

## Math Activities

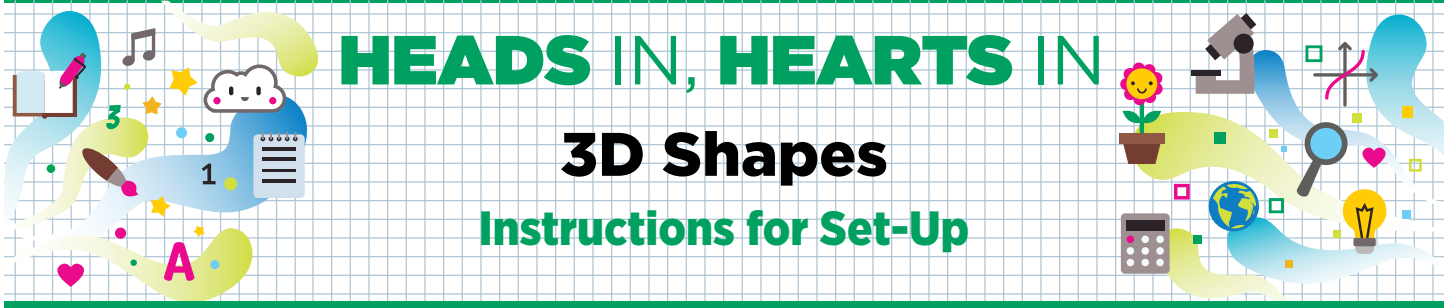
The Heads In, Hearts In family enrichment program encourages families to use their minds (putting their “heads in”) as a tool to expand their knowledge around a variety of topic areas. By creating a shared educational experience, the family unit will work, grow and learn together, putting their “hearts in” to the process.

**This unit contains the following:**

- ▶ 3D Shapes
- ▶ Eggs-cellent Counting
- ▶ Guess Which Shape
- ▶ Gumball Equations
- ▶ Hungry Hedgehogs
- ▶ Marshmallow Structures
- ▶ Measure a Room
- ▶ Measurement Equivalents
- ▶ Measuring Liquids
- ▶ Photo-Graph
- ▶ Pie Die
- ▶ Skippy Clippy
- ▶ Spinner Math
- ▶ Stories Math
- ▶ Time: Before and After
- ▶ Twisting Place Values



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## Supplies

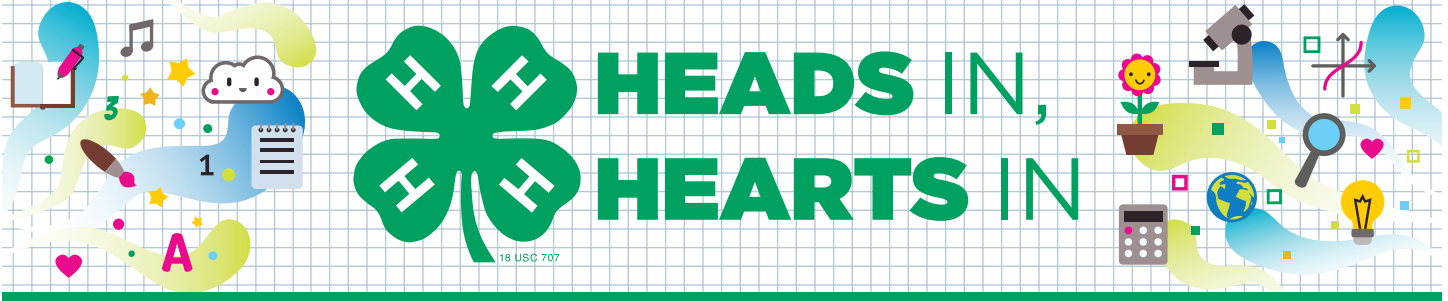
- “Guide for Families” handout
- Clear plastic standup display (optional)
- “Matching 3D Shapes” handout
- 3–5 containers of play dough
- Objects to model 3D shapes including cylinder, cone, cube, sphere, triangular prism and rectangular prism (a soup can, an ice cream cone, a die, a ball, Toblerone candy bar\*, a rectangular tissue box)
- Display table

## Activity Preparation

- ▶ Purchase or locate items on supply list.
- ▶ Print one copy of the “Guide for Families” handout. Laminate or place in a clear plastic standup display to allow participants to see it more readily.
- ▶ Print the “Matching 3D Shapes” handout; cut it out into puzzle pieces. Optionally, laminate it.
- ▶ Set up the display table and arrange needed supplies.



\*Reference to commercial names does not imply endorsement by Michigan State University Extension or bias against those not mentioned. The Toblerone candy bar is the best example of this shape that can easily be used for this activity.



# 3D Shapes

## Guide for Families

### Learning Objectives

#### What you need to know:

A drawing of a square on a piece of paper is two-dimensional or **2-D** shape. It has 1) length and 2) height (two dimensions). It is flat. Three-dimensional or **3-D** shapes have 1) length, 2) height and 3) width (three dimensions). They are solid shapes. A tissue box is a **3D** shape.

#### What you will do and learn:

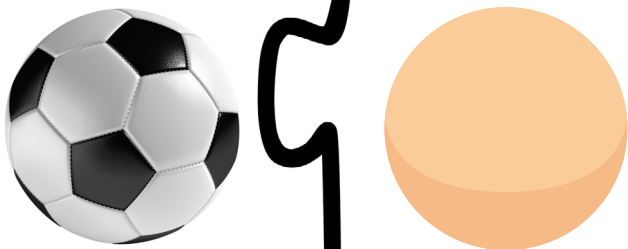
You will practice identifying and naming 3D shapes and then making models of those shapes using play dough.

### Instructions

1. Pick one puzzle piece with a picture of a shape. Identify and name that shape.
2. Next, try to find the matching 3D shape puzzle piece.
3. Once you have found the match, use the play dough to make a model of the 3D shape. Use the examples of 3D shapes on the table as a guide.
4. Repeat this activity for the remaining 3D shapes.

# 3D Shapes


## Matching 3D Shapes Handout



sphere

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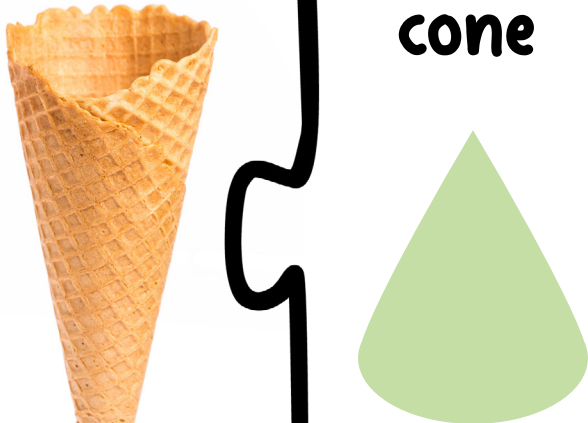
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cylinder

Photos © iStock.com/arthobbit

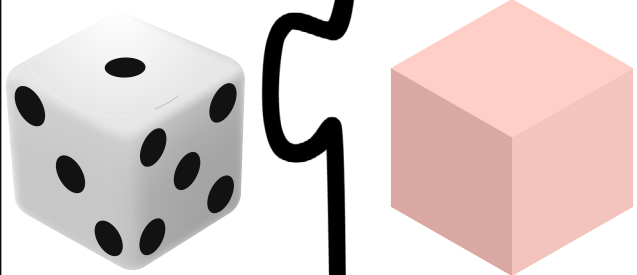
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cone

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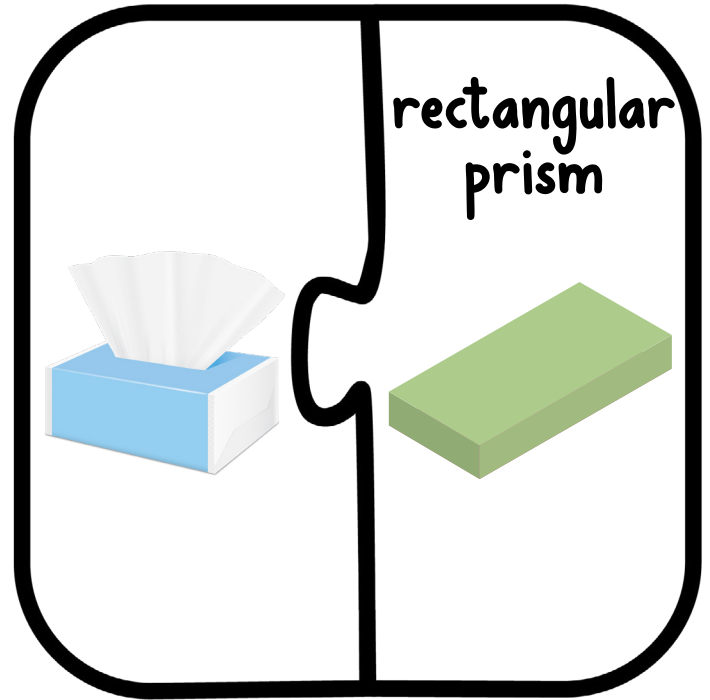
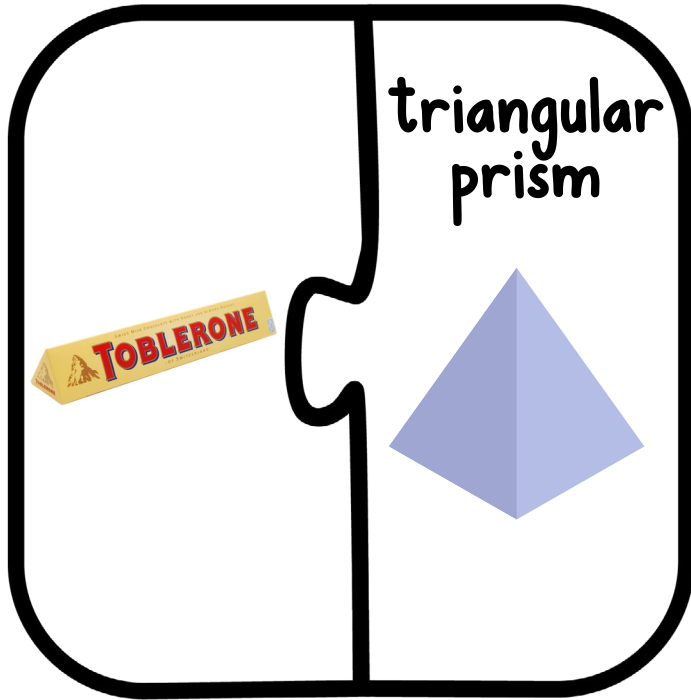
square pyramid

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# 3D Shapes

## Matching 3D Shapes Handout, continued

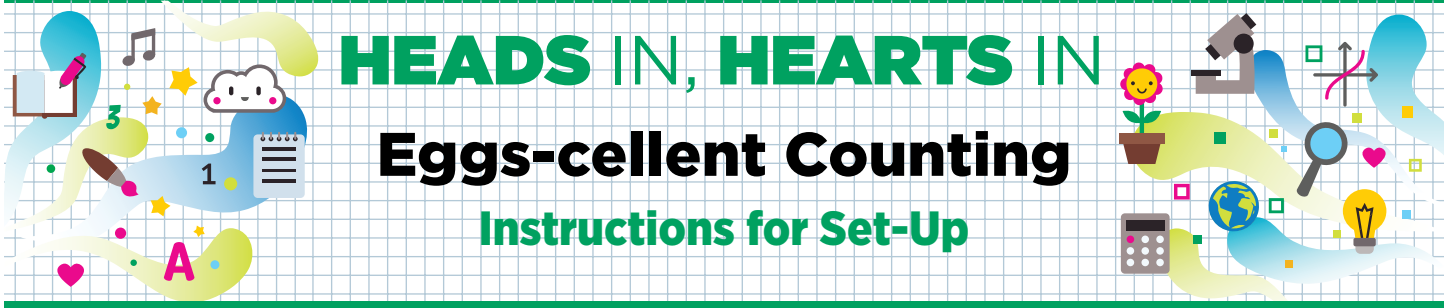


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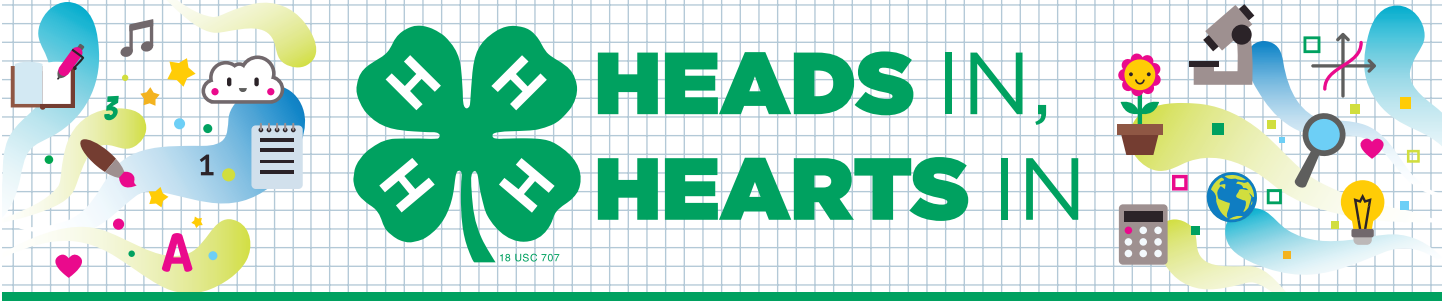
## Supplies

- “Guide for Families” handout
- Clear plastic standup display (optional)
- Egg carton
- Marker
- Several small items such as buttons, cereal, pompoms, pasta or dry beans
- “Eggs-cellent Counting” handout (1 for each participant or family)
- Display table

## Activity Preparation

- ▶ Purchase or locate items on the supply list.
- ▶ Print one copy of the “Guide for Families” handout. Laminate or place in a clear plastic standup display to allow participants to see it more readily.
- ▶ Print one copy of the “Eggs-cellent Counting” handout for each participant or family.
- ▶ Using the marker, write the numbers 1 through 12 on the inside of each egg carton, one number per well.
- ▶ Set up the display table and arrange needed supplies.





# Eggs-cellent Counting

## Guide for Families

### Learning Objectives

#### What you need to know:

**Number recognition** is knowing and being able to identify and name numbers (1, 2, 3, 4 and so on.). **One-to-one correspondence** is matching each object when counting with only one number name (when counting 3 squares, counting “1, 2, 3” instead of “1, 2, 3, 4, 5”). **Cardinality** is knowing how many items are in a set when counting and understanding that the last number you say is how much or how many are in the whole group (“1 fish, 2 fish, 3 fish, 4 fish. There are four fish total!”).

#### What you will do and learn:

In this activity, you will count small items and place them in the space on an egg carton with the matching written number.

### Instructions

1. Choose a number that is written in the well of an egg carton.
2. Say that number out loud.
3. Look at the small items such as buttons, cereal, pompoms, pasta or dry beans.
4. Pick up the small items and place the number of items into the well of the egg carton that corresponds with the number you chose.
5. Now pick a new number, saying the number out loud and fill the well with the corresponding number of items.
6. Using the “Eggs-cellent Counting” handout, practice counting items at home.

#### Adaptations:

- Use tongs to pick up small items and place them in the well.
- For older learners, take two items and place them in the egg carton. Close the lid. Shake the egg carton. When you open the egg carton, ask the learners to add or subtract the two numbers that have the items in them. For an extra challenge, use three items to scramble and add or subtract.



