Work Place IA

WORK PLACE GAMES & ACTIVITIES

Unifix Cubes

This Work Place basket will need

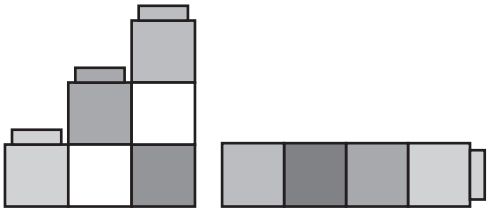
★ about 1000 Unifix cubes

Skills

★ counting

★ comparing lengths of objects

★ identifying more or less



Work Place Instructions

1. What do you think you'll be able to do with the cubes?

2. Do you think you could snap them together in a train as long as your arm?

3. Do you think you could work with a friend to make the train as tall as one of you?

4. How far do you think the cubes would reach if they were all snapped together?

5. How many students could lie down touching heels to heads to measure the train if it reached all the way across the room?

6. What else can you do with Unifix cubes?

Instructional Considerations

First graders love Unifix cubes. It doesn't take them long to discover the joy of sharing their cubes. Soon, you may even notice children coordinating efforts to make trains from the table to the door or even clear across the room. At cleanup time, encourage them to break their train(s) apart in lengths of 10. With a bit of modeling on your part, some of the children will start to count the cubes by 10's as they put them away, or use them to see if they can count to 100.

It won't be too many days before you begin to notice that some children are using the cubes to make simple repeating patterns. Others may build towers (like stair steps) and tell you that they're getting higher each time (7 is one more than 6). Still others just love snapping them together in long trains as they learn how to share the cubes and cooperate with others to accomplish their goals. All of these are important community-building activities.

Work Place 1B

WORK PLACE GAMES & ACTIVITIES

Pattern Blocks

This Work Place basket will need

★ 3 buckets of pattern blocks

★ several small containers of paper pattern block shapes (Blacklines 1.17–1.22)

★ glue to share

★ 20–30 pieces of 6″ × 9″ black construction paper in a folder or ziplock bag

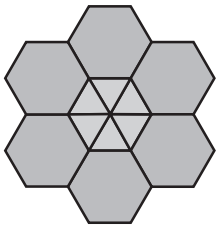
Skills

★ combining shapes to make other shapes

★ identifying shapes

★ working with the idea that shapes retain their identity even when flipped or rotated

★ exploring relationships between various 2-dimensional shapes



Work Place Instructions

1. What do you notice about the pattern blocks?

2. What can you do with them?

3. Are the other children creating things that are the same or different than your work? Talk to each other about your work. Do you see lots of good ideas?

4. How can you fit the pattern blocks together to make designs?

5. Could you make a pattern with them?

6. If you create a design with the pattern blocks that is special, you might want to make a copy of it on paper.

Instructional Considerations

Pattern blocks are splendid materials. They provide many opportunities for designing, patterning, counting, and exploring shapes and fractions. Many children love to go back to them over and over. You'll see beautiful designs, long lines of simple patterns, and even 3-dimensional structures. The possibilities are endless. Children will begin to notice that the yellow hexagon is the same size as 2 red trapezoids, or that 3 green triangles are the same as the red trapezoid. They may surround a hexagon with triangles and then add trapezoids or diamonds as they expand their design, carefully fitting each shape into the growing plane. Encourage children to record their finest work by gluing paper pattern blocks to black construction paper. These paper records can then be displayed or sent home.

Work Place IC

WORK PLACE GAMES & ACTIVITIES

Polydrons

This Work Place will need

★ 80 Polydron squares and 100 Polydron triangles

Skills

★ creating 3-dimensional shapes with 2-dimensional shapes

★ identifying shapes (square, triangle)

★ building and inventing

Work Place Instructions

1. Can you figure out how to hook 2 pieces together? How can you take them apart?

2. What if you want to add more pieces?

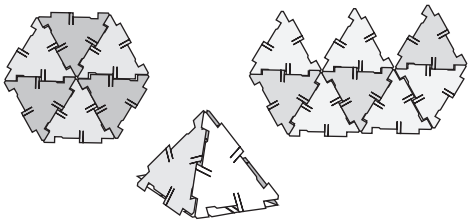
3. Can you find a way to fold your pieces together into a 3-dimensional figure?

4. How many different ways can you find to make a star?

5. What can you make using only triangles? Only squares?

6. What can you make when you mix the various shapes?

7. Talk to a friend about the things you're both making.



Instructional Considerations

The polydrons provide exceptional opportunities for children to create 2- and 3-dimensional figures. It is important to let the children have many days to explore and invent in their own ways with these materials. Nestle in beside students who are working with the pieces and encourage them to talk to you about what they're discovering and creating.

Work Place ID

WORK PLACE GAMES & ACTIVITIES

Bucket of Bugs

This Work Place basket will need

★ math bucket of bugs

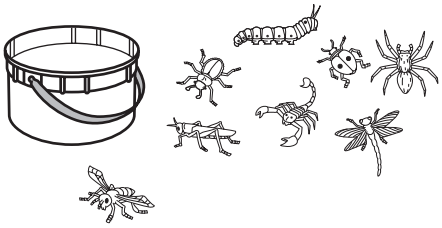
★ 10 Bug Counting Mats

Skills

★ estimating using a benchmark of 10

★ counting by 1's, 5's, and 10's

★ sorting



Work Place Instructions

1. Get some of the bugs out of the bucket. Do you see any that you can name? What do they look like? Which are your favorite? Do you see any that you don't like?

2. Do you see any bugs that match? How many can you find of each kind? How many butterflies are there? How many grasshoppers?

3. Work with your friends to sort and count the bugs and then see what kinds of games or bug stories you can make up.

Instructional Considerations

Many first graders will want to use the bugs to pursue their own purposes for the first few weeks of Work Places. Some may count the bugs onto the mats over and over. Others may sort them by appearance, carefully lining up the bugs that match. Still others will pull the bugs into fantasy games of various sorts, creating hierarchies of bugs—kings and queens, generals and army soldiers. They'll talk with friends about their work and play. These materials will be used in more structured ways soon. In the meantime, it's important for children to be able to play with them. Remind students to count the bugs back onto the mats at cleanup time to make sure that all 100 find their way back into the bucket. They'll all be needed the next time the Work Places come out.

Work Place IE

WORK PLACE GAMES & ACTIVITIES

Bugs on Board

This Work Place basket will need

★ 3 Bugs on Board gameboards

★ 3 sets of Bug cards and 3 sets of Coordinate cards (Package the cards in 3 small ziplock bags by placing 1 set of Bug cards and 1 set of Coordinate cards in each. This way, it will be easier for children to get their materials out of the Work Place basket and less likely that they'll mix all the cards together at cleanup time.)

Skills

★ identifying the position of an object using such words as top, middle, bottom, above, below, right, left, center

★ learning to read a coordinate grid

Work Place Instructions

1. Find a partner. Get a gameboard and a bag containing two sets of cards—the Bug cards and the Coordinate cards.

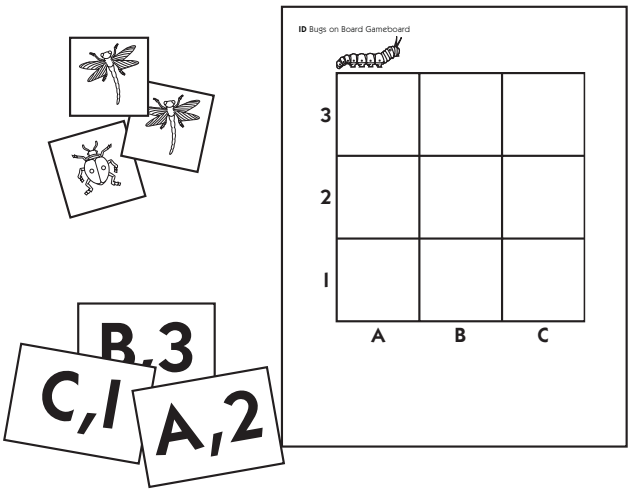
2. Decide who will play for the ladybugs and who will play for the dragonflies. Take your Bug cards and set them beside you. Then mix up all the Coordinate cards and set them in a pile, face down.

3. Take turns drawing Coordinate cards from the pile and placing your Bug cards in the correct boxes on the gameboard. The first person to get three side by side vertically, horizontally, or diagonally wins. If neither of you manages to do so by the end, it's a cat's game and you should just mix up the Coordinate cards and play again.

4. After playing Bugs on Board several times, clean up your materials and find another Work Place.

Instructional Considerations

Although there may be students who don't yet understand the game perfectly, others will help them become more proficient at playing Bugs on Board—especially reading the coordinate cards and placing the bugs correctly on the gameboard. You may also want to play the game yourself with individuals or small groups—it presents a grand opportunity to model position words and also to get to know some of your students better.



Work Place IF

WORK PLACE GAMES & ACTIVITIES

Geoboards & Pictures

This Work Place basket will need

★ 6–8 geoboards along with tubs of geobands

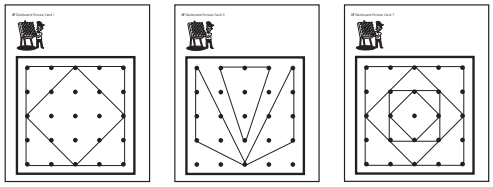
★ 8 Geoboard Picture cards

Skills

★ using positional language

★ naming shapes and their attributes

★ creating repeating geometric shapes using manipulatives



Work Place Instructions

1. Take a geoboard and a few geobands. What can you create?

2. Show a friend. What is your friend doing with her geoboard?.

3. Try copying one of the geoboard pictures with your geobands and geoboard if you like. What do you notice?

Instructional Considerations

In the beginning, many first graders are quite fascinated with the business of fastening geobands to the pegs. Their goal seems to be simply to get as many geobands on the board as possible. You'll want to nudge them beyond that level after a couple of days by encouraging them to copy some of the drawings shown on the Geoboard Picture cards, and to make up similar pictures with their geobands. Also, although we've rarely had a first grader deliberately shoot the bands at anyone, occasionally they lose hold of a band as they're trying to attach it and it flies through the air. You might want to spend some time talking about safety issues with geobands.

Work Place IG

WORK PLACE GAMES & ACTIVITIES

Which Numeral Will Win, 1–4?

This Work Place basket will need

★ Which Numeral Will Win, 1–4? record sheets (Blackline 1.35, run 20–30 copies)

★ 6 Which Numeral Will Win, 1–4? spinners

★ pencils

★ Which Numeral Won, 1–4? graph (Blackline 1.37, run 1 copy and post nearby at a level children can easily reach)

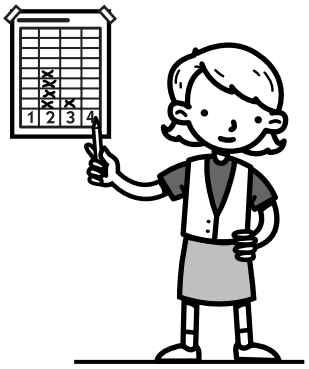
Skills

★ learning to read and recognize numerals 1–4

★ writing numerals 1–4

★ recording information on a graph

★ recognizing when games or activities depend on chance



"Wow! The 2's are way ahead!"

Work Place Instructions

1. Get a spinner, record sheet, and pencil.

2. Spin the spinner and then trace the numeral indicated by the arrow. Continue spinning and recording until one row of numerals is completely full.

3. Which numeral won? Record your results on the class graph and then store the record sheet in your work folder.

Work Place 1H

WORK PLACE GAMES & ACTIVITIES

Bucket of Frogs

This Work Place basket will need

★ math bucket of frogs

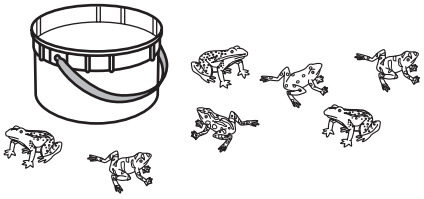
★ 10 Frog Counting Mats

Skills

★ counting by 1's, 5's, and 10's

★ estimating quantity

★ sorting



Work Place Instructions

1. Get some of the frogs out of the bucket. What do they look like? Which are your favorite?

2. Do you see any frogs that match? How many can you find of each kind?

3. Work with your friends to sort, count, and enjoy the frogs.

Instructional Considerations

Many first graders will want to use the frogs to pursue their own purposes for the first few weeks of Work Places. Some may count the frogs onto the mats over and over. Others may sort them by appearance, carefully lining up the frogs that match. Still others will pull the frogs into fantasy games of various sorts. These materials will be used in more structured ways soon. In the meantime, it's important for children to be able to play with them. Be sure to remind students to count the frogs back onto the mats at cleanup time to make sure that all 100 find their way back into the bucket for use next time the Work Places come out.

Work Place 11

WORK PLACE GAMES & ACTIVITIES

Bucket of Sea Creatures

This Work Place basket will need

★ math bucket of sea creatures

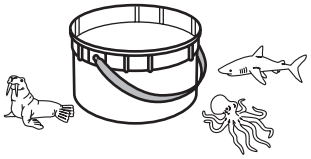
★ 10 Sea Creature Counting Mats

Skills

★ counting by 1's, 5's, and 10's

★ estimating quantity

★ sorting



Work Place Instructions

1. Get some of the sea creatures out of the bucket. What do they look like? Which are your favorites? Can you share any information about these creatures with your classmates?

