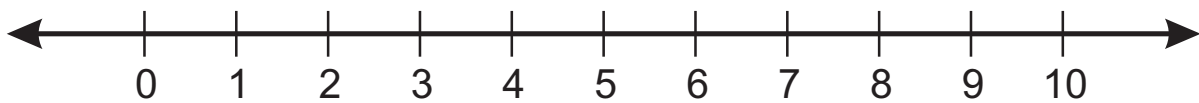


BLANK NUMBER LINES



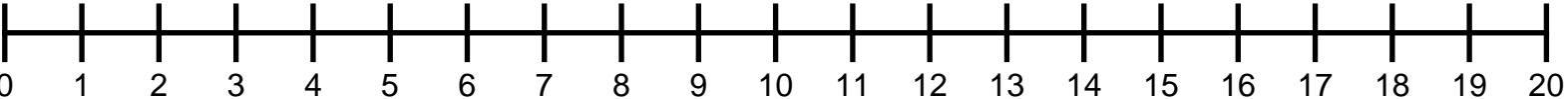
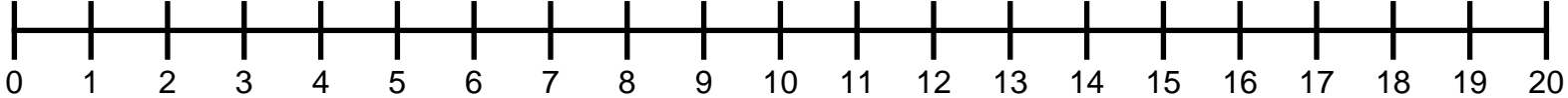
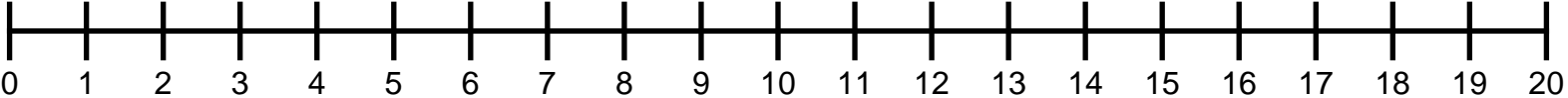
# Number Lines

NAME \_\_\_\_\_



# Number Institute

NAME \_\_\_\_\_



**Table 3.5:  
Domain-by-Domain Cross-Grade Analysis**

Grade K	Grade 1	Grade 2	Grade 3
<b>Counting and Cardinality (K only)</b>			
Know number names and the count sequence.			
Count to tell the number of objects.			
Compare numbers.			
<b>Operations and Algebraic Thinking</b>			
Understand addition as <i>putting together</i> and <i>adding to</i> , and understand subtraction as <i>taking apart</i> and <i>taking from</i> .	Represent and solve problems involving addition and subtraction.	Represent and solve problems involving addition and subtraction.	Represent and solve problems involving multiplication and division.
	Understand and apply properties of operations and the relationship between addition and subtraction.	Add and subtract within 20.	Understand properties of multiplication and the relationship between multiplication and division.
	Add and subtract within 20.	Work with equal groups of objects to gain foundations for multiplication.	Multiply and divide within 100.
	Work with addition and subtraction equations.		Solve problems involving the four operations, and identify and explain patterns in arithmetic.
<b>Number and Operations in Base Ten</b>			
Work with numbers 11 to 19 to gain foundations for place value.	Extend the counting sequence.		
	Understand place value.	Understand place value.	

**REPRODUCIBLE**

Grade K	Grade 1	Grade 2	Grade 3
	Use place-value understanding and properties of operations to add and subtract.	Use place-value understanding and properties of operations to add and subtract.	Use place-value understanding and properties of operations to perform multidigit arithmetic.
<b>Number and Operations—Fractions</b>			
			Develop understanding of fractions as numbers.
<b>Measurement and Data</b>			
Describe and compare measurable attributes.	Measure lengths indirectly and by iterating length units.	Measure and estimate lengths in standard units.	Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.
Classify objects and count the number of objects in categories.	Tell and write time.	Relate addition and subtraction to length.	Represent and interpret data.
	Represent and interpret data.	Work with time and money.	Geometric measurement: Understand concepts of area, and relate area to multiplication and to addition.
		Represent and interpret data.	Geometric measurement: Recognize perimeter as an attribute of plane figures, and distinguish between linear and area measures.
<b>Geometry</b>			
Identify and describe shapes.	Reason with shapes and their attributes.	Reason with shapes and their attributes.	Reason with shapes and their attributes.
Analyze, compare, create, and compose shapes.			
<b>General Comments</b>			

Source: Adapted from NGA & CCSSO, 2010.








# What Time Is It? Board Game

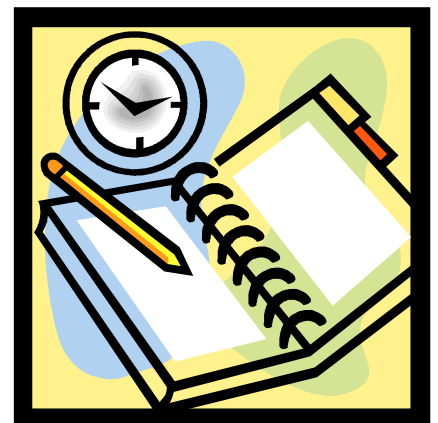
**Materials:** one number cube, one mini-clock per player, and game pieces (colored cubes or chips) one for each player

**Number of players:** Two or more players. Roll the number cube to determine who moves first. (The player with the lowest number will go first, then the next highest number and so on.)












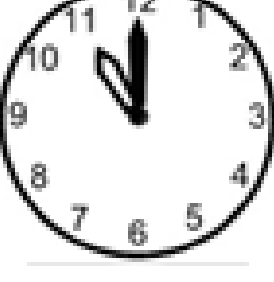
**How to Play:** Each player rolls the number cube to determine the number of spaces to move. Each player is to use the mini-clock to show the time described on the space he/she lands on or follow the directions on the space on which he/she lands. The first player to reach the finish line is the winner.

NOTE: If the player does not show the correct answer on the clock, he/she loses his/her turn.

