2. Next, use the scoop to take out a quantity that looks like 100. Is bench-marking okay? Sure. Once you've made your first scoop, you can pull off 10 items or even 25 and try to use that smaller quantity in judging your overall amount. Is it fair to count each item as you go? Of course not! The whole point here is to make an estimate! Do you have to take the whole quantity in one scoop? No. You can keep going back into the bucket with your scoop and taking more out until you think you have 100 in your pile.
3. Group the items you've scooped into 10's and 1's and count them. Record the number you actually scooped, and then find the difference between that amount and 100 and record those figures in the second and third boxes on your record sheet. How far off were you?



4. Get another math bucket or try the same one again. You have room to try to scoop 100 three times on this record sheet. The hundreds grid in the lower right-hand corner is there to help you find the difference between 100 and the amount you actually got in your scoop. Do you have to use it? No, you can use any method of differencing you want.

Instructional Considerations

This is an activity to be done by individuals, although children can certainly work in partners too. (We find that it's helpful to have a couple of activities in each set of Work Places that don't require children to find partners. Sometimes a child can't find a partner when she needs one, and there are days when some children simply do better on their own!)

Scoop 100 provides opportunities for students to estimate and then physically group objects into sets of 10's and 1's, possibly 100's, to check for accuracy. We're also asking them to find the difference between 100 and the quantity they actually scooped. A theme in the early addition and subtraction work places, finding differences, re-emerges in Money & Place Value at a higher level. At this point, however, we are asking students to develop their own, informal methods of differencing. Among second graders, such methods include counting on from the lower of the two numbers by 1's, or counting on in chunks (to

(Continued on back.)

Work Place 8C (cont.)

find the difference between 79 and 100, a child might count, “79—89, 99, 100. I had to go up 20 and 1 more. The difference is 21.”) Other methods we’ve seen include locating the two numbers on a hundreds grid and counting the numbers from lower to higher, or using the base ten pieces to find the difference in some way.

None of these methods is particularly easy for most children unless the difference is quite small. It may be that even after you’ve modeled the activity and started it as a Work Place, you’ll want to return to the question of finding differences in group discussion for several days running.

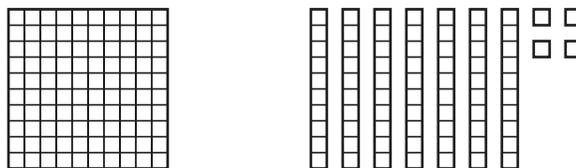
Teacher Now that the new set of Work Places has been out for a few days, I’d like to go back to the problem of finding differences. It’s been interesting to watch how you’re finding the differences at Scoop 100 and Find the Mass. I’ve noticed lots of you using the hundreds grid at the bottom of the record sheets to help, but I’ve also seen a few of you using the base ten pieces. Before we go out Work Place Instructions this morning, let’s all try a problem with these pieces. Suppose I was trying to scoop 100 and I actually got 74. How could I find the difference?

McCall You could count up from 74.

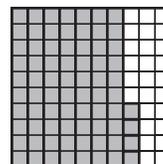
Kaitlin It’s 26, because 75 plus 25 is 100, and you’d just need 1 more.

Teacher Would there be any way to show that with the base ten pieces? I’ve spread some sets of these pieces out around the circle. What could you do with them?

Sherwin Well, I have 100 over here. That’s easy. It’s just a mat. And I have 74 over here. I don’t get it. How can I use these blocks to find the difference?



Alyssa Wait! What if you put the 74 on top of the hundreds mat? Then you could see which ones weren’t covered! Like this!



Alejandrina Oh yeah! I see now. There are 26 blocks left uncovered. The difference is 26. Kaitlin was right!

We think you’ll find some really nice opportunities to explore this sort of problem with your students, either in whole group discussions or during Work Places.

Work Place 8D



WORK PLACE GAMES & ACTIVITIES

Find the Mass

This Work Place Basket will need

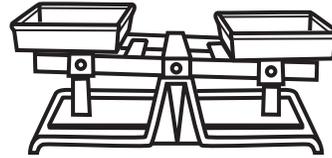
- ★ 200 ceramic tile stacked and taped into sets of 10
- ★ 40 loose tile
- ★ a collection of about 15 objects to weigh (e.g., a box of crayons, a roll of masking tape, a building block, a box of modeling clay, etc. It's also fun to have objects that are proportional to one another—a unit block and a half-unit block, for instance, or a sealed sack of 100 pennies, a sack of 150 pennies, and a sack of 200 pennies. This kind of proportionality encourages children to use the weight of one object to estimate the weight of another.)
- ★ Find the Mass record sheets (Blackline 5.13, run 30 copies and place in a folder)
- ★ base ten pieces (3 collections of 1 mat, 10 strips, and 20 units)
- ★ at least 1 balance scale—it's ideal to have 2 or 3 if you can borrow them

Skills

- ★ estimating mass using benchmarks
- ★ counting by 10's and 1's
- ★ finding differences

Work Place Instructions

1. You'll need to choose one object from the tub to weigh. You'll also need a balance scale and some tile in 10's and 1's. You'll have to share scales and tile with at least one other child at the Work Place.
2. Once you've chosen an object to weigh, record its name in the first empty box on your record sheet. Then estimate its weight in tile. It's fair to hold the object in one hand and some tile in the other. Record your estimate in the box right under the object's name.



3. Set the object on one side of the scales and balance it with tile on the other. Remember to set stacks of 10 in first, using the individual tile at the end to get a perfect balance (or near-perfect—we don't have any half tile!).
4. Record your actual result in the next box on your record sheet. Then figure the difference between your estimate and the actual result and record it in the last little box. You can use any of the methods we developed in Scoop 100 to find the difference, or perhaps you'll come up with something new. Be careful, though. Even though the numbers are smaller in some cases, some of the differences here will be trickier than what you encountered in Scoop 100!
5. When you go on to estimate the weight of the next object, try to use the information you got about the first one. If the block, for instance, really weighs 43 tile, and the clay feels quite a bit heavier, what would be a reasonable estimate? Is it fair to get another block from the shelf and weigh the two against the box of clay in trying to come up with your estimate? Sure! If 100 pennies weighs 25 tile, how much do you think 150 pennies will weigh? There are some great opportunities for thinking as you do this activity.

(Continued on back.)

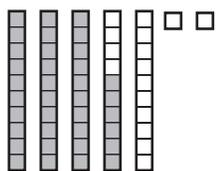
Work Place 8D (cont.)

Instructional Considerations

Find the Mass is very similar to Scoop 100 in that it's designed for individual rather than partner use, and it allows children opportunities to estimate, work with 10's and 1's, and find differences. It differs in that children are trying to estimate mass, rather than quantity. Students can be challenged more explicitly to use the information they get about one object to make estimates about the weight of other objects. Finally, some of the differences that emerge from their work may be more challenging to figure.