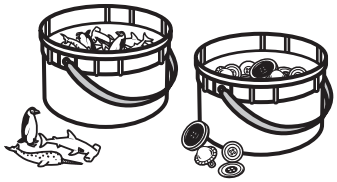
2. Do you see any sea creatures that match? How many can you find of each kind?

3. Work with your friends to sort, count, and enjoy the sea creatures.

Work Place II/IJ

WORK PLACE GAMES & ACTIVITIES

Bucket of Sea Creatures / Bucket of Buttons



This Work Place basket will need

★ math bucket of sea creatures

★ 10 Sea Creature Counting Mats

★ Sea Creature Sorting cards

★ Graphing Mats (Blackline 1.38, run several copies)

★ math bucket of buttons

★ 3 1-cup measures

Skills

★ counting by 1's, 5's, and 10's

★ estimating quantity

★ sorting

Work Place Instructions (for the sea creatures)

1. Get some of the sea creatures out of the bucket. What do they look like? Which are your favorites? Can you share any information about these creatures with your classmates?

2. Do you see any sea creatures that match? How many can you find of each kind?

3. Work with your friends to sort, count, and enjoy the sea creatures.

Work Place Instructions (for the buttons)

1. Take some buttons out of the bucket. What can you do with them? Make a picture? Sort them by color, size, or number of holes? Find the exact matches? Count to see which color occurs most often? Hunt through them to find your favorites?

2. After you've played with the buttons, put them back in their own bucket. Be sure to use the cup measures to see if there are 3 cupfuls when it's time to clean them up.

Work Place IK

WORK PLACE GAMES & ACTIVITIES

Which Numeral Will Win, 5–8?

This Work Place basket will need

★ Which Numeral Will Win, 5–8? record sheets (Blackline I.39, run 20–30 copies)

★ 6 Which Numeral Will Win, 5–8? spinners

★ pencils

★ Which Numeral Won, 5–8? graph (Blackline I.40, run I copy and post nearby at a level children can easily reach)

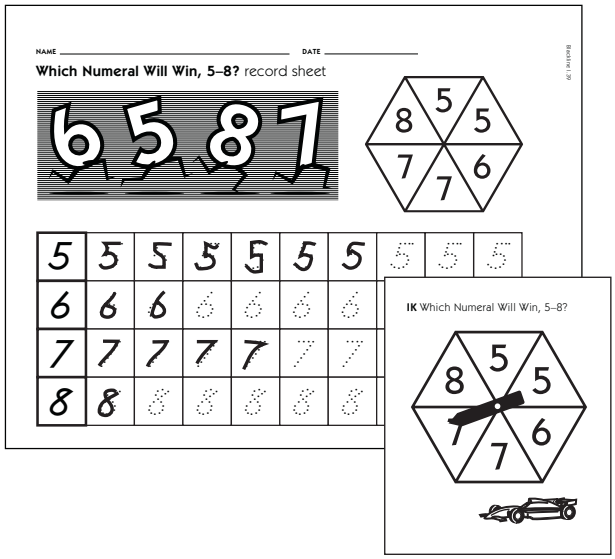
Skills

★ learning to read and recognize numerals 5–8

★ writing numerals 5–8

★ recording information on a graph

★ recognizing when games or activities depend on chance



Work Place Instructions

1. Get a spinner, record sheet, and pencil.

2. Spin the spinner and then trace the numeral indicated by the arrow. Continue spinning and recording until one row of numerals is completely full.

3. Which numeral won? Record your results on the class graph and then store the record sheet in your work folder.

Work Place 2A

WORK PLACE GAMES & ACTIVITIES

Buttons Addition

This Work Place will need

★ Buttons Addition record sheets (Blacklines 2.18–2.22, run 10 copies of each and place in a folder)

★ a container of black and white buttons

★ 6 probability containers (If you've purchased the Deluxe Package, you'll find these among the program manipulatives. If not, simply slip an 8-ounce yogurt container inside a small, stretchy sock to make each container.)

★ crayons

Skills

★ counting

★ combining sets

★ writing number sentences

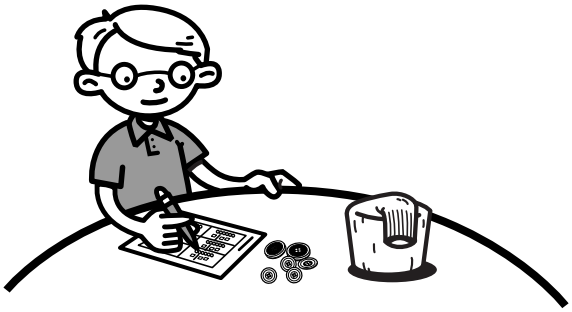
★ understanding the process of addition

★ looking for patterns

★ recognizing when games or activities depend on chance

Work Place Instructions

1. Choose a Buttons Addition record sheet. You can choose to work with 4's, 5's, 6's, 7's, or 8's. After you've made your decision, take that many white buttons and that many black buttons and put them inside one of the probability containers.



2. Shake your buttons well and reach in to pull out as many buttons as are shown on your sheet. Record the number of black and the number of white by coloring in the buttons in the first box on your sheet. Write a number sentence to match.

3. Put the buttons back into your container. Shake well and again pull out the number you need. Record your results. Repeat four more times.

4. Save your record sheet in your work folder for your teacher to see. Be sure to mark your planner.

Instructional Considerations

You can assign children numbers for this activity. We find that children generally make reasonable choices for themselves, though, and prefer to let them choose.

Work Place 2B

WORK PLACE GAMES & ACTIVITES

Bugs in the Garden Addition

This Work Place will need

★ 3 Bugs in the Garden Addition spinners

★ 3 Bugs in the Garden Addition gameboards

★ Bugs in the Garden Addition record sheets (Blackline 2.23, run 30 copies and place in a folder)

★ bucket of bugs

Skills

★ counting

★ combining sets

★ writing addition number sentences

★ understanding the process of addition

★ looking for patterns

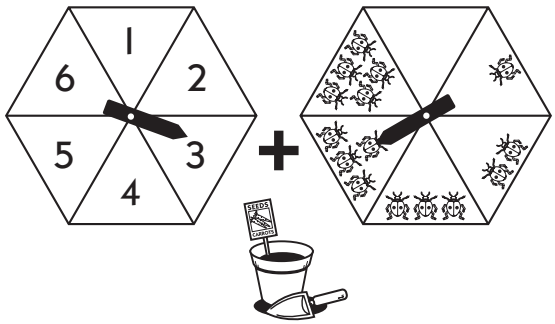
★ counting on

Work Place Instructions

1. Get a spinner to share with a partner. Take a gameboard and some bugs too, if you think you'll want to use them.

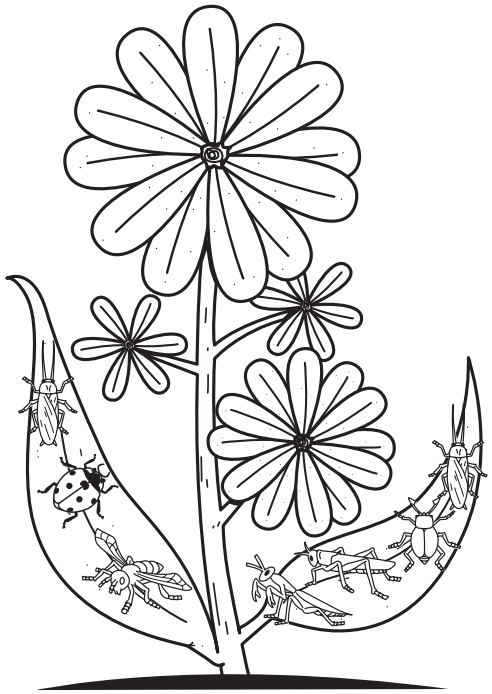
2. Get a record sheet and put your name on it. Then spin both arrows on the spinner. Where did they land? Write the combination you got in the first box on your record sheet. Figure the total by laying out the number of bugs you need on each leaf and counting them. If you prefer, you can use your fingers instead of the gameboard, or find some way to figure the total in your head. Once you have the answer, record it on your paper.

2B Bugs in the Garden Addition



"I got 3 and 4. Let's see. That's 3, 4, 5, 6, 7."

2B Bugs in the Garden Addition Gameboard



(Continued on back.)

Work Place 2B (cont.)

Blackline 2.23

NAME Robert DATE 10/19

Bugs in the Garden Addition record sheet

3 + 3 = 6

3 + 4 = 7	+ =

"The answer is 7 so I have to write 3 + 4 = 7 on my paper."

3. Continue spinning and recording until your sheet is finished.

4. Save this record sheet in your Work Folder for your teacher to see. Be sure to mark your planner.

Instructional Considerations

As you nestle in with youngsters who are working here, try to discover their strategies. Are they one-by-one counters? Can they see things in chunks and count on from one quantity to the sum? Are they developing a comfort level with some simple addition combinations? Are they able to read the number sentences they record?

Work Place 2C

WORK PLACE GAMES & ACTIVITES

Spin & Write

This Work Place will need

★ Spin & Write record sheets (Blackline 2.24, run 30 copies and place in a folder)

★ 6 Spin & Write spinners

★ pencils

Skills

★ reading and writing numerals 0–9

★ creating and interpreting a graph

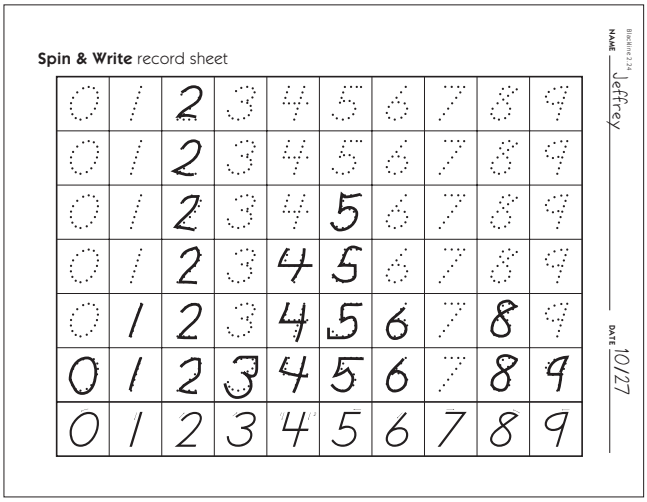
★ counting and comparing quantities

Work Place Instructions

1. Get a spinner, a record sheet, and a pencil.

2. Spin and read the number. (If you're not sure what the number says, ask a friend to help you.) Find the number you spun on the record sheet and trace it once. Work from the bottom up, filling each column the way you would a bar graph.

3. Keep spinning, reading, and recording until one column fills to the top. After that you can keep going or you can stop and move on to another Work Place.



4. Save your record sheet in your work folder. Be sure to color in the star in the Spin and Write box on your planner to show that you've gone to this Work Place once.

Work Place 2D

WORK PLACE GAMES & ACTIVITES

Odd & Even

This Work Place will need

★ Odd & Even record sheets (Blacklines 2.25–2.27, run 10 copies of each sheet and cut in half. Store each half-sheet separately so children can easily find the number they want to work with)

★ 6 sets of Odd & Even pieces (Each set contains all the number pieces from 1 through 10, in 2 different colors. Place each set in a ziplock.)

★ pencils

Skills

★ combining sets

★ writing number sentences

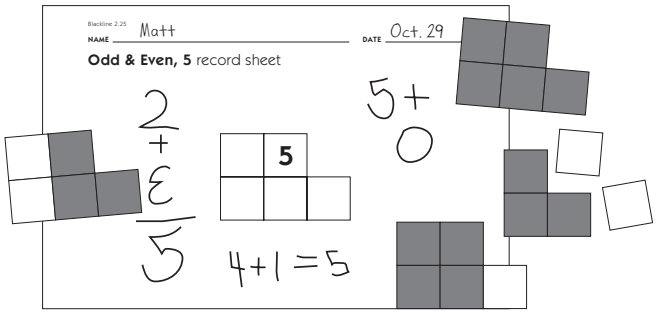
★ finding addition combinations for 5–10

★ looking for patterns

Work Place Instructions

1. Choose a sheet that shows the number you want to work on today, and get a set of Odd & Even pieces.

2. How many ways can you fit the pieces together to make your chosen number? Record all the possibilities in number sentences right on the sheet.



"Let's see—I did 4 + 1, and 2 + 3, and 5 by itself. Oh, I see a good one. I can fit 3 and 1 and then 1 more to make 5. That would be 3 + 1 + 1!"

3. Save this half-page worksheet in your work folder. If you decide to come back and do another sheet later, you can staple them together to make a little book.

Instructional Considerations

This games introduces some important mathematical ideas. As children work with the Odd & Even pieces, they not only discover that 3 and 5 combined is one way to make 8, but also that 1 and 2 made the 3 and 2 and 3 made the 5. Many begin to work in combinations of numbers, at least part of the time, rather than strictly with one-by-one counting. That skill grows as they gain more comfort in seeing combinations.