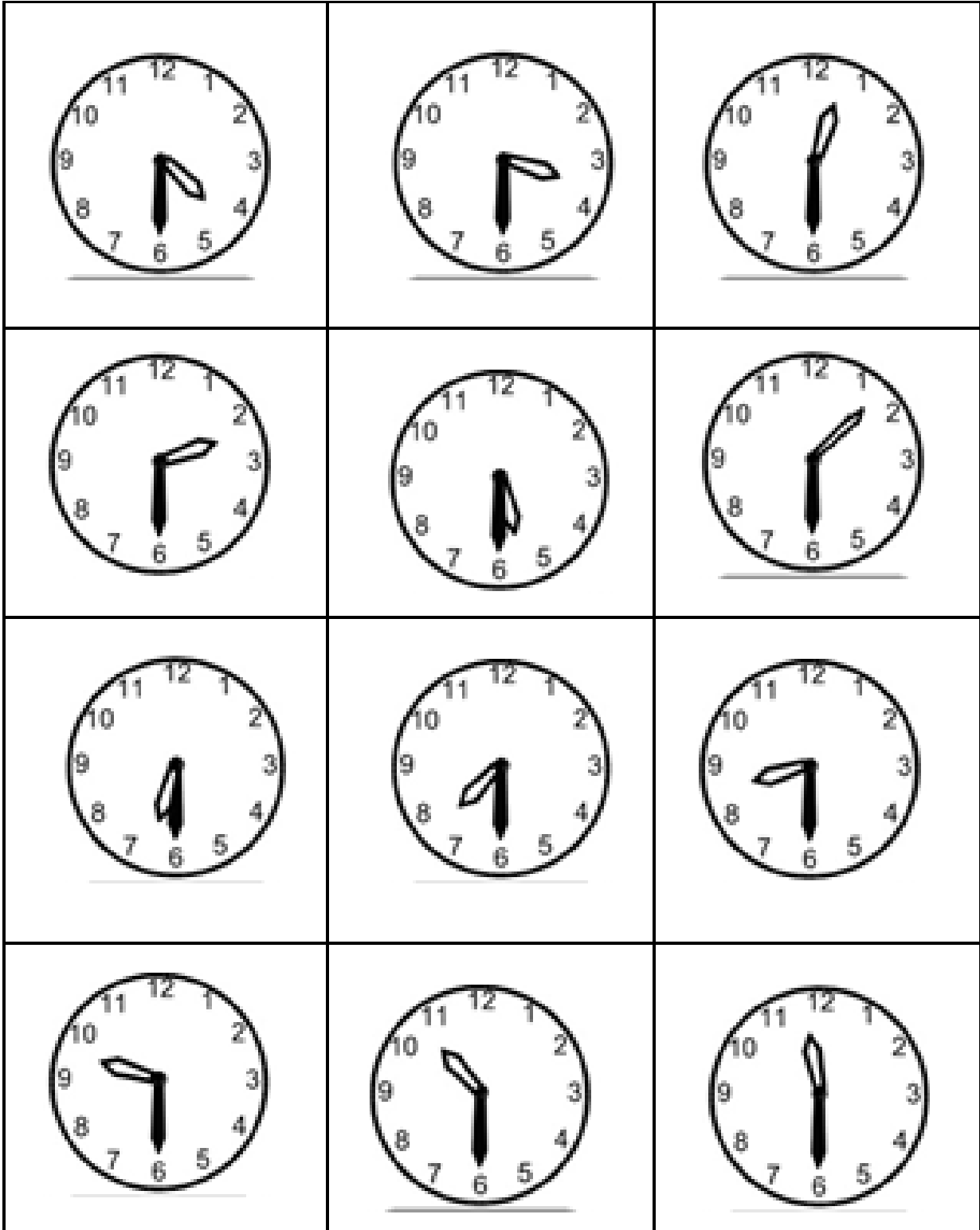
<p><b>Use your clock to show the times described.</b></p>		<p><b>Move backward one space</b></p>	<p>Cheryl met her best friend for lunch at 11:30 a.m.</p> 	<p><b>Lose one turn.</b></p>
<p><b>START</b></p>		<p>Joshua and his brother went to the movies at 2:00 p.m. on Saturday.</p> 		<p>Marisa plays with her friends until dinner time at 6:30 p.m.</p> 
<p>Jasmine goes to bed at 8:00 p.m. each night.</p>		<p>Gabriel's favorite subject, math starts at 12:30 p.m.</p> 		<p><b>FINISH</b></p>
<p>Recess begins at 10:30 a.m. for the students in Room 100.</p>		<p>Peter's baseball game starts at 6:00 p.m.</p> 		<p><b>Take an extra turn.</b></p>
<p><b>Move forward two spaces.</b></p>		<p>The Watertown Waterpark opens at 10:00 a.m.</p>		



CLOCK MATCHING GAME

 <hr/>	 <hr/>	 <hr/>
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CLOCK MATCHING GAME





CLOCK MATCHING GAME

<b>1:00</b>	<b>2:00</b>	<b>3:00</b>
<b>4:00</b>	<b>5:00</b>	<b>6:00</b>
<b>7:00</b>	<b>8:00</b>	<b>9:00</b>
<b>10:00</b>	<b>11:00</b>	<b>12:00</b>

CLOCK MATCHING GAME

<b>1:30</b>	<b>2:30</b>	<b>3:30</b>
<b>4:30</b>	<b>5:30</b>	<b>6:30</b>
<b>7:30</b>	<b>8:30</b>	<b>9:30</b>
<b>10:30</b>	<b>11:30</b>	<b>12:30</b>

## Measurement Word Problems

At the beginning of the school year, Mr. Parker measured each student's height in inches. He measured each student's height again at the end of the school year. Use the table to answer the questions below.

