



# GRADE 4 SUPPLEMENT

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## Set A11 Number & Operations: Negative Numbers

### Includes

Activity 1: Introducing Negative Numbers on a Thermometer	A11.1
Activity 2: Number Line Tug O' War	A11.11
Activity 3: The Lemonade Stand	A11.17
Independent Worksheet 1: Negative & Positive Temperatures	A11.25
Independent Worksheet 2: Golf Scores	A11.27

### Skills & Concepts

- ★ explore and connect negative numbers using real world situations
- ★ read thermometers using different intervals
- ★ mental computation (addition, subtraction, and multiplication)

**Bridges in Mathematics Grade 4 Supplement**

**Set A11** Numbers & Operations: Negative Numbers

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*Bridges in Mathematics* is a standards-based K–5 curriculum that provides a unique blend of concept development and skills practice in the context of problem solving. It incorporates the Number Corner, a collection of daily skill-building activities for students.

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# Set A11 ★ Activity 1



## ACTIVITY

### Introducing Negative Numbers on a Thermometer

#### Overview

Students are introduced to negative numbers in context of temperatures above and below zero. This activity helps children develop understandings of negative numbers that will provide a solid foundation for work with integers in middle school.

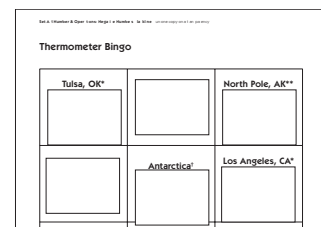
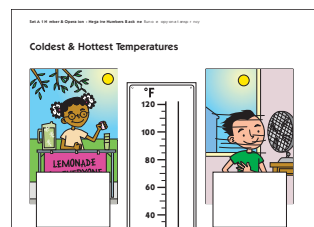
#### Skills & Concepts

- ★ explore and connect negative numbers using real world situations
- ★ read thermometers using different intervals

#### You'll need

- ★ Coldest & Hottest Temperatures (page A11.6, run 1 copy on a transparency, see Advance Preparation)
- ★ Thermometer Bingo (page A11.7, run 1 copy on a transparency, see Advance Preparation)
- ★ Thermometer Bingo Board A (page A11.8, run a half class set on colored copy paper)
- ★ Temperature Bingo Board B (page A11.9, run a half class set on white copy paper)
- ★  $1\frac{1}{2}$ "  $\times$  2" sticky notes (see Advance Preparation)
- ★ red overhead pen
- ★ red colored pencils (class set)

**Advance Preparation** Cover the temperature under each illustration on the Coldest & Hottest Temperatures overhead with a  $1\frac{1}{2}$ "  $\times$  2" sticky note. Use the same size sticky notes to cover each of the temperatures on the Thermometer Bingo overhead also.



#### Instructions for Introducing Negative Numbers on a Thermometer

1. Open the activity by writing the phrase *Negative Numbers* on the board. Ask students to pair-share anything they know about the phrase. After a minute or two, call on volunteers to share their ideas with the class.

**Students** *Negative numbers are the opposite of regular numbers. My mom told me about them. If a number is negative, it has a minus sign in front of it. Sometimes it gets so cold that the temperature is below 0. I think that's a negative number. I think if you're really good at golf, you can get a score that's lower than zero.*

**Activity 1** Introducing Negative Numbers on a Thermometer (cont.)

2. After students have had an opportunity to share what they already know, confirm the fact that negative numbers are numbers that are less than 0. Then explain that over the next few days, you're going to investigate these numbers to find out more about how and where people use them in daily life.

3. Place the Coldest & Hottest Temperatures overhead on display. Explain that there is a temperature recorded below each of the illustrations. You have covered these with sticky notes so the students can make some predictions. In which of the four situations might the temperature be lowest? In which of the four situations might the temperature be highest? What might the temperature be in each of these situations? Ask students to pair-share responses to these questions.

4. Remove the sticky note from the temperature under the first picture, and read it with the class.

**Students** *80 degrees Fahrenheit. That's not so hot! I think the fan picture will be hotter. I think the snow picture will be the coldest, maybe even below 0!*

Then work with input from the class to color in the thermometer so it reads 80° Fahrenheit. Note with students that the scale on the thermometer is marked in increments of 5 degrees.

Set A11 Number & Operations: Negative Numbers Blackline Run one copy on a transparency

### Coldest & Hottest Temperatures

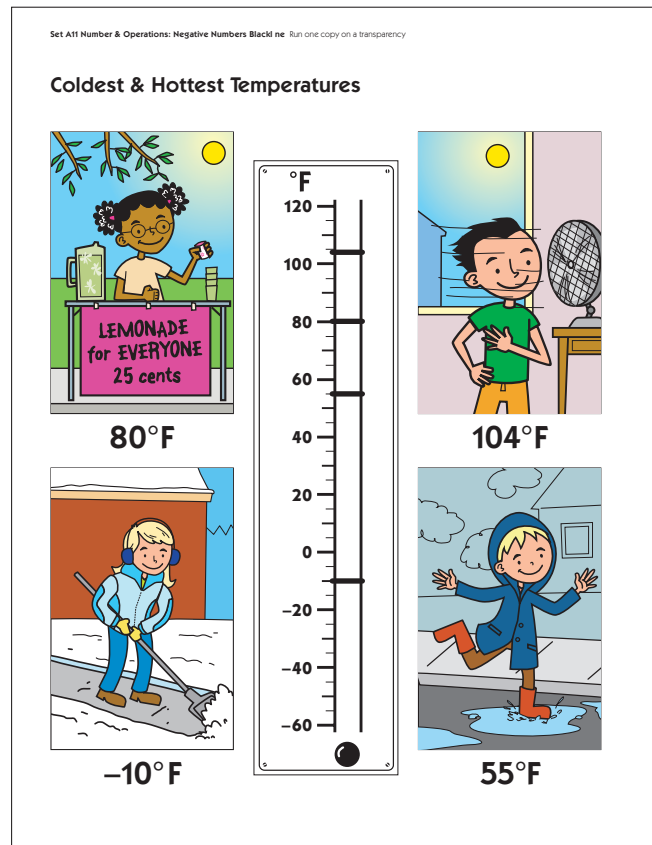
80°F

5. Erase the red ink from the thermometer. Remove the other three sticky notes one by one. Read and discuss each temperature with the class, and call on a student volunteer to color in the thermometer accordingly.