They might also begin to notice that two odd numbers combined make an even number, but two even numbers combined can't make an odd number. You'll hear talk about rectangles and "school bus" shapes as they work on these combinations. Writing the number sentences accurately is the hardest part. Be patient—this grows over time. Take time to model again for children who are having difficulty, and encourage them to help one another.

Work Place 2E

WORK PLACE GAMES & ACTIVITES

Pattern Block Patterns & Puzzles

This Work Place will need

★ pattern blocks

★ Pattern Block Pattern cards and Pattern Block Puzzle cards

Skills

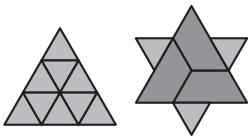
★ exploring growing patterns

★ making observations and predictions

★ solving spatial problems

★ flipping and rotating 2-dimensional shapes

★ recognizing and naming shapes



Work Place Instructions for Pattern Block Patterns

1. Choose a Pattern Block Pattern card.

2. What do you notice about the pattern?

3. What do you think would happen next if the pattern kept going?

4. Copy the pattern and show what will come next in the sequence with your pattern blocks. (You might even build the next few arrangements in the sequence.)

5. Show your work to a friend or your teacher.

6. Be sure to mark your planner to show that you have worked here.

Instructional Considerations for Pattern Block Patterns

Pattern blocks are splendid materials. There will be a fair number of children who would prefer to go back to creating designs rather than working with patterns. One way to appease that need is to allow one day a week of free choice activities with the pattern blocks. A week or so after these cards have been introduced, you might encourage students to create pattern problems for one another to solve. You may find most of their work involves repeating patterns rather than growing patterns, however.

Work Place Instructions for the Pattern Block Puzzles

1. Choose a Pattern Block Puzzle Card. What do you notice? What do you think those numbers mean? Why do you suppose you can see triangles within the design? If your card has numbers, can you build the larger shape with those same pieces as indicated at the beginning? (Triangles to make triangles, etc.)

If it does not have numbers, how many different pattern block shapes can be used to finish the puzzle? Is there more than one possibility? What is the fewest number of pieces that can be used? What is the greatest number of pieces?

2. Can you complete the puzzle(s)?

3. Talk to a friend or your teacher about your work.

4. Don't forget to mark your folder to show that you have worked here.

Instructional Considerations for Pattern Block Puzzles

Many children enjoy working with a variety of puzzles. There will be quite a bit of intuitive learning going on with this activity. Some students will notice that different shapes will fit to complete the unnumbered puzzles. Others may discover that a blue rhombus is equivalent to two triangles, etc. Some may notice that a friend did the puzzle with all triangles while someone else used the largest pieces possible, and that those who used larger shapes used fewer pieces.

Work Place 2F

WORK PLACE GAMES & ACTIVITES

Bugs in the House Subtraction

This Work Place will need

★ Bugs in the House Subtraction cards, group by fact families and store in ziplock bags (e.g., put all cards that begin with 5 in one bag, all that begin with 6 in another, and so on)

★ bucket of bugs

★ 6 Bugs in the House Subtraction gameboards

★ Bugs in the House Subtraction record sheets (Blackline 2.28, run 20–30 copies and place in a folder)

★ pencils

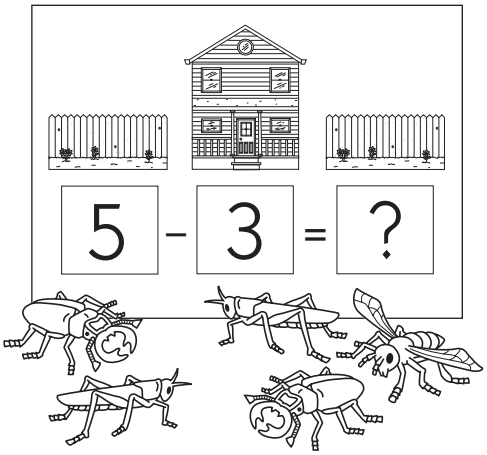
Skills

★ counting

★ understanding the process of subtraction

★ writing subtraction number sentences

★ practicing subtraction facts



Work Place Instructions

1. Get a record sheet, a pencil, a subtraction board, a set of Bugs in the House Subtraction cards, and a handful of bugs.

2. Read the first card and tell a story to match the number sentence as you set the bugs on your subtraction board.

3. Write the number sentence in the first box on your record sheet. Don't forget to write in the answer—how many bugs were left out in the grass?

4. Look at the next card in the set. Read it, set the bugs out on your board as you tell a story about the number sentence, and write it down. Continue this way until you've finished all the cards in your set. If you have extra boxes on your record sheet, you can do a few of the problems from another set of cards.

5. Put the record sheet in your work folder, and mark your planning sheet to show that you've visited this Work Place.

Instructional Considerations

With the addition of this activity to your collection of Work Places, you might consider whether or not you're going to require every student to complete every Work Place in a particular set. Usually, we ask that our students visit each Work Place at least once over a period of several weeks. As noted above, though, there may be a few students for whom a particular activity is not yet appropriate. There will be many other subtraction activities through the year. Is this the time to ask those students to go through the motions of writing number sentences they might not understand? Is there any level at which they might benefit from this activity? Would it be helpful for them to read the subtraction cards, set out the bugs to match, and watch as you or a parent helper writes the number sentences? Do you want to meet with a small group of children to go through this activity at a slower pace during Work Places? None of these are easy decisions, and will depend entirely on the needs of your students.

Work Place 2G

WORK PLACE GAMES & ACTIVITIES

Hungry Shark Subtraction

This Work Place will need

★ Hungry Shark Subtraction cards, group by fact families and store in ziplock bags

★ Hungry Shark Subtraction record sheets (Blackline 2.43, run 30 copies and place in a folder)

★ bucket of sea animals

Skills

★ exploring subtraction

★ learning to record subtraction equations using standard notation

★ learning subtraction combinations for 4–9

Work Place Instructions

1. Select a bag of Hungry Shark Subtraction cards and a record sheet.

2. Read the first card. How many sea animals did the hungry shark see? How many did she eat? How many were still swimming?

3. Record the number sentence and the difference on your record sheet.

4. Continue working until you have solved all of the problems in the set.

5. Save your record sheet in your work folder for your teacher to see.

Instructional Considerations

This is another Work Place that might need some special thought on your part. While most of your students will understand the operation well enough to enact, draw, and maybe even tell subtraction story problems, there may be some for whom writing formal subtraction sentences is more confusing than enlightening. You might consider meeting with small groups of children to go through this activity at a slower pace during Work Places. Knowing that you will offer many more experiences with subtraction this year, you might also make this Work Place available to all your students with the understanding that some might not choose to do it.

Work Place 2H

WORK PLACE 2H

Who Has More Cents?

This Work Place will need

★ 3 Who Has More Cents? Nickels & Pennies spinners

★ 3 Who Has More Cents? Dimes, Nickels & Pennies spinners

★ Who Has More Cents? record sheets (Blacklines 2.44–2.45, run 15–20 copies of each and place in a folder)

★ pencils and brown crayons

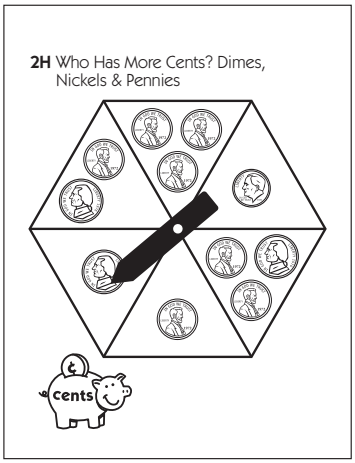
Skills

★ recognizing coins

★ learning coin names and values

★ counting by 1's, 5's, and 10's

★ comparing quantities



Work Place Instructions

1. Find a partner.

2. Choose whether to play the easier game with the Nickels & Pennies spinner or the more challenging game with the Dimes, Nickels & Pennies spinner.

3. Choose the appropriate record sheet.

4. Take turns spinning the spinner and coloring the appropriate number of pennies for each spin. Don't forget to count the pennies you get each turn and then draw a vertical line on your sheet to mark where you left off. This will help you know when to stop coloring, and also see where to begin on your next turn. Be sure to wait for each other to finish every time.

5. Who will color exactly 40 or 100 (depending on which version you chose) pennies first? If you are getting near coloring all of them and spin an amount that is too much, you miss your turn. Keep playing back and forth until one of you goes out exactly.

6. Put your finished paper in your Work Folder for your teacher to see. Be sure to mark your planner to show you have worked here.

Instructional Considerations

Even though the Number Corner has provided lots of work with money, some of your students may still get confused with coin names and values. These games are intended to help in those areas, as well as to give children a chance to count and compare growing sums of pennies. Take some time to nestle in at this Work Place to help students name the coins and count the amounts shown on the spinner. Encourage children to help one another as well. Here are some helpful questions to ask:

• How many pennies have you colored in all?

• How many more do you need? How many does your partner have?

• How many more does your partner need?

• Who do you think will win? (First graders are wonderful—they often believe that they will surely win even if a partner is far ahead.)

Work Place 21

WORK PLACE 21

Ten & More

This Work Place Will Need

★ Ten & More record sheets (Blackline 2.47, run 30 copies and place in a folder)

★ 3 Ten & More spinners

★ Unifix cubes

★ pencils

Skills

★ adding 10's and 1's

★ counting by 10's and 1's

★ predicting and comparing

★ developing strategies

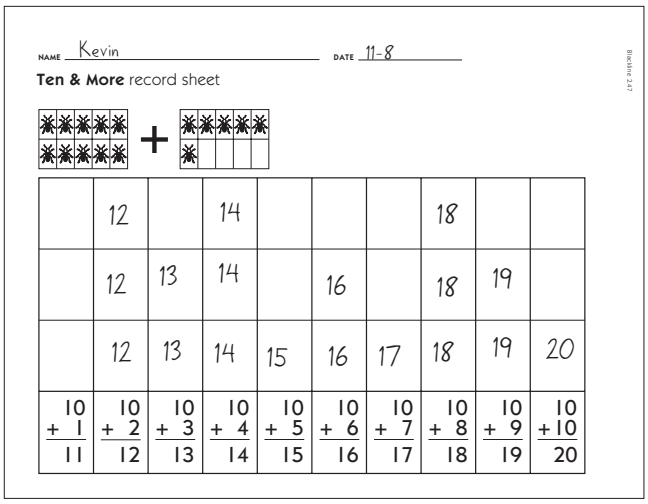
Work Place Instructions

1. Get a record sheet, a pencil, and some cubes if you want them. Depending on how many children are working with this activity, you may have to share a spinner with someone else.

2. Spin the spinner and figure out the total. There are 10 ladybugs in the frame at the top of the spinner and then the number you just spun. How many does that make in all? If you want, you can build the sum with cubes, but you may find it easier to use the pictures on the spinner to help. (Some children will count all the ladybugs, starting from 1 on the top ten-frame and continuing from there, but many will count on from the 10 in the top frame, and some will simply know by now that if they spin a 6, the answer is 16.)

Once you've figured the total, find the appropriate number sentence on the record sheet and fill in the answer. Work from the bottom up, filling each column the way you would a bar graph.

3. Keep spinning, figuring, and recording until three columns fill to the top. After that, you can keep going or you can stop and move on to another Work Place.



NAME Kevin DATE 11-8

Ten & More record sheet

Blackline 2.47

	12		14				18		
	12	13	14		16		18	19	
	12	13	14	15	16	17	18	19	20
10 + 1 = 11	10 + 2 = 12	10 + 3 = 13	10 + 4 = 14	10 + 5 = 15	10 + 6 = 16	10 + 7 = 17	10 + 8 = 18	10 + 9 = 19	10 + 10 = 20

4. Save your record sheet in your work folder. Be sure to color in the star in the Ten & More box on your planner to show that you've gone to this Work Place.

Work Place 2J

WORK PLACE 2J

50 or Bust!

This Work Place will need

★ 50 or Bust! gameboard & record sheets (Blackline 2.46, run 30 copies and place in a folder)

★ 3 sets of 50 or Bust! cards

★ Unifix cubes

★ crayons in several different colors

Skills

★ adding 10's and 1's

★ counting by 10's and 1's

★ predicting and comparing

★ developing strategies

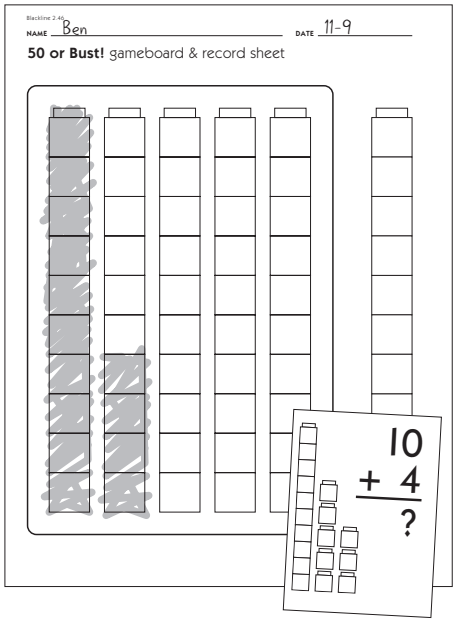
Work Place Instructions

1. Find a partner.

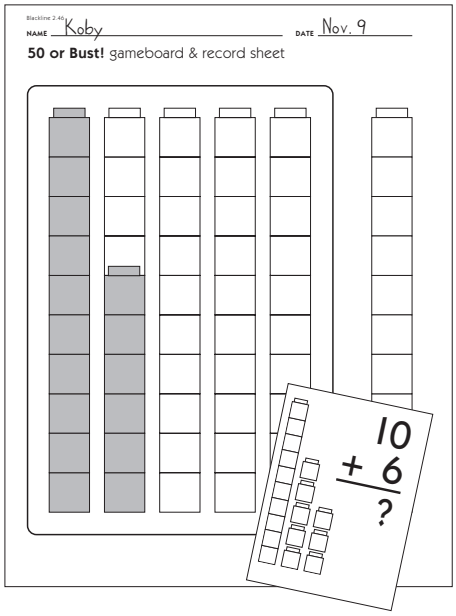
2. If you think you'll want to use Unifix cubes to keep your score instead of coloring in the record sheet, stack some cubes into same-colored sets of 10. Keep some extra single cubes. If not, take 4 or 5 crayons in different colors.