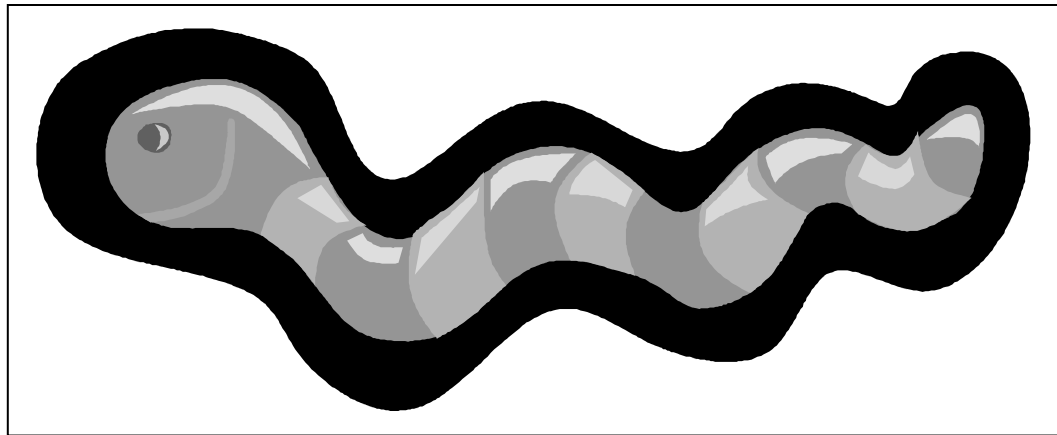
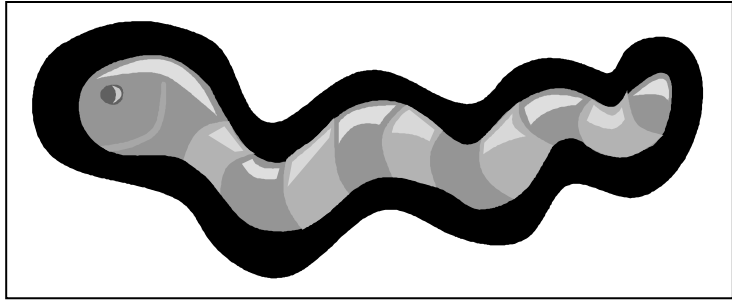
Students	Height in August	Height in May
Ava	38 inches	50 inches
Gabriel	36 inches	45 inches
James	38 inches	46 inches
Zaara	40 inches	46 inches

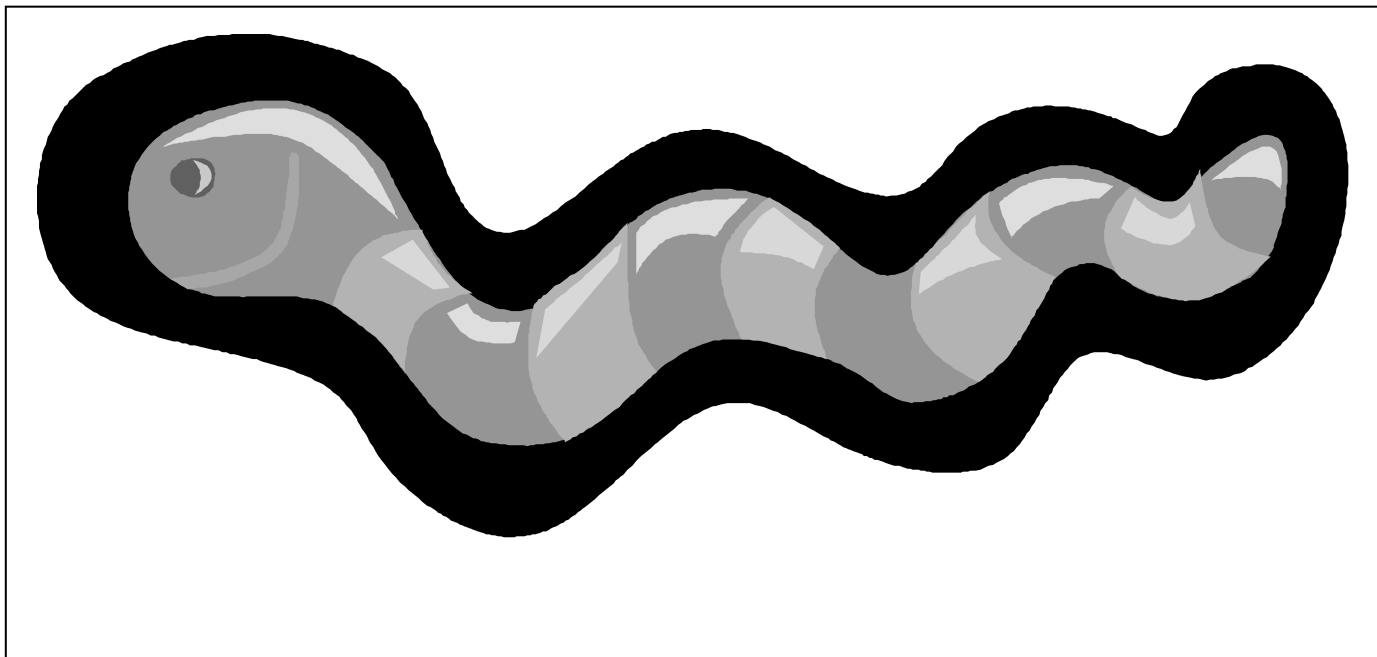
- Who was the tallest student in August? Who was the tallest student at the end of the school year?
- Put the students in order from tallest to shortest for August. Do the same for May.
- Look at Gabriel and Ava. How much shorter was Gabriel than Ava in May?
- Compare each student's height in August to his/her height in May. How much did each student grow from August to May?
- Which student grew the most from August to May?
- What is the difference in the girls' total heights in May and the boys' total heights in May?
- Did the boys or the girls grow the most from August to May?
- Rafael joined the class in May. He is 9 inches taller than Zaara was in August. How tall is Rafael?