**Activity 1** Introducing Negative Numbers on a Thermometer (cont.)

6. Erase the thermometer, and work with input from the students to mark each of the four temperatures with a horizontal red line on the thermometer.. Then ask:

- Which of the four temperatures is lowest?
- Which is highest?
- What does the minus sign in front of the lowest temperature mean?
- Can the students imagine how cold it might be if the temperature was negative  $80^{\circ}$  F? (Many sources report that as of 2009, the lowest temperature ever recorded on earth was  $-127^{\circ}$  Fahrenheit at Vostok Station in Antarctica on July 21, 1983.)



7. Now explain that you are going to play a game that will give students practice thinking about temperatures around the country, marking temperatures on a thermometer, and reading positive and negative numbers. Divide the class into 2 teams. Give each of the students on Team 1 a copy of Thermometer Bingo Board A, and each of the students on Team 2 a copy of Thermometer Bingo Board B. Tell them that they will need a red colored pencil to play the game.

8. Place the Thermometer Bingo overhead on display. Explain that there is a temperature under each sticky note. You will let teams take turns telling you which sticky notes to remove. If either or both teams have that temperature on their board, they get to color in the thermometer to show it. The first team to color 3 of their thermometers in a horizontal, vertical, or diagonal row wins the game.

**Activity 1** Introducing Negative Numbers on a Thermometer (cont.)

9. Call on a student from one of the teams to tell you which sticky note to remove from the overhead.

**Maya** Please uncover the one in the top row, left-hand corner. That's the one that says Tulsa, Oklahoma at the top.

**Students** Wow! It's  $94^{\circ}$  - that's hot!  
 We have  $94^{\circ}$  on our board!  
 So do we!

**Teacher** If you have  $94^{\circ}$  on your board, you get to color in the thermometer next to the number to show that temperature. Mark the thermometer with your regular pencil first and check with the person next to you to make sure you're accurate. If they agree, you can color it in red. Is it that hot in Tulsa all the time?

**Students** No!  
 It says  $94^{\circ}$  is the average high temperature in July.  
 It's not always that hot in July, but sometimes it's even hotter.

Set A11 Number & Operations: Negative Numbers Blackline Run one copy on a transparency

**Thermometer Bingo**

Tulsa, OK* Average High Temperature in July: $94^{\circ}\text{F}$		North Pole, AK**
	Antarctica†	Los Angeles, CA*
Nome, AK*	Palm Springs, CA*	
New York City, NY*		Portland, OR*

\* US Weather @ <http://countrystudies.us/united-states/weather/>  
 \*\* Western Regional Climate Center @ <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?aknorp>  
 † Antarctic Connection @ <http://www.antarcticconnection.com/antarctic/weather/climate.shtml>

Set A11 Number & Operations: Negative Numbers Blackline Run a half class set on colored copy paper

NAME Kendra DATE April 5

**Thermometer Bingo Board A**

$32^{\circ}\text{F}$	$-27^{\circ}\text{F}$	$50^{\circ}\text{F}$
$-42^{\circ}\text{F}$	$26^{\circ}\text{F}$	$108^{\circ}\text{F}$
$-4^{\circ}\text{F}$	$101^{\circ}\text{F}$	$94^{\circ}\text{F}$

10. Call on a student from the other team to tell you which sticky note to remove, and repeat the process described above. Continue until one of the teams has colored 3 thermometers in a horizontal, vertical, or diagonal row, or play for blackout if time allows. There are 4 temperatures on the overhead that don't have any information to accompany them. When one of these is uncovered, ask students to tell you anything they know about that temperature. Where might it be as hot or cold as that? Have they ever experienced weather that hot or that cold? What happens to water when the temperature drops to  $32^{\circ}\text{F}$ ?

**Activity 1** Introducing Negative Numbers on a Thermometer (cont.)

11. When one of the teams has won, remove all of the sticky notes from the overhead. Discuss the set of temperatures with the class. Here are some questions and prompts you might pose:

- Which temperature on the overhead is the lowest? Which is the highest?
- Let's list the temperatures in order on the board. You read them out to me from lowest to highest, and I'll record them.
- How do you know that  $-27^{\circ}$  F is colder than  $50^{\circ}$  F?
- How do you know that  $-42^{\circ}$  F is colder than  $32^{\circ}$  F? (A second grader might be confused because 42 is more than 32. How would you explain this to a younger student?)
- What is the difference, in degrees, between  $26^{\circ}$  and  $94^{\circ}$ ?
- What is the difference, in degrees, between  $-27^{\circ}$  and  $50^{\circ}$ ? (Encourage students to use one of the thermometer drawings on their board to help solve this problem.)
- Which is colder,  $-42$  or  $-58$ ? How do you know?