They'll use all the methods discussed in Scoop 100 to determine differences, but in a case where the estimate was 36 tile, say, and the actual weight was 52, you might find some of your most capable children working mentally and coming up with differences like 24. This is not correct, but makes perfect sense to them. These children may say, "Well, I came up with 24 because the difference between 30 and 50 is 20, and the difference between 6 and 2 is 4." They may be puzzled indeed when you ask them to find the difference on the hundreds grid at the bottom of the sheet. "When I counted the numbers, the difference was only 16. What's going on here?"

What a perfect opportunity to pull out the base ten pieces. Indeed, some of the differences that emerge in this activity present true problems to the brightest second graders.



Student If I put 36 right on top of 52, I can see the difference. It's 16!

Work Place 8F



WORK PLACE GAMES & ACTIVITIES

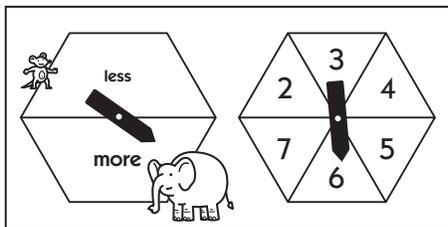
Base Ten Triple Spin

This Work Place Basket will need

- ★ Base Ten Triple Spin record sheets (Blackline 5.19, run 30 copies and place in a folder)
- ★ 3 Base Ten Triple Spin spinners
- ★ 3 sets of base ten pieces (Each set needs 7 yellow strips, 7 green strips, 10 yellow units, and 10 green units. Place each collection in a ziplock.)
- ★ 30 base ten mats (store at the bottom of the Work Place basket)

Skills

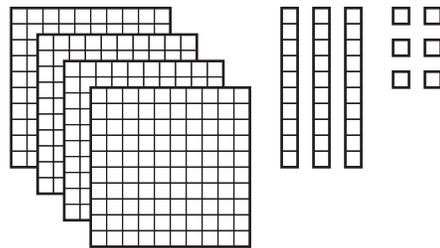
- ★ counting by 100's, 10's, and 1's
- ★ understanding place value notation
- ★ comparing 3-digit numbers



Work Place Instructions

1. Find a partner. Get one of the bags of base ten pieces out of the basket, along with a record sheet to share and a spinner. You'll also need about ten hundreds mats. You can either count them out ahead of time or take them out of the basket as you need them. Put each of your names on the top of the sheet.
2. Spin the More/Less portion of your double spinner to determine whether you're playing your first round for More or Less. Indicate which it is on the record sheet by circling the appropriate word at the top.

3. Each of you will spin three times, alternately. Remember that you have to take one spin in 100's, one in 10's, and one in 1's. You can decide which to take for each spin, but you have to take a different denomination for each of your three spins. (You can't take two of your spins in 100's and none in 1's, for instance.) Each time you spin and decide which denomination to take your spin in, take that many base ten pieces and lay them out in front of you. At the end of the third spin, you should have some mats, some strips, and some units.



"I got 436. I wish I'd waited 'til my last roll to take the 100's, but I was afraid that 4 would be the biggest number I'd roll so I took it in 100's just to be safe."

4. After you and your partner have both taken your three spins, collected your base ten pieces and counted up your totals, take turns recording your results on the record sheet.

Note If you haven't already discussed it earlier this session, this is a good time to introduce the shorthand method (shown on page 551) for recording 100's, 10's, and 1's on the Base Ten Triple Spin record sheet. Even if you did introduce it earlier, you may want to go over it again. As children use the base ten pieces more and more to figure

(Continued on back.)

Work Place 8F (cont.)

double- and triple-digit addition and subtraction, they'll want something that's easier than drawing out detailed pictures of the pieces.

Blackline 5.19
 NAME Mark Justin DATE Feb 28

Base Ten Triple Spin record sheet

EXAMPLE Round 0 Did you play for   More or Less?			
100's □ □ □ □	10's 	1's •••	My score ★ 437
□ □ □		••	My partner's score 352

Round 1 Did you play for   More or Less?			
100's □ □ □ □	10's 	1's •••••	My score 436
□ □ □ □ □		•••	My partner's score 563

Round 2 Did you play for   More or Less?			
100's	10's	1's	My score
			My partner's score

5. After both you and your partner have recorded your scores on the record sheet and circled the player who won, go ahead and play a second round. (In the case shown on the previous page, the partners were going for "More," so the person who scored 563 was the winner, as indicated by the fact that his score is circled.) Then take a second sheet and play two more rounds so that both you and your partner will have a sheet to put in your folder.

Note If you have children in tremendous need of a challenge, you might ask them to find the difference between the two scores each time and record that somewhere on the sheet.

Work Place 9A



WORK PLACE GAMES & ACTIVITIES

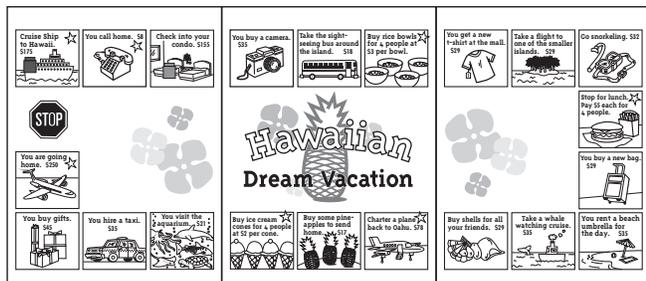
Hawaiian Dream Vacation

This Work Place Basket will need

- ★ 3 Hawaiian Dream Vacation gameboards
- ★ 3 Hawaiian Dream Vacation spinners
- ★ 3 sets of Pineapple Bucks (Each set should contain 35 ones, 30 fives, 30 tens, 12 twenty-fives, and 10 hundreds. Blacklines 5.26–5.30, run on different colors of copier paper for each denomination and cut apart. It's helpful to bag each set of bills separately, along with a spinner and 2 game markers.)
- ★ 3 Bank sheets, 1 for each set of partners (Blackline 5.31, run these sheets on cardstock and laminate if desired)
- ★ 6 Money Guides, 1 for each player (Blackline 5.32, run these sheets on cardstock and laminate if desired)
- ★ 6 Unifix cubes or other game markers

Skills

- ★ counting money
- ★ making change
- ★ adding, subtracting, and multiplying
- ★ estimating and doing mental arithmetic



Work Place Instructions

1. Get a gameboard and set it between you. Then get a game marker, a Vacation Money Guide, and money for each of you. The Vacation Money Guide indicates how many of each bill to take, and you'll spend a few minutes setting up your money directly on the guide sheet in much the same way you might

count and arrange money for a game of Life or Monopoly. The amounts each player takes are: 10 ones, 10 fives, 10 tens, 4 twenty-fives, and 5 hundreds

2. After you've each set up your own gameboard and money, work together to set up the Bank. The Bank sheet should be placed between you, and be equipped with: 15 ones, 10 fives, 10 tens, and 4 twenty-fives. This money is to be used by both partners to make change if necessary. Whenever you have to pay a fee or decide to make a purchase during the game, the money is paid into the bank by placing it on the Bank sheet.

3. Before either of you make your first move, you both have to place your game marker on the first square, which shows a picture of a cruise ship, and pay \$175 into the bank. After that, take turns spinning the spinner and moving the number of spaces shown. If you land on a square marked with a star, which is usually a food purchase, you have to pay that amount of money to the bank. When you land on squares that aren't marked with stars, you may decide whether or not to make the purchase indicated on the square. If you decide to make a purchase, just pay the required amount of money into the bank.