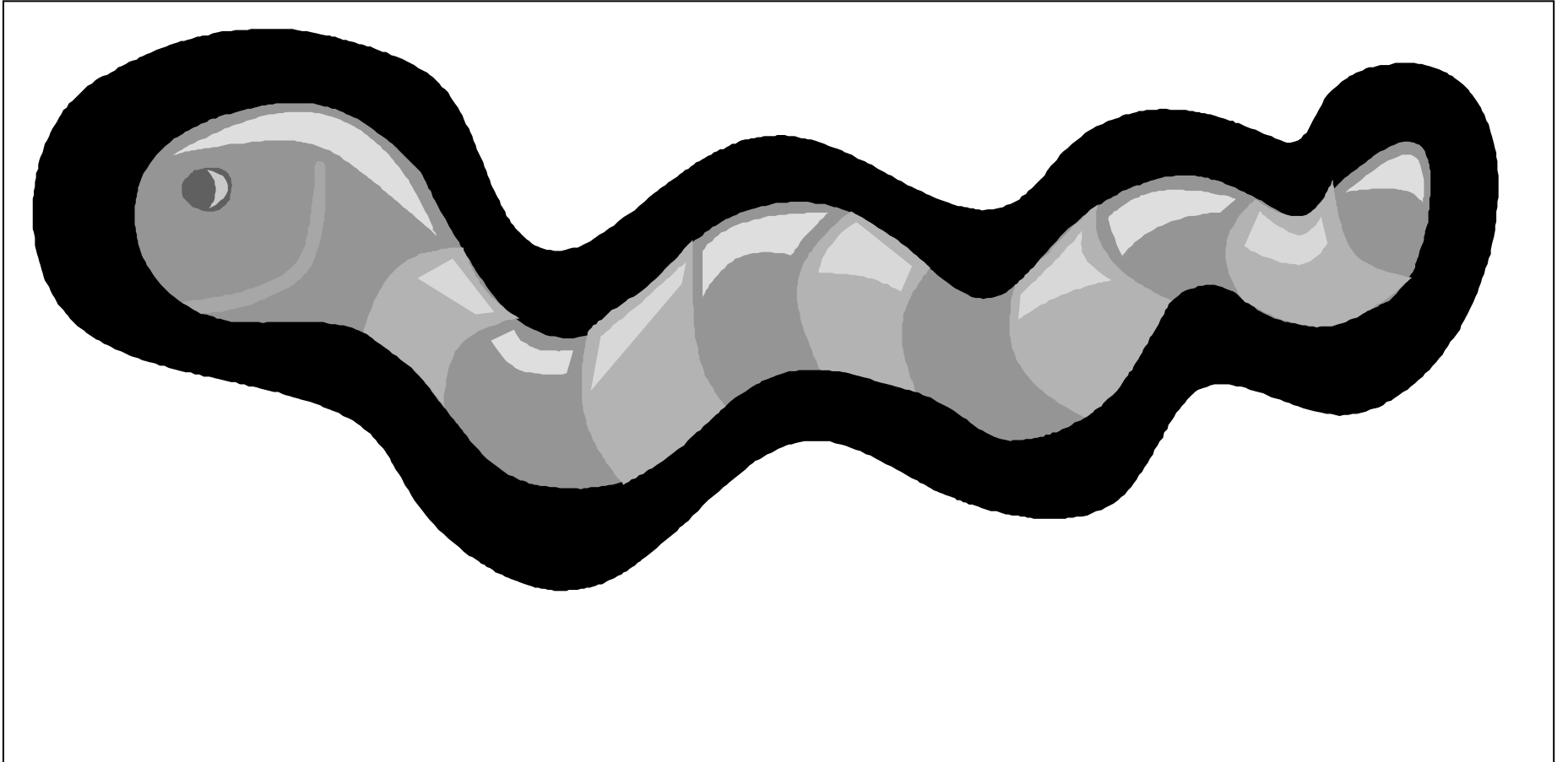
## MONEY WORD PROBLEMS

- Jillian has 25 cents in her coin purse. What coins could she have?
- Manuel has 64 cents in his pocket. What coins could he have?
- Jayla has 4 nickels, 5 dimes, and 8 pennies. How much money does she have in all?
- Joseph has saved 1 dollar, 5 quarters, 3 dimes, 8 nickels, and 4 pennies in his piggy bank. He buys a toy car that costs \$2.50. How much money does he have left?
- Sierra and her sister are earned money for doing chores. Sierra has 2 quarters, 10 dimes, 5 nickels, and 25 pennies. Her sister has 2 quarters, 5 dimes, 20 nickels, and 25 pennies. Who has more money?
- Ava is saving money to buy a new art kit for \$3.50. She has 8 quarters, 6 nickels, and 38 pennies. How much more money does she need?
- Bernard wants to buy a snack at Field Day. He has \$1.00, 1 quarter, 5 dimes, 4 nickels, and 40 pennies. Which snacks can he purchase?

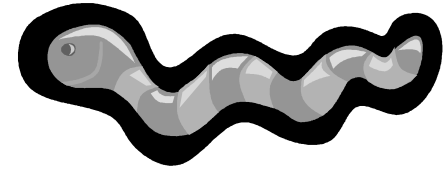
<b>Snack</b>	<b>Price</b>
Hot Dog	\$1.25
Ice Cream Cone	.65
Soft Drink	.75
Popcorn	.50







# Wiggly Worms Activity One



## Materials:

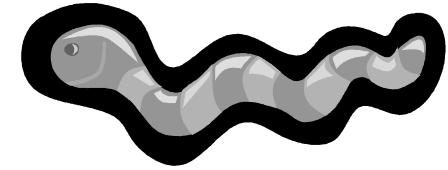
- 1 set of wiggly worms
- Measurement materials (standard and non-standard)

## Directions:

1. Examine the wiggly worms. Compare the lengths of the different colored worms. Which worm is the shortest? Longest?
2. Order the wiggly worms from shortest to longest.
3. Measure each worm using a standard and non-standard unit of measurement. Record your findings (length of each worm in standard **AND** non-standard units) REMEMBER: A measurement must have a number and a unit. Example: 4 marshmallows long
4. BONUS: What is the difference in length between the shortest and longest worm? Tell how you found your answer.



## Wiggly Worms Activity Two



### Materials:

- 1 set of wiggly worms
- Classroom table

### Directions:

**Task 1:** Measure the length of the table using the red worm. Measure the length of the table using the green worm. Record the lengths:

- The table is \_\_\_\_\_ red worms long.
- The table is \_\_\_\_\_ green worms long.

**Task 2:** How many more red worms does it take to measure the length of the table?

- Make a picture to show how you got your answer.
  