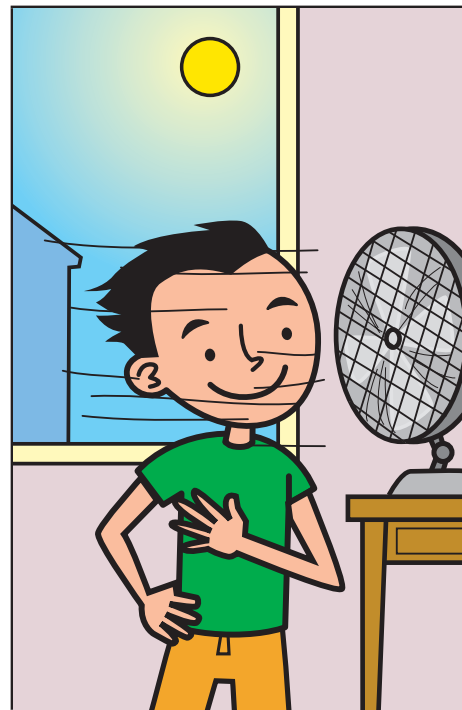
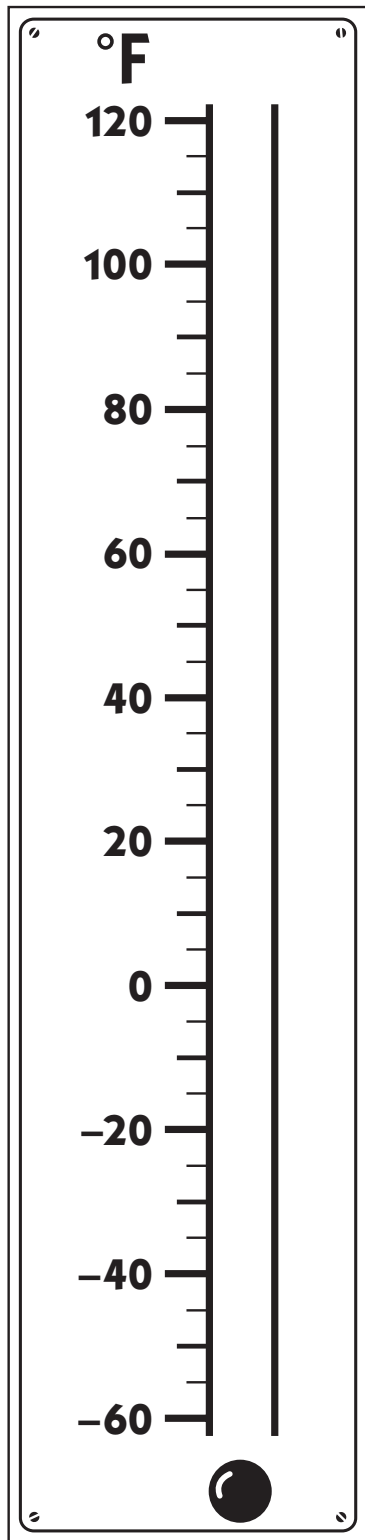
# Coldest & Hottest Temperatures



**80°F**



**-10°F**



**104°F**



**55°F**



# Thermometer Bingo

<p><b>Tulsa, OK*</b> Average High Temperature in July: <b>94°F</b></p>	<p><b>-27°F</b></p>	<p><b>North Pole, AK**</b> Average Low Temperature in February: <b>-14.5°F</b></p>
<p><b>101°F</b></p>	<p><b>Antarctica†</b> Average Annual Temperature: <b>-58°F</b></p>	<p><b>Los Angeles, CA*</b> Average Low Temperature in February: <b>50°F</b></p>
<p><b>Nome, AK*</b> Average Low Temperature in February: <b>-4°F</b></p>	<p><b>Palm Springs, CA*</b> Average High Temperature in July: <b>108°F</b></p>	<p><b>32°F</b></p>
<p><b>New York City, NY*</b> Average Low Temperature in February <b>26°F</b></p>	<p><b>-42°F</b></p>	<p><b>Portland, OR*</b> Average High Temperature in July: <b>78°F</b></p>

\* US Weather@ <http://countrystudies.us/united-states/weather/>

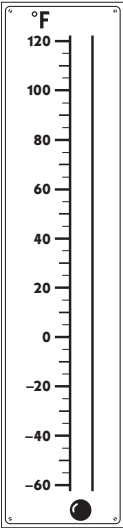
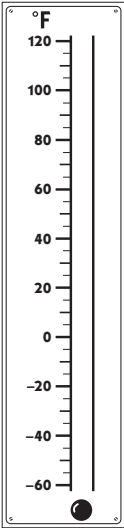
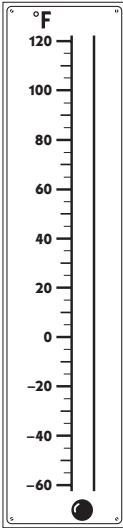
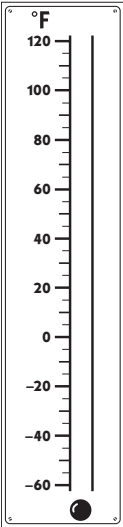
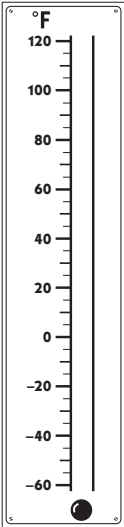
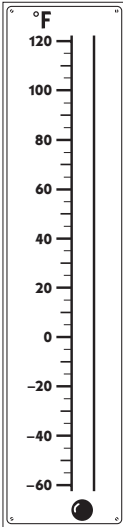
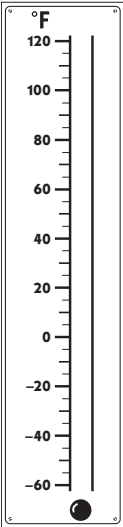
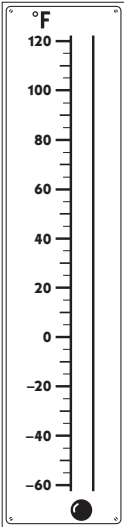
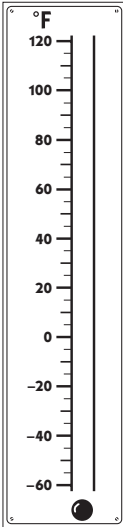
\*\* Western Regional Climate Center@<http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?aknorp>

† Antarctic Connection@<http://www.antarcticconnection.com/antarctic/weather/climate.shtml>