# Eggs-cellent Counting

## Eggs-cellent Counting Handout



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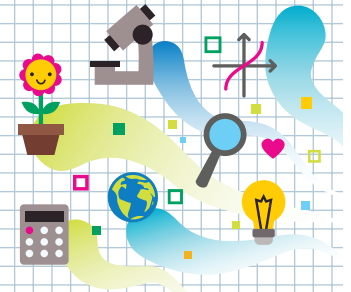




# HEADS IN, HEARTS IN

## Guess Which Shape

### Instructions for Set-Up



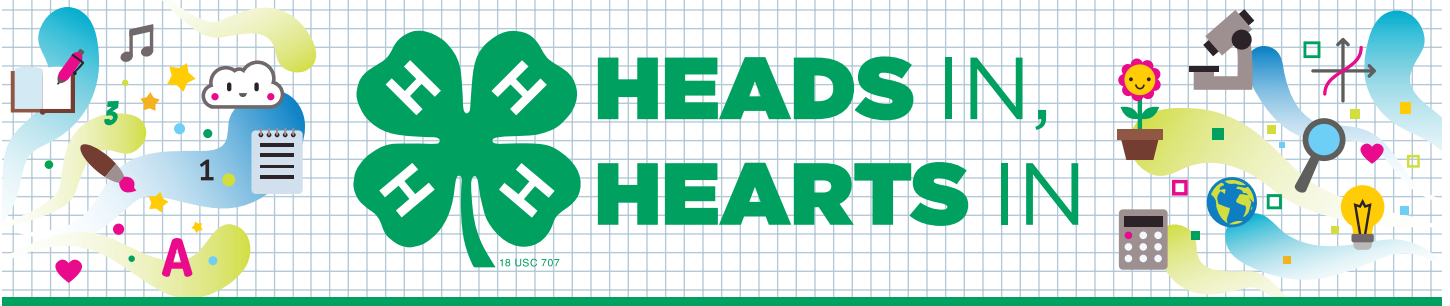
### Supplies

- “Guide for Families” handout
- Clear plastic standup display (optional)
- “Mystery Shape” handout
- “Attributes Questions” handout
- “Guess Which Shape” handout
- Crayons or markers
- Display table

### Activity Preparation

- ▶ Purchase or locate items on supply list.
- ▶ Print one copy of the “Guide for Families” handout. Laminate or place in a clear plastic standup display to allow participants to see it more readily.
- ▶ Print the “Mystery Shape” handout. Cut out the shape cards. Optionally, laminate the cards.
- ▶ Print three to four “Attributes Questions” handouts. Optionally, laminate the handouts.
- ▶ Print one “Guess Which Shape” handout for each participant or family. Optionally, print four to five copies of this handout and laminate. Then use dry-erase markers or crayons so that they can be reused.
- ▶ Set up the display table and arrange needed supplies.





# Guess Which Shape

## Guide for Families

### Learning Objectives

#### What you need to know:

Each shape has **attributes**, or characteristics, that describe the shape. Each shape is made up of **sides**. Some sides are straight, and some sides are curved. Some lines in a shape are **equal**, or the same length, and some lines are **unequal**, or different lengths. Some shapes also have **angles**, or corners, where two sides meet to close a shape.

#### What you will do and learn:

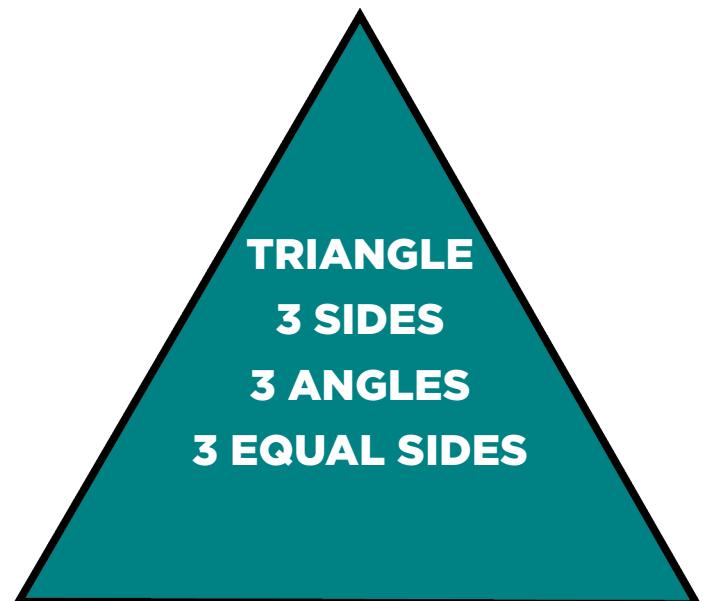
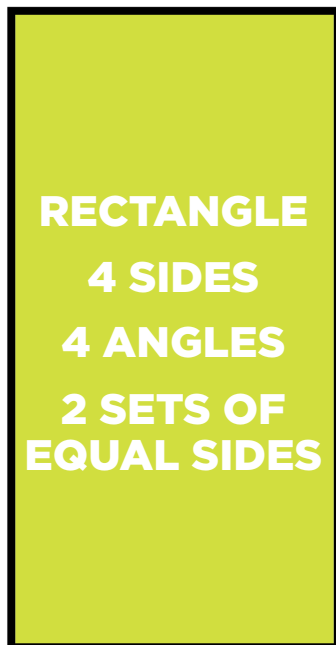
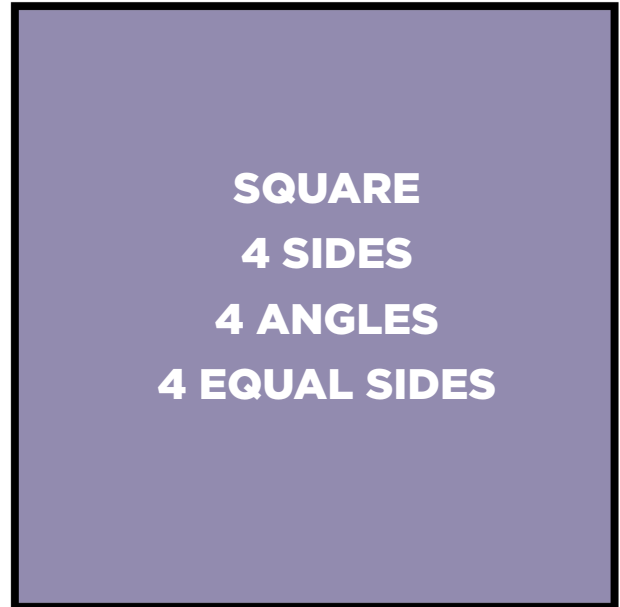
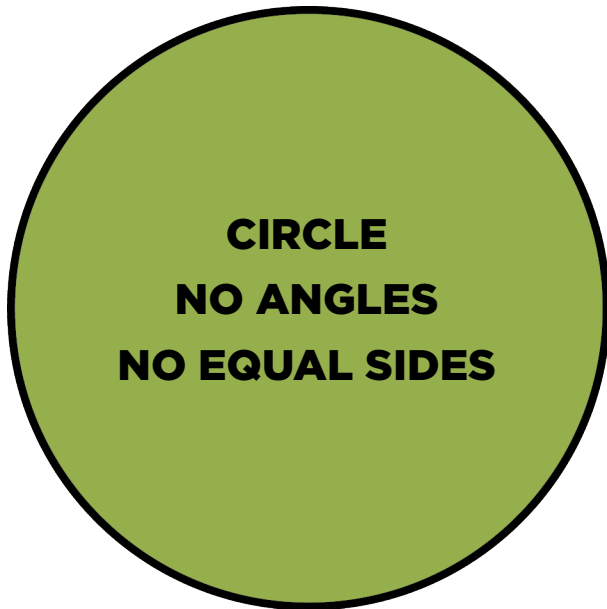
In this activity, you will try to guess a mystery shape that you can't see by asking questions about the shape's **attributes**.

### Instructions

1. Ask a teacher or adult to pick a shape from the "Mystery Shape" pile and not show the shape to you.
2. Take a "Guess Which Shape" handout and a marker or crayon.
3. Using the "Attributes Questions" handout, follow the directions at the top of the handout to find information about the mystery shape.
4. When you get your answer, cross off any shapes on your "Guess Which Shape" handout that do not match that attribute.
5. Keep asking yes-or-no questions about the shape's attributes until you think you know what the mystery shape is. Then make your guess.
6. Play again and see if you can guess another mystery shape.

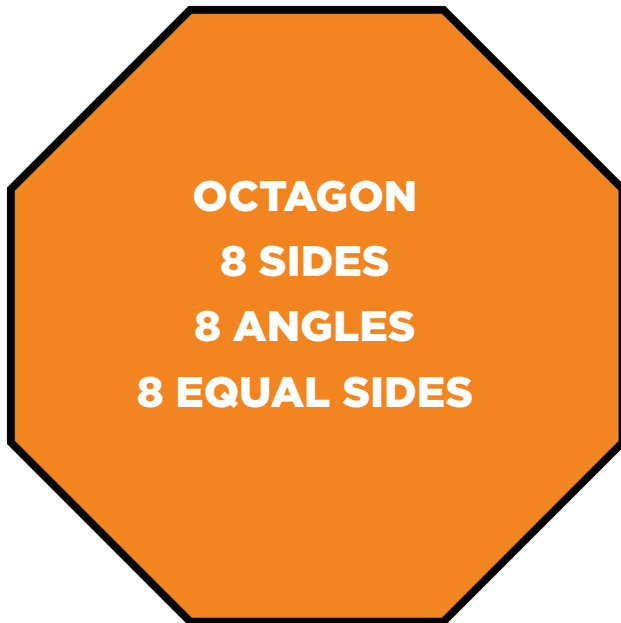
# Guess Which Shape

## Mystery Shape Handout



# Guess Which Shape

## Mystery Shape Handout, continued



# Guess Which Shape

## Attributes Questions Handout

Ask yes-or-no questions about the **sides** of the shape, such as “Does the shape have four sides?” Keep asking until you find the correct answers. Then ask about **angles** of the shape until you find the correct answers. Then ask about the **equal sides** of the shape until you find the correct answer. When you think you know the correct shape, take a guess.

### Sides

- ▶ Does the shape have \_\_\_\_\_ sides? (Fill in a number.)
- ▶ Are the sides straight?
- ▶ Are the sides curved?

### Angles

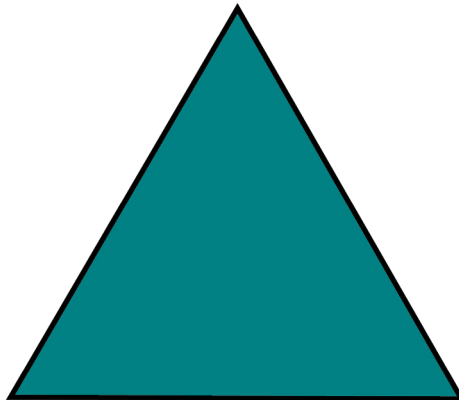
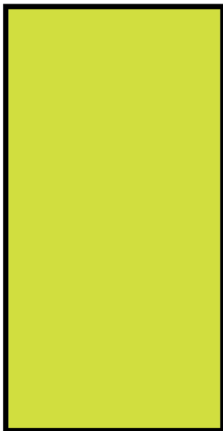
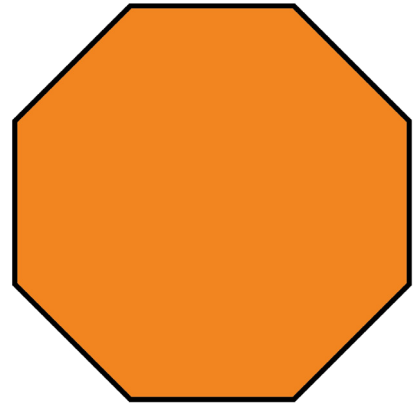
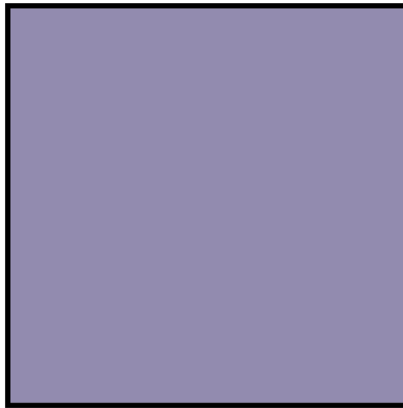
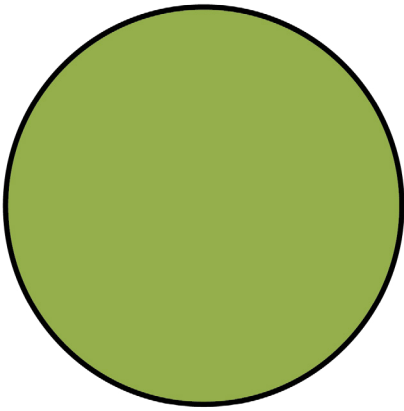
- ▶ Does the shape have \_\_\_\_\_ angles? (Fill in a number.)

### Equal Sides

- ▶ Does the shape have any equal sides?
- ▶ Does the shape have all sides equal?

# Guess Which Shape

## Mystery Shape Handout



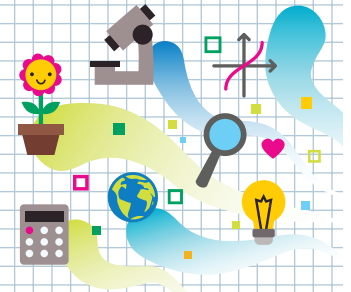




# HEADS IN, HEARTS IN

## Gumball Equations

### Instructions for Set-Up



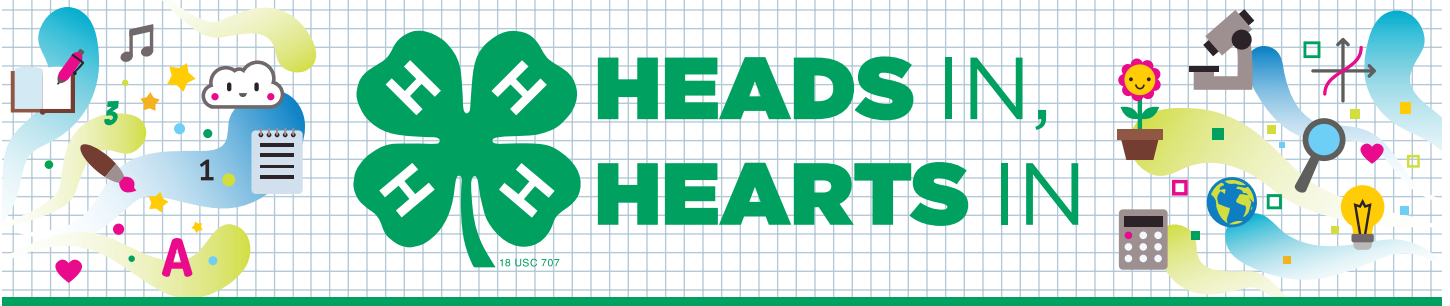
### Supplies

- “Guide for Families” handout
- Clear plastic standup display (optional)
- “Gumball Equations” handout (2 per participant or family)
- ¼ inch dot stickers or labels in three colors (10–15 per participant or family)
- Markers or crayons
- Display table

### Activity Preparation

- ▶ Purchase or locate items on supply list.
- ▶ Print one copy of the “Guide for Families” handout. Laminate or place in a clear plastic standup display to allow participants to see it more readily.
- ▶ Print two “Gumball Equations” handouts per participant or family.
- ▶ Set up the display table and arrange needed supplies.





# Gumball Equations

## Guide for Families

### Learning Objectives

#### What you need to know:

An **equation** is a math sentence that has two sides that are equal separated by an equal sign (=). For example, in the **equation**  $1+1=2$ , both sides of the equation are equal and show two different ways to represent a number.