- Write a number sentence.

## Make 25 ¢



### Materials:

- Coins (pennies, nickels, and quarters)
- Number cube or dot cube
- Make 25¢ game board

### Directions:

The object of the game is to be the first person to make 25¢. In this game you will toss the number cube to determine the number of pennies to place on the game board. Once you collect five pennies, you can trade in the pennies for 1 nickel. Once you collect five nickels, you can trade in the nickels for a quarter and win the game!

1. Toss the number cube to determine who goes first. Players can take turns in order from highest to lowest number or lowest to highest number.
2. Toss the number cube to determine the number of pennies to place on your game board. For example, if the cube lands on the number 4, you will place 4 pennies on your game board.
3. Continue playing and trading pennies for nickels until you make 25¢.

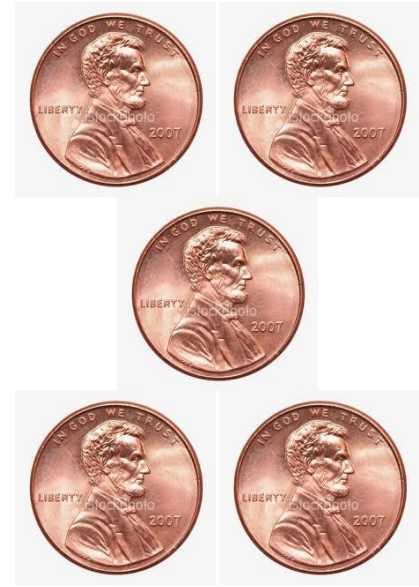
Adapted from Box It or Bag it Mathematics

4. CHALLENGE: Can you think of other ways to make 25¢? List as many ways as possible.
5. Play **Make \$1.00** – Use the **Make \$1.00 game board** and the same procedure to play.

# Make 25¢



# Make \$1.00



# **A Word's Worth**



























Students use the Word's Worth chart to find the value of words.  
Some things to use:

Find the value of your name. Who has the name highest in value?

Which of this week's spelling words is worth the most?

Is addition, subtraction, multiplication, or division of greatest value?

# A Word's Worth

a	b	c	d	e
				
f	g	h	i	j
				
k	l	m	n	o
				
p	q	r	s	t
				
u	v	w	x	y
				
z				
				

1:35

4:55

12:30

2:10



3:45

5:05

10:15

7:20



11:25

2:50

5:00

7:15



10:05

4:40

12:00

10:25





3:30

8:00

1:45

7:30



9:05

6:00

5:15

6:30



3:15

8:50

7:35

8:45



9:30

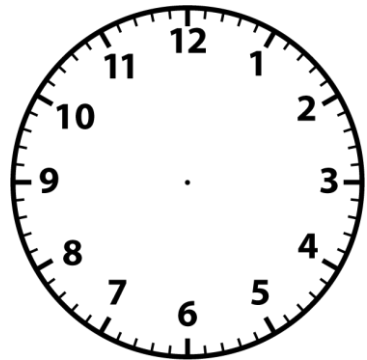
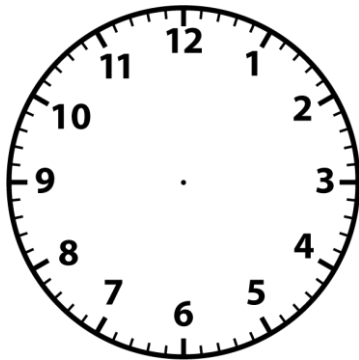
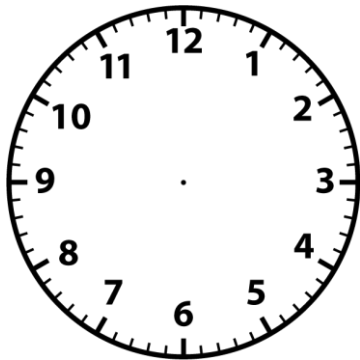
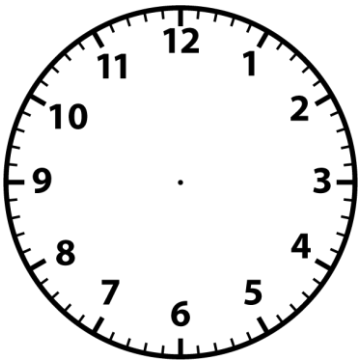
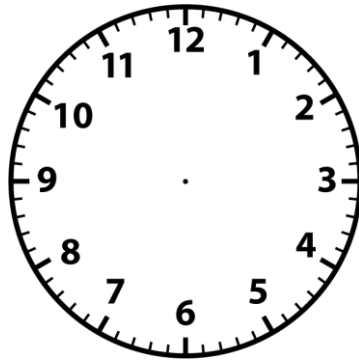
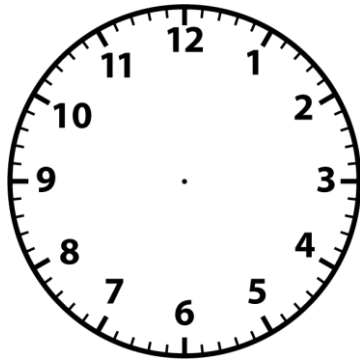
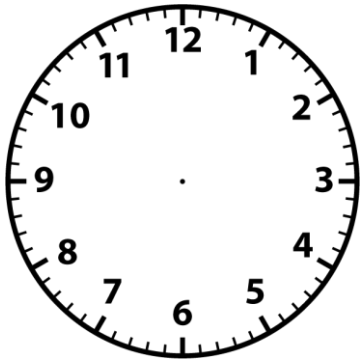
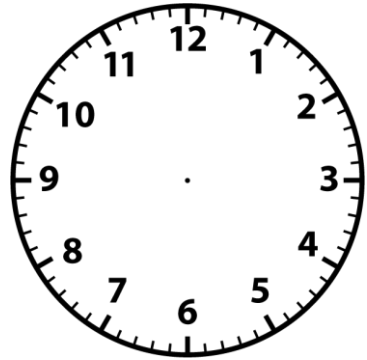
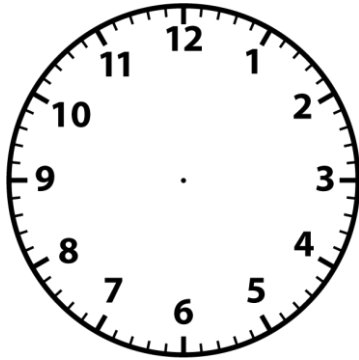
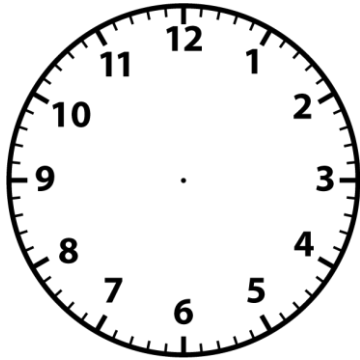
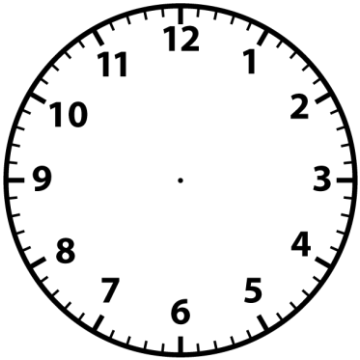
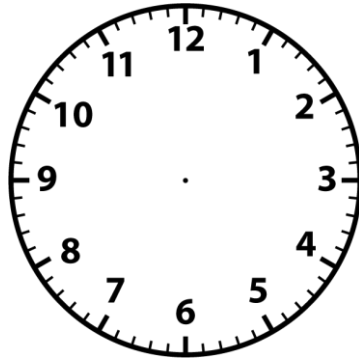
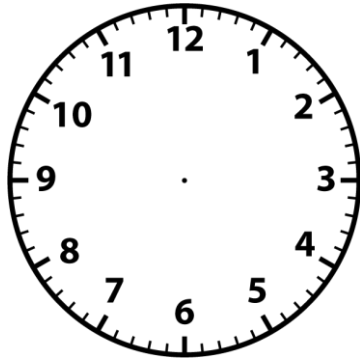
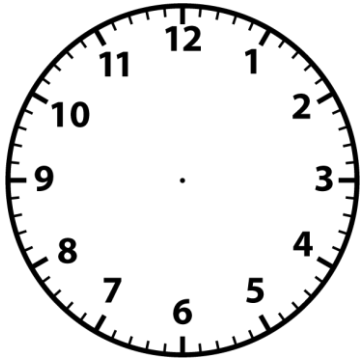
1:20