3. You and your partner will each need a 50 or Bust! record sheet and a set of 50 or Bust! cards to share. Set the cards faceup, or facedown if you prefer. (We like to give children the option here. Some will want to be able to see the cards, while others will prefer the mystery and suspense of not knowing what they're going to get each turn.)

4. Take turns selecting a card and recording the amount shown on your sheet, either by setting Unifix cubes directly on top or coloring in the amount.



Ben I'm coloring my sheet to show how much I get each time.

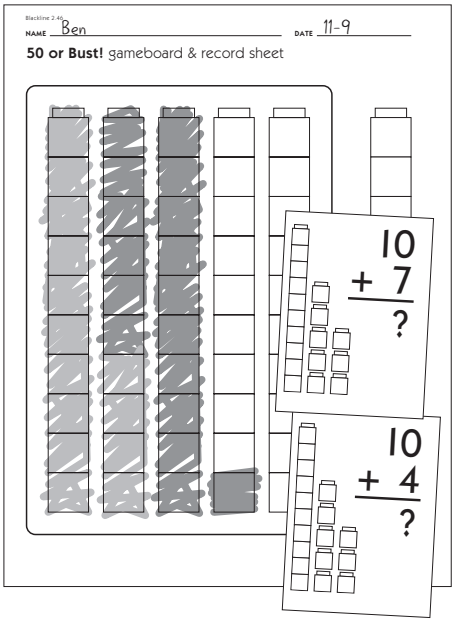


Koby Not me—I'm putting cubes on the paper to show. I got 16, see?

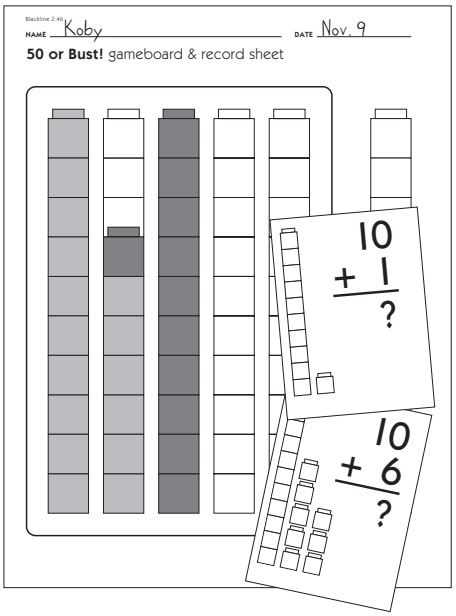
(Continued on back.)

Work Place 2J (cont.)

5. Each of you should take another card and record your score, either by coloring or building with cubes. Be sure to use a new color, whether you're using crayons or cubes. Who has more now? How many do you need to get to 50?



Ben I have 31 now. I'm ahead! I only need 19 more. I sure hope I get the 10 + 9 card.



Koby Oh, boy. Today is not my lucky day. I only have, let's see—10 and 10 is 20, then 21, 22, 23, 24, 25, 26, 27.

6. Do you dare to take another card or will you go beyond 50? Is there any card that would get you close to 50 without going over? Remember, you can stop taking cards whenever you choose. The winner is the person who gets closest to 50 without going over.

7. If you colored your record sheet to show your score, be sure to save it in your work folder. If you used cubes, put the record sheet and cubes back for others to use.

Instructional Considerations

As children play 50 or Bust! they begin to work in and think in multiples of 10. The teen numbers may take on more meaning, and the numbers may become easier to name. Some students will easily add with 10's, while others won't quite trust that stack to be 10 until they count it by 1's. The important thing is that they're all accessing the game at their own developmental level. Some will love counting their accumulated cubes by 10's and 1's, while others may need to count one by one to the total. If they choose to play with the cards faceup, some will begin to develop strategies, and try to pick the cards that will get them closer to 50 than their partner. Others will just try to pick the card each time that will give them lots of cubes. There is learning in all of these approaches. Celebrate whatever growth you see with each student as you nestle in at this Work Place.

Work Place 3A

WORK PLACE GAMES & ACTIVITIES

Race You to 25¢

This Work Place basket will need

★ 6 Race You to 25¢ gameboards

★ 3 containers with 15 pennies, 10 nickels, and 1 quarter in each

Skills

★ counting by 5's and 1's

★ recognizing coins and their worth

★ regrouping by 1's and 5's

★ mental arithmetic—adding and comparing quantities to 25

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 exchange them for a quarter.

4. The first person to get a quarter wins the game. It's okay to have a few pennies over 25¢.

Instructional Considerations

Remembering to trade up for a nickel each time they get 5 pennies may pose a challenge for your first graders, some of whom still believe in their hearts that 5 pennies are better than 1 nickel. Some may also have difficulty counting their growing collections of coins. Changing counting patterns in midstream, switching from 5's to 1's, is not easy.

5, 10, 15, 20, 25—oops! 5, 10, 15—16, 17, 18.

In spite of the challenges associated with this game, Race You to 25¢ has been popular in our classrooms, and most youngsters are good about helping one another when they get stuck. A nice variation of the game is to change the rule that 25¢ or more wins the game to a rule that says the winner must have exactly 25¢. With this variation, both players have to depend on the luck of the spin in order to complete the game. It tends to keep the player who is behind full of hope.

Work Place 3B

WORK PLACE GAMES & ACTIVITIES

Spin & Add

This Work Place basket will need

★ 3 Spin & Add spinners

★ Spin & Add record sheets (Blackline 3.2, run 30 copies, place in a folder)

★ pencils

Skills

★ practicing addition facts

★ counting on

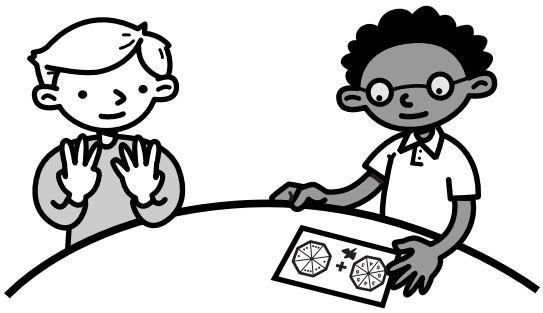
★ creating a graph

★ recording addition number sentences

Work Place Instructions

1. You can work here alone or side by side with a partner. Each person will need his or her own record sheet and a spinner to share.

2. Spin the spinners and figure out the sum of the two numbers.



I got 4 + 3; that makes 4—5, 6, 7.

3. Record the number sentence in the column above the appropriate sum. (Remember to work your way from the bottom to the top of the sheet.)

4. Continue working until you have filled three columns. After that, you can keep working or put this sheet in your folder and find another Work Place.

Instructional Considerations

One of the difficult parts of this game is that the number sentence must be recorded in the appropriate column for the sum of the two numbers spun. Use the overhead to model this thoroughly. Spin & Add is designed to encourage counting on, so push gently but firmly to get those children who are still one-by-one counters to begin moving toward this strategy, or toward another they see as they work alongside classmates. A few may continue to count from one each time, no matter what.

Work Place 3C

WORK PLACE GAMES & ACTIVITIES

Ten or Bust!

This Work Place Basket will need

★ 3 sets of Ten or Bust! cards

★ Ten or Bust! record sheets (Blackline 3.3, run 30 copies and place in a folder)

★ pencils

Skills

★ finding combinations that add to 10

★ mental arithmetic

★ counting on

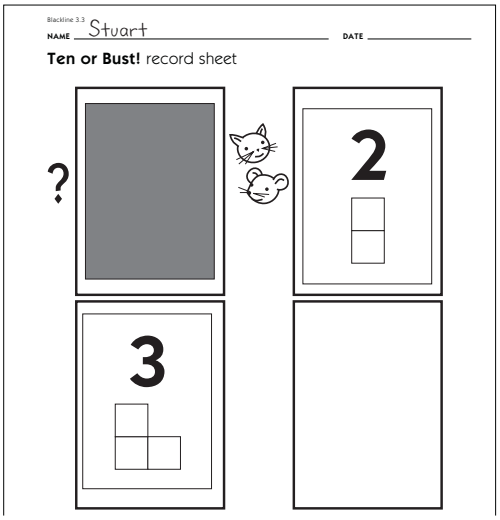
★ developing strategies

Work Place Instructions

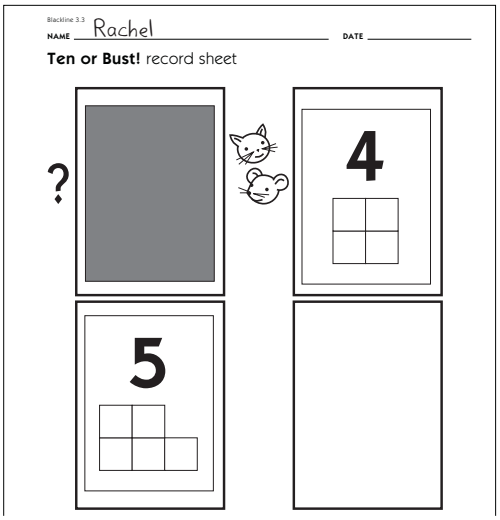
1. Choose a partner; then get a deck of game cards out of the basket and a record sheets for each of you. Be sure to put your name on your sheet.

2. Shuffle the cards and place the deck face down between you. Draw a card from the pile, take a peek at it, and place it facedown 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 10 without going over. If you decide to draw more cards, take turns pulling them off the top of the pile until neither of you wants any more. You can't take any more than four, and you have to show all your cards except the first one. (It's fair to peek at your own first card if you forget what's on it!)



Stuart (peeking under his facedown card and thinking to himself) Let's see—1 + 2 is 3, and 3 more—1, 2, 3, 4, 5, 6. I only have 6. I need to take another card.

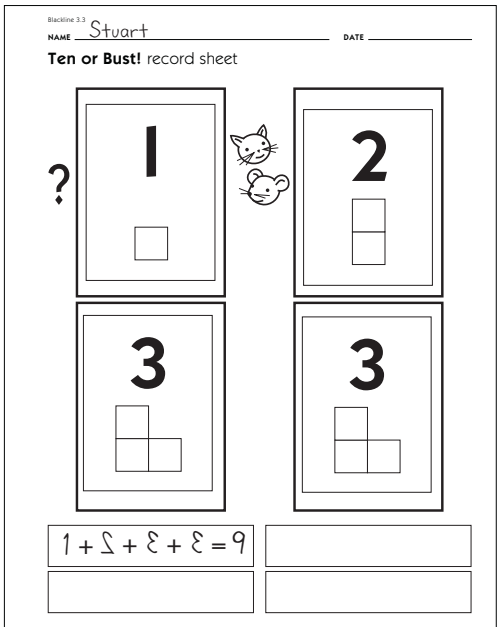


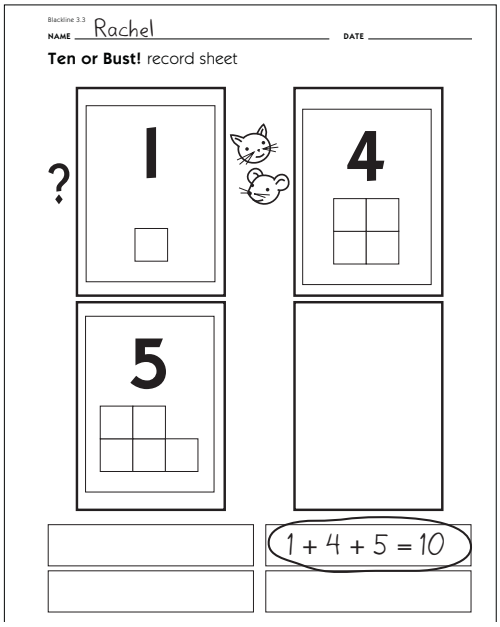
Rachel (peeking under her facedown card and thinking to herself) Yes! I have 10, 'cause 1 and 4 makes 5, and 5 + 5 is 10. No more cards for me!

(Continued on back.)

Work Place 3C (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 10 without going over is the winner of the first round. If you both get 10 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.





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. When you run out of cards, just reshuffle and reuse the ones you've set aside.

Instructional Considerations

You may need to reteach this game to some of your students in a small group, or have certain individuals work with more confident classmates as they begin to play independently. Here are a few things to consider as you observe children at this new Work Place:

- Are they able to determine the sum of their cards? If so, what strategies are they using? Are they counting by 1's from the first number? Counting on? Working from facts they already know?
- Are they able to watch their partner's cards to make decisions about whether they should take additional cards?
- Are students monitoring each other's addition for accuracy?