Partner A Let's see. I spun a 2 on my first turn and landed on the square that says, "Check into your condo." Do I want to pay the money to stay in a condo? How much money do I have left now that I paid \$175 for my trip on the ship? 4 hundreds—that's \$400. Then 10 ones, that's \$10; 10 fives, that's \$50, so \$60; then 10 tens, that's \$100, so \$160 and \$25 more. Oooh—I don't know. I have around

(Continued on back.)

Work Place 9A (cont.)

\$600 and I have to save \$250 for the trip home and also some money for food.

Partner B *Spend the money!*

Partner A *Why? You're just trying to make me, run out of money!*

Partner B *But the whole point of the game is to spend your money. Remember? The person who goes out of the game with the least amount of money wins. What if you don't land on other good places to spend money?*

Partner A *There are other good places ahead —I'm saving my money for now—your turn.*

4. Continue taking turns spinning, moving, and making decisions each time you land to buy or not to buy. Remember that if you land on a square marked with a star, you don't have a choice—you have to pay that amount of money to the bank. Try to spend as much money as you can without going over the amount you'll need for food along the way and plane fare at the end.

5. You don't have to go out exactly on your last move. That is, if you only have 2 spaces left to go and you spin a 3, you can still go out. Whether you go out exactly or not, you have to pay \$250 into the bank for your trip home. After you've each reached the end and paid your plane fare home, both of you need to count your money and see how much you each have left. The partner with the least amount of money left wins the game. If you neglect to save enough money and are unable to pay the cost of the flight home at the end, you automatically lose.

Work Place 9B



WORK PLACE GAMES & ACTIVITIES

Pick 2

This Work Place Basket will need

- ★ 3 Pick 2 spinners
- ★ 3 sets of Pick 2 cards
- ★ Pick 2 record sheets (Blackline 5.37, run 30 copies and place in a folder)
- ★ 3 sets of base ten pieces (Each set should contain 10 strips and 20 units.)

Skills

- ★ estimating the results of adding 2-digit numbers
- ★ adding 2-digit numbers using visual models and mental strategies

Work Place Instructions

1. Take a record sheet for you and your partner—the two of you will be sharing a sheet and playing two rounds of the game. When you're finished, you'll play another two rounds on a second sheet so that you'll each have one for your work folder. Shuffle the deck of cards and place them face down between yourself and your partner.

2. Spin the double spinner and get your partner's help to figure out the total. (Encourage students to use the base ten pieces if neither is able to figure the total mentally. Given that the numbers on each spinner move from 10 to 35 by 5's, we're hoping the children will be able to add them in their heads, but it's possible that they will need manipulatives to do so.)

3. Once you've determined the total on the spinner, enter that number at the top of the sheet. This is the target number for Round 1.

Gavin Look, Bryce. I spun 25 plus 25. That's easy. It's 50. Let's write it at the top of our sheet. Then we'll be ready to get our cards.

4. Take turns drawing cards from the top of the pile and placing them face up beside your half of the record sheet until each partner has a collection of three. Enter the numbers in the three boxes below the name lines on the record sheets. Then study your cards to determine which two can be added to come closest to the target number. After you make your selections, record a number sentence to show the total of the two cards you've selected.

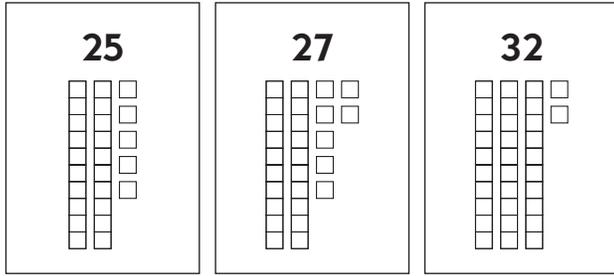
Blackline 5.37					
NAME _____			DATE _____		
Pick 2 record sheet					
Round 1					
$\frac{50}{\text{Target Number}}$					
Bryce			Gavin		
My name			My partner's name		
23	17	34			
Card 1	Card 2	Card 3	Card 1	Card 2	Card 3
$17 + 34 = 51$					
My number sentence			My partner's number sentence		

Bryce I picked 23, 17, and 34. 23 plus 34 would be 57. That's pretty close—only 7 off. Oh, wait a minute! 17 plus 34—that's 40 and then 11 more—51! Wow! That's almost perfect! What did you get, Gavin?

Gavin I got 25, 27, and 32. Let's see. I'm going to try 25 and 32 'cause I know that 20 + 30 is 50. 10, 20, 30, 40, 50, 51, 52, 53, 54, 55, 56, 57. That's pretty close.

(Continued on back.)

Work Place 9B (cont.)



Instructional Considerations

Estimating and then checking the results of adding double-digit numbers is going to be easier for some students than others. It will be important that they have easy access to the base ten pieces. Even though the numbers are pictured on the cards, some may need kinesthetic, as well as visual input to help solve these problems.

Bryce *I bet you could get closer if you used 25 and 27.*

Gavin *But 20 and 20 is only 40.*

Bryce *Yeah, but 5 and 7 is 12.*

Gavin *Okay (counting the base ten pieces pictured on the cards)—10, 20, 30, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52. I'm not quite as close as you, but 52 is closer than 57.*

5. After you've each picked your cards and written the appropriate number sentence on your side of the record sheet, circle the winning combination, the one closest to the target number, either under or over. Then play the next round. When you're finished both rounds, be sure to get a second record sheet and play two more rounds so that each of you will have a sheet to put into your work folder.

Blackline 5.37

NAME _____ DATE _____

Pick 2 record sheet

Round 1

50
Target Number

Bryce ★ My name			Gavin My partner's name		
23 Card 1	17 Card 2	34 Card 3	25 Card 1	27 Card 2	32 Card 3
17 + 34 = 51 My number sentence			25 + 27 = 52 My partner's number sentence		

Work Place 9C



WORK PLACE GAMES & ACTIVITIES

Race to 100 & Back

This Work Place Basket will need

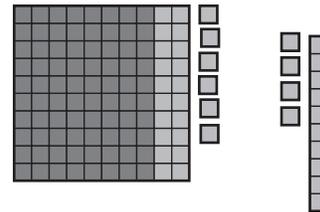
- ★ 3 sets of base ten pieces (Each set should contain 2 mats, 10 green strips and 10 yellow strips, and 20 green and 20 yellow units. Package each set in a gallon-size ziplock bag along with a pair of dice.)
- ★ 3 pairs of dice (Each pair needs to include 1 die numbered 4–9 and 1 die numbered 5–10.)