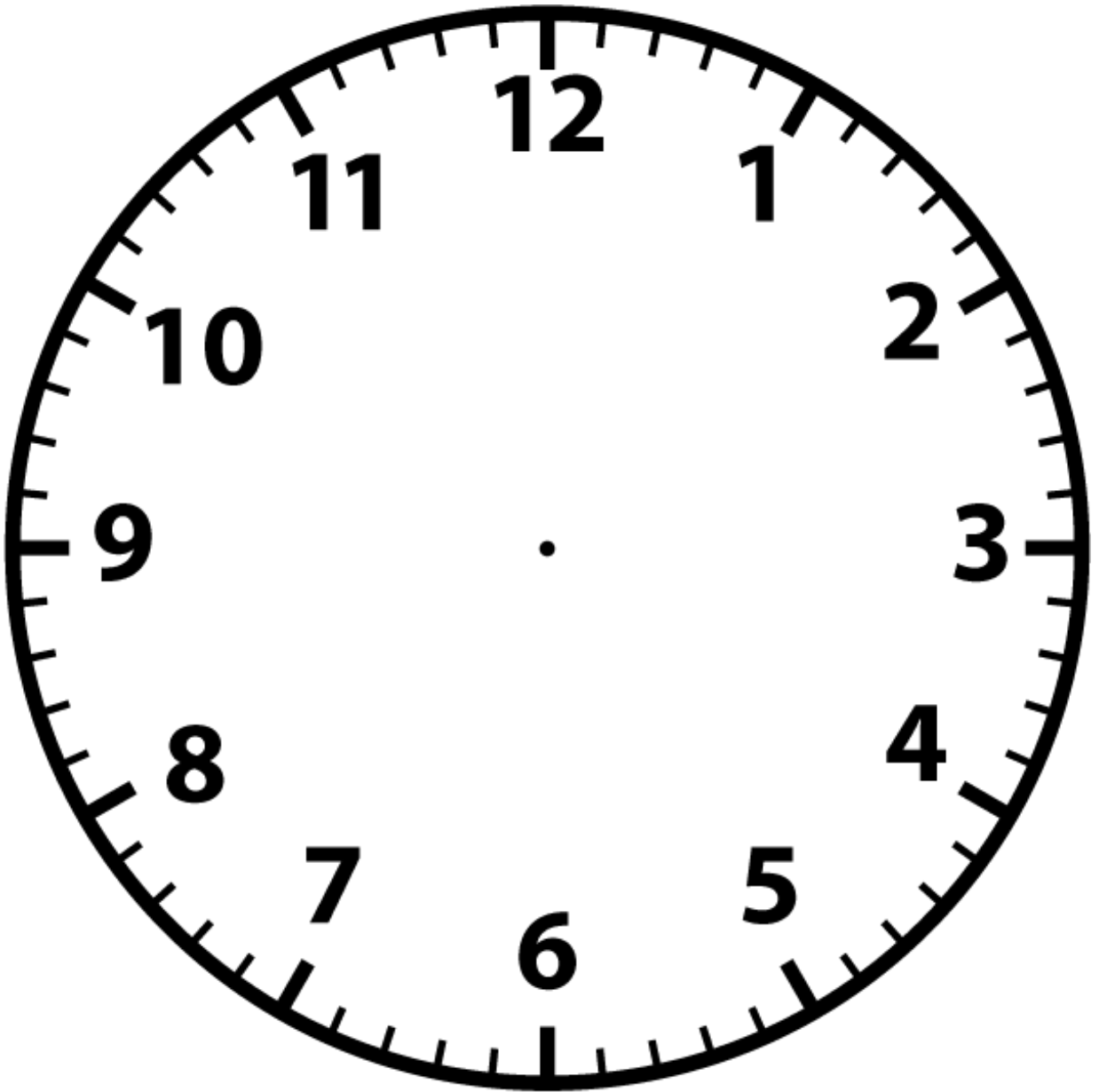
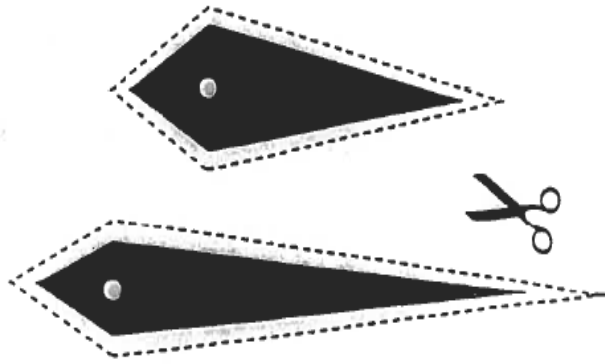
5:10