#### What you will do and learn:

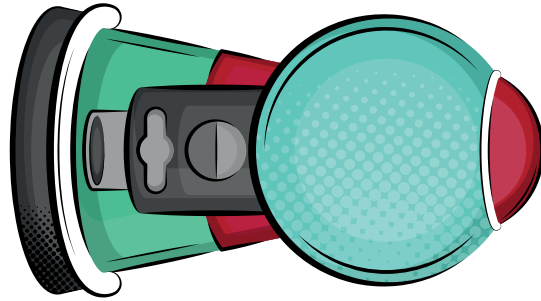
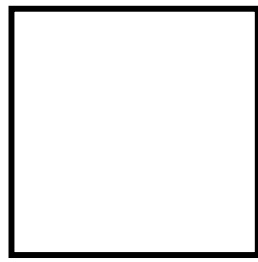
In this activity you will practice counting objects, adding them together to get the total and completing equations.

### Instructions

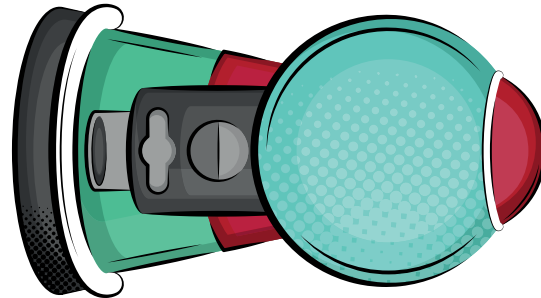
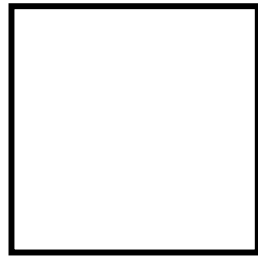
1. Take a “Gumball Equations” handout.
2. In the first gumball machine, place a few stickers of the same color.
3. In the second gumball machine, place a few stickers of the second color.
4. In the third gumball machine, place a few stickers of the third color.
5. Count the number of stickers in each gumball machine and write the number in the box below the gumball machine with a crayon or marker.
6. Add the number of stickers together and write the total in the box after the + sign.
7. Repeat this activity a second time with a different number of stickers.

# Gumball Equations

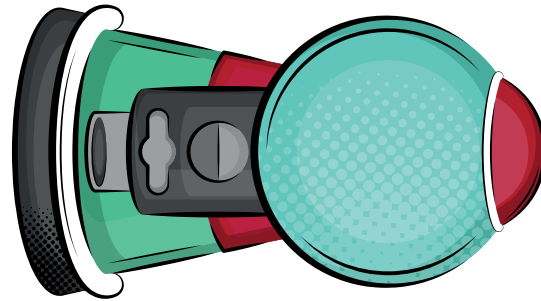
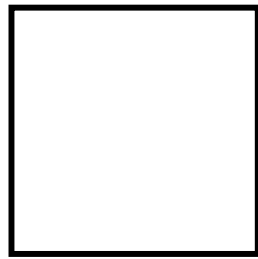
## Gumball Equations Handout



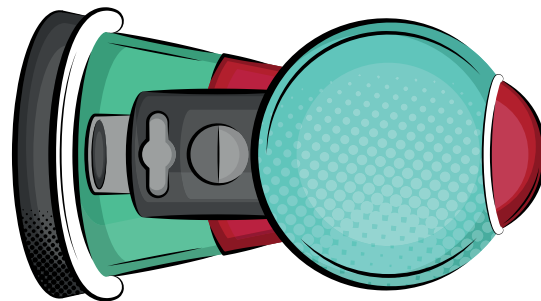
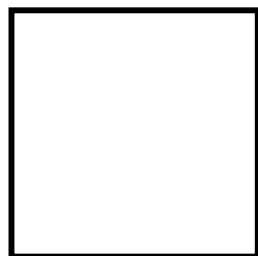
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+

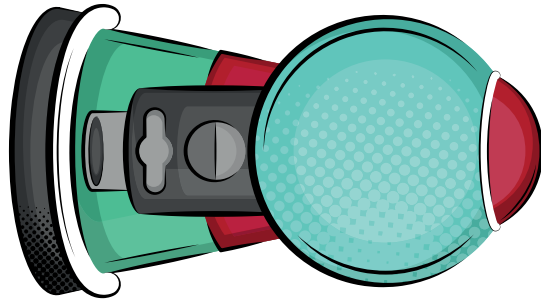
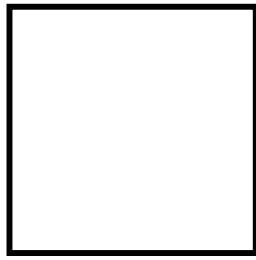


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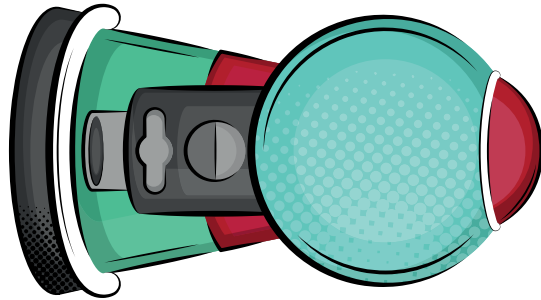
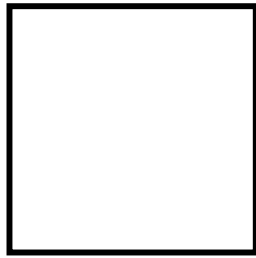


# Gumball Equations

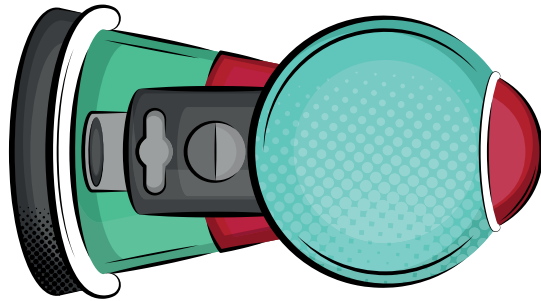
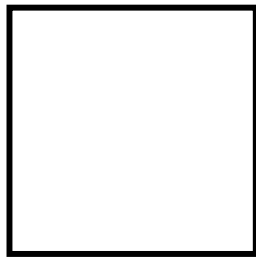
## Gumball Equations Handout, continued



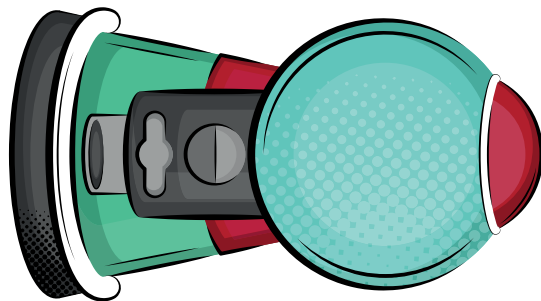
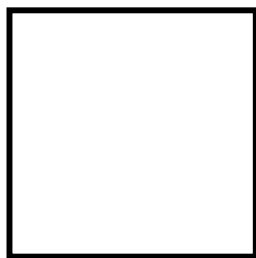
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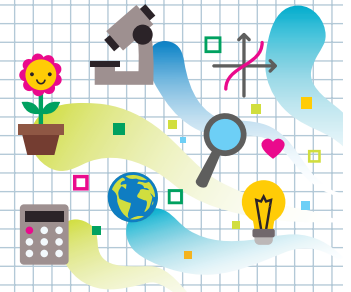




# HEADS IN, HEARTS IN

## Hungry Hedgehogs

### Instructions for Set-Up



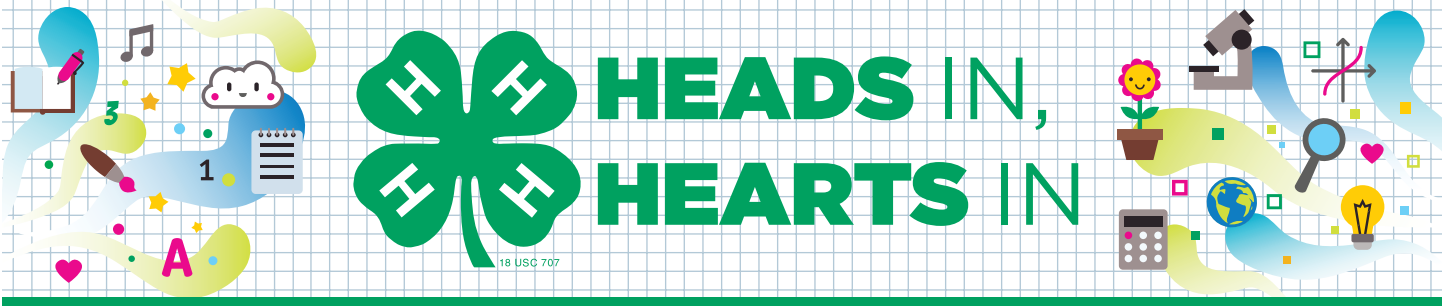
### Supplies

- “Guide for Families” handout
- Clear plastic standup display (optional)
- “Greater Than, Equal To, Less Than” handout (3 to 4 copies)
- “Cricket Cards” handout (3 to 4 copies)
- Display table

### Activity Preparation

- ▶ Purchase or locate items on supply list.
- ▶ Print one copy of the “Guide for Families” handout. Laminate or place in a clear plastic standup display to allow participants to see it more readily.
- ▶ Print three to four copies of the “Greater Than, Equal To, Less Than” handout. Optionally, laminate.
- ▶ Print three to four copies of the “Cricket Cards” handout. Cut out the cricket groups. Optionally, laminate.
- ▶ Place the “Cricket Cards” and “Greater Than, Equal To, Less Than” handouts on the display table.





# Hungry Hedgehogs

## Guide for Families

### Learning Objectives

#### What you need to know:

An **inequality** is a math sentence in which two different numbers are separated by a symbol that shows their relationship. When one number is bigger than another, they can be separated by the **greater than** sign ( $>$ ). For example, 5 is bigger than 3, so that would look like  $5 > 3$ . When one number is smaller than the other, they can be separated by the **less than** sign ( $<$ ). For example, 2 is less than 9 so that would look like  $2 < 9$ . When trying to remember which symbol to use, remember that the small ends of the  $<$  and  $>$  symbols always point toward the smallest number, for example:  $3 < 20$  (3 is less than 20) and  $20 > 3$  (20 is greater than 3).

An **equation** is a math sentence in which the two sides are equal. When two numbers are the same, they can be separated by the **equal to** sign ( $=$ ). For example, 6 is equal to 6 so that would look like  $6 = 6$ .

#### What you will do and learn:

In this activity, you will help feed crickets to a hedgehog. You will take two groups of crickets and decide which symbol to use to describe whether one number is greater than, less than or equal to.

### Instructions

1. Pick two “Cricket Cards” and count how many crickets are on each card.
2. Use the “Greater Than, Equal To, Less Than” handout to make a math sentence that is true. You can do this by placing the “Cricket Cards” around the greater than symbol ( $>$ ), the equal to sign ( $=$ ) or the less than symbol ( $<$ )
3. Read the math sentence out loud to make sure it makes sense (for example, “3 crickets is less than 6 crickets”). If it doesn’t make sense, move your crickets around and find the math sentence that is correct.
4. Repeat the activity using different “Cricket Cards,” making new math sentences.



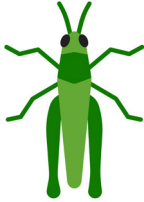
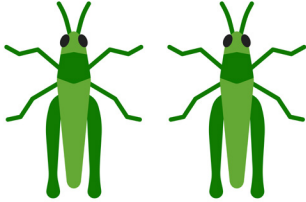
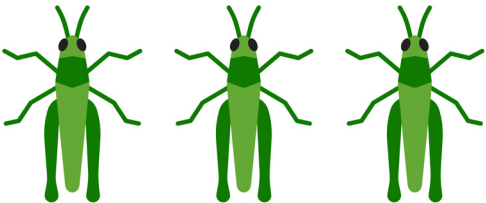
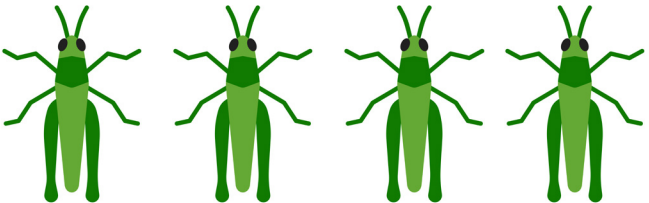
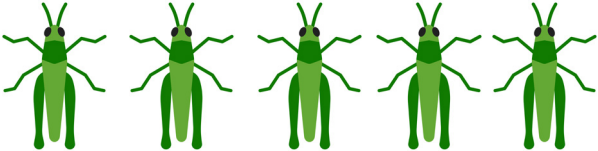
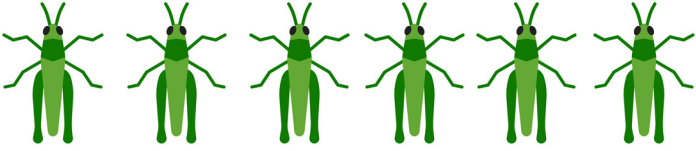
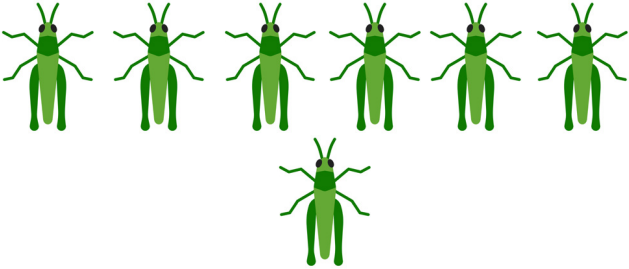
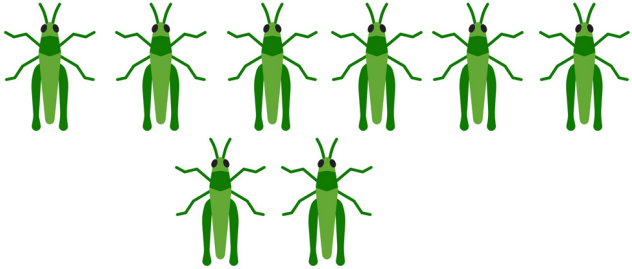
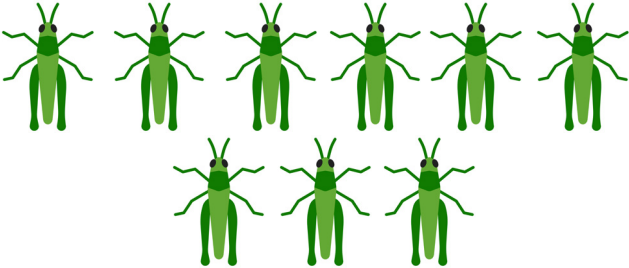
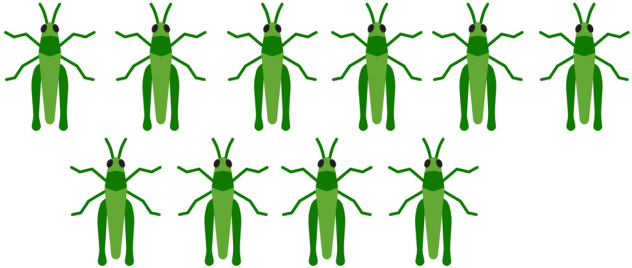
# Hungry Hedgehogs