Skills

- ★ practicing addition facts to 19
- ★ counting by 10's and 1's
- ★ developing strategies for adding and subtracting 2-digit numbers using a visual model

Work Place Instructions

1. You and your partner each need base ten pieces; one partner uses a mat plus the green pieces, the other partner uses a mat and the yellow pieces. You also need a pair of dice to use together. Be sure you have one die numbered 4–9 and one die numbered 5–10. After you have your materials, each of you should set out your hundreds mat and find a spot to set your strips and units where they won't get confused with the other person's pieces.
2. Take turns rolling the two dice, adding, and collecting the total in strips and units. Place the strips on your mat and the units off to the side. Each time a you collect ten or more units, trade them in for another strip.



“Oh boy! I just rolled 8 and 6. That’s 14. I can tell that when I add the 14 to my mat, I’ll have 40 because it’s another 10 and then 6 + 4 is 10 more—10, 20, 30, 40!”

3. Continue playing forward until one of you has reached or gone over 100. At that point in the game, both of you will head back to 0. Suppose, for instance, that you have 94 pieces and your partner has 87, and you roll 13. You would collect 1 strip and 3 units for a total of 107. When it's your partner's turn, he gets to start removing pieces from his board, even though he never reached 100. Suddenly, in fact, he's in the lead in the race back to 0.
4. When you go backwards, take turns rolling the two dice, summing the two numbers, and removing that many pieces from the board. You'll have to deal with making trades every two or three turns. Be sure to help each other. This can be a little confusing.
5. Continue playing backwards. *When you reach 6 units or fewer, be sure to switch to one die instead of two.* The first player to go out exactly wins.

Instructional Considerations

If you are able to observe at this Work Place, it's very instructive to watch how children handle problems like $82 - 14$. Unless both partners are utterly stuck, resist the temptation to step in and give advice. Be aware, though, that it will be very difficult for some children to make the trades accurately, and they may need help from you or their partner.

Work Place 9D



WORK PLACE GAMES & ACTIVITIES

Make 100! Under or Over?

This Work Place Basket will need

- ★ 3 sets of Make 100 cards
- ★ Make 100! Under or Over? record sheets (Blackline 5.38, run 30 copies and place in a folder)
- ★ crayons or colored pencils

Skills

- ★ counting by 10's and 1's
- ★ adding 2-digit numbers
- ★ finding differences using a visual model

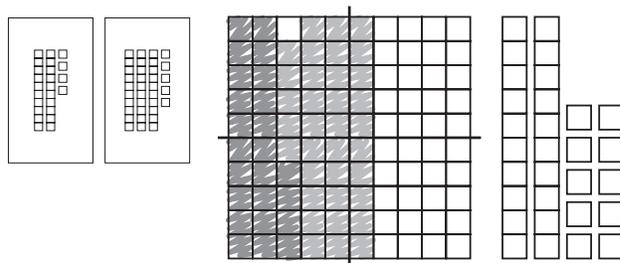
Work Place Instructions

1. Take a set of Make 100 cards for the two of you. Shuffle the deck and place it face down. Put your name at the top of a record sheet and have your partner put her name down below.
2. Take two cards and turn them face up. Record the two numbers in the boxes below the hundreds grid and color in the amounts on your grid. Be sure to use a different color for each number. Also, be sure to fill in the hundreds grid completely before you start using the 10's and 1's pictured to the right side of the grid. When you're finished, have your partner do the same on her part of the record sheet.

.....

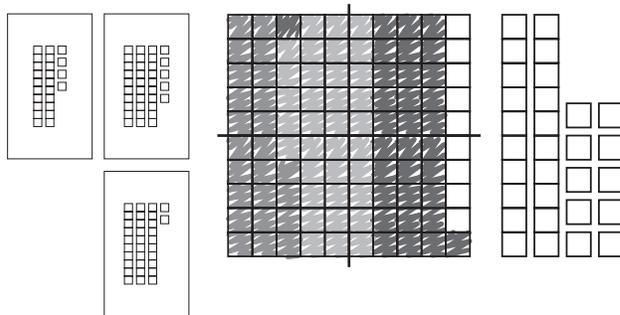
***Note** There are many different ways to color in the amounts, but the easiest seems to be to color in the 10's first and then the 1's. We model it this way simply because it seems to be the least confusing. We also ask children to fill in the hundreds grid completely before they use the 10's and 1's to the side so they can see their total in relation to 100.*

.....



Partner A My first card is 24, so I'm going to color two 10's and four 1's. My next card is 35, so first I'm going to color in three 10's—see? Then I'm going to come back in and color five 1's. I'm going to use the empty boxes between the 2 sets of 10's. I know I'll still have a little hole left, but that's okay for now.

3. Decide whether or not you want to draw a third card. If you're very close to 100, you may choose to stay put. If you're still a ways off, you might decide to draw a third card. (three is the maximum number of cards you can draw.) Be sure to fill in the entire grid before you use the 10's and 1's pictured to the right. Those are there just in case you go over 100.



Partner A I decided to draw a third card. I got a 32. I think that's going to put me pretty close to 100. Let's see. First I'm going

(Continued on back.)

Work Place 9D (cont.)

to color in the three 10's. Then I'm going to go back in and color in the two 1's, like this. Now I've filled in that empty hole and it's easy to see that my total is 91 and that I'm only 9 away from 100.

4. Record your results in the boxes below the grid you've been coloring and have your partner record her results on the same sheet. Compare to see who came closest to 100, whether under or over. Circle the winner, get another sheet, and play again so that each of you has a sheet to put in your folder (see sample of completed sheet below).

Make 100! Under or Over? record sheet

$24 + 35 + 32 = 91$

I was under 100 over 100 by 9
(circle one)

$46 + 33 + 27 = 106$

My partner was under 100 over 100 by 6 ★
(circle one)

NAME _____

RESOURCES _____

Taylor _____

DATE _____

Work Place 9E



WORK PLACE GAMES & ACTIVITIES

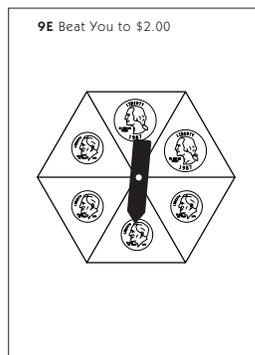
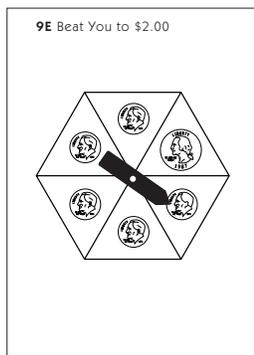
Beat You to \$2.00

This Work Place Basket will need

- ★ Beat You to \$2.00 record sheets (Blackline 5.39, run 30 copies and place in a folder)
- ★ 6 Beat You to \$2.00 spinners
- ★ Beat You to \$2.00 graphs 1–3 (Blacklines 5.33–5.35, run 1 copy of each and post them on a wall where children can reach them)
- ★ 3 yellow highlighters or red crayons

Skills

- ★ counting money
- ★ comparing sums of money to \$2.00
- ★ investigating probability



Work Place Instructions

This work place is nearly identical to Beat You to \$1.00 and should be quite familiar to the children. Even though they may have Beat You to \$1.00 all figured out, however, there's a bit of a twist here in that 4 dimes aren't quite equal to 2 quarters. Hopefully, this will generate some questions about which spinner is going to turn out to be the most fair in this version of the game. Puzzlement will, in turn, generate the need for a whole new batch of data. Here are the steps to follow:

1. Get a partner and one record sheet to share. To start, put your name at the top of the sheet above

the coin you're going to play for, and have your partner do the same. Then decide which spinner you're going to use and be sure to circle it on the sheet. Now you're ready to start.