NAME \_\_\_\_\_

DATE \_\_\_\_\_

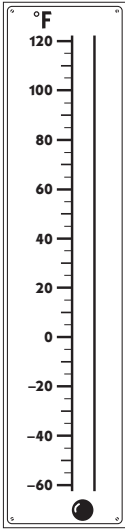
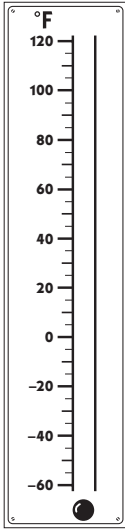
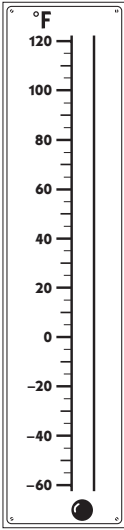
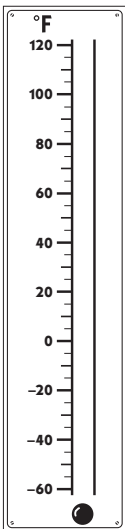
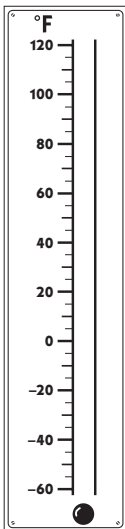
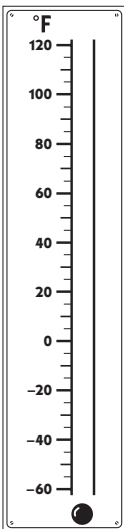
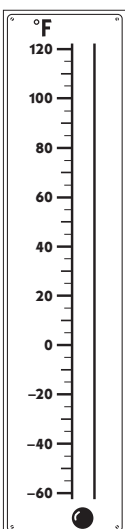
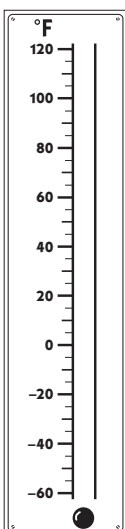
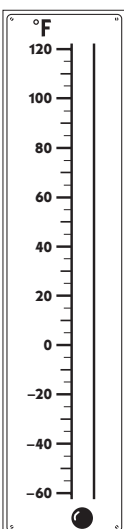
# Thermometer Bingo Board A

<p><b>32°F</b></p> 	<p><b>-27°F</b></p> 	<p><b>50°F</b></p> 
<p><b>-42°F</b></p> 	<p><b>26°F</b></p> 	<p><b>108°F</b></p> 
<p><b>-4°F</b></p> 	<p><b>101°F</b></p> 	<p><b>94°F</b></p> 

NAME \_\_\_\_\_

DATE \_\_\_\_\_

# Thermometer Bingo Board B

<p><b><math>-14.5^{\circ}\text{F}</math></b></p> 	<p><b><math>-42^{\circ}\text{F}</math></b></p> 	<p><b><math>78^{\circ}\text{F}</math></b></p> 
<p><b><math>-27^{\circ}\text{F}</math></b></p> 	<p><b><math>-4^{\circ}\text{F}</math></b></p> 	<p><b><math>94^{\circ}\text{F}</math></b></p> 
<p><b><math>101^{\circ}\text{F}</math></b></p> 	<p><b><math>-58^{\circ}\text{F}</math></b></p> 	<p><b><math>108^{\circ}\text{F}</math></b></p> 



# Set A11 ★ Activity 2



## ACTIVITY

### Number Line Tug O' War

#### Overview

Among the familiar contexts in which negative numbers appear are games such as Jeopardy and Hearts, where players score both positive and negative points, and football, where teams move in positive and negative directions with respect to their own goals. Number Line Tug O' War is a board game that bears a slight resemblance to football, in that two teams race to be the first to their own goal line, spinning a spinner that features both positive and negative numbers. The teacher introduces Number Line Tug O' War to the whole class, and then students play the game in pairs.

#### You'll need

- ★ Number Line Tug O' War (page A11.15, run a half-class set and 1 copy on a transparency)
- ★ Negative Numbers in Daily Life (page A11.16, run a class set)
- ★ paper clips (colored, if possible; each student will need 1)
- ★ single spinner overlays (half class set)

#### Skills & Concepts

- ★ explore and connect negative numbers using real world situations

#### Instructions for Number Line Tug O' War

1. Place the Number Line Tug O' War overhead on display. Ask students to examine it quietly for a few moments, and then have them pair-share observations. After a minute or so, call on volunteers to share their ideas with the class.

**Number Line Tug O' War**

Team 1

★

★

Team 2

Set A11 Number & Operations: Negative Numbers Baseline. Run one copy on a transparency.

**Activity 2** Number Line Tug O' War (cont.)

**Students** *The spinner has negative numbers on it. The ones with minuses are negative.*

*It looks like a race game with two teams.*

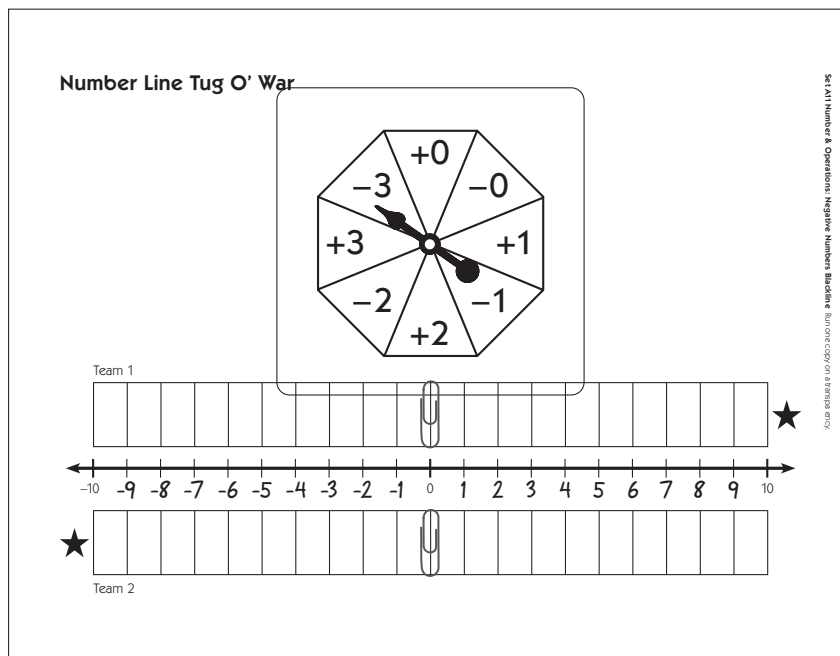
*It looks a little bit like a football field. Maybe each team tries to get to its own goal.*

*There are only 3 numbers on the line: negative 10, 0 and regular 10.*

2. Explain that this is a game board. Today, you are going to teach the class a new game called Number Line Tug O' War, that will help them learn more about negative and positive numbers. Then explain that *positive numbers* are numbers that are greater than zero. Work with input from the class to label each of the points on the line to the right of the zero. Next, explain that *negative numbers* are numbers that are less than zero. Work with students' input to label each of the points on the line to the left of the zero. Finally, explain that zero is neither positive nor negative.