## Greater Than, Equal To, Less Than Handout



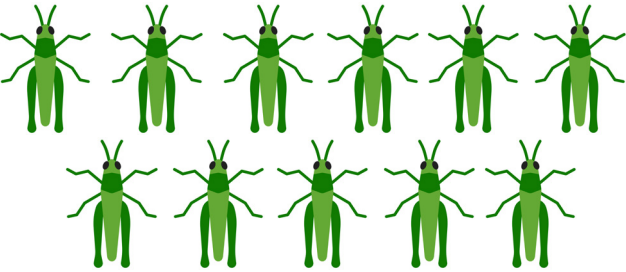
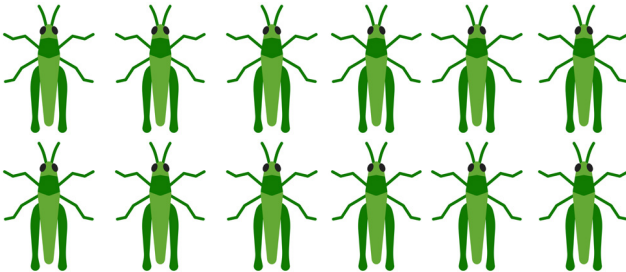
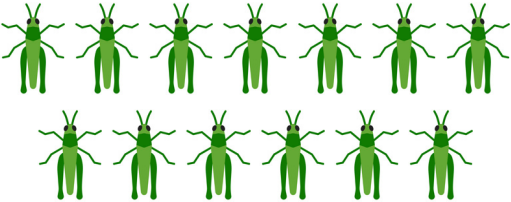
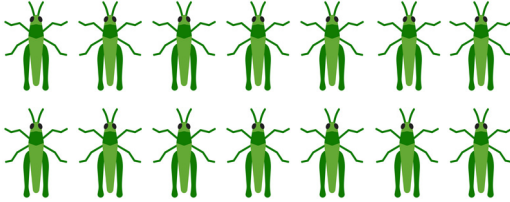
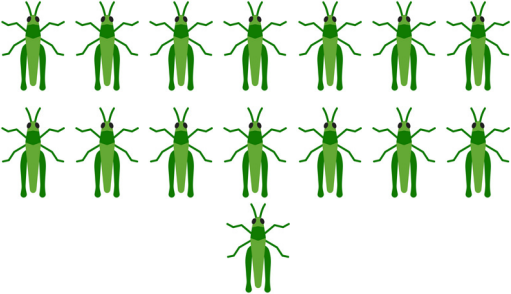
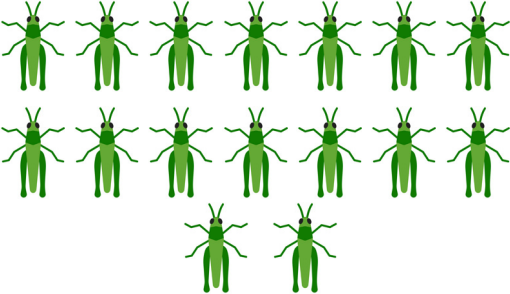
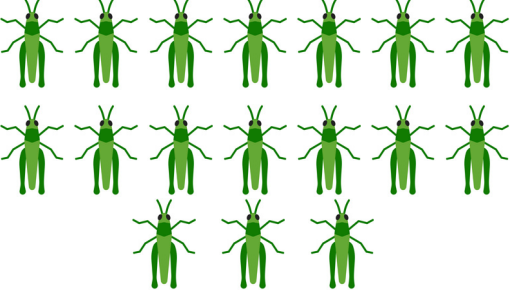
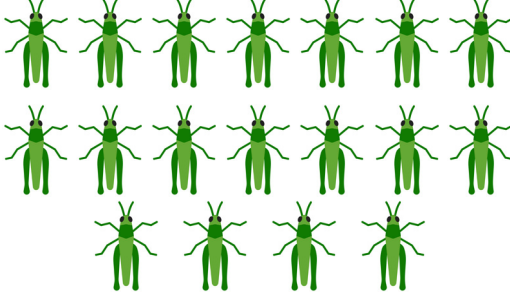
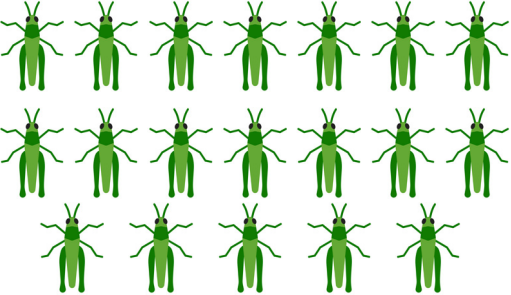
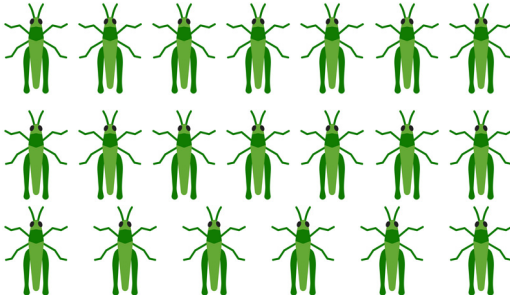
# Hungry Hedgehogs

## Cricket Cards Handout

# Hungry Hedgehogs

## Cricket Cards Handout, continued

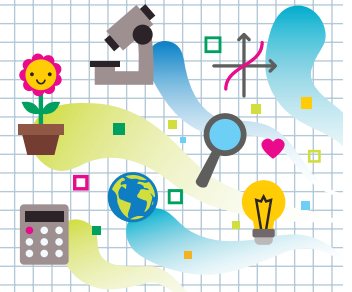
	
	
	
	
	



# HEADS IN, HEARTS IN

## Marshmallow Structures

### Instructions for Set-Up

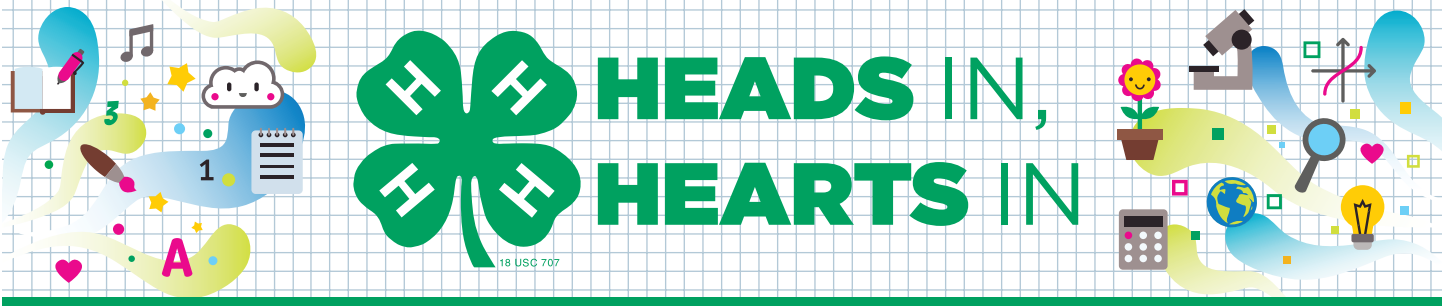


### Supplies

- “Guide for Families” handout
- Clear plastic standup display (optional)
- Miniature marshmallows
- Toothpicks
- “2D and 3D Shapes” handout (2 to 3 copies)
- Display table

### Activity Preparation

- ▶ Purchase or locate items on supply list.
- ▶ Print one copy of the “Guide for Families” handout. Laminate or place in a clear plastic standup display to allow participants to see it more readily.
- ▶ Print two to three “2D and 3D Shapes” handouts. Optionally, laminate these handouts.
- ▶ Set up the display table and arrange needed supplies.



# Marshmallow Structures

## Guide for Families

### Learning Objectives

#### What you need to know:

Each shape has **attributes**, or characteristics, that describe the shape. Each shape is made up of **sides**. Some sides are straight, and some sides are curved. Some shapes also have corners, or **angles**, where two sides meet to close a shape. When you draw a square on a piece of paper, that's a two-dimensional or **2-D** shape. It has 1) length and 2) height (two dimensions). It is flat. Three-dimensional, or **3-D** shapes, are solid shapes. They have 1) length, 2) height and 3) width (three dimensions). A tissue box is a **3D** shape. It is solid.

#### What you will do and learn:

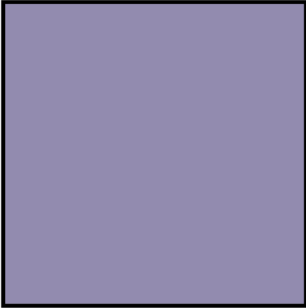
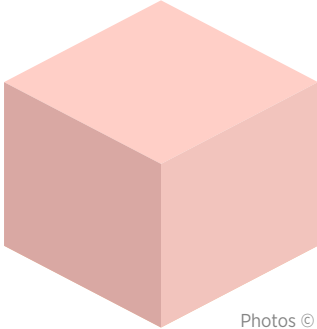
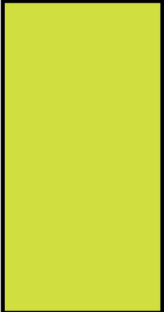
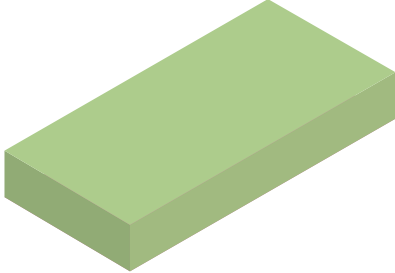
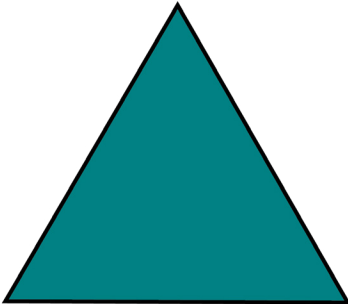
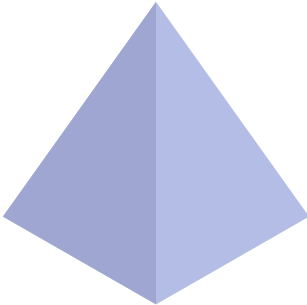
You will practice building models of 2D and 3D shapes using marshmallows and toothpicks.

### Instructions

1. Choose a 2D shape from the “2D and 3D Shapes” handout that you want to build a model of.
2. Using marshmallows as corners or angles and toothpicks for sides, work to construct or build a model of that shape.
3. Now, look at the 3D version of the shape that you built. Think about how you can make that 2D shape into a 3D shape.
4. Use additional marshmallows and toothpicks to make your shape 3D.
5. Repeat this activity with the other shapes.

# Marshmallow Structures

## 2D and 3D Shapes Handout

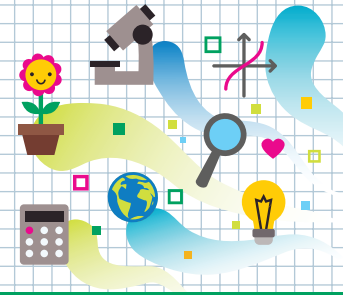
2D or Flat Shapes	3D or Solid Shapes
<p style="text-align: center;"><b>square</b></p> 	<p style="text-align: center;"><b>cube</b></p>  <p style="text-align: right; font-size: small;">Photos © iStock.com/MicrovOne</p>
<p style="text-align: center;"><b>rectangle</b></p> 	<p style="text-align: center;"><b>rectangular prism</b></p>  <p style="text-align: right; font-size: small;">Photos © iStock.com/MicrovOne</p>
<p style="text-align: center;"><b>triangle</b></p> 	<p style="text-align: center;"><b>triangular prism</b></p>  <p style="text-align: right; font-size: small;">Photos © iStock.com/MicrovOne</p>





# HEADS IN, HEARTS IN

## Measure a Room Instructions for Set-Up

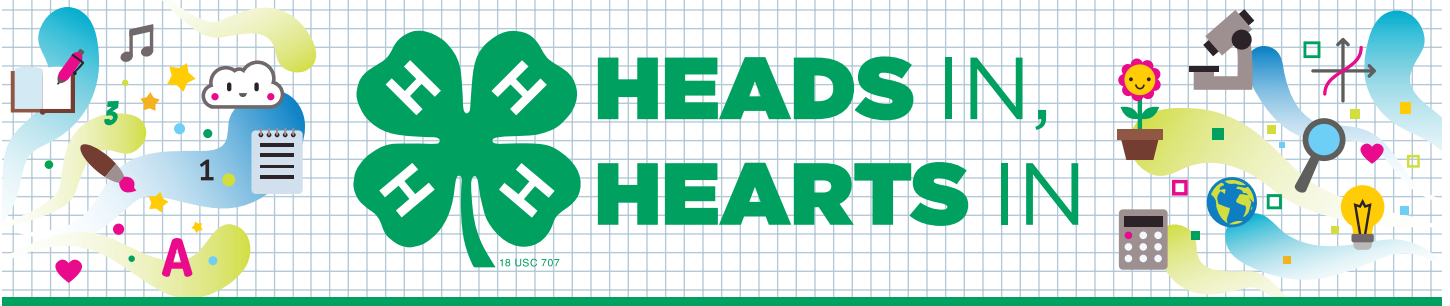


### Supplies

- “Guide for Families” handout
- Clear plastic standup display (optional)
- “Measure a Room Example” handout
- “Measure a Room” handout (1 per participant or family)
- 5 medium plastic totes with lids
- 5 kitchen items such as a small plate, cup, placemat, fork or spoon, straw, potholder, bowl or measuring cup
- 5 bathroom items such as a toothbrush, tube of toothpaste, brush or comb, roll of toilet paper, bar of soap, tweezers or cotton swab
- 5 office items such as a notepad, book, keyboard, box of markers, stapler, mouse, scissors, tape dispenser or pen
- 5 living room items such as a remote control, picture frame, coaster, book or magazine, CD or DVD, candle or phone
- 5 bedroom items such as a clock, slipper, sock, hanger, perfume or lotion container, small stuffed animal, small mirror or box of tissues
- Painter’s tape
- Marker
- Several rulers, yardsticks or sewing tape measures
- Sharpened pencils
- Display table

### Activity Preparation

- ▶ Purchase or locate items on supply list.
- ▶ Print one copy of the “Guide for Families” handout. Laminate or place in a clear plastic standup display to allow participants to see it more readily.
- ▶ Print one copy of the “Measure a Room Example” handout. Laminate if desired.
- ▶ Print one copy of the “Measure a Room” handout per participant or family.
- ▶ Keeping with the theme of rooms, place five selected items that belong in each room into the tote and place the lid on the tote. Place a piece of painter’s tape on top of the box and using the marker, write down the name of the room (example, “bathroom”).
- ▶ Set up the display table and arrange needed supplies.



# Measure a Room

## Guide for Families

### Learning Objectives

#### What you need to know:

**Measurement** is what you do when you're trying to find the size of something. Measurement is a part of everyday life. Whether we're cooking, buying clothes, playing sports or estimating whether an object will fit in a particular location, we need to know how to use a ruler, yardstick, tape measure and other measuring instruments accurately.

#### What you will do and learn:

In this activity, you will choose a room (tote) and measure commonly found items in that room for length, width or height using two different units of measurement. The **U.S. Standard System** uses inches (in.), feet (ft), yards (yd) and miles (m). The **metric** system uses millimeters (mm), centimeters (cm), meters (m) and kilometers (km). You will measure a variety of items using both the **U.S. Standard System** and the **metric** system.