2. Select the spinner you've decided to use from the collection in the work basket. Take turns spinning. Every time a dime comes up on the spinner, the dime person gets to mark off 10 pennies on his grid, no matter who spun the spinner. Same with the quarter. The first person to cross out all 200 pennies is the winner.

3. Once one person has crossed out all his pennies, mark the number of pennies the other person still has left to go in yellow highlighter or red crayon and record the amount in the box at the bottom of the sheet. This is the difference: the amount that one person lost by and the other won by.

4. Play the game as many times through as you want to, using a new record sheet each time. You can switch coin assignments, and certainly experiment with the spinners you use. After all, you are trying to find the spinner that seems to give both players the most equal chance to win, no matter what coin they're playing. While you might not be able to make this discovery in a single work place session, you can come back to this game over several sessions. Also, examine the class data, which will be posted each day on the wall.

5. After you've played all the games you're going to during this session, post your data on the wall or turn it in to the teacher to be posted later. Also, be sure to mark the graph(s) on the wall to show your results. (See the write-up of Beat You to \$1.00 in Work Places 9 for a diagram of a data wall display.)

Work Place 9F



WORK PLACE GAMES & ACTIVITIES

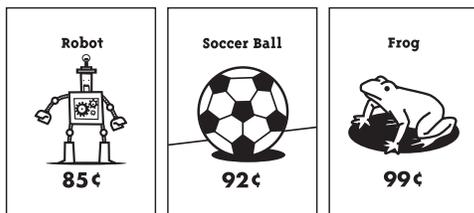
Shopping for Key Chain Charms

This Work Place Basket will need

- ★ 3 sets of Shopping for Key Chain Charms cards
- ★ 3 Shopping for Key Chain Charms spinners
- ★ Shopping for Key Chain Charms record sheets
(Blackline 5.40, run 30 copies and place in a folder)
- ★ 6 sets of base ten pieces (Each set should contain 10 strips and 20 units.)

Skills

- ★ adding and subtracting 2-digit numbers
- ★ adding 3 numbers in column form
- ★ estimating and doing mental arithmetic



Work Place Instructions

1. Get a record sheet for you and your partner. The two of you will also need a set of Shopping for Key Chain Charm cards, a spinner, and a set or two of base ten pieces.
2. Shuffle the cards and place them face down. Take one from the top of the deck and enter the name of the item on your record sheet. Then, both you and your partner need to enter the price of that item.
3. Next, you and your partner each need to take a turn spinning the double spinner to determine your savings on this item. Take a moment to record your savings. Then use the base ten pieces or some scratch paper to figure the actual price you will both pay. Record your answer.

4. Repeat Steps 2 and 3 twice more, so that you've taken three cards, determined your savings by spinning the spinner, and calculated your actual prices three times. Finally, enter your actual prices in the third box and total them. The person who comes up with the lowest total (and saves the most money over all) is the winner. Be sure to mark the winning total with a star.

Blackline 5.40

PARTNER A Hiroki PARTNER B Corey ★

Shopping for Key Chain Charms record sheet

Charm 1	Original price	A	8 7	B	8 7
	Savings		- 2 9		- 4 2
	Price you pay		5 8		4 5
<hr/>					
Charm 2	Original price	A	8 5	B	8 5
	Savings		- 3 6		- 1 6
	Price you pay		4 9		6 9
<hr/>					
Charm 3	Original price	A	9 3	B	9 3
	Savings		- 1 2		- 3 5
	Price you pay		8 1		5 8
<hr/>					
Totals	Price you paid for Charm 1	A	5 8	B	4 5
	Price you paid for Charm 2		4 9		6 9
	Price you paid for Charm 3		+ 8 1		+ 5 8
	Total		1 8 8		1 7 2

(Circle the person who shopped for less.)

5. Get a second sheet and play the game over so that both of you have a sheet for your folders.

(Continued on back.)

Work Place 9F (cont.)

Instructional Considerations

You'll want to monitor this game closely, especially if you have many students who are struggling with double-digit subtraction. Shopping for Key Chain Charms provides a perfect opportunity for you Work Place Instructions individually with children who need help. Again, we encourage you to focus on helping children continue to develop methods that make sense to them. For many, this will mean continued use of base ten pieces, or at least sketches of base ten pieces, particularly if they're still subtracting upside down (e.g., $93 - 35 = 62$ because $3 - 5 = 2$ and $90 - 30 = 60$). For others, it may mean encouraging the use of paper and pencil to keep track of mental computations. Scratch paper is particularly useful to children who like to decompose the subtrahend ($93 - 35 = 58$ because $93 - 30$ is 63, and $63 - 5$ is 58).

Work Place 10A



WORK PLACE GAMES & ACTIVITIES

Robot Glyphs

This Work Place basket will need

- ★ all the robot glyphs students made during Session 3
- ★ Graphing the Glyphs: bar graph form and pie graph form (Blacklines 7.14–7.15, run 20 copies of each and place in a folder)
- ★ crayons
- ★ the large Robot Glyph Key (Blacklines 7.6–7.12. Post the Key on a wall near this Work Place.)

Skills

- ★ observing and describing
- ★ sorting
- ★ interpreting glyphs
- ★ creating and interpreting real, pictorial, and symbolic graphs
- ★ exploring bar graphs and pie graphs

Work Place Instructions

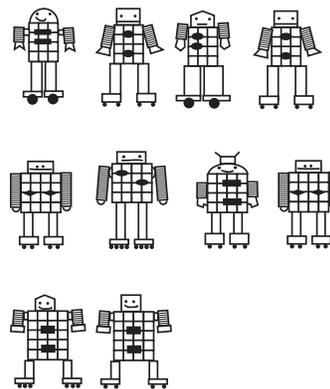
1. Choose a partner. With your partner, pick any ten robot glyphs out of the Work Place basket.
2. Lay out the ten robots so you can see all of them clearly. Spend a minute with your partner brainstorming all the ways you might sort and graph these glyphs. When you come up with a graphing idea that you both like, lay the robots out in columns.

Eloise Let's graph our robots by body size—you know, how big their chests are.

Alyssa That's the one where it tells about kids' favorite places to play, right? Like if the chest has 12 square inches, it means the kid likes to play in their bedroom?

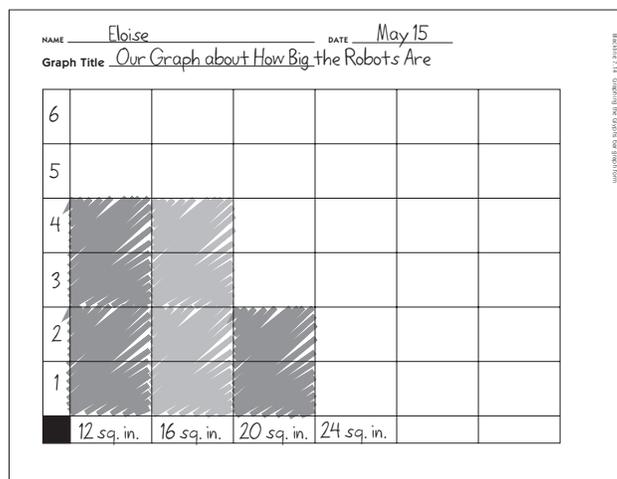
Eloise Right!