3. When the line has been labeled, explain that in Number Line Tug O' War, both teams will use a paper clip for a game marker, and both will place their marker on 0 to start. The teams will take turns spinning and moving the designated number of spaces. Team 1 will try to get to their goal line on positive 10 before Team 2 gets to their goal line on negative 10.

4. Divide the class into two teams, and invite a representative from each team to the overhead to place their marker. Then set the spinner overlay in position, and ask each of the representatives to spin for their team. The team that gets the higher number starts.



**Students** *We got 2 and you guys got negative 3. We get to start.*

*What do you mean? 3 is higher than 2.*

*But 2 is more than 0, and negative 3 is less than 0. If you count it on the line, 2 is actually 5 more than negative 3!*

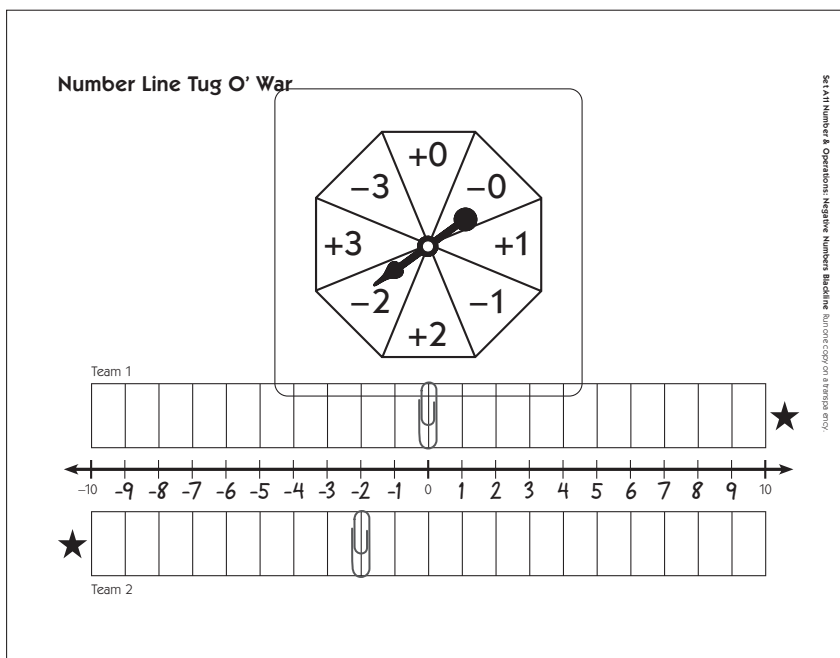
5 Once the starting team has been identified, call a representative up from that team to spin and move the paper clip. If there is any confusion about which direction to move, explain that spinning a positive number always results in a move to the right, no matter where you are on the line. Likewise, spinning a

### Activity 2 Number Line Tug O' War (cont.)

negative number always results in a move to the left. (This is a good opportunity for students to start to understand that signed values are directed distances, not just points on a line.)

**Maddy** *I got negative 2. That means I have to move backwards, right? I mean, it's kind of like taking 2 away.*

**Jake** *That's good, though. We want to go that way. We're the negative number team! We don't want to get positive numbers.*



6. Now have a representative from the other team come up to spin and move. Then have the two teams take turns spinning and moving until one team lands on or beyond their own goal line.

**Note** *If one team lands on or goes beyond the other team's goal line, have them set their paper clip on 0 and start over again on their next turn. In order to win, a team has to land on their own goal line exactly. For example, if Team 2 is positioned on -9, they will have to spin a -1 to win. If they spin a -2 or -3, they have to wait until their next turn to see if they get a spin they can use.*

7. Have the two teams play the game twice. Then ask students to pair up. Give each pair 2 paper clips, a game board blackline, and a spinner overlay, and let them use the rest of the instructional period to play the game independently. Circulate to observe and give assistance as needed. Depending on the needs of your students, you may want to pull a small group together to play the game with you. If more than a few of your students run into difficulties, reconvene the group to work through the problem(s) together using the overhead board.

8. At the end of the math period, give students each a copy of Negative Numbers in Daily Life. Review the assignment with them. Ask them to complete it at home and return it the following day.

**Activity 2** Number Line Tug O' War (cont.)

Set A11 Number & Operations: Negative Numbers Backline Run a class set

NAME \_\_\_\_\_ DATE \_\_\_\_\_

### Negative Numbers in Daily Life

When do people actually use negative numbers in daily life?

- In very cold parts of the world, the temperature can fall below zero. It's not unusual for people in Nome, Alaska to report temperatures of negative 2° F or negative 3° F in February. In fact, back in February of 1930, the temperature in Nome fell to 35° F below zero!
- There are places in the world that are exactly at sea level, but if your town is built on a hill, it may be above sea level. If it sits in a valley, it might be below sea level. The city of Bogota, in the mountains of Colombia, is about 8,660 feet above sea level. Desert Shores in California is 200 feet below sea level.