### Instructions

1. Take a "Measure a Room" handout and a pencil.
2. Choose a tote and open the lid.
3. Using the "Measure a Room" handout (and looking at the "Measure a Room Example" handout for help), write the name of the room in a section next to the word "Room." Then write the name of the first object you will measure under "Item 1."
4. Measure the item using both the U.S. Standard System and the metric system.
5. Items may be measured for length, width or height. You get to choose.
6. On the handout, record your measurements for the U.S. Standard System by writing the number in the box to the right of Item 1 and under the "U.S." column. Check the unit of measurement (inches, feet or yards). Next record your measurements for the metric system by writing the number in the box for Item 1 under the "Metric" column. Circle the unit of measurement (millimeters, centimeters or meters).
7. Continue on in the same way for the other items in the tote. When you've measured all of the items from that room, place the items back in the tote.
8. Choose a new room (tote) and measure the items, recording your measurements on the handout.
9. See if you can measure all five rooms!

# Measure a Room

## Measure a Room Example Handout

### Example Room: Bathroom

	<b>U.S.</b> (Check the unit of measurement)		<b>Metric</b> (Check the unit of measurement)	
<b>Item 1</b> <b>Tissue Box</b>	<b>8</b>	<input checked="" type="checkbox"/> inches <input type="checkbox"/> feet <input type="checkbox"/> yards	<b>20</b>	<input type="checkbox"/> millimeters <input checked="" type="checkbox"/> centimeters <input type="checkbox"/> meters
<b>Item 2</b>		<input type="checkbox"/> inches <input type="checkbox"/> feet <input type="checkbox"/> yards		<input type="checkbox"/> millimeters <input type="checkbox"/> centimeters <input type="checkbox"/> meters
<b>Item 3</b>		<input type="checkbox"/> inches <input type="checkbox"/> feet <input type="checkbox"/> yards		<input type="checkbox"/> millimeters <input type="checkbox"/> centimeters <input type="checkbox"/> meters
<b>Item 4</b>		<input type="checkbox"/> inches <input type="checkbox"/> feet <input type="checkbox"/> yards		<input type="checkbox"/> millimeters <input type="checkbox"/> centimeters <input type="checkbox"/> meters
<b>Item 5</b>		<input type="checkbox"/> inches <input type="checkbox"/> feet <input type="checkbox"/> yards		<input type="checkbox"/> millimeters <input type="checkbox"/> centimeters <input type="checkbox"/> meters

# Measure a Room

## Measure a Room Handout

**Room:**

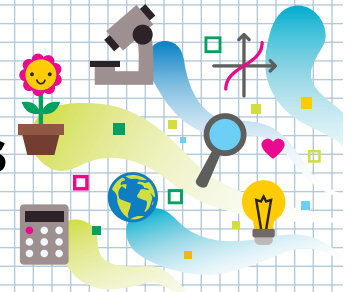
	<b>U.S.</b> (circle the unit of measurement)		<b>Metric</b> (circle the unit of measurement)	
<b>Item 1</b>		<input type="checkbox"/> inches <input type="checkbox"/> feet <input type="checkbox"/> yards		<input type="checkbox"/> millimeters <input type="checkbox"/> centimeters <input type="checkbox"/> meters
<b>Item 2</b>		<input type="checkbox"/> inches <input type="checkbox"/> feet <input type="checkbox"/> yards		<input type="checkbox"/> millimeters <input type="checkbox"/> centimeters <input type="checkbox"/> meters
<b>Item 3</b>		<input type="checkbox"/> inches <input type="checkbox"/> feet <input type="checkbox"/> yards		<input type="checkbox"/> millimeters <input type="checkbox"/> centimeters <input type="checkbox"/> meters
<b>Item 4</b>		<input type="checkbox"/> inches <input type="checkbox"/> feet <input type="checkbox"/> yards		<input type="checkbox"/> millimeters <input type="checkbox"/> centimeters <input type="checkbox"/> meters
<b>Item 5</b>		<input type="checkbox"/> inches <input type="checkbox"/> feet <input type="checkbox"/> yards		<input type="checkbox"/> millimeters <input type="checkbox"/> centimeters <input type="checkbox"/> meters



# HEADS IN, HEARTS IN

## Measurement Equivalents

### Instructions for Set-Up



### Supplies

- “Guide for Families” handout
- Clear plastic standup display (optional)
- “Equivalent Liquid” Handout
- “Equivalent Dry” Handout
- 5–10 pounds of dry material such as flour
- Large bowl to hold dry material such as flour
- Water
- Large bowl to hold water
- 3–5 teaspoon dry measuring spoons
- Three to five  $\frac{1}{4}$ -cup dry measuring cups
- Three to five  $\frac{1}{2}$ -cup dry measuring cups
- Three to five 1-cup dry measuring cups
- 3–5 liquid measuring cups with 2-cup capacity
- 3–5 liquid measuring utensils with 4-ounce capacity
- Pencils
- 6 large bowls
- Paper towels
- Display table

### Activity Preparation

- ▶ Purchase or locate items on supply list.
- ▶ Print one copy of the “Guide for Families” handout. Laminate or place in a clear plastic standup display to allow participants to see it more readily.
- ▶ Print “Equivalent Liquid” and “Equivalent Dry” handouts.
- ▶ Put flour in a large bowl and water in another large bowl. Place on the table.
- ▶ Arrange the rest of the supplies on the table.

#### Liquid measuring cup

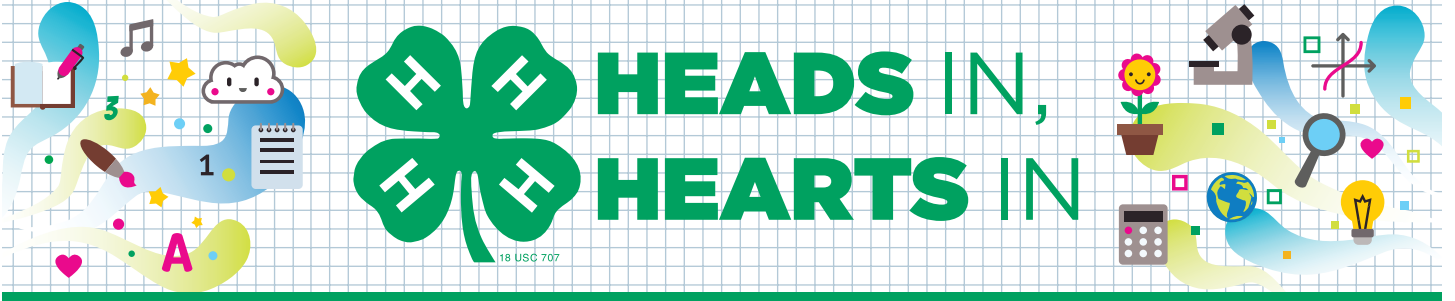
This can be used for measuring  $\frac{1}{2}$  cups to 2 cup measurements.



#### Dry measuring utensil

When measuring small units of dry materials such as teaspoons and tablespoons, be sure to scrape off excess materials with the flat side of a knife.





# Measurement Equivalents

## Guide for Families

### Learning Objectives

#### What you need to know:

**Equivalence** is when there are two ways to measure and talk about the same quantity. Equivalence can be applied in measurement, math, time, money and a variety of other areas. For example, one dollar is the same as 100 cents. It's the same quantity or amount of money but there are two different ways to measure and talk about it.

When you understand the different ways of measuring, you can **convert** or use a different tool to measure the same amount.

#### What you will do and learn:

You will practice exploring **equivalence** by measuring dry and liquid materials with different measuring tools. By measuring the materials with multiple tools, you will learn more about the different ways to measure and different units of measurement.

### Instructions

1. Take the “Equivalent Liquid ” handout and follow the instructions to measure water using different measuring tools.
2. Take the “Equivalent Dry ” handout and follow the instructions to measure a dry material using different measuring tools.



# Measurement Equivalents

## Equivalent Dry Handout

Take the liquid measuring tools including a tablespoon, teaspoon and liquid measuring cups and utensils. Use those utensils to find the measurement equivalents below. Follow the example below:

Example: Measure one tablespoon of water and place it into bowl #1. Then, use a teaspoon to scoop the water out of bowl #1 into bowl #2, counting how many teaspoons it takes. This is how many teaspoons are in a tablespoon. You will then write that number in the blank space. See the example below to see how to write out the liquid equivalency.

$$1 \text{ tablespoon} = \underline{3} \text{ teaspoons}$$

Repeat the process from the example to find the measurements below.

1. 3 tablespoons = \_\_\_\_\_ teaspoons
2. 8 tablespoons = \_\_\_\_\_ teaspoons
3. 1 cup = \_\_\_\_\_ ounces
4. 3 cups = \_\_\_\_\_ ounces
5. 1.5 cups = \_\_\_\_\_ ounces
6. 2 ounces = \_\_\_\_\_ tablespoons

# Measurement Equivalents

## Equivalent Liquid Handout

Take the dry measuring tools including a tablespoon, teaspoon and tools to measure a dry measuring cup and two bowls. Follow the example below:

Example: Measure one tablespoon of flour or other dry material it into bowl #1. Then, use a teaspoon to scoop the flour out of bowl #1 into bowl #2, counting how many teaspoons it takes. This is how many teaspoons are in a tablespoon. Write that number in the blank space.

$$1 \text{ tablespoon} = \underline{3} \text{ teaspoons}$$

Repeat the process from the example to find the measurements below.

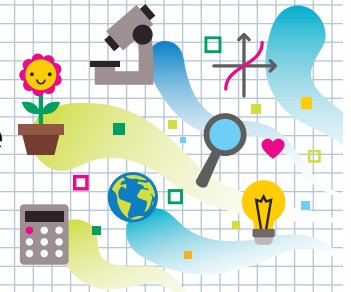
1. 4 tablespoons = \_\_\_\_\_ teaspoons
2. 6 tablespoons = \_\_\_\_\_ teaspoons
3. 1 cup = \_\_\_\_\_ tablespoons
4.  $\frac{1}{4}$  cups = \_\_\_\_\_ teaspoons
5.  $\frac{1}{3}$  cups = \_\_\_\_\_ tablespoons
6.  $\frac{1}{2}$  ounces = \_\_\_\_\_ tablespoons



# HEADS IN, HEARTS IN

## Measuring Liquids: Exploring Volume

### Instructions for Set-Up



### Supplies

- “Guide for Families” handout
- Clear plastic standup display (optional)
- “Liquid Measurement Task Cards” handout
- 3–5 liquid measuring tools
- Three to five 16-ounce plastic bottles
- Liquid food coloring
- Water
- Permanent marker
- Scissors
- Display table

### Activity Preparation

- ▶ Purchase or locate items on supply list.
- ▶ Print one copy of the “Guide for Families” handout. Laminate or place in a clear plastic standup display to allow participants to see it more readily.
- ▶ Fill each of the three to five 16-ounce bottles with water of differing amounts (for example,  $\frac{1}{2}$  cup, 1 tablespoon and so on).
- ▶ Using the liquid food coloring, color water in each bottle a different color.
- ▶ Using a permanent marker, write the correct amount of liquid on the bottom of the plastic bottle (for example,  $\frac{1}{2}$  cup, 1 tablespoon and so on).
- ▶ Print “Liquid Measurement Task Cards” handout on durable paper and cut out the cards, or print, cut and laminate the cards.
- ▶ Set up the display table and arrange needed supplies.

#### Liquid measuring cup

This can be used for measuring  $\frac{1}{2}$  cups to 2 cup measurements.

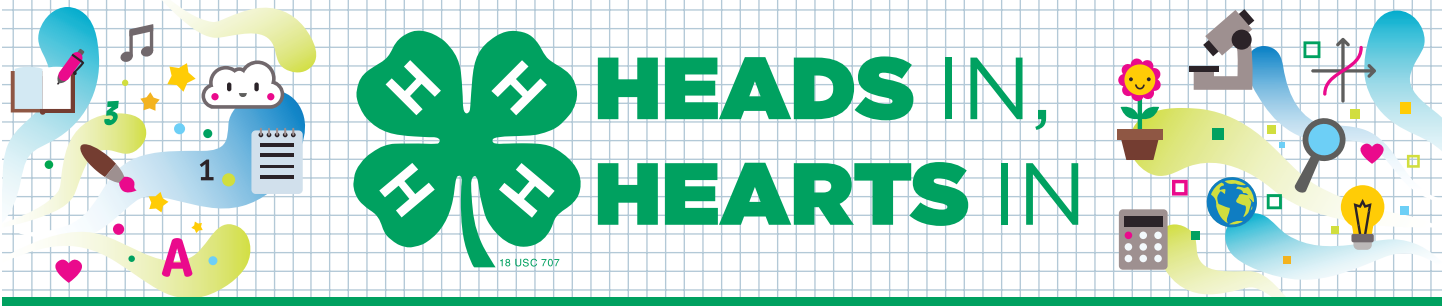


#### Liquid measuring utensil

This can be used to measure teaspoons, tablespoon and ounces.



This activity is adapted from “Measuring Liquids” in *Heads In, Hearts In* (4H1749S) by Michigan State University Extension, 4-H Youth Development, 2017.



## Measuring Liquids: Exploring Volume

### Guide for Families

#### Learning Objectives

##### What you need to know:

**Volume** is a measure of space or how much space an object takes up. If an object is empty, like a cup, **volume** is the amount of water or liquid it will hold. When measuring volume with liquids you can measure in different units like teaspoons, tablespoons, ounces, cups, quarts, gallons, liters and milliliters. When measuring liquid substances, it is important to use measuring tools that have been created specifically for liquids. For instance, a liquid measuring cup is clear, and you can see through it so you can easily measure the volume of the liquid.

##### What you will do and learn:

You will practice using liquid measuring cups to find the volume of the water inside each bottle.

#### Instructions

1. Choose a measurement task card and read the directions.
2. Complete the tasks of each card.
3. Repeat the activity several times by choosing different task cards.

## Measuring Liquids: Exploring Volume

### Liquid Measurement Task Card Handout

#### Find the bottle with yellow liquid.

Which measuring tool will you use?  
Measure that liquid and see how much there is.

Look on the bottom of the plastic bottle. Were you correct?

#### Find the bottle with red liquid.

Which measuring tool will you use?  
Measure that liquid and see how much there is.

Look on the bottom of the plastic bottle. Were you correct?

#### Find the bottle with green liquid.

Which measuring tool will you use?  
Measure that liquid and see how much there is.

Look on the bottom of the plastic bottle. Were you correct?

#### Find the bottle with orange liquid.

Which measuring tool will you use?  
Measure that liquid and see how much there is.

Look on the bottom of the plastic bottle. Were you correct?

#### Find the bottle with blue liquid.

Which measuring tool will you use?  
Measure that liquid and see how much there is.

Look on the bottom of the plastic bottle. Were you correct?

#### Find the bottle with purple liquid.

Which measuring tool will you use?  
Measure that liquid and see how much there is.

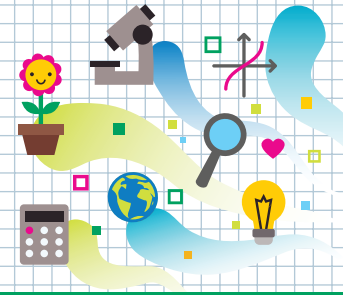
Look on the bottom of the plastic bottle. Were you correct?

The "Liquid Measurement Task Cards Handout" originally appeared in the "Measuring Liquids" activity in *Heads In, Hearts In* (4H1749S) by Michigan State University Extension, 4-H Youth Development, 2017.