Alyssa Okay.



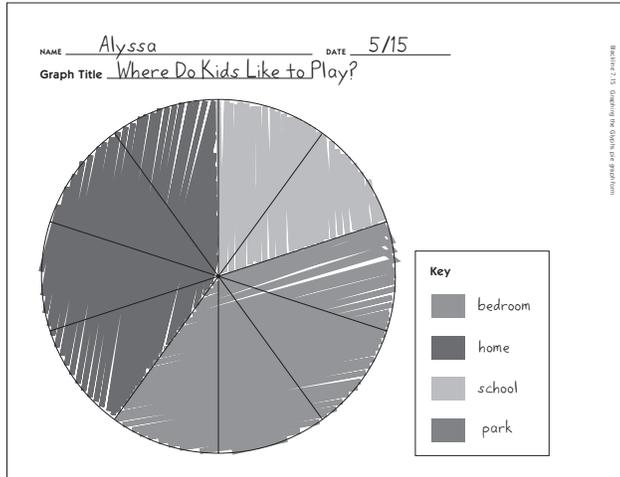
Eloise Hmm... 4 robots with 12 square inches, 4 with 16 square inches, and 2 with 20 square inches—and none with 24 square inches. That's weird. Most of these kids like to play in their bedrooms or at home. None of them like playing at the park.

3. After you've graphed the ten robots, transfer the information to paper. One of you needs to use the bar graph form and one of you needs to use the pie graph form to create permanent records of your robot graph. Be sure to title your graphs and label them clearly so that other people will be able to understand them easily.



(Continued on back.)

Work Place 10A (cont.)



Instructional Considerations

You may wish to extend this activity by asking children to write some observations about their graphs directly on the sheets. If Eloise and Alyssa had been asked to make some statements about the graphs they constructed above, they might have written some of the following:

2 columns are the same.

There are the same number of robots with 12 square inch bodies and 16 square inch bodies.

No one in this group made a robot with 24 square inches.

Most of the pie graph is taken up with kids who like to play at home and in their bedrooms best.

$\frac{4}{10}$ of the kids like to play in their bedrooms best.

Only $\frac{2}{10}$ like to play at school the best.

No one chose the park because there are no robots with 24 square inches.

Maybe kids don't like the park around here very much.

Work Place 10B



WORK PLACE GAMES & ACTIVITIES

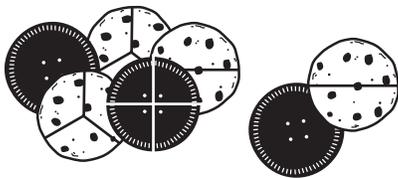
Fair Shares

This Work Place basket will need

- ★ Fair Shares sheets (Blacklines 7.25–7.30, run 7.25 back-to-back with 7.26, 7.27 back-to-back with 7.28, and 7.29 back-to-back with 7.30. Run 15 copies of each double-sided sheet and place in a pocket folder.)
- ★ Cookies for Fair Shares (Blackline 7.31, run 15 copies on cream or light brown paper and place in a folder)
- ★ scissors and gluesticks

Skills

- ★ exploring division
- ★ looking for number patterns
- ★ finding fractional parts of whole objects and fractional parts of sets



Work Place Instructions

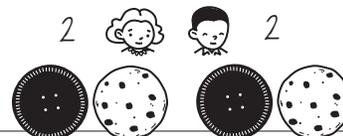
1. Choose one of the double-sided Fair Share sheets. Get a sheet of cookie cutouts, some scissors, and a gluestick, and you'll be ready to start.
2. Solve the problems on *both* sides of the sheet. Don't forget to label each child's share with whole numbers and fractions as necessary (see next page). When you're finished with both sides of the sheet, describe at least one number pattern you noticed as you shared more and more cookies between the children.

Instructional Considerations

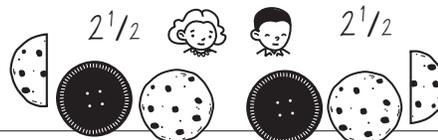
The challenge level increases significantly as children move from sheets 7.25 and 7.26 to the next two sets. The first set requires that children deal with whole and half cookies only, where the next two sets require use of thirds and fourths. You might want to require children to do more than one set of sheets. You might also consider assigning specific sets to particular children in your group. The cookie cutouts on Blackline 7.31 include whole cookies along with halves, thirds, and fourths to make some of the tasks a little easier, although some children may choose to use only whole cookies, cutting their own fractional parts when necessary.

Blackline 7.26 (Run this back to back with Blackline 7.25)
Fair Shares, 2-Kid Sharing sheet 2

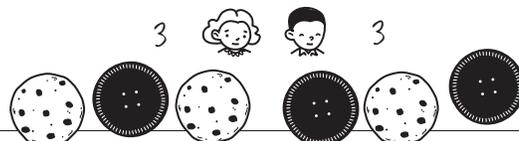
What happens when 2 kids share 4 cookies?



What happens when 2 kids share 5 cookies?



What happens when 2 kids share 6 cookies?



Describe at least 1 number pattern you've noticed as you share more and more cookies between 2 kids.

Every time they share another cookie, they each
get another half. It goes $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2, $2\frac{1}{2}$, 3

Work Place 10C



WORK PLACE GAMES & ACTIVITIES

The Gardener's Friend Game

This Work Place basket will need

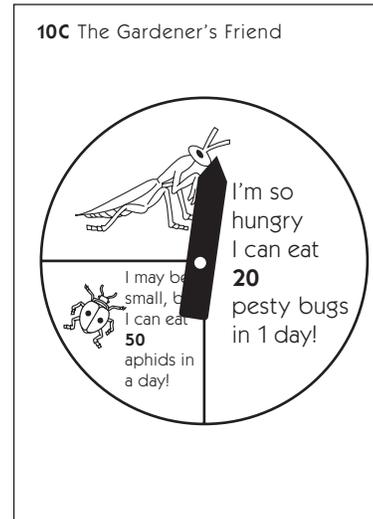
- ★ The Gardener's Friend game sheet (Blackline 7.32, run 30 copies and place in a folder)
- ★ 3 Gardener's Friend spinners
- ★ crayons or colored pencils

Skills

- ★ exploring fractions as parts of a whole and parts of a set
- ★ making predictions
- ★ exploring probability

Work Place Instructions

1. Choose a partner. You and your partner will need one game sheet and one spinner.
2. Decide who is going to play for the ladybug and who is going to play for the praying mantis. The ladybug eats 50 bugs a day but only occupies $\frac{1}{4}$ of the spinner. The praying mantis eats only 20 bugs a day but takes up $\frac{3}{4}$ of the spinner top. Which bug do you think will be most likely to gobble up the 300 garden pests first? Write your name on the line above the insect you choose to be.
3. Take turns spinning. If the spinner lands on the ladybug, the person who's playing the ladybug gets to color in 50 tiny squares on her side, *regardless of who spun*. That is, if the praying mantis player spins and the arrow lands on the ladybug, the ladybug player gets to color in 50 squares. If the ladybug player spins and the arrow lands on the praying mantis, the praying mantis player gets to color in 20 squares. The first player to fill in all 300 tiny squares on his or her side of the gameboard is the winner.