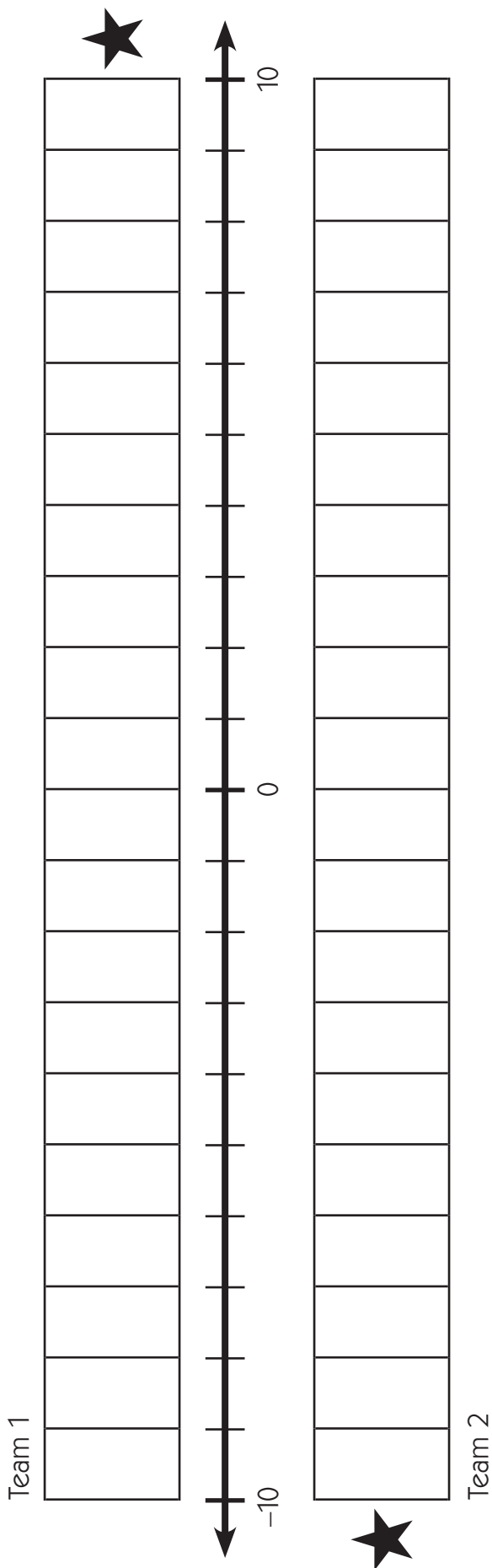
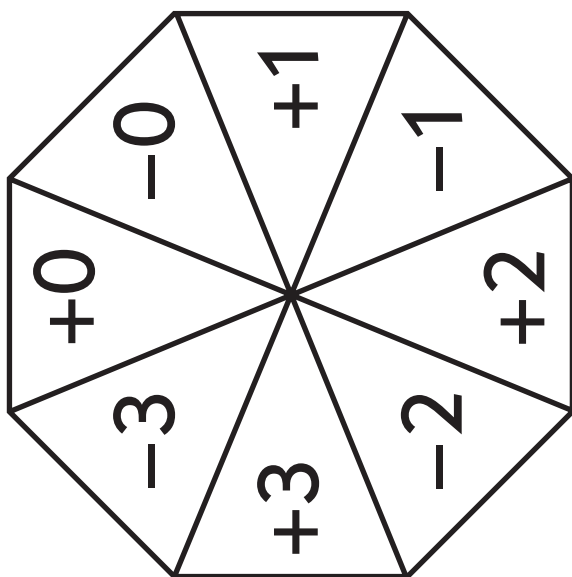
Talk to your family and friends, look on the Internet, or in a magazine or newspaper to find some other ways people use negative numbers in their lives. List at least 3 different examples below.

**Extensions**

- Ask students to write about their experiences playing Number Line Tug O' War. Some prompts might include:
  - Do you think this is a fair game? Why or why not?
  - Does it make any difference whether you are on the positive or the negative team?
  - Here's what I like about this game.
  - Here's what frustrates me about this game.
  - Here's what I would do to make this a better game.
- Send Number Line Tug O' War home with students to play with their families. Have them use a pencil and paper clip for a spinner arrow.
- Some students may enjoy making their own version of Number Line Tug O' War with numbers that extend beyond 10 on the positive side and beyond -10 on the negative side. They may also want to create a spinner with higher numbers.
- If you happen to have an old Chutes and Ladders game board, offer it to students along with a die numbered 1 – 6 and a die with a plus sign written on 3 sides and a minus sign written on 3 sides. (Use a wooden cubes to make the signed die if you don't have one in your collection.) Players take turns rolling both dice. If a player rolls a positive number, he or she moves that many spaces forward on the board. If a negative number is rolled, the player moves that many spaces backward. If the player lands on a chute or ladder, the regular rules apply. The first player to get to the 100 at the top of the board wins.



# Number Line Tug O' War



NAME \_\_\_\_\_

DATE \_\_\_\_\_

## Negative Numbers in Daily Life

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- There are places in the world that are exactly at sea level, but if your town is built on a hill, it may be above sea level. If it sits in a valley, it might be below sea level. The city of Bogota, in the mountains of Colombia, is about 8,660 feet above sea level. Desert Shores in California is 200 feet below sea level.

Talk to your family and friends, look on the Internet, or in a magazine or newspaper to find some other ways people use negative numbers in their lives. List at least 3 different examples below.

# Set A11 ★ Activity 3



## ACTIVITY

### The Lemonade Stand

#### Overview

Another context in which negative numbers appear is the world of finance, from personal bank accounts to Wall Street. In this activity, students track the progress of two friends who have agreed to run separate lemonade stands to earn money for their local pet shelter.

#### Skills & Concepts

- ★ explore and connect negative numbers using real world situations
- ★ mental computation (addition, subtraction, and multiplication)

#### You'll need

- ★ The Lemonade Stand (page A11.21, run a double-sided class set and 1 copy on a transparency)
- ★ Lemonade Stand cards (pages A11.22–A11.24, run 1 copy of each sheet on a transparency, cut the cards apart, and mix thoroughly)
- ★ Negative Numbers in Daily Life (from Set A11, Activity 2, assigned as homework and completed by students prior to this activity)
- ★ black and red overhead pens
- ★ red colored pencils (class set)



#### Instructions for The Lemonade Stand

1. Ask students to get out the Negative Numbers in Daily Life homework assignment. Have them pair-share their findings, and then call on volunteers to share with the class. What are some of the ways in which people use negative numbers in their daily lives?
2. Place The Lemonade Stand overhead on display. Give students a few moments to examine the sheet quietly.

Set A11 Number & Operations: Negative Numbers Blackline Run a double-sided class set and 1 copy on a transparency

### The Lemonade Stand

Stuart and Amy play on the same soccer team, but they live in different neighborhoods. Last summer they both decided to run a lemonade stand for 10 days in their own neighborhood to earn money for the local pet shelter. They each started with \$15.00 and bought supplies for \$10.00. Find out who made the most money in 10 days.

Date	Transaction	Balance	Date	Transaction	Balance
		15			15
7/1	-10	5	7/1	-10	5

3. Read and discuss the text with the class. Explain that when people run a business, they have to find a way to keep track of their transactions – the money they earn and the money they have to spend to keep the business going. Ask the students to pair-share what the figures that have been entered on Stuart and Amy's ledger sheets so far mean. Then call on volunteers to share their thinking with the class.