2:45



# Clock Faces





## Effective Mathematics Teaching Practices

Mathematics Teaching Practices
<b>Establish mathematics goals to focus learning.</b> Effective teaching of mathematics establishes clear goals for the mathematics that students are learning, situates goals within learning progressions, and uses the goals to guide instructional decisions.
<b>Implement tasks that promote reasoning and problem solving.</b> Effective teaching of mathematics engages students in solving and discussing tasks that promote mathematical reasoning and problem solving and allow multiple entry points and varied solution strategies.
<b>Use and connect mathematical representations.</b> Effective teaching of mathematics engages students in making connections among mathematical representations to deepen understanding of mathematics concepts and procedures and as tools for problem solving.
<b>Facilitate meaningful mathematical discourse.</b> Effective teaching of mathematics facilitates discourse among students to build shared understanding of mathematical ideas by analyzing and comparing student approaches and arguments.
<b>Pose purposeful questions.</b> Effective teaching of mathematics uses purposeful questions to assess and advance students' reasoning and sense making about important mathematical ideas and relationships.
<b>Build procedural fluency from conceptual understanding.</b> Effective teaching of mathematics builds fluency with procedures on a foundation of conceptual understanding so that students, over time, become skillful in using procedures flexibly as they solve contextual and mathematical problems.
<b>Support productive struggle in learning mathematics.</b> Effective teaching of mathematics consistently provides students, individually and collectively, with opportunities and supports to engage in productive struggle as they grapple with mathematical ideas and relationships.
<b>Elicit and use evidence of student thinking.</b> Effective teaching of mathematics uses evidence of student thinking to assess progress toward mathematical understanding and to adjust instruction continually in ways that support and extend learning.

©National Council of Teachers of Mathematics. (2014). *Principles to Actions: Ensuring mathematical success for all*. Reston, VA: Author.

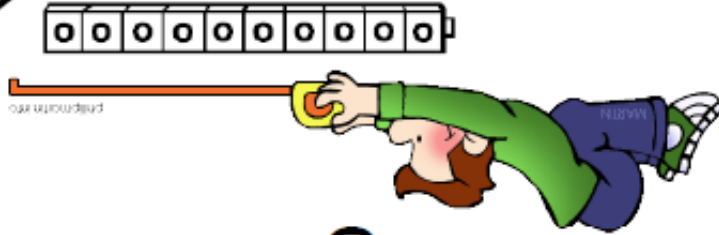
## **Shorter Stick/Longer Stick**

### Materials:

- Die or number cube
- Unifix or snap cubes
- Longest/Shortest spinner
- Paper clip

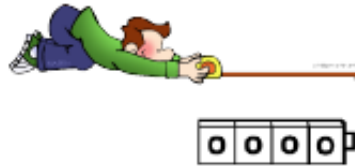
### Directions:

- Play with a partner.
- Take turns rolling a die.
- Whatever number you roll, take that number of cubes and connect them.
- Each player takes 3 turns.
- After players have finished their turns, use the paper clip to spin the spinner. If the spinner lands on Shortest, the player with the shorter stick wins. If the spinner lands on Longest, the player with the longer stick wins.



Longer

Shorter



## Measuring with Cuisenaire Rods

### Materials:

- Cuisenaire rods
- Rulers or measuring tapes

### Directions:

#### Activity 1: Let's Get in Order!

1. Order a set of Cuisenaire rods from shortest to tallest.
2. If the white rod is equal to 1, what number is equal to the orange rod? Line up white rods end to end next to an orange rod to find the value.
3. Use the same method to determine the value of the other rods.
4. Record your findings.



## Measuring with Cuisenaire Rods

### Materials:

- Cuisenaire rods
- Rulers or measuring tapes

### Directions:

#### Activity 2: Can You Build It? Yes, you Can!

1. Can you make a Cuisenaire rod train with a length of 10cm? Show your work.
2. How many different ways can you make a Cuisenaire rod train with a length of 10 cm?
3. Use pictures and number sentences to show your work.

## Measuring with Cuisenaire Rods

### Materials:








- Cuisenaire rods
- Rulers or measuring tapes

### Directions:
















### Activity 3: Measure Up with Cuisenaire Rods!

1. The white rod has a length of 1cm. What is the length of the orange rod?
2. Determine the length of the other rods. Record your findings.
3. Use the information you learned about the lengths of Cuisenaire rods to fill in the blanks: The blue rod is \_\_\_\_\_ cm longer than the dark green rod. The yellow rod is \_\_\_\_\_ cm shorter than the brown rod.