Work Place 3D

WORK PLACE GAMES & ACTIVITIES

Count & Compare Coins

This Work Place basket will need

★ 3 Count & Compare Coins gameboards

★ 3 sets of Count & Compare Coins cards

Skills

★ practicing addition facts

★ comparing quantities

★ recognizing coins and their worth

Work Place Instructions

1. Find a partner.

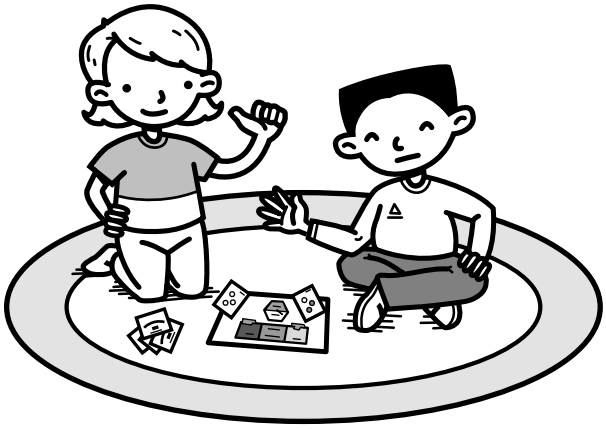
2. Get a gameboard and a set of cards from the Work Place basket. Mix the cards and place them facedown between you and your partner.

3. Draw one card from the pile and have your partner do the same.

4. Count to determine how much money is shown on each card.

5. Place your cards where they belong on the gameboard—one card 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.



Maria Your card is 15¢ and mine is 12¢. 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, comparing the quantities, and spinning until you are out of cards. Spin the spinner to 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.

Work Place 3E

WORK PLACE GAMES & ACTIVITIES

Add & Compare

This Work Place basket will need

★ 3 Add & Compare gameboards

★ 3 sets of Add & Compare cards

Skills

★ practicing addition facts to 10

★ comparing quantities

★ recognizing coins and their worth

★ counting on

Work Place Instructions

1. Find a partner.

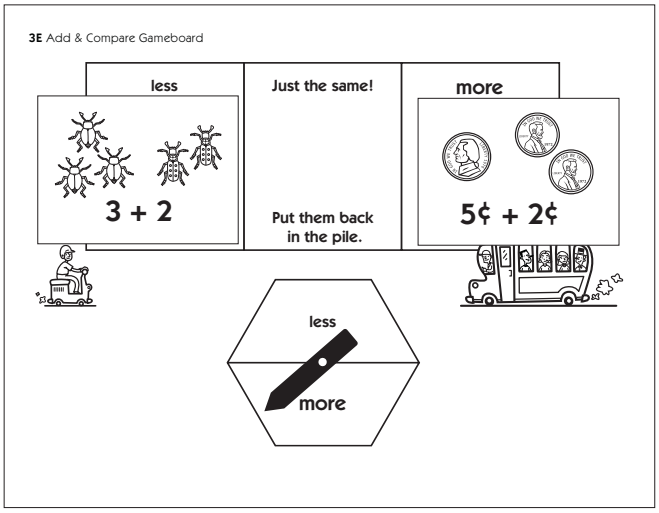
2. Get a gameboard and a set of cards from the Work Place basket. Mix the cards and place them facedown between you and your partner.

3. Draw one card from the pile and have your partner do the same.

4. Add the two quantities shown on each card.

5. Place your cards where they belong on the gameboard—one card 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 having the card whose numbers add to a higher total gets to take both the cards. If it lands on "less," the person drawing the card whose numbers add to a lower total gets both cards.



Koby I got 2 + 3. That's 5.

Erica I got 5 + 2 and that's 7 so I got more than you. The spinner landed on more so I get to take both cards this turn.

7. Take turns drawing cards, adding, and then comparing the totals, and spinning until you are out of cards. Spin the spinner to determine the overall winner of the game.

Work Place 3F

WORK PLACE GAMES & ACTIVITIES

Sea Creature Sorting & Graphing

This Work Place Basket Will Need

★ Sea Creature cards (Blackline 3.4, run 30 copies and place in a folder)

★ 2-Column graphs (Blackline 3.5, run 15 copies and place in a folder)

★ 3-Column graphs (Blackline 3.6, run 15 copies and place in a folder)

★ scissors

★ glue

★ pencils

Skills

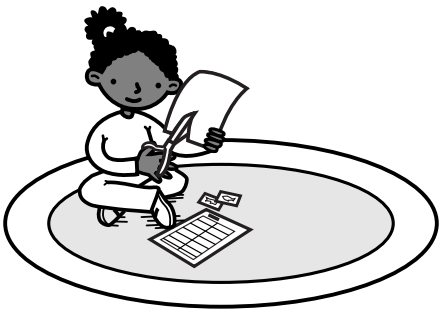
★ sorting objects by common attributes and describing the groups formed using categorical labels

★ creating a simple 2- or 3-column picture graph

★ giving the graph an appropriate title and labeling the columns

Work Place Instructions

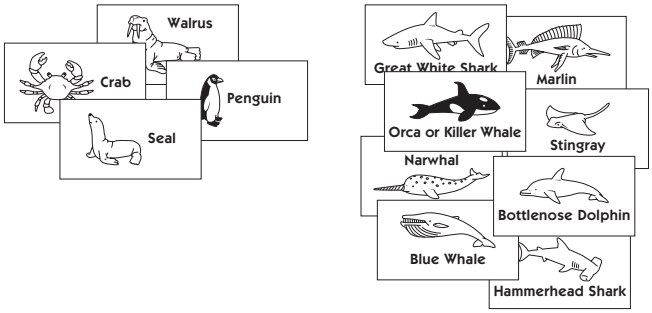
1. Get a sheet of Sea Creature cards and a pair of scissors.



2. Cut the cards apart and lay them out in front of you. You don't have to use all of them, but try to use at least 10 or 11.

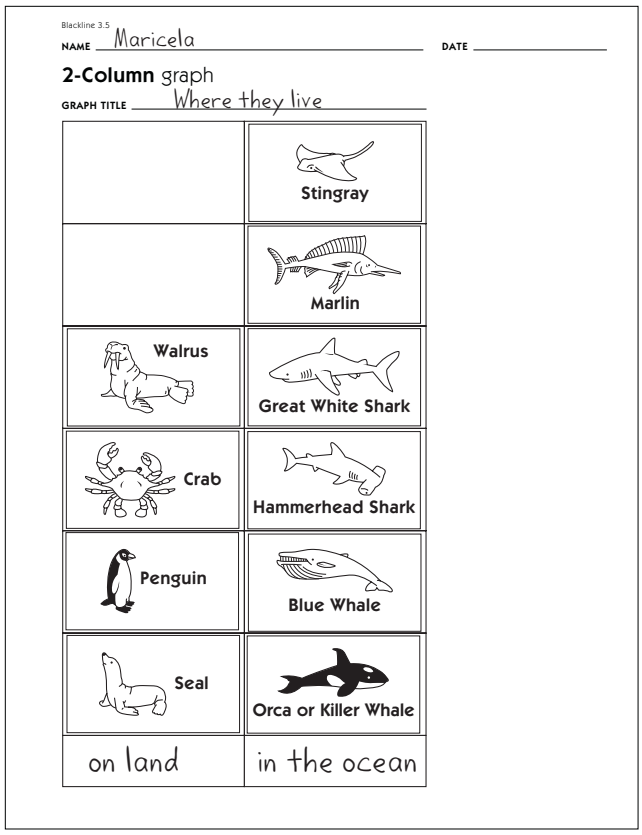
3. Decide how you want to sort the cards and set them in piles.

(Continued on back.)



Maricela I'm putting these guys up here together because they spend time on the beach, and the other guys together because they have to stay out in the water all the time or they die.

4. Glue the cards onto a graphing form according to the categories you've identified. Label each column and give your graph a title.


Blackline 3.5

NAME Maricela DATE

2-Column graph

GRAPH TITLE Where they live

	Stingray
	Marlin
Walrus	Great White Shark
Crab	Hammerhead Shark
Penguin	Blue Whale
Seal	Orca or Killer Whale
on land	in the ocean

Work Place 3F (cont.)

Instructional Considerations

This Work Place provides a wonderful opportunity for you to see how your students are doing with sorting and graphing. Here are some questions you might ask yourself as you observe children at work and talk with them about their finished graphs:

• Can they organize the sea creature cards into categories?

• Are their sorting categories related (e.g., fish/not fish, or whales/sharks/other creatures), or unrelated (e.g., shells/big/sharks)?

• Are they using factual information to sort the creatures (e.g., mammals/not mammals), things they can see by looking at the pictures (e.g., long legs/short legs/no legs), or imaginary criteria (e.g., friendly/mean)?

• Are they able to make statements about their finished graphs that go beyond identifying and discussing the individual animals in each column? Can they, for instance, tell you which column has more and how many more, without your prompting them to do so? Can they talk about how many fewer there are in one column or another? (First graders frequently put this in terms of how many it would take one column to "catch up" with the other.)

Work Place 3G

WORK PLACE GAMES & ACTIVITIES

20¢ or Bust!

This Work Place basket will need

★ 3 sets of 20¢ or Bust! cards

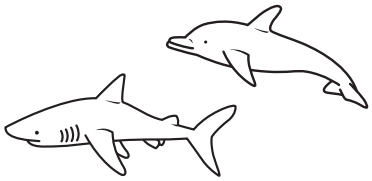
★ 20¢ or Bust! record sheets (Blackline 3.8, run 30 copies and place in a folder)

Skills

★ counting sums of money to 20

★ mental arithmetic

★ developing strategies



Work Place Instructions

1. Choose a partner; then get a deck 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 facedown between you. Draw a card from the pile, take a peek at it to count the money, and place it facedown 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 you want to draw any more cards in an attempt to get closer to 20¢ without going over. If you do decide to draw more cards, take turns pulling them from 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!)

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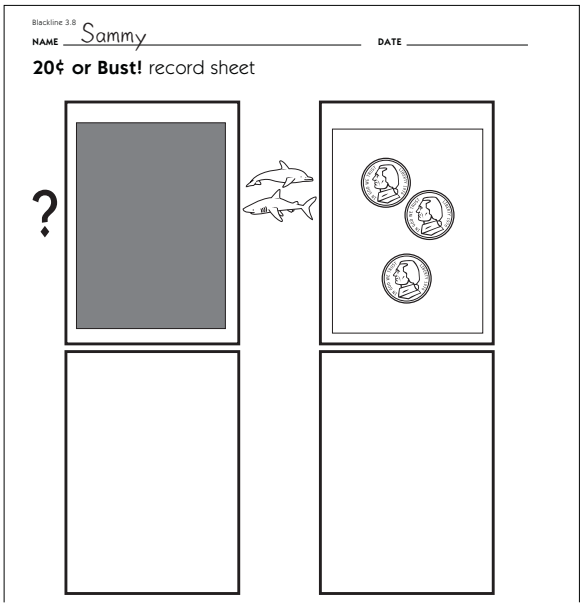
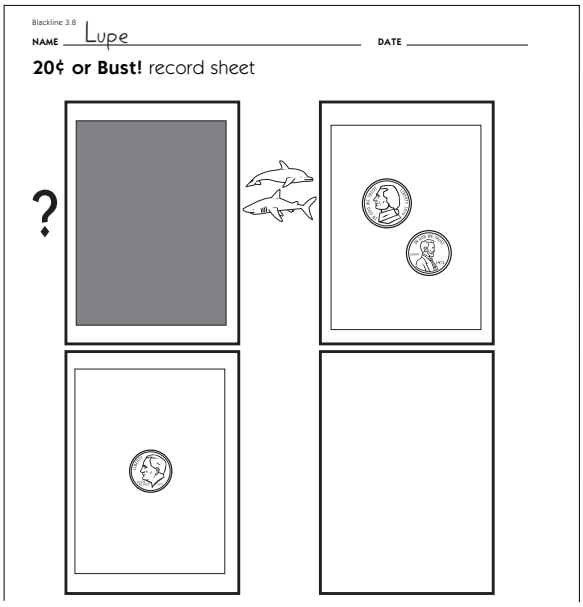


Sammy (peeking under his facedown card and thinking to himself) 5, 10, 15, and 4 more pennies. That's 19; I'm not taking any more cards!