# HEADS IN, HEARTS IN

## Photo-Graph Instructions for Set-Up

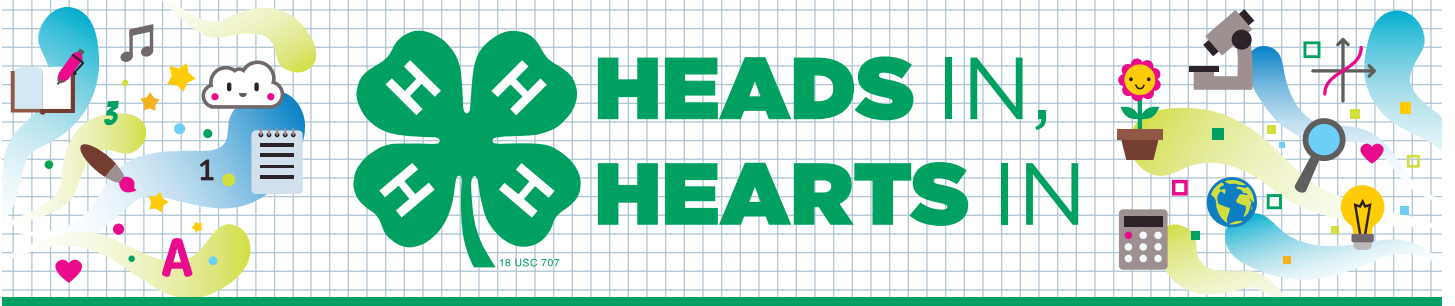


### Supplies

- “Guide for Families” handout
- Clear plastic standup display (optional)
- Display table
- “Bar Graph” handout
- “Photo-Graph” handout
- Crayons or markers

### Activity Preparation

- ▶ Purchase or locate items on supply list.
- ▶ Print one copy of the “Guide for Families” handout. Laminate or place in a clear plastic standup display to allow participants to see it more readily.
- ▶ Print several copies of the “Bar Graph” and “Photo-Graph” handouts. Each participant may choose to do one handout or several of them.
- ▶ Set up the display table and arrange needed supplies.



# Photo-Graph

## Guide for Families

### Learning Objectives

#### What you need to know:

A **graph** is a way to show numbers in a chart or picture. A **bar graph** is used to show information in lines using **columns** and **rows**. A **column** is vertical or upright, and information is shown stacked on top of each other. A **row** is horizontal, and information is displayed in a left-to-right fashion or side by side.

#### What you will do and learn:

This activity will help you practice counting and grouping items and then displaying or graphing your results. In this activity, you will identify shapes, count the number of matching pictures, and then use a bar graph to display the results.

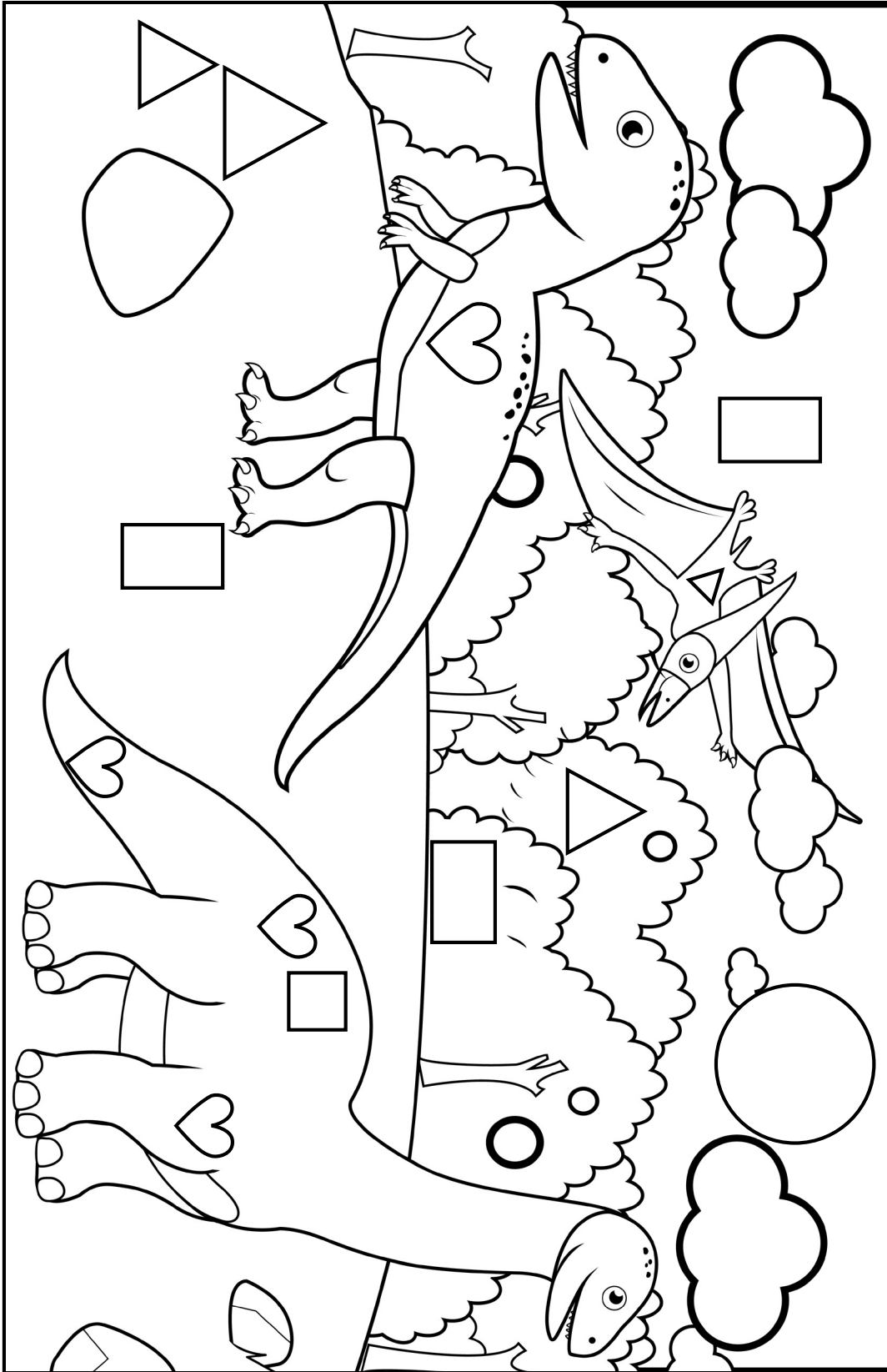
### Instructions

1. Take a “Bar Graph” handout and “Photo-Graph” handout.
2. Get several crayons or markers.
3. Look at the shapes in the first column on the “Bar Graph” handout.
4. Notice that there are the same shapes on the picture on the “Photo-Graph” handout.
5. Start with the hearts on the “Photo-Graphs” handout. Find all of the hearts in the picture. Count how many hearts there are.
6. On the “Bar Graph” handout color in that number of squares in the matching row.
7. Now color all of the hearts on the picture.
8. Move to the triangles. Find all of the triangles in the picture. Count how many triangles there are.
9. Color in that number of triangles in the matching row on the “Bar Graph” handout.
10. Now color all of the triangles on the picture.
11. Continue to the next shape until all rows and shapes are colored in.



# Photo-Graph Handout

## Photo-Graph Handout



Yellow

Blue

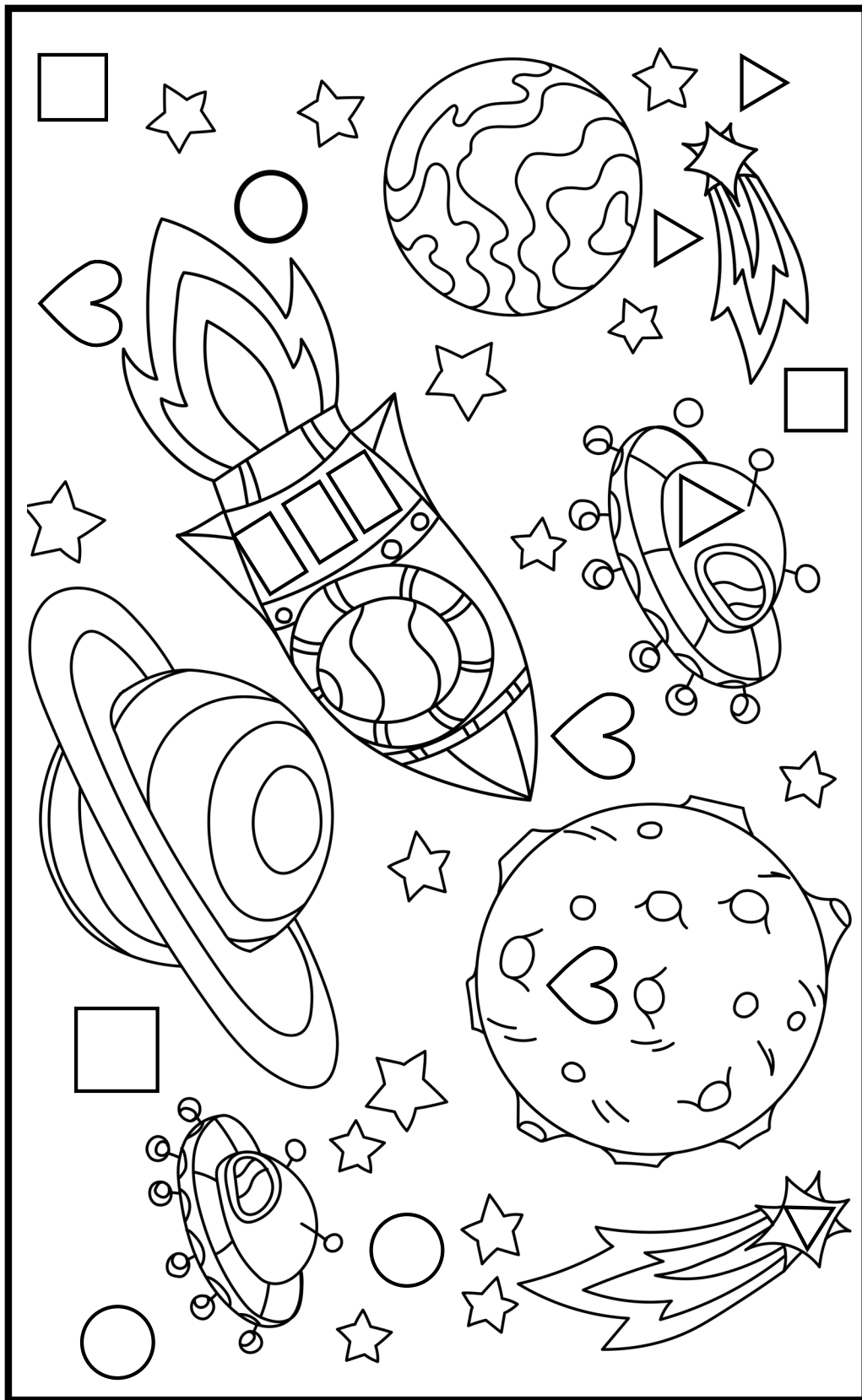
Red

Purple

Green

# Photo-Graph Handout

## Photo-Graph Handout, continued

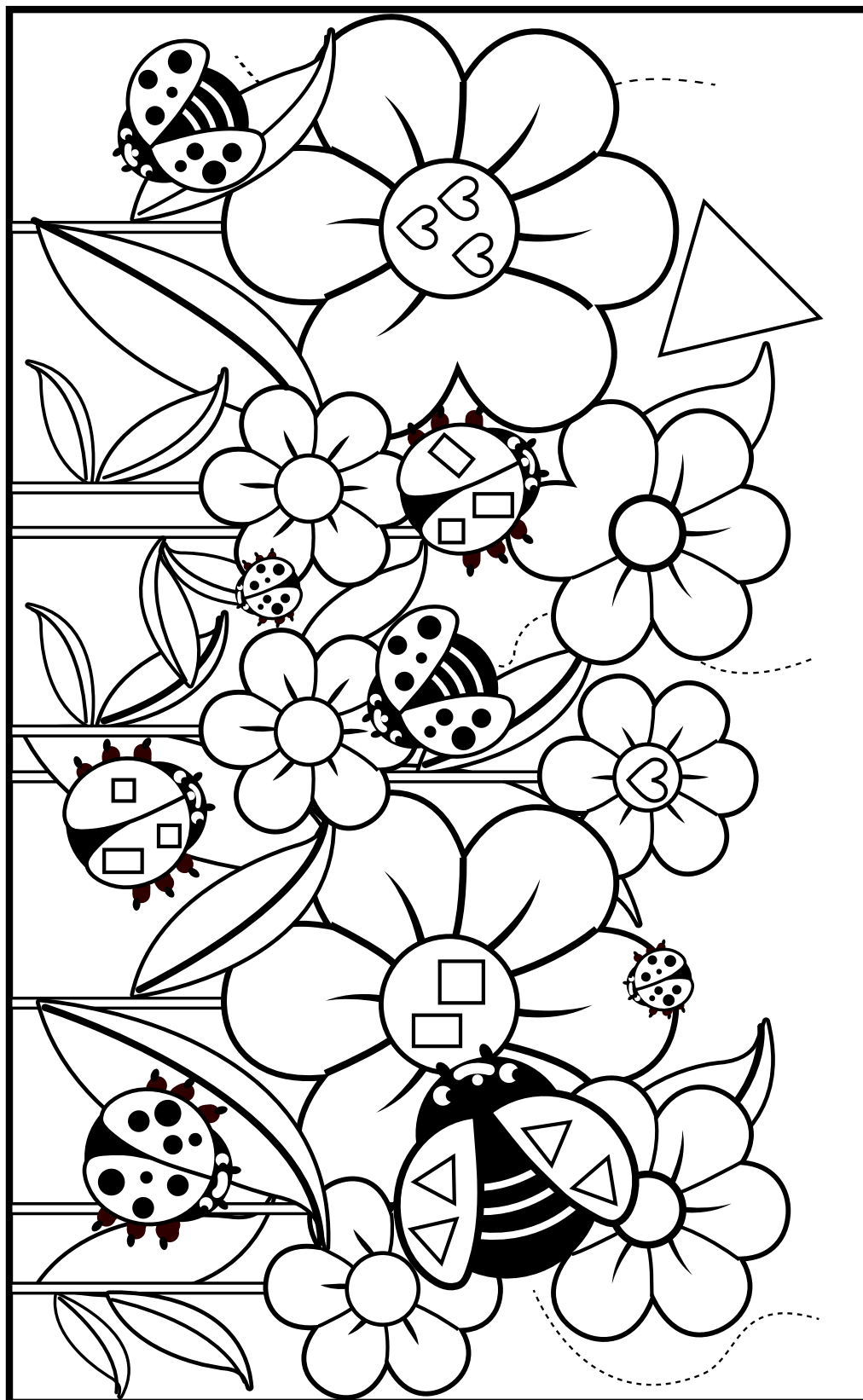


Color key for the Photo-Graph activity:

- Heart: Yellow
- Circle: Blue
- Triangle: Red
- Square: Purple
- Rectangle: Green

# Photo-Graph Handout

## Photo-Graph Handout, continued



Yellow

Blue

Purple

Green

Red

Yellow

Blue

Purple

Green

Red

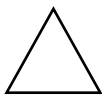
Green

# Photo-Graph Handout

## Photo-Graph Handout, continued



Yellow



Red



Green



Blue













Purple



# Photo-Graph Handout

## Bar-Graph Handout, continued

				
<b>Purple</b>	<b>Blue</b>	<b>Green</b>	<b>Red</b>	<b>Yellow</b>

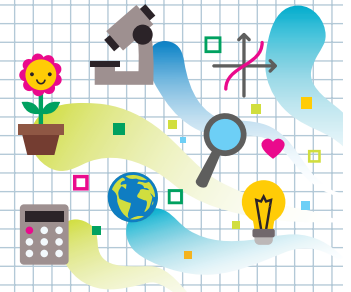
				



# HEADS IN, HEARTS IN

## Pie Die

### Instructions for Set-Up

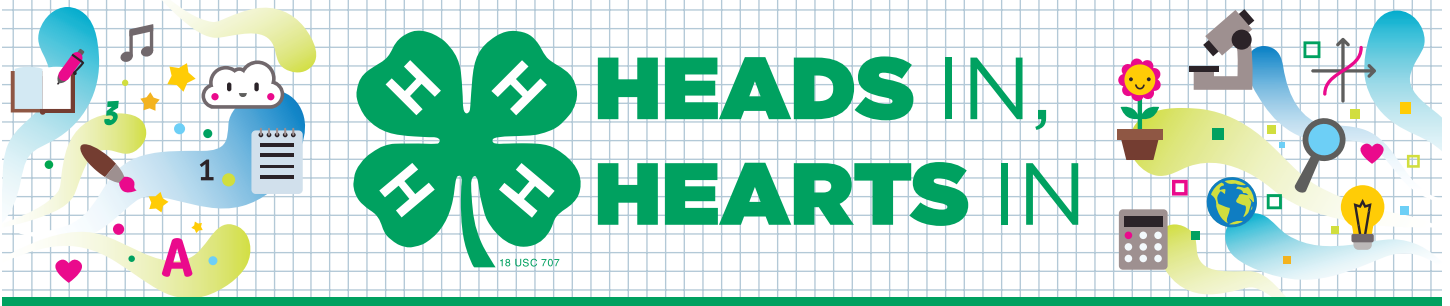


### Supplies

- “Guide for Families” handout
- Clear plastic standup display (optional)
- “Die” handout (1 per participant or family)
- “Pie Chart” handout (1 per participant or family)
- Scissors
- Crayons
- Clear tape
- Display table

### Activity Preparation

- ▶ Purchase or locate items on supply list.
- ▶ Print one copy of the “Guide for Families” handout. Laminate or place in a clear plastic standup display to allow participants to see it more readily.
- ▶ Print one copy of the “Die” handout for each participant or family.
- ▶ Print one copy of “Pie Chart” handout for each participant or family.
- ▶ Set up the display table and arrange needed supplies.