Briana Oh no! It landed on the praying mantis again. You get to mark your side, Ciel. Now you'll be up to 80 bugs.

Ciel I picked the praying mantis 'cause I knew the spinner would always land there.

Briana It won't always land there, and when it lands on me, I get 50 points! I think I can maybe win.

4. When the first person gets to 300, circle his or her name at the top of the sheet and put a star by it.
5. Play the game a second time so that each partner can have a game sheet to put in his or her folder. Switch insects this time around if you want.

Instructional Considerations

You might recognize this game as a variation of Beat You to \$1.00. There is only one spinner in this version of the game, but this time the two sections are weighted in a way that makes the odds a little harder to figure—20 points when the

(Continued on back.)

Work Place 10C (cont.)

arrow lands on the larger section and 50 when it lands on the smaller.

After having collected and analyzed the data in Session 6, most children will know that the spinner will land much more often on the larger section, but may be attracted to the smaller section of the spinner because of the 50 points that are awarded. Theoretical probability slightly favors the praying mantis, in that the spinner should land there 3 times out of 4, and $3 \times 20 = 60$, while $1 \times 50 = 50$. You may want to have students post their game sheets somewhere in the room on a graph made of butcher paper similar to the one shown below. This way, they can keep an eye on which bug seems to be winning most often.

Ladybugs win

Mantises win

Number 10C
NAME Brenda PARTNER Ciel

The Gardener's Friend game sheet

 I can eat 50 bugs a day!

 I can eat 20 bugs a day!

Number 10C
NAME Cathi PARTNER Martin

The Gardener's Friend game sheet

 I can eat 50 bugs a day!

 I can eat 20 bugs a day!

Number 10C
NAME Jesse PARTNER Arnie

The Gardener's Friend game sheet

 I can eat 50 bugs a day!

 I can eat 20 bugs a day!

Work Place 10D



WORK PLACE GAMES & ACTIVITIES

Pick & Peek Which One Is It?

This Work Place basket will need

- ★ 3 probability containers prepared in the following way:

Cut three 3" square tagboard labels and label them "A," "B," and "C," respectively. Use safety pins to fasten these labels securely to the socks that cover the 3 containers. In container A, put 4 red and 4 blue tile. In container B, put 6 red and 2 blue tile. In container C, put 2 red and 6 blue tile.

- ★ Pick & Peek: Which One Is It? (Blackline 7.33, run 30 copies and place in a folder)
- ★ red and blue crayons

Skills

- ★ exploring probability
- ★ finding fractions
- ★ creating and interpreting graphs

Work Place Instructions

1. With a partner, choose one of the containers and find that letter on your record sheets. There is space on the Pick & Peek sheet to record the results of sampling tile from each container. Whether you choose to start with the A, B, or C container, make sure you're recording in the right spot. Each of you need to keep your own sheet.
2. Go through the tile sampling procedure ten times using the container you've chosen. That is, give the container a good shake, pull out a single tile without looking, and record the color you got by coloring in one of the sections on the pie graph for that container. Then return the tile to the container, shake the container again, pull out a second tile, and record the color you got. Repeat this sequence eight more times, being sure to put the tile back in the container and give it a good shake

each time. Finally, record the results of your experiment using the fraction boxes below the pie graph.

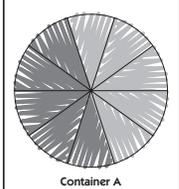
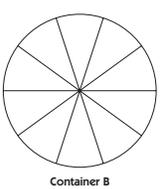
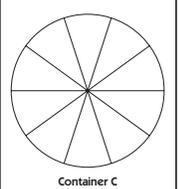
NAME Kevin DATE May 15

Pick & Peek Which One Is It?

Your mission is to identify the container that best fits the mystery profile:

6 blue and 2 red

Sample the contents of each container 10 times and record your findings below. Based on your evidence, circle the graph you think best fits the mystery profile.

 <p>Container A</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 2px;">$\frac{5}{10}$ blue</div> <div style="border: 1px solid black; padding: 2px;">$\frac{5}{10}$ red</div> </div>	 <p>Container B</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 2px;">$\frac{6}{10}$ blue</div> <div style="border: 1px solid black; padding: 2px;">$\frac{2}{10}$ red</div> </div>	 <p>Container C</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 2px;">$\frac{2}{10}$ blue</div> <div style="border: 1px solid black; padding: 2px;">$\frac{8}{10}$ red</div> </div>
---	--	--

"Hmm...I got red 5 times and blue 5 times. This probably isn't the container with 6 blues and 2 reds or I would have gotten blue more often. I bet this container really has half and half."

3. Repeat the whole tile sampling routine with the other two containers, recording as you go. What you're trying to figure out is which container actually has 6 blue and 2 red tile in it, but none of your results will match exactly because you're taking ten samples and there are only eight tile in the bag. Circle the graph of the container you think *probably* has 6 blues and 2 reds.

(Continued on back.)

Work Place 10D (cont.)

NAME Kevin DATE May 9

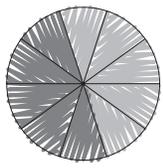
Pick & Peek Which One Is It?

Your mission is to identify the container that best fits the mystery profile:

6 blue and 2 red

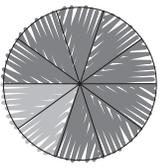
Sample the contents of each container 10 times and record your findings below.
Based on your evidence, circle the graph you think best fits the mystery profile.





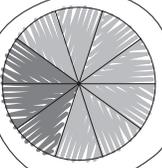
Container A

$\frac{5}{10}$'s blue $\frac{5}{10}$'s red



Container B

$\frac{2}{10}$'s blue $\frac{8}{10}$'s red



Container C

$\frac{7}{10}$'s blue $\frac{3}{10}$'s red

“Boy, this is hard. Which container *probably* has 6 blues and 2 reds? It can’t be Bag A—I only got half reds and half blues on that one. And the middle one came out 8 reds and 2 blues—that couldn’t be it. It must be that last one ’cause I pulled blues out so many times.”

Instructional Considerations

It might be a bit of a stretch for some of your students to predict which container really has 6 blue tile and 2 reds based on the results of their work. Since none of their sampling outcomes will match the “mystery profile,” children will just have to pick the one that’s closest. You might want to collect the sheets from this Work Place as students finish them and post them on a wall so children can see the growing body of evidence. As the data pile up, it may become evident to many students that C is, in fact, the mystery container.

Work Place 10E



WORK PLACE GAME & ACTIVITIES

Anything But 1!