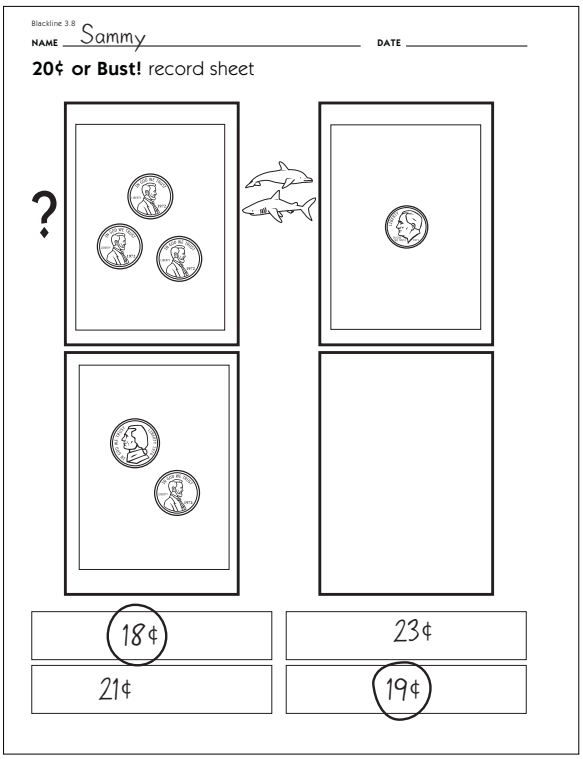


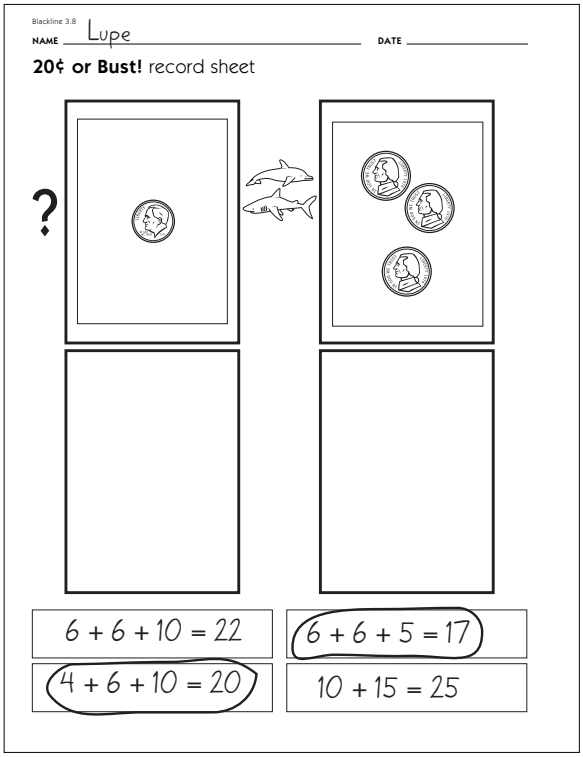
Lupe 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22. Oh no!

Work Place 3G (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 20¢ without going over is the winner of the first round. If you both get 20¢ 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.

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. When you run out of cards, just reshuffle and reuse the ones you've set aside.





Instructional Considerations

This is a challenging game and may need modeling over several days. Some children will be able to play it with ease and teach others. A few students may need a great deal of assistance to play successfully. It will help to play the game again with them during Work Places in the next day or two.

Work Place 3H

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 3.10, run 30 copies and place in a folder)

★ crayons in several different colors

Skills

★ counting by 5's

★ reading a clock face

★ recognizing when games or activities depend on chance

★ developing strategies

Work Place Instructions

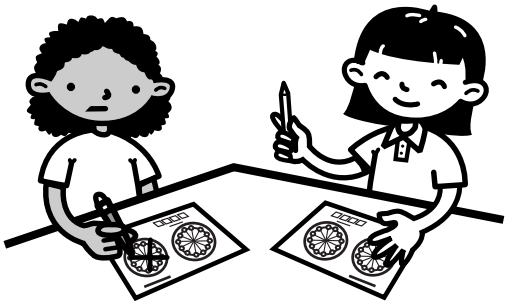
1. Get a partner, a spinner, two record sheets, and some crayons (4 different colors each). Put your names on your papers.

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 as soon as you've had 2. 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. If you do go over 60 minutes you can continue going by coloring over the first color used to the right of 12 to show you've gone bust. You'll be able to tell by the coloring how much over 60 minutes you went.

5. Circle the winning player's clock and begin again. There is room to play 2 games on your sheets.



Instructional Considerations

This is a fairly complex game, and it is likely that some of your children won't quite know what to do when they first begin to play independently. 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 to handle the game more independently.

Work Place 31

WORK PLACE GAMES & ACTIVITIES

Polydrons—Box or House?

This Work Place basket will need

★ all your Polydron squares

★ Box or House? record sheets (Black-line 3.16, run 30 copies and place in a folder)

★ pencils

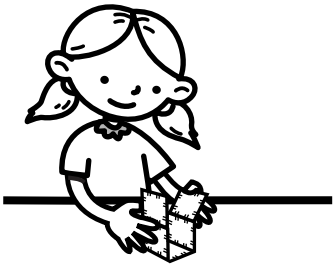
Skills

★ solving spatial problems

★ investigating and predicting the results of putting together and taking apart 2- and 3-dimensional shapes

★ interpreting visual instructions

★ flipping and rotating 2-dimensional shapes to create 3-dimensional structures



Work Place Instructions

1. Get 5 Polydron squares and a record sheet.

2. With your Polydron squares, form the first arrangement shown on the record sheet and make a prediction—will it turn into a box or a house when you fold the pieces and connect them?

3. Fold the pieces and connect them where possible. What's the result? Circle the picture of the box or the house for the first arrangement on the record sheet to show your results. Repeat until you've tried all 6 arrangements.

Work Place 4A

WORK PLACE GAMES & ACTIVITIES

Pattern Block Reflections

This Work Place basket will need

★ pattern blocks

★ 8 double–hinged mirrors

★ cut paper pattern blocks (Blacklines 1.17–1.22)

★ glue

★ Pattern Block Reflections record sheets (Blackline 5.2, run 30 copies and place in a folder)

Skills

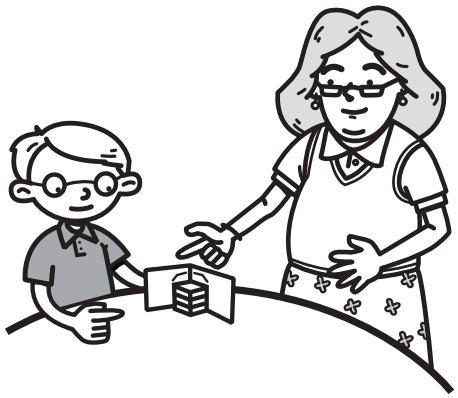
★ exploring the concept of symmetry

★ describing and arranging shapes in terms of proximity and position

★ working with the idea that shapes retain their identity even when flipped or rotated

★ identifying, describing, and comparing shapes

Note Normally, we set up Work Places for 6 children. This one is so popular that it goes more smoothly if we have enough materials to accommodate 8 children.

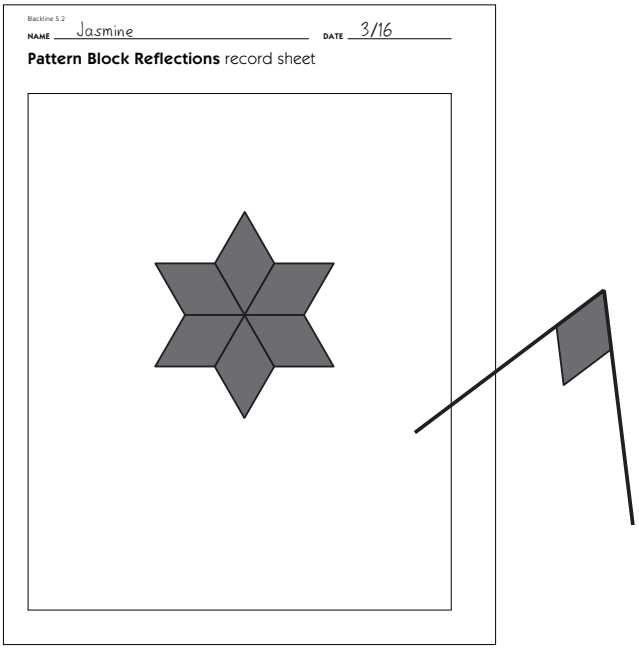


Work Place Instructions

1. Get a hinged mirror, 2 or 3 pattern blocks, a record sheet, some paper pattern blocks, and glue.

2. Tuck one of your pattern blocks into the corner of the hinged mirror and take a peek to see what the reflection looks like. How many of the blocks do you see now? Open the mirror out and then tuck it back up against the block.

3. Copy exactly what you see by gluing down paper pattern block shapes on your record sheet. Create your design in the center of the page so you can add more blocks to it later.



4. Add another block to the one that's already set in the corner of the hinged mirror. Add more paper pattern blocks to your design to match what you see. Your design will grow very quickly. Add another block or two and copy the new reflections each time until you have the pattern block design you want.

5. Set your picture somewhere safe to dry, and then store it in your work folder.

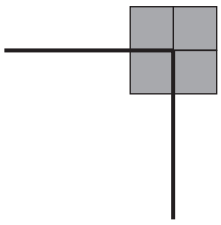
(Continued on back.)

Work Place 4A (cont.)

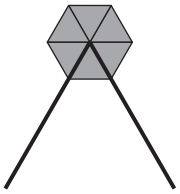
Instructional Considerations

If some children enjoy working with the mirrors and pattern blocks without recording their designs, that's fine. Positioning and gluing the paper shapes may actually get in the way of some students' investigations, although others will adore taking their record sheets home.

When you're talking to children about their work, there are plenty of opportunities to discuss reflection, symmetry, and number. When you pull a hinged mirror snugly around a green triangle, you see 6 of them in the reflection counting the real one. Does that happen with all of the pattern blocks? (No) Do you see 6 squares including the real one when you pull the mirror around the square? (No) How many squares do you see? (4) What about the hexagon (3) or the white rhombus (12)? Is there any way to predict how many of a particular shape you'll see? (The number of shapes you see in a hinged mirror depends on the angle of the shape you've snuggled into the corner, If it's 90°, like the corner of the square block, you'll see 4 blocks (including the real one). If it's 60°, like the corner of the green triangles, you'll see 6 in all—1 real and 5 reflected blocks.

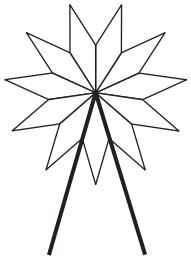


1 real block, 3 reflected blocks



1 real block, 5 reflected blocks

You might notice a pattern to this, which is that the angle of the shape you've snuggled into the corner of the hinged mirror multiplied by the number of blocks (real and reflected) always comes to 360 (4 × 90 = 360, 6 × 60 = 360). While this is too abstract for first graders, some might notice that the "skinnier" the pattern block is, the more times they'll see it reflected in the mirror.



"Wow! When I put the white rhombus in, I can see 12!"

What happens to the number of shapes when you add more blocks to the first block inside the mirror? What happens if you open and close the double-hinged mirror around a shape? (Try it and find out!)

Work Place 4B

WORK PLACE GAMES & ACTIVITIES

Last Shape In Wins

This Work Place basket will need

★ pattern blocks—hexagons, trapezoids, triangles, and blue rhombuses only (Organize sets of pattern blocks—4 hexagons and 12 each of the other shapes—into 3 ziplock bags so partners can easily get what they need.)

★ 3 Last Shape In Wins gameboards

Skills

★ exploring some of the relationships between various 2-dimensional shapes

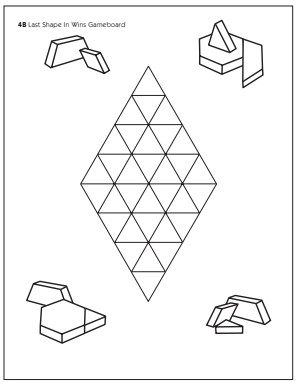
★ combining shapes to make other shapes

★ developing game-playing strategies

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. The first block can be placed anywhere; after that each new block has to touch at least one of the blocks already on the gameboard. You may use any of the 4 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 rhombus 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, imagining what will happen if she places a trapezoid on the board instead of a rhombus, 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 4C

WORK PLACE GAMES & ACTIVITIES

Pattern Block Puzzles

This Work Place basket will need

★ cut paper pattern blocks (Blacklines 1.17–1.22, hexagons, trapezoids, triangles, and blue rhombuses only)

★ Pattern Block Puzzle sheets 2–5 (Blacklines 5.4–5.7, run 15 copies of each and place in a folder)

★ glue

★ pencils

Skills

★ exploring some of the relationships between various 2-dimensional shapes

★ combining shapes to make other shapes

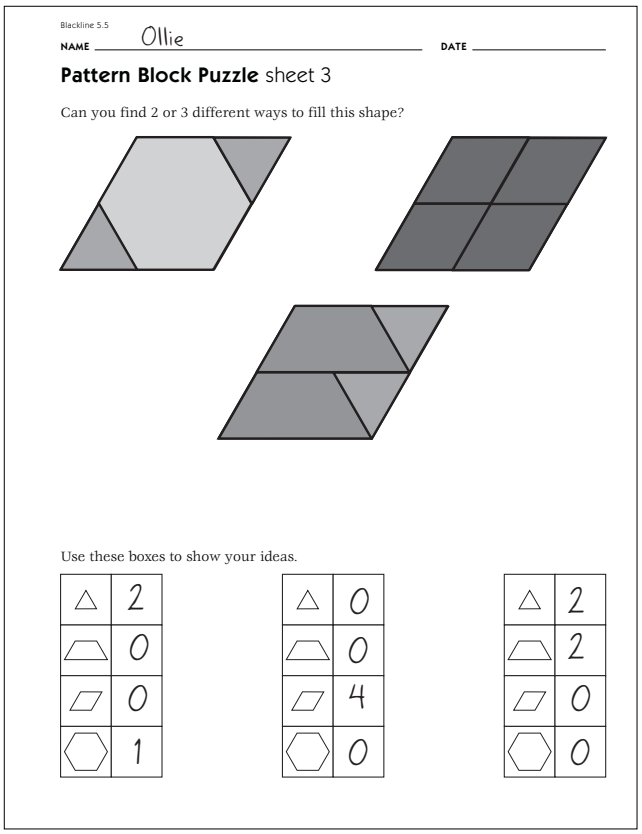
★ solving spatial problems

★ exploring the idea of area

Work Place Instructions

1. Choose one of the puzzle sheets and take a handful of paper pattern block shapes. You'll also need a pencil to record your solutions.