# MONEY BINGO

	dime		50¢	
			penny	5¢
1¢	quarter	 free		
	nickel		25¢	
		half dollar		10¢














# MONEY BINGO

	<b>10¢</b>	half dollar		<b>1¢</b>
		dime	<b>5¢</b>	
<b>50¢</b>	quarter	 <b>free</b>		
penny			<b>25¢</b>	
		nickel		

# MONEY BINGO

1¢			5¢	
		10¢	nickel	
quarter		 free		25¢
	half dollar		50¢	
		dime		penny

# MONEY BINGO

	penny		5¢	
		10¢		half dollar
dime	1¢		free	
quarter			25¢	
	nickel		50¢	

# MONEY BINGO

27¢

\$0.48

\$0.39

\$0.62

86¢

92¢

\$0.23

\$0.87



59¢

\$0.45

\$0.98

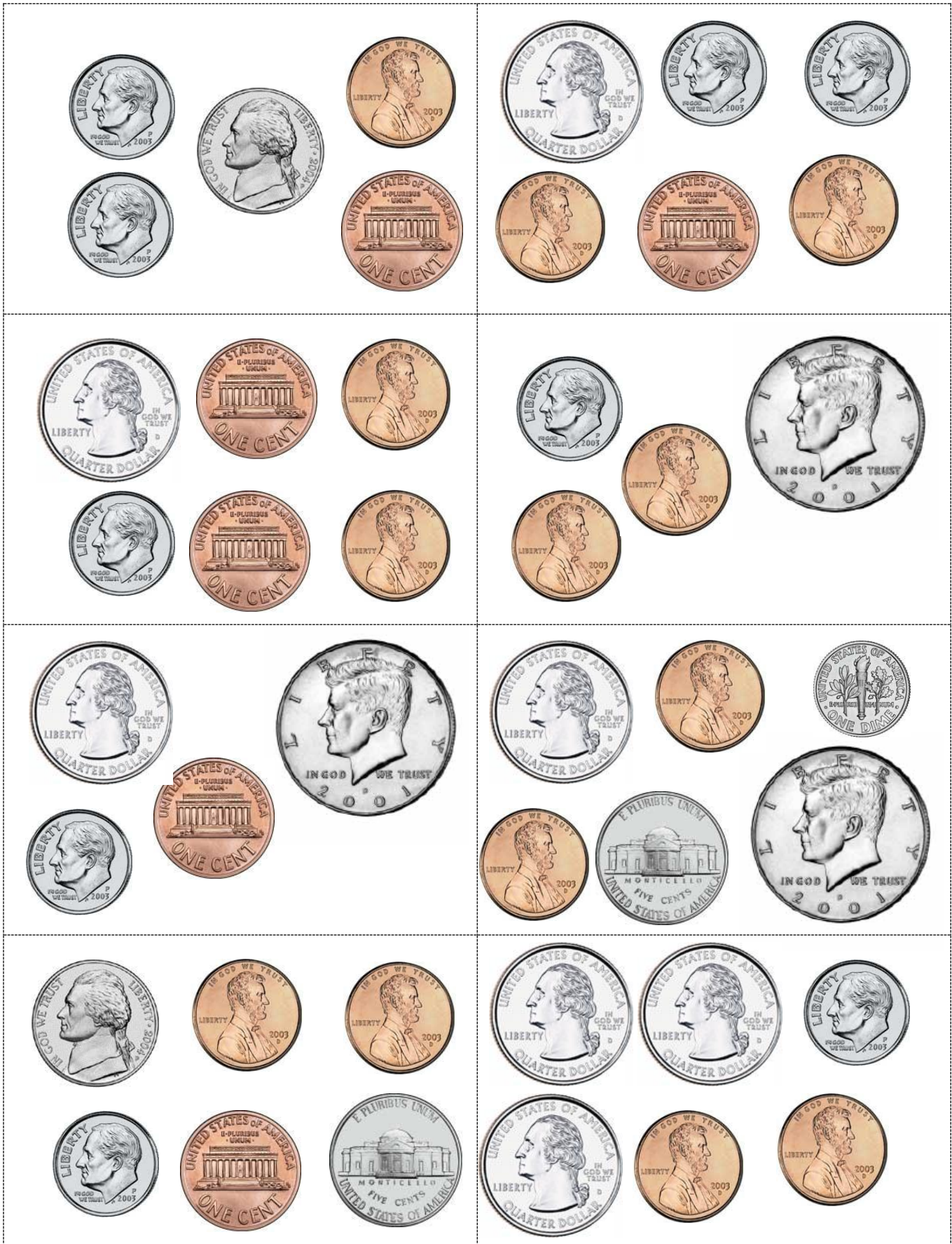
\$0.17

79¢

64¢

\$0.91

\$0.83



fifty-nine  
cents



ninety-eight  
cents



seventy-nine  
cents

sixty-four  
cents



eighty-three  
cents

## Pony Bead Ruler

### Materials:

- One 18" piece of jute or heavy cord for each ruler
- Tape
- 48 pony beads in two colors (24 of each color)
- Recording sheet

### Directions:

- Knot one end of the jute/cord close to the end.
- Wrap the opposite end with a piece of tape to keep it from unraveling.
- Thread four beads of one color on the jute/cord.
- Thread four beads of the second color on the jute/cord.
- Alternate colors until you have 12 groups of four beads.
- Tie a knot in the end as close to the beads as possible.

1. Find the objects listed on the recording sheet.
2. Estimate the length of each object in inches.
3. Use the bead ruler to measure and record the measurement.
4. Find the difference between the estimated measurement and the actual measurement.



Name \_\_\_\_\_

### Pony Bead Ruler Recording Sheet

	Object	Estimate (in inches)	Measurement (in inches)	Difference
1.	Your writing utensil			
2.	Length of your index finger			
3.	Across the seat of your chair			
4.	Around your wrist			
5.	Your hand span			
6.	Length of your foot			
7.	Length of your arm from the inside of the elbow to your wrist			
8.	Around your knee			

# Time Riddle

## Materials:

- Piece of construction paper, 6" x 9"
- two pieces of copy paper, 4¼" x 5½"
- Pen or pencil
- Gluestick
- Clock face (cut from sheet of clock faces)
- Small individual clock

## Directions:

- Fold the construction paper in half with the fold on top so that it is 5½" x 6".
- Write a riddle on one piece of the copy paper.

### Example:

The longer hand is halfway between the four and the five.  
The shorter hand is pointing at the seven. What time is it?

- Glue this to the front of the construction paper card.
- Draw the hands on the clock face as described and glue it on the clean piece of copy paper. Write the time by the clock.
- Glue this piece on the inside of the construction paper card.
- Another student reads the riddle and sets the clock to match the description. Student states the time.
- Open the card and check to see if the answer is correct.