# Pie Die

## Guide for Families

### Learning Objectives

#### What you need to know:

A **graph** is a way to show numbers in a chart or picture. A **pie chart** is a way to show information in a picture with a circle divided into sections to represent different parts of a whole.

#### What you will do and learn:

This activity will help you practice counting and grouping items and then displaying or graphing your results. In this activity, you will roll a die to collect information and total how many different colors you roll. You will then use a **pie chart** to display the results.

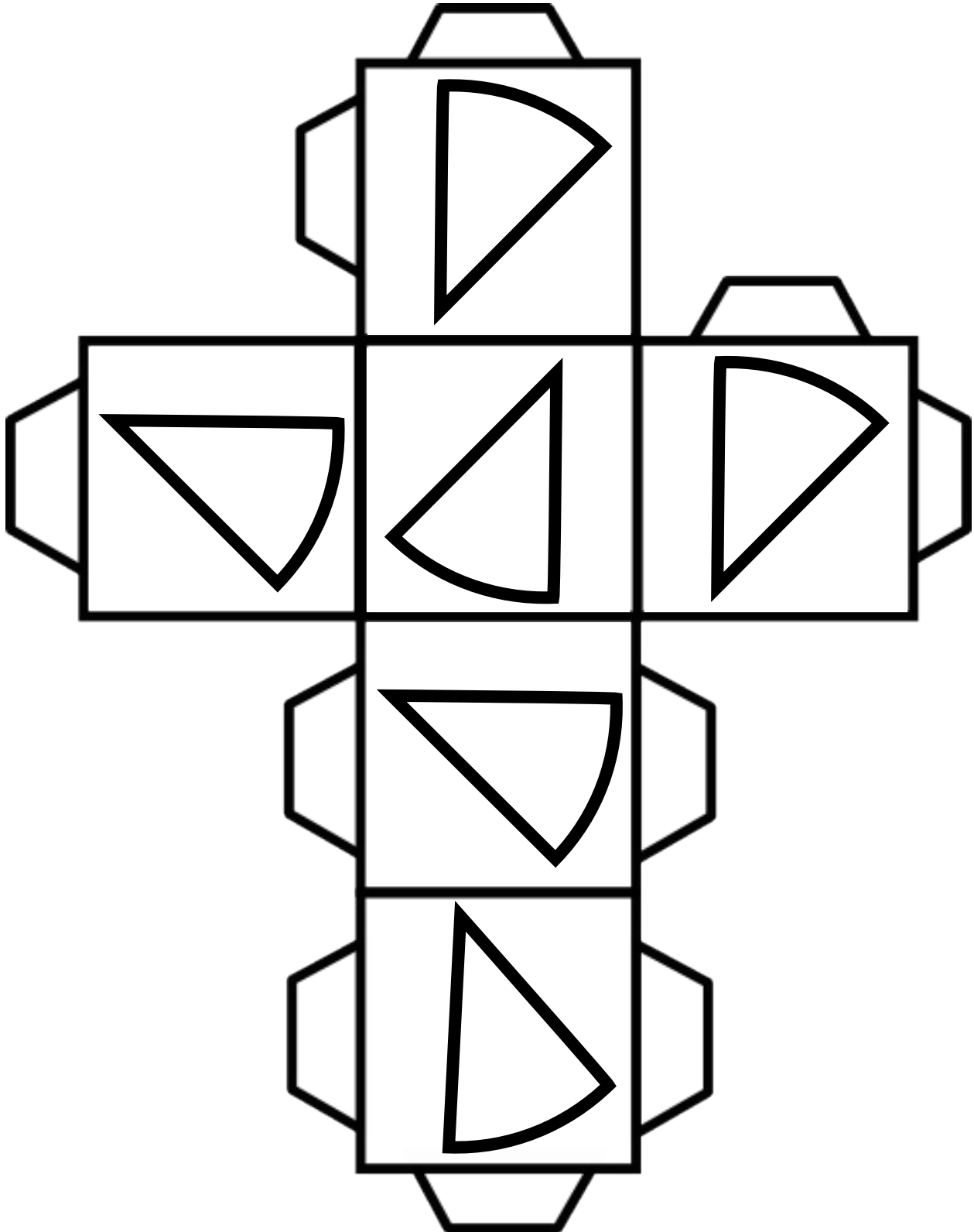
### Instructions

1. Take the “Die” handout and cut around the figure with the scissors.
2. Using the crayons, color each slice of pie on each side of the die a different color.
3. Fold the die and using the clear tape, tape it together until you have a cube you can roll.
4. Roll the die. Look at the color on top of the die. Color in the first little pie shape on the “Pie Chart” handout with that color.
5. Keep rolling the die until all the circles are colored in.
6. Choose one color and count how many circles you’ve colored in with that color. Then fill in that many slices on the pie with the same color.
7. Repeat Step 6 until your pie is completely colored in.
8. Answer the questions on the bottom of the “Pie Chart” handout.



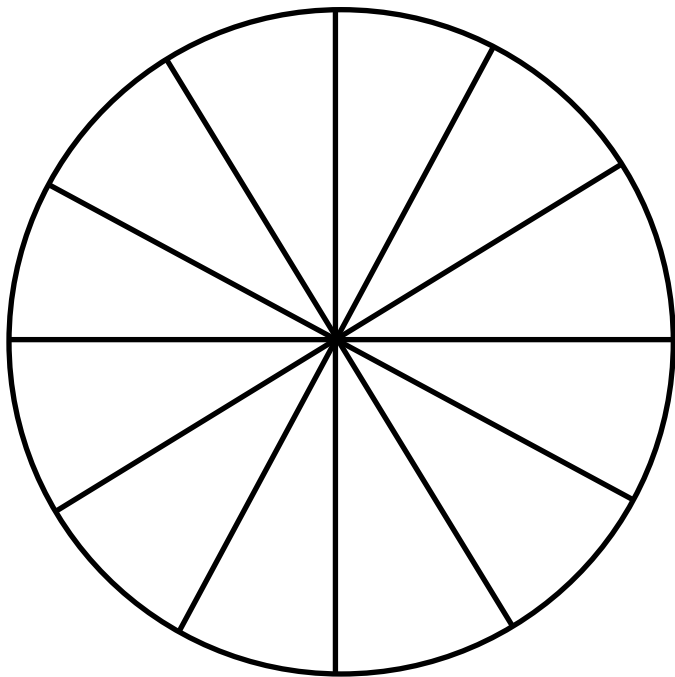
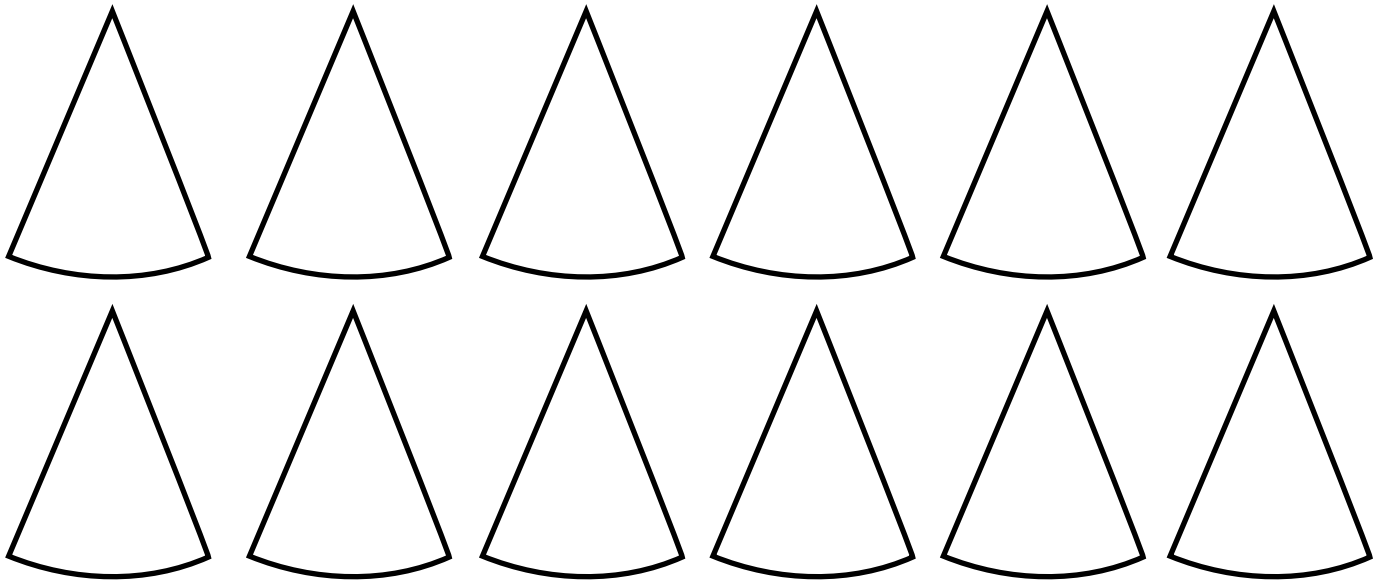
# Pie Die

## Die Handout



# Pie Die

## Pie Chart Handout



**Which color has the most slices?**

\_\_\_\_\_

**Which color has the least slices?**

\_\_\_\_\_

**Are there any colors that have an equal number of slices?**

\_\_\_\_\_

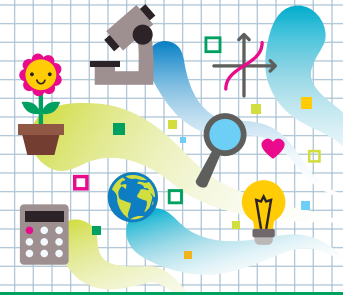
**For older children:**

**What fraction of the pie is the color \_\_\_\_\_**



# HEADS IN, HEARTS IN

## Skippy Clippy Instructions for Set-Up

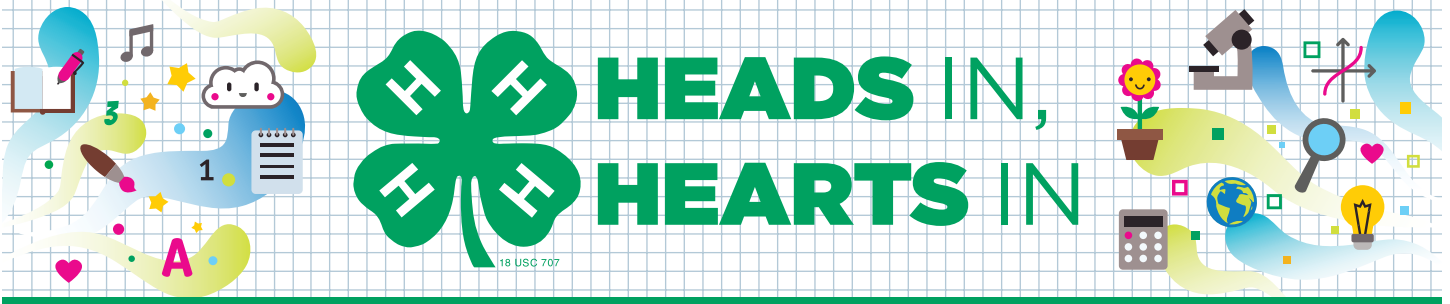


### Supplies

- “Guide for Families” handout
- Clear plastic standup display (optional)
- Rulers (ideal for younger children) (one per participant or family)
- Sewing tape measures (ideal for older children) (one per participant or family)
- Packing tape
- Several wooden or wire spring clothespins
- “Pick a Number” handout
- Display table

### Activity Preparation

- ▶ Purchase or locate items on supply list.
- ▶ Print one copy of the “Guide for Families” handout. Laminate or place in a clear plastic standup display to allow participants to see it more readily.
- ▶ Print a few copies of the “Pick a Number” handout.
- ▶ Set up the display table and arrange needed supplies.
- ▶ If using the sewing tape measures, use the packing tape to attach the tape measure flat to the table on both ends. Leave enough slack so that participants can easily clip clothespins onto the tape measure.



# Skippy Clippy

## Guide for Families

### Learning Objectives

#### What you need to know:

**Skip counting** is counting by a number other than one. For example, you can skip count by 2, skip count by 3 and so on. When skip counting by 2, you count 2, 4, 6, 8 and so on. **Skip counting** helps you to learn how to count many things quickly, count money easily, tell time in various increments and begin to understand multiplication.