2. Find 3 different ways to cover the shape at the top of the page you've chosen. Glue paper pattern block shapes directly onto each of the large figures to show your 3 different ideas. Then record each solution on a chart at the bottom of the page. If you think you can come up with more than 3 ways to work the puzzle, take a second copy of the sheet and keep on working. Which solution requires the most blocks? Which requires the fewest?



Blackline 5.5

NAME Ollie DATE

Pattern Block Puzzle sheet 3

Can you find 2 or 3 different ways to fill this shape?

Use these boxes to show your ideas.

△	2	△	0	△	2
⏢	0	⏢	0	⏢	2
▱	0	▱	4	▱	0
⬡	1	⬡	0	⬡	0

Ollie I have another idea too. I can use all triangles. I'm going to get another sheet of this same puzzle!

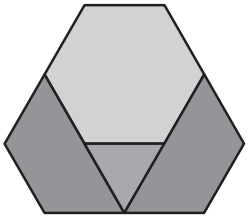
(Continued on back.)

Work Place 4C (cont.)

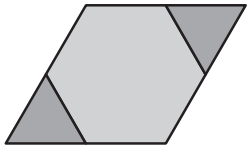
Instructional Considerations

If you have students who'd rather use real pattern blocks and show their solutions at the bottom to the paper without gluing in the paper shapes above, that's fine. It's the problem solving that's most important. If there are children in your class for whom these puzzles seem quite easy, there are two extensions you might want to consider. One is to challenge these students to find the fewest number of blocks it takes to build each of the four pattern block puzzles. This is not as easy or obvious as it sounds, and children may not agree on the solution for each of the designs. (The correct answers are shown to the right, although there are several different ways to build Pattern Block Puzzle 2 with 4 blocks.) The second extension is to ask students to figure the area of each of the four designs in green triangles. (You'll need to explain to them that the area of the triangle is one unit.)

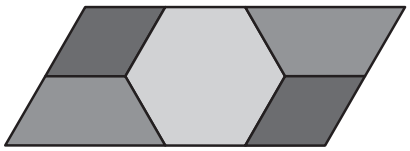
Answer Key to Pattern Block Puzzles



Pattern Block Puzzle 2
(Blackline 5.4)
Fewest Number of Blocks = 4
Area in Triangles = 13



Pattern Block Puzzle 3
(Blackline 5.5)
Fewest Number of Blocks = 3
Area in Triangles = 8



Pattern Block Puzzle 4
(Blackline 5.6)
Fewest Number of Blocks = 5
Area in Triangles = 16

Pattern Block Puzzle 5
(Blackline 5.7)
Fewest Number of Blocks = 6
Area in Triangles = 16

Work Place 4D

WORK PLACE GAMES & ACTIVITIES

Pattern Block Find & Fill

This Work Place basket will need

★ 6 Pattern Block Find & Fill gameboards

★ 3 Pattern Block Find & Fill spinners

★ 6 sock boxes, each filled with the following pattern blocks: 5 hexagons, 10 trapezoids, 12 triangles, and 12 blue rhombuses

Skills

★ identifying shapes by feel

★ exploring some of the relationships between various 2-dimensional shapes

★ combining shapes to make other shapes

★ solving spatial problems

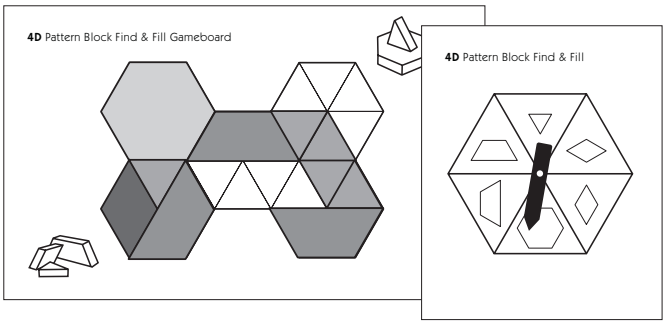
Note If you're using sock boxes you've made yourself, make sure they're large enough to hold all the blocks with lots of room to spare. Sturdy plastic quart containers each placed inside a large stretchy sock work quite well.

Work Place Instructions

1. Get 2 gameboards, 1 spinner, and 2 sock boxes out of the Work Place basket.

2. Spin the spinner and reach into your sock box to find the block indicated by the spinner. The idea is to use your sense of touch to find the block you need, but if you really get stuck and can't seem to locate the one you need, you can peek into the container. Once you've located the block you need, place it on your gameboard. It doesn't matter where you put it, as long as you fit it into the guidelines in one of the hexagons. Then have your partner do the same.

3. Take turns spinning, reaching into your sock to locate the correct pattern block, and setting it on your gameboard. If toward the end of the game you spin a shape that you can't use, you lose your turn and must give the spinner to your partner.



Player 1 Oh no! I got a hexagon but I can't use it. I don't have any space big enough to hold it. I need a smaller shape. It's your turn now.

The first person to fill his or her shape completely and exactly wins.

4. Be sure to clear the blocks off your gameboards when you finish and put them back into the sock boxes for the next players to use.

Work Place 4E

WORK PLACE GAMES & ACTIVITIES

Will It Make a Cube?

This Work Place basket will need

★ 36 polydron squares

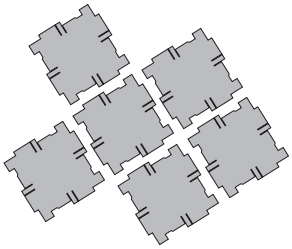
★ Will It Make a Cube? (Blackline 5.9, run 30 copies and place in a folder)

Skills

★ exploring 2-dimensional configurations of squares ("nets") that can be used to create cubes

★ interpreting visual instructions

★ flipping and rotating squares to create a cube



Work Place Instructions

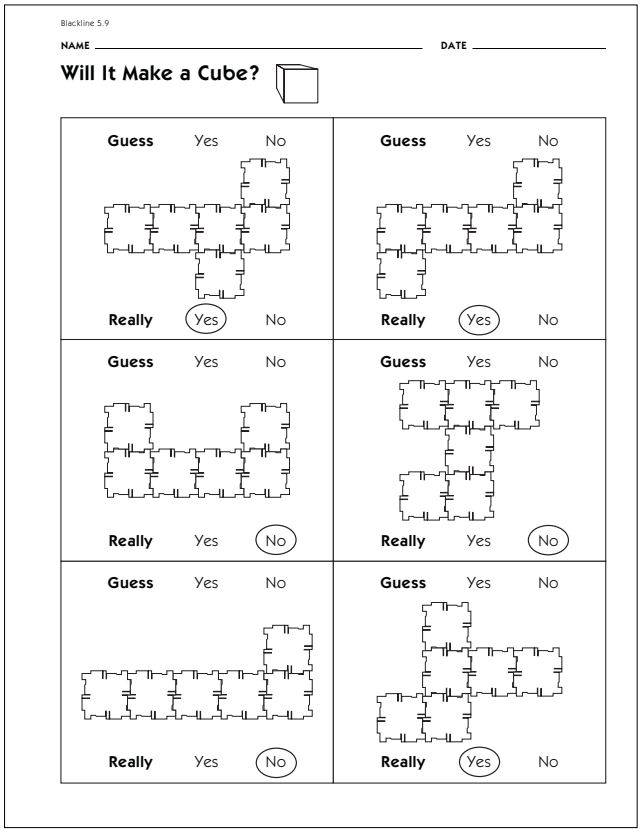
1. Get 6 polydron squares and a record sheet.

2. With your polydron squares, copy the first net shown on the record sheet and make a prediction—will it turn into a cube when you fold the pieces and connect them? If you think it will, circle the word "Yes" at the top of the first box. If not, circle the word "No."

3. Fold the pieces and connect them where possible. What's the result? Circle the "Yes" or the "No" at the bottom of the box to show your results. Repeat until you've tried all 6 nets.

Instructional Considerations

Here are the answers to each of the problems on the record sheet.



A nice extension of this activity is to ask children to make 2 different nets for their friends to try—one that will form a cube and one that will not form a cube.

Work Place 4F

WORK PLACE GAMES & ACTIVITIES

Will It Make a Pyramid?

This Work Place basket will need

★ 6 polydron squares

★ 24 polydron triangles

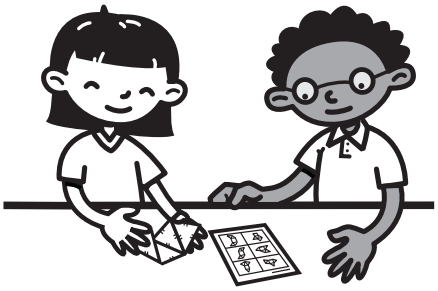
★ Will It Make a Pyramid? (Blackline 5.10, run 30 copies and place in a folder)

Skills

★ identifying and describing square and triangular pyramids

★ exploring 2-dimensional configurations of triangles and squares ("nets") that can be used to create square pyramids

★ arranging and describing objects in space by relative position and direction (e.g., near, far, below, above, up, down, behind, in front of, next to, left or right of)



Work Place Instructions

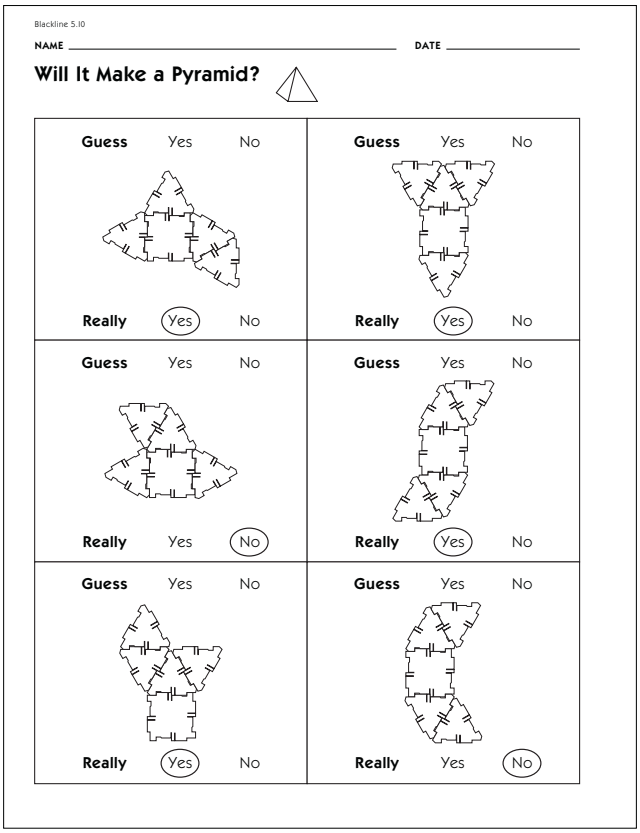
1. Get 1 polydron square, 4 polydron triangles, and a record sheet.

2. With your polydrons, copy the first arrangement shown on the record sheet and make a prediction—will it turn into a pyramid when you fold the pieces and connect them? If you think it will, circle the word "Yes" at the top of the first box. If not, circle the word "No."

3. Fold the pieces and connect them where possible. What's the result? Circle the "Yes" or the "No" at the bottom of the box to show your results. Repeat until you've tried all 6 arrangements.

Instructional Considerations

Here are the answers to each of the problems on the record sheet.



Work Place 4G

WORK PLACE GAMES & ACTIVITIES

How Many Triangles Does It Take?

This Work Place basket will need

★ pattern blocks—hexagons, trapezoids, triangles, and blue rhombuses only

★ How Many Triangles Does It Take? sheets 1–4 (Blacklines 5.16–5.19, run 15 copies of each sheet and place in a folder)

Skills

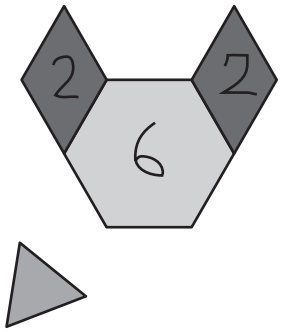
★ using triangles as units to measure the area of other shapes

★ combining shapes to make other shapes

★ writing addition equations

★ counting on

★ finding sums



Work Place Instructions

1. Choose one of the sheets and take a handful of pattern blocks. You'll also need a pencil to record your solutions.

2. Use your pattern blocks to figure out how many triangles it takes to cover each design on your sheet. Each one of the problems in the set can be solved by covering the whole design with triangles and counting, but see if you can find any quicker ways to figure the totals. If it helps, you can draw or write on the figures themselves. This is also a good way to show your work.