This Work Place basket will need

- ★ Anything But 1! game sheet (Blackline 7.34, run 30 copies and place in a folder)
- ★ 9 dice numbered or dotted 1–6
- ★ Anything But 1! class graph (Blackline 7.35, run 1 copy and post on a wall near this Work Place)
- ★ 3 base ten kits (Each kit needs 12 strips and 40 units.)
- ★ scratch paper

Skills

- ★ exploring probability
- ★ addition facts to 12
- ★ double-digit subtraction
- ★ creating and interpreting graphs

Work Place Instructions

1. Get a partner and one game sheet to share. You'll also need three dice, a base ten kit, and some scratch paper. (Base ten pieces can be useful for figuring some of the subtraction problems, and you'll want scratch paper to keep track of your score when you're rolling the dice.) Before you start, decide which of you is going to play with one number cube and which of you will play with two. If one of you takes two cubes on the first game, you can switch on the second.
2. Once you've decided who's going to play with one cube and who's going to play with two, write your names on the appropriate sides of the sheet and get started. Take turns rolling and subtracting. *On your turn, you can roll as many times as you like, adding all the numbers you roll. However, if you happen to roll a 1, you lose your turn and any points you have accumulated during that turn. Keep track of your accumulating scores on scratch paper.* Some children like to play it safe and only roll once or twice, while others like to take more of a

risk in exchange for a higher score. Here's a sample sequence:

Evan Okay, I'm playing with one cube. I got a 6!



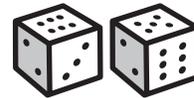
I'm going to roll again. A 4! That's it. I'm not going to take the risk of getting a 1. So $6 + 4 = 10$ and $65 - 10$ is 55. Your turn.



Whitney Okay. Let's see—I got a 5 and a 2! That's 7.



I'm going to try again. This time I got a 6 and a 5—that's 11!



So $7 + 11 = 18$, and $65 - 18$ —that's almost like $65 - 20$, which is 45. It's 47. Your turn.

Evan Oh no! I rolled a 1 the very first time. No score for me. I'll have to write $55 - 0$ for that turn.



(Continued on back.)

Work Place 10F



WORK PLACE GAMES & ACTIVITIES

The Indy 500

This Work Place basket will need

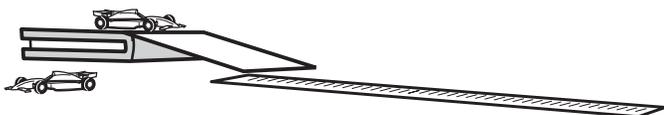
- ★ The Indy 500 record sheet (Blackline 7.36, run 30 copies and place in a folder)
- ★ 6 matchbox-type toy cars (Ask your students to bring these or perhaps you can borrow some from kindergarten.)
- ★ 3 textbooks, each no more than 1"–2" thick
- ★ 3 ramps, each about 9" × 12" (These might be large, thin picture books, pieces of stiff corrugated cardboard, or even 1/4" thick wood.)
- ★ 3 centimeter measuring tapes
- ★ 1 or 2 rolls of masking tape
- ★ 3 base ten kits (Each kit needs 2 mats, 20 strips, and 40 units.)
- ★ scratch paper

Skills

- ★ measuring length in centimeters
- ★ double-digit column addition
- ★ finding the difference between multi-digit numbers

Work Place Instructions

1. Get a partner and one game sheet to share. You'll also need one centimeter tape measure, two toy cars, and a couple pieces of masking tape. Set up a ramp using a picture book, a piece of stiff cardboard, or a piece of wood propped up on a textbook, as shown:



Run the centimeter tape out from the base of the ramp, taping it at both ends if necessary.

2. Choose who will go first and second and write your names on the record sheet. You can either let one person take all of his runs at once, measuring and recording the distances as he goes, and then the other person, or you can take turns back and forth until both of you have both completed three runs.
3. Take a minute or two to figure your totals. You might want to use the base ten pieces or scratch paper to help. After you've figured your totals, fill in the rest of the sheet.

Blackline 7.36

NAME Danielle DATE May 12

The Indy 500 record sheet

With a partner, set up a race ramp and choose your cars.

Run each of your cars from the top of the ramp 3 times. Measure the distance traveled in centimeters each time and record the results below. Add up your score and compare it with your partner's score.

Car A, driven by <u>Danielle</u>	Car B, driven by <u>Susannah</u>						
Run 1 <table style="display: inline-table; border: 1px solid black; text-align: center;"><tr><td style="width: 20px; height: 20px;">4</td><td style="width: 20px; height: 20px;">2</td></tr></table> centimeters	4	2	Run 1 <table style="display: inline-table; border: 1px solid black; text-align: center;"><tr><td style="width: 20px; height: 20px;">5</td><td style="width: 20px; height: 20px;">3</td></tr></table> centimeters	5	3		
4	2						
5	3						
Run 2 <table style="display: inline-table; border: 1px solid black; text-align: center;"><tr><td style="width: 20px; height: 20px;">5</td><td style="width: 20px; height: 20px;">1</td></tr></table> centimeters	5	1	Run 2 <table style="display: inline-table; border: 1px solid black; text-align: center;"><tr><td style="width: 20px; height: 20px;">6</td><td style="width: 20px; height: 20px;">5</td></tr></table> centimeters	6	5		
5	1						
6	5						
Run 3 <table style="display: inline-table; border: 1px solid black; text-align: center;"><tr><td style="width: 20px; height: 20px;">4</td><td style="width: 20px; height: 20px;">9</td></tr></table> centimeters	4	9	Run 3 <table style="display: inline-table; border: 1px solid black; text-align: center;"><tr><td style="width: 20px; height: 20px;">4</td><td style="width: 20px; height: 20px;">7</td></tr></table> centimeters	4	7		
4	9						
4	7						
Total Distance <table style="display: inline-table; border: 1px solid black; text-align: center;"><tr><td style="width: 20px; height: 20px;">1</td><td style="width: 20px; height: 20px;">4</td><td style="width: 20px; height: 20px;">2</td></tr></table> centimeters	1	4	2	Total Distance <table style="display: inline-table; border: 1px solid black; text-align: center;"><tr><td style="width: 20px; height: 20px;">1</td><td style="width: 20px; height: 20px;">6</td><td style="width: 20px; height: 20px;">5</td></tr></table> centimeters	1	6	5
1	4	2					
1	6	5					

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Which car traveled the greater distance?

A **B**

How much farther did it travel?

1	6	5	centimeters
1	4	2	centimeters
	2	3	centimeters

(Continued on back.)

Work Place 10F (cont.)

Instructional Considerations

This is another Work Place you'll want to monitor carefully, being aware of students who need help with the column addition or finding the difference between multi-digit numbers. You will also have to decide whether you want everyone in your class to use standard subtraction notation to express the difference at the bottom of the sheet. The other possibility is to encourage students to use notation that makes sense to them. If, for instance, two children get totals of 164 and 172 centimeters, they might choose to express the difference between the two numbers as $164 + 8 = 172$, or $172 - 8 = 164$ rather than $172 - 164 = 8$. Will this be okay with you?