**Activity 3** The Lemonade Stand (cont.)

**Students** Balance means how much money you have in your account. I know that because I have a bank account.

The date tells you when each thing happened. Like, they got their supplies on July 1st.

The numbers in the middle tell what happened. There's a negative 10 on July 1st because they both spent money that day to get stuff like lemons and sugar and cups.

After they spent the money, the new balance number shows how much money they had left, \$5.00.



4. Give students each a copy of the Lemonade Stand sheet, and divide them into two teams. Explain that they will keep the ledger sheets for both children, but that one team will represent Stuart, while the other represents Amy. The team that winds up with the most money in their account after 10 days wins.

5. Show students the Lemonade Stand cards, and explain that the teams will take turns drawing a card to see what happened each day. Flip a coin to determine which team gets to start, and invite a student from that team to come up to the overhead, draw the first card, and place it on the game board.

Set A11 Number & Operations: Negative Numbers Blackline Run a double sided class set and 1 copy on a transparency

### The Lemonade Stand

Stuart and Amy play on the same soccer team, but they live in different neighborhoods. Last summer they both decided to run a lemonade stand for 10 days in their own neighborhood to earn money for the local pet shelter. They each started with \$15.00 and bought supplies for \$10.00. Find out who made the most money in 10 days.

**Your neighbor buys 2 cups of lemonade and gives you an extra \$1.50 for the pet shelter.**

Date	Transaction	Balance	Date	Transaction	Balance
		15			15
7/1	-10	5	7/1	-10	5

6. Read and discuss the card with the class.

**Students** How much does the lemonade cost?

It's 25 cents for a cup, it says so on their signs.

So that's 50 cents for the lemonade and \$1.50 for the pet shelter.

It's \$2.00 in all.

**Teacher** Antonio drew that card for the team that is representing Amy. How will we record this on Amy's ledger?

**Students** You need to put the date, July 2.

Then she earned \$2.00. Should we put a plus by the 2?

Do we have to put down the numbers for Amy? We're on Stuart's team.


**Teacher** Yes to both questions. Both teams are going to keep track of the money for Amy and Stuart. We need to write a + beside the 2 to show that it's a gain of 2 dollars coming into her account. What is her new balance? You're right. Now she has \$7.00 in her account.

### Activity 3 The Lemonade Stand (cont.)


Set A11 Number & Operations: Negative Numbers Blackline Run a double sided class set and 1 copy on a transparency

#### The Lemonade Stand

Stuart and Amy play on the same soccer team, but they live in different neighborhoods. Last summer they both decided to run a lemonade stand for 10 days in their own neighborhood to earn money for the local pet shelter. They each started with \$15.00 and bought supplies for \$10.00. Find out who made the most money in 10 days.



**Your neighbor buys 2 cups of lemonade and gives you an extra \$1.50 for the pet shelter.**




Date	Transaction	Balance	Date	Transaction	Balance
		15			15
7/1	-10	5	7/1	-10	5
			7/2	+2	7

7. Call on a student from the other team to draw the next card and place it on display. Read and discuss the card with the class, and have students make the entry on the other ledger. Continue in this fashion until each team has drawn 10 cards. Then ask the students to draw a star beside the picture of the winner and discuss the results.


Set A11 Number & Operations: Negative Numbers Blackline Run a double sided class set and 1 copy on a transparency

#### The Lemonade Stand

Stuart and Amy play on the same soccer team, but they live in different neighborhoods. Last summer they both decided to run a lemonade stand for 10 days in their own neighborhood to earn money for the local pet shelter. They each started with \$15.00 and bought supplies for \$10.00. Find out who made the most money in 10 days.



**Your mom bakes some cookies for you to sell at the stand. You sell 28 cookies for 25¢ each.**



Date	Transaction	Balance	Date	Transaction	Balance
		15			15
7/1	-10	5	7/1	-10	5
7/2	+5	10	7/2	+2	7
7/3	+5	15	7/3	-4	3
7/4	-4	11	7/4	-5	-2
7/5	+2	13	7/5	+3	1
7/6	+6	19	7/6	+4	5
7/7	+2	21	7/7	+10	15
7/8	-2	19	7/8	+3	18
7/9	+8	27	7/9	+2	20
7/10	-6	21	7/10	+5	25
7/11	+7	28	7/11	-1	24

**Students** *Stuart won by 4 dollars! He was kind of ahead most of the time, but I thought Amy might win. It was lucky on that last card how he made \$7.00.*

### Activity 3 The Lemonade Stand (cont.)

*They didn't make very much money. If you take out the 15 dollars they started with, Stuart only made 13 dollars, and Amy only made 9.*

*Still, that's 22 dollars in all for the shelter.*

*It seems like a lot of work for not much money. I think they should have made each cup of lemonade cost 50¢.*

*But that's too much for just a little cup of lemonade!*

8. Erase the overhead and mix the cards thoroughly. Have students use the other side of their sheet to play the game a second time.

#### Extension

- Have students develop their own versions of the Lemonade Stand game, using some other context for buying and selling, or earning and spending.

#### Independent Worksheet

Use Set A11 Independent Worksheets 1 and 2 (pages A11.25–A11.27) to provide students with more practice reading, writing, and comparing negative numbers in real world contexts.

# The Lemonade Stand

Stuart and Amy play on the same soccer team, but they live in different neighborhoods. Last summer they both decided to run a lemonade stand for 10 days in their own neighborhood to earn money for the local pet shelter. They each started with \$15.00 and bought supplies for \$10.00. Find out who made the most money in 10 days.