3. Once you've figured out how many triangles it takes to cover a design, record the total. Be sure to show how you got your answer in the space provided.

Instructional Considerations

Don't be too surprised or concerned if children who were able to use more efficient strategies in group discussion revert back to one-by-one counting when they visit this activity. We often find that children are buoyed up by more competent classmates or by our modeling during whole group work, and tend to look more competent than when they're working at the same task independently. The idea of thinking of shapes or numbers as being composed of smaller shapes or numbers will resurface again and again this year and next year. Given time and experience, most students will develop more efficient strategies for calculating totals.

Here are the answers to the problems on the four sheets for this Work Place:

Sheet 1 (Blackline 5.16)
Design 1: 6 triangles
Design 2: 12 triangles

Sheet 2 (Blackline 5.17)
Design 1: 10 triangles
Design 2: 16 triangles

Sheet 3 (Blackline 5.18)
Design 1: 9 triangles
Design 2: 12 triangles

Sheet 4 (Blackline 5.19)
Design 1: 18 triangles

Work Place 4H

WORK PLACE GAMES & ACTIVITIES

Four in a Row

This Work Place basket will need

★ 3 clear geoboards

★ 3 Four in a Row gameboards

★ 3 sets of Four in a Row Coordinate cards

★ 6 sets of 15 Unifix cubes, each set a different color. (Place 1 set of coordinate cards and 2 sets of cubes in each of 3 ziplock bags. That way children are less likely to mix the coordinate cards and cubes together.)

Skills

★ learning to read a coordinate grid

★ learning to accurately use the following words: top, middle, bottom, above, below, right, left, center, up, over, vertical, horizontal, diagonal

Work Place Instructions

1. Find a partner. Get a gameboard, a geoboard, and a bag containing a set of Coordinate cards and Unifix cubes in 2 different colors.

2. Decide which cube color you'll each play and set your cubes beside you. Place the geoboard on top of the gameboard so you can see the coordinates when you place cubes on the geoboard pegs. Then mix up all the Coordinate cards and set them in a pile, face down.

3. Take turns drawing Coordinate cards from the pile and placing your cubes on the correct pegs on the geoboard. The first person to get four of her own markers in a row vertically, horizontally, or diagonally, wins. If neither of you gets four in a row, it's a cat's game and you should just mix up the Coordinate cards and play again.

4. After playing Four in a Row once or twice, clean up your materials and find another Work Place.

Work Place 41

WORK PLACE GAMES & ACTIVITIES

Will It Make A Triangular Prism?

This Work Place basket will need

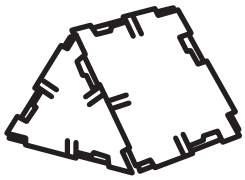
★ 18 polydron squares

★ 12 polydron triangles

★ Will It Make a Triangular Prism? (Blackline 5.21, run 30 copies and place in a folder)

Skills

★ exploring 2-dimensional configurations of triangles and squares ("nets") that can be used to create triangular prisms



Work Place Instructions

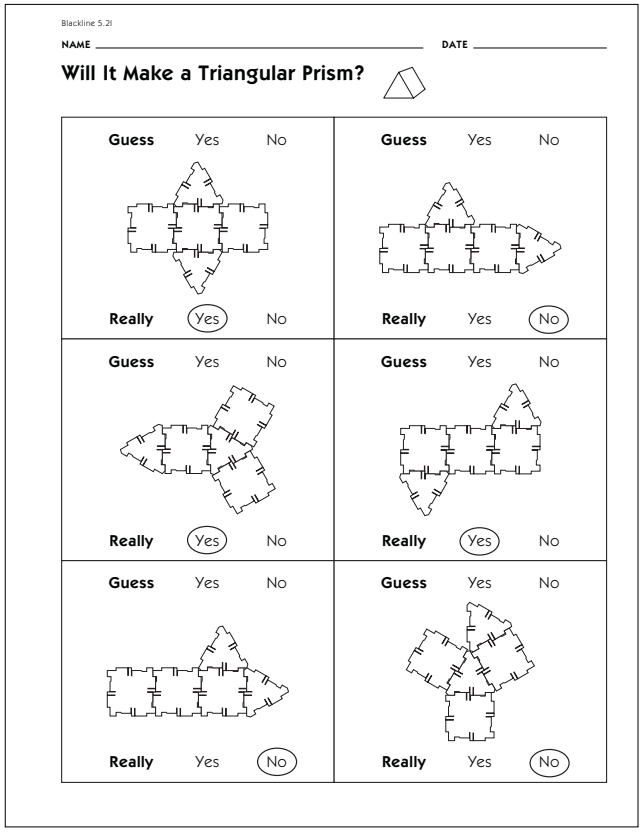
1. Get 3 polydron squares, 2 polydron triangles, and a record sheet.

2. With your polydrons, copy the first net shown on the record sheet and make a prediction—will it turn into a triangular prism when you fold the pieces and connect them? If you think it will, circle the word "Yes" at the top of the first box. If not, circle the word "No."

3. Fold the pieces and connect them where possible. What's the result? Circle the "Yes" or the "No" at the bottom of the box to show your results. Repeat until you've tried all 6 nets.

Instructional Considerations

Here are the answers to each of the problems on the record sheet


Blackline 5.21

NAME _____ DATE _____

Will It Make a Triangular Prism?

Guess Yes No **Really** (Yes) No	**Guess** Yes No **Really** Yes (No)
Guess Yes No **Really** (Yes) No	**Guess** Yes No **Really** (Yes) No
Guess Yes No **Really** Yes (No)	**Guess** Yes No **Really** Yes (No)

Work Place 4J

WORK PLACE GAMES & ACTIVITIES

Shape Sorting & Graphing

This Work Place basket will need

★ Shape cards: cut & paste (Blackline 5.22, run 30 copies and place in a folder)

★ 2–Column graph (Blackline 5.23, run 30 copies and place in a folder)

★ 6 pairs of scissors

★ 6 glue sticks or small bottles of glue

Skills

★ generating different ways to sort a collection of shapes

★ creating a picture graph

★ giving the graph an appropriate title and labeling the columns

★ recognizing and identifying attributes of 2-dimensional shapes

Work Place Instructions

1. Get a sheet of Shape cards and a pair of scissors.

2. Cut the cards apart and lay them out in front of you. Try to use at least 10 or more shapes.

3. Decide how you want to sort the cards and set them in piles. If you can't think of a good way, have a look at the Shape Attribute cards in the pocket chart. They might give you some good ideas.

"I know! I'm going to go by square corners and not square corners."

4. Glue the cards onto a graphing form according to the categories you've identified. Label each column and give your graph a title.

Instructional Considerations

This Work Place provides a wonderful opportunity for you to find out how your students are thinking about shapes. You might use their work to take a look at their current graphing skills. Here are some questions to think about as you observe children at work and talk with them about their finished graphs:

• Can they organize the shape cards into categories? Are the categories related (e.g., curved sides/straight sides) or unrelated (e.g., 6 sides/4 corners)?

• Are they using properties to sort the shapes (e.g., 4 corners/not 4 corners), things they associate with some of the shapes (e.g., shapes that look like mountains/shapes that don't look like mountains), or subjective criteria (e.g., weird/not weird)? Don't be too surprised if a fair number of your students are making pictorial associations or personal judgments about the shapes rather than sorting and graphing by shape properties. Identifying shapes by "how they look" is characteristic of young children and is likely to emerge when students are working independently, despite your best efforts to move them into the stage of describing shapes by their properties.

• Are they able to make statements about their finished graphs that go beyond identifying and discussing the individual shapes in each column? Can they, for instance, tell you which column has more—and how many more—without your prompting them to do so? Can they talk about how many fewer there are in one column or another? (First graders frequently put this in terms of how many it would take one column to "catch up" with the other.)

Work Place 4K

WORK PLACE GAMES & ACTIVITIES

Cube Moves

This Work Place basket will need

★ 3 Cube Moves gameboards

★ 3 clear geoboards

★ 6 sets of 6 Unifix cubes, each set a different color (Place 2 sets each in 3 ziplock bags so children can easily get their materials.)

Skills

★ using the terms diagonal, horizontal, and vertical with accuracy

★ arranging and describing objects in space by proximity, position, and direction (e.g., near, far, below, above, up, down, in front of, next to, left or right of)

Work Place Instructions

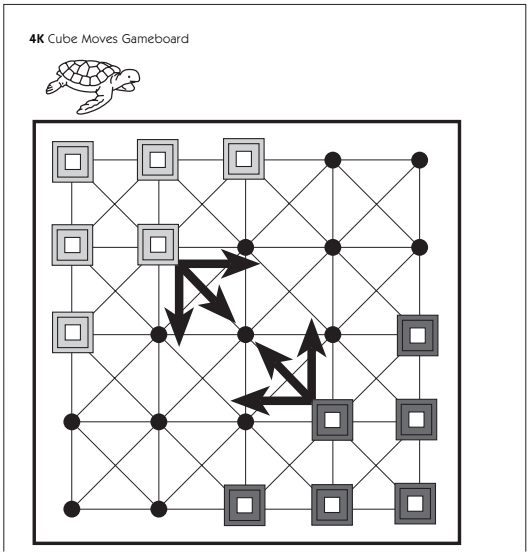
1. Get a partner, a gameboard, a geoboard, and a bag of Unifix cubes. Set the geoboard on top of the gameboard. Choose the color you want and set your cubes on top of the pegs that border the gray triangle on your side of the board. Have your partner do the same.

2. Take turns moving your markers. You can only move 1 marker per turn, and you can only move diagonally, vertically, or horizontally across 1 square unless you can make a jump move. Jumps can be made over your own or your partner's markers and you can move diagonally, horizontally, or vertically for as many jumps as you can make. There are no captures in Cube Moves, though. The point of making jump moves is to get your markers across the board more quickly, not to capture your partner's markers.

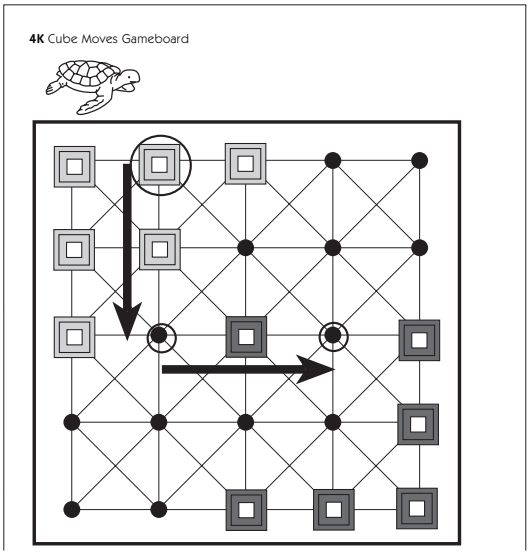
3. Continue taking turns back and forth until one of you has moved all of his or her markers across to the triangle on the opposite corner of the board. When you're finished, reset your markers and play again or put your materials back into the basket and find another Work Place.

Instructional Considerations

You may find that you want to meet with small groups of children during Work Places to play this game. Once you have a few students trained to play, they'll be instrumental in teaching others.



Regular Moves



A Jump Move

Work Place 4L

WORK PLACE GAMES & ACTIVITIES

Shape Bubbles

This Work Place basket will need

★ a gallon milk jug cut off about three quarters of the way up (or another deep container) and half-filled with bubble solution (see page 725)

★ round toothpicks

★ small gumdrops (although gumdrops may be tempting to eat, they're the best choice for this activity because they remain firm when dipped into bubble solution)

★ wrapped drinking straws (have children discard used straws so they don't pass germs around)

★ models of simple 3-dimensional shapes made with polydrons—a cube, a triangular prism, and a pyramid (These will be useful as models as students make their own 3-D shapes with toothpicks and gumdrops.)

Skills

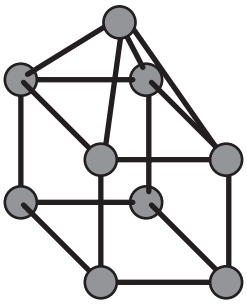
★ building and identifying 2- and 3-dimensional shapes

★ making predictions and doing experiments to find out what happens

★ arranging and describing objects in space by relative position, and direction (e.g., near, far, below, above, up, down, behind, in front of, next to, left or right of)

Work Place Instructions

1. Using gumdrops and toothpicks, make a simple 3-dimensional shape—a cube, a pyramid, a triangular prism, or some other 3-D invention.



Jasmine Hey, look at my shape! I made a house for my bubble dipper!

2. Working very carefully, dip your shape into the bubble solution so that it's completely covered. Then lift it out very carefully and have a close look. What shapes are formed by the soap film as it sits inside the frame?

3. With help from a partner, dip the end of a drinking straw and blow very gently into the center of each shape, right where the bubble planes come together. What do you see now?

4. Blow very gently on your bubble dipper or wave it through the air. Can you get a bubble to form in the air? What shape is it?

Instructional Considerations

One of the reasons children love this activity so much is that it's sheer experimentation. There are no right answers—just the challenge of building 3-dimensional shapes and seeing what happens when they're immersed in bubble solution. As long as our students keep the gumdrops out of their mouths and the shapes they design somewhere in the realm of 3-dimensional, we encourage lots of creativity, free thinking, and fun at this Work Place.