#### What you will do and learn:

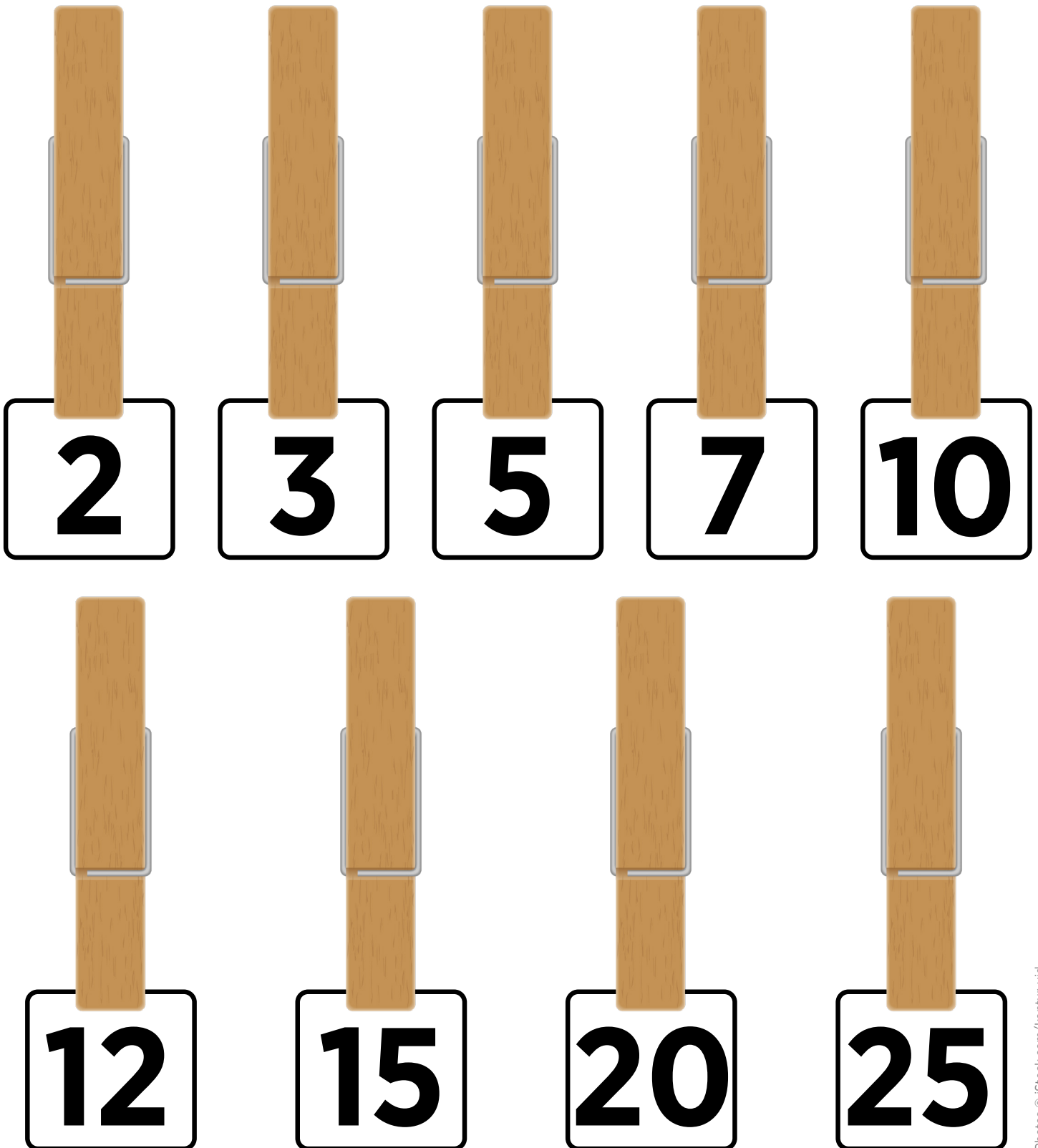
You will use clothespins to practice skip counting. Remember that skip counting can be done by a variety of different numbers. Practicing skip counting is a great way to become accurate and quick at counting by numbers other than one. In no time, you'll become a quick Skippy Clippy!

### Instructions

1. Choose a ruler or a sewing tape measure.
2. Look at the "Pick a Number" handout on the table. Choose a number that you want to skip count by.
3. Choose whether you will use a ruler or tape measure. Take a clothespin and clip it on the ruler or tape measure on the number you chose.
4. Begin skip counting by that number and clip the next number on the ruler or tape measure with a clothespin.
5. Continue until you run out of room on your ruler or sewing tape measure.
6. Remove the clothespins.
7. Choose a new number to skip count by and do the activity again.

# Skippy Clippy

## Pick a Number Handout

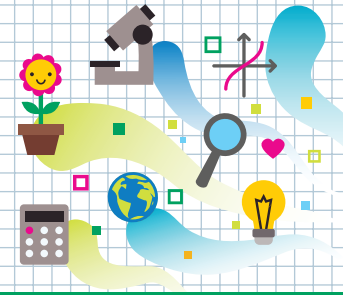


Photos © iStock.com/kontur-vid



# HEADS IN, HEARTS IN

## Spinner Math Instructions for Set-Up

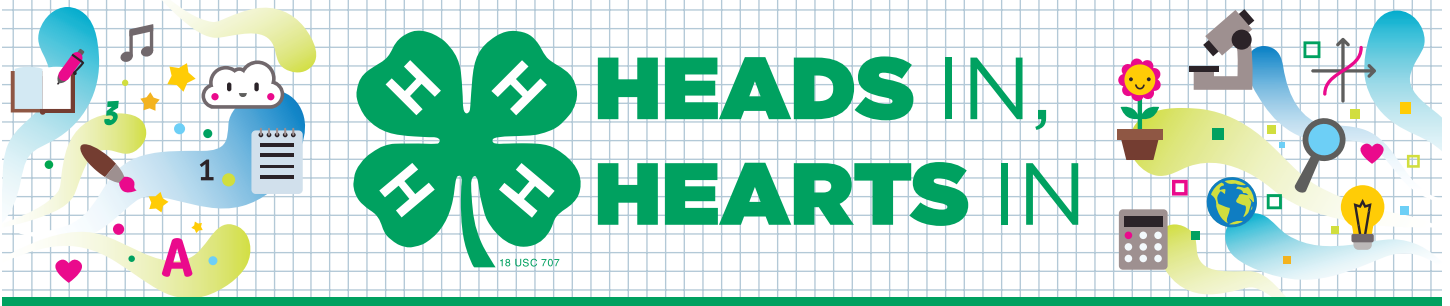


### Supplies

- “Guide for Families” handout
- Clear plastic standup display (optional)
- Display table
- “Spinner” handout
- “Spinner Math” handout
- “Blank Spinner” handout
- Sharpened pencils
- Paper clips

### Activity Preparation

- ▶ Purchase or locate items on supply list.
- ▶ Print one copy of the “Guide for Families” handout. Laminate or place in a clear plastic standup display to allow participants to see it more readily.
- ▶ Print copies of the “Spinner” and the “Blank Spinner” handouts. Each participant may choose to do one handout or both of them.
- ▶ Print copies of the “Spinner Math” handout. Each participant may need more than one.
- ▶ Set up the display table and arrange needed supplies.



# Spinner Math

## Guide for Families

### Learning Objectives

#### What you need to know:

An **equation** is a math sentence with two equal sides separated by an **equal to** sign (=). For example, in the equation  $1+1=2$ , both sides of the equation are equal. Equations often show two different ways to represent a number.

#### What you will do and learn:

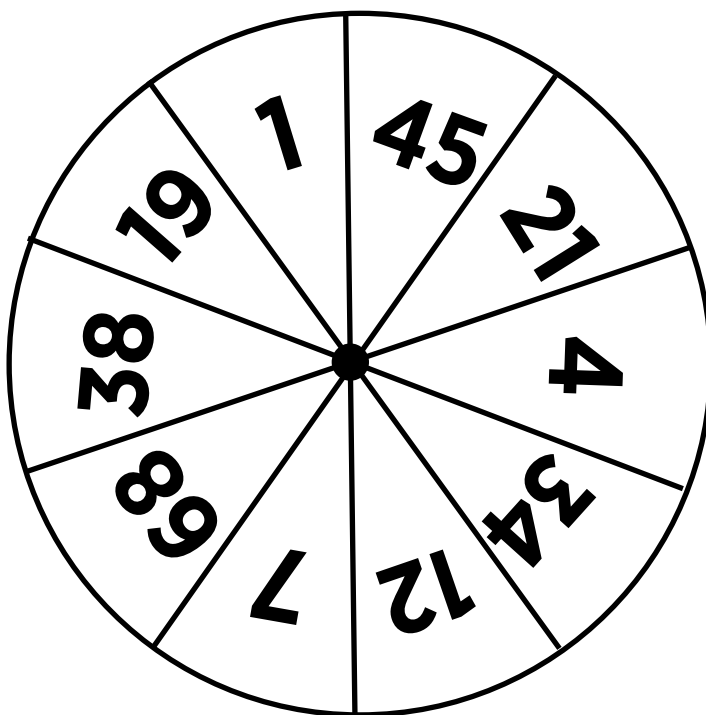
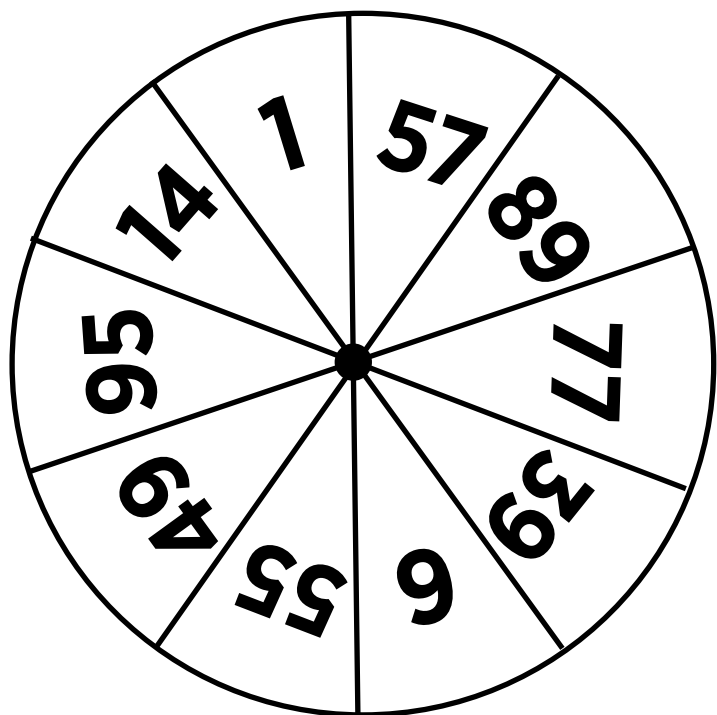
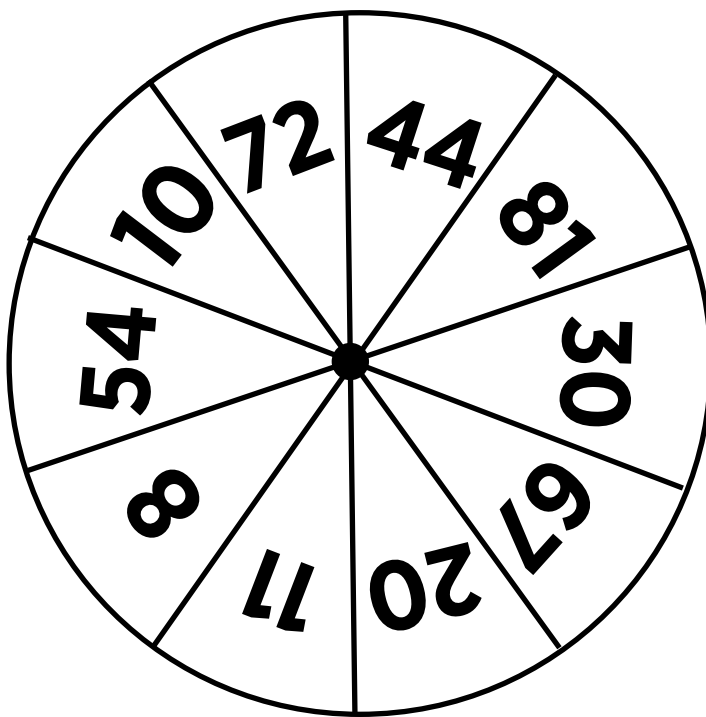
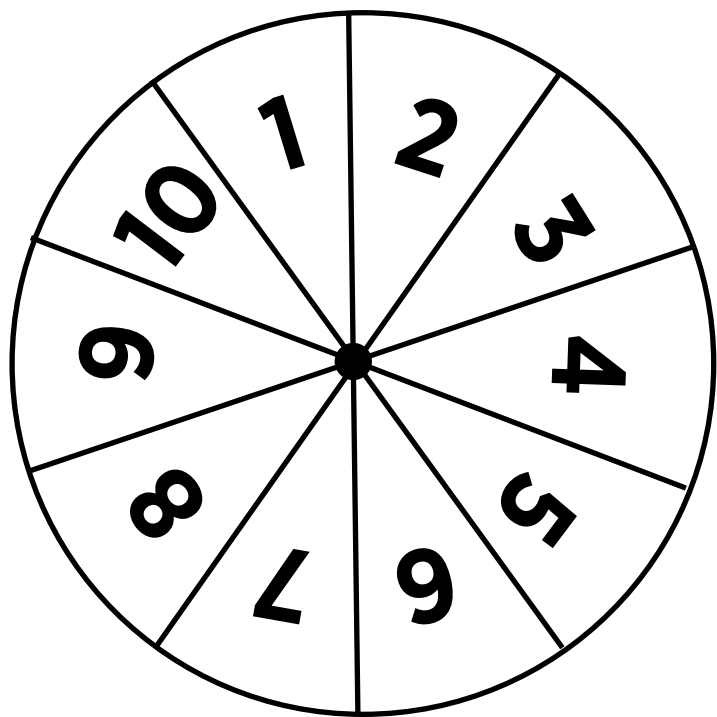
You will use common items to practice math equations. You will practice adding, subtracting or multiplying a variety of numbers. You also can practice identifying numbers, solving math problems and naming place values.

### Instructions

1. Take one copy of the “Spinner” handout and one copy of the “Spinner Math” handout.
2. Take a pencil and a paper clip.
3. Place the paper clip onto the sharpened end of the pencil.
4. Put the tip of the pencil in the center of the “Spinner” handout.
5. Using your finger, spin the paper clip. See where the paper clip stops.
6. Record the number where the paper clip stopped on the first equation of the “Spinner Math” handout.
7. Spin the paper clip again.
8. Record the number where the paper clip stopped below the first number you wrote down on the “Spinner Math” handout.
9. In the small circle, decide if you want to add, subtract or multiply the two numbers. Add that symbol. Remember for subtraction, the larger number needs to be put on top of the smaller number.
10. Solve the equation.  
Adaptations:  
-Use the “Blank Spinner” handout to choose your own numbers for the activity.  
-Identify which number is in the ones, tens or hundreds place value position.

# Spinner Math

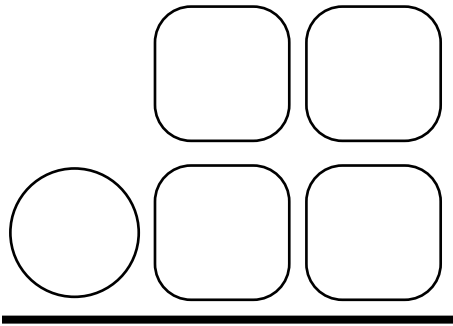
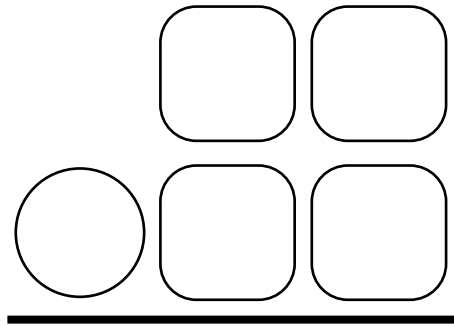
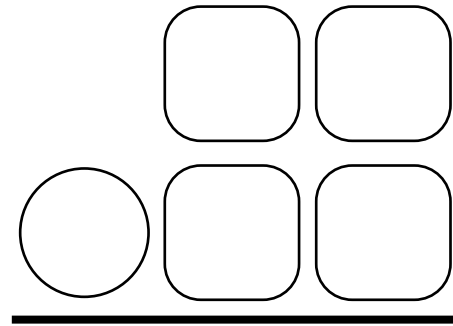
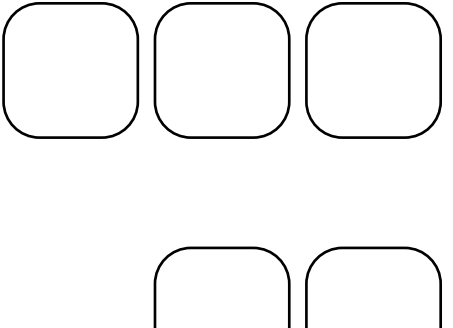