Date	Transaction	Balance
		15
7/1	-10	5

Date	Transaction	Balance
		15
7/1	-10	5

## Lemonade Stand Cards page 1 of 3

<p><b>You sell 16 cups of lemonade for 25¢ each.</b></p>	<p><b>The kids from down the street buy 6 cups of lemonade and give you 50¢ extra for the shelter.</b></p>
<p><b>Your uncle buys a cup of lemonade and gives you \$9.75 extra for the shelter.</b></p>	<p><b>Some fire fighters stop by and get 12 cups of lemonade.</b></p>
<p><b>It's a great day. You make \$6.00!</b></p>	<p><b>You sell 6 super-size cups of lemonade for 50¢ each.</b></p>
<p><b>It's a great day. You make \$8.00!</b></p>	<p><b>You sell 24 cups of lemonade for 25¢ each.</b></p>



## Lemonade Stand Cards page 2 of 3

<p>The kids from the day care come by and buy 8 cups of lemonade.</p>	<p>Your neighbor buys 2 cups of lemonade and gives you an extra \$1.50 for the pet shelter.</p>
<p>You sell 20 cups of lemonade for 25¢ each.</p>	<p>Your mom bakes some cookies for you to sell at the stand. You sell 28 cookies for 25¢ each.</p>
<p>Another good day. You make \$5.00.</p>	<p>Your dad buys 1 cup of lemonade and gives you an extra \$1.75 for the pet shelter.</p>
<p>Some of the kids from the soccer team come by and buy 12 cups of lemonade.</p>	<p>Your grandma buys 2 cups of lemonade and gives you an extra \$4.50 for the pet shelter.</p>

## Lemonade Stand Cards page 3 of 3

<p><b>You have to buy more sugar for \$5.00.</b></p>	<p><b>Bad news! One of your pitchers breaks. You buy a new one for \$6.00.</b></p>
<p><b>You have to buy more paper cups for \$2.00.</b></p>	<p><b>You have to pay your brother \$1.00 to watch the stand for an hour.</b></p>
<p><b>You have to buy another quart of lemon juice for \$3.00.</b></p>	<p><b>You have to buy a bag of ice for \$2.00.</b></p>
<p><b>You rent a beach umbrella for \$4.00 from your friend so you can stay cool.</b></p>	<p><b>You buy poster board to make a better sign. It costs \$1.00</b></p>

NAME \_\_\_\_\_

DATE \_\_\_\_\_

# Set A11 ★ Independent Worksheet 1



## INDEPENDENT WORKSHEET

### Negative & Positive Temperatures

Water freezes at 32 degrees Fahrenheit, but temperatures on Earth can get much colder than that. Some places even report temperatures below 0 in the winter time.

**1** Mark and label each of the temperatures below on the thermometer. The first one has been marked for you.

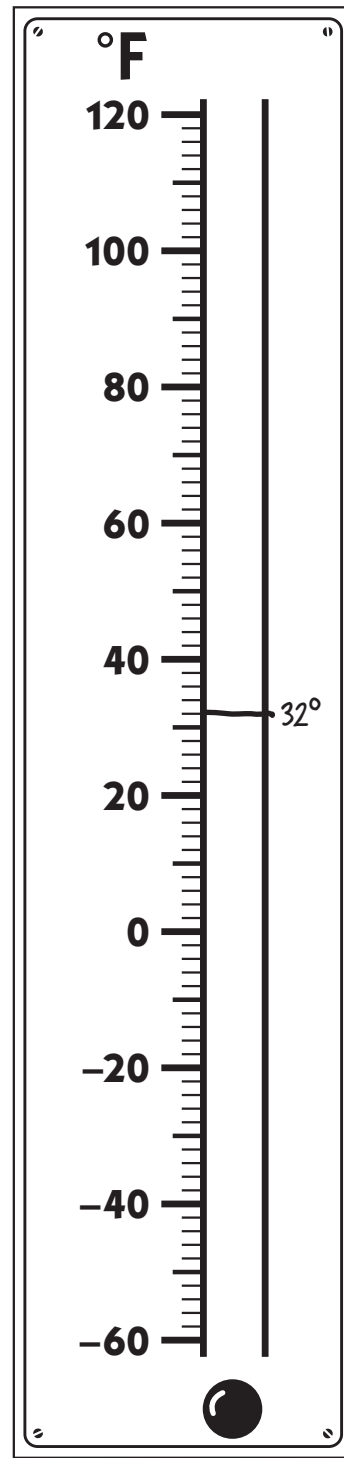
32° F	Water Freezes
92° F	Average August high in Oklahoma City, OK
25° F	Average January low in Oklahoma City, OK
68° F	Average August high in Tok, AK
-27° F	Average January low in Tok, AK
56° F	Average August high in Nome, AK
0° F	Average January low in Nome AK
88° F	Average August high in Honolulu, HI
65° F	Average January low in Honolulu, HI

**2** Which of the temperatures listed above is lowest?

**3** Which of the temperatures listed above is highest?

**4** There are 3 temperatures listed above that are lower than the freezing point of water. Write them here.

**5** Which of the 4 cities listed above has the best temperatures for you? Why?



**Note** Temperatures listed above are found on the US Weather website@ <http://countrystudies.us/united-states/weather/>



NAME \_\_\_\_\_

DATE \_\_\_\_\_

# Set A11 ★ Independent Worksheet 2



## INDEPENDENT WORKSHEET

### Golf Scores

**1** Fill in the missing numbers on the line below.



**2** Golf players use negative numbers to help keep score. If they get the ball into a hole in less than the usual number of strokes, they get negative points. The player with the lowest score at the end of the game wins. Use the number line to help solve these golf problems.

**a** Here are the scores to par of 6 people who played in the 89th PGA Golf Championship.

Anthony Kim	+ 9
John Senden	- 1
K.J. Choi	+ 2

Tiger Woods	- 8
Woody Austin	- 6
Pat Perez	+ 4

Write these scores in order from lowest to highest on the lines below.

\_\_\_\_\_ lowest \_\_\_\_\_ highest \_\_\_\_\_

**b** In the 89th PGA Championship, Ernie Els scored 5 below par, or  $-5$ . Tiger Woods scored 8 below par, or  $-8$ . Which player did better? (Remember, negative points are good because they bring your total score down.)

**c** Woody Austin scored 6 below par, or  $-6$  and John Senden scored 1 below par or  $-1$ . What was the difference in their scores? Show your work on back of this page.

**d** Not all the players scored negative points in the Championship. Some of them took more strokes than the usual number. Pat Perez scored 4 above par, or  $+4$ . Tiger Woods scored 8 below par, or  $-8$ . What was the difference in their scores? Show your work on the back of this page. (Hint: The answer is not 4. Use the number line to help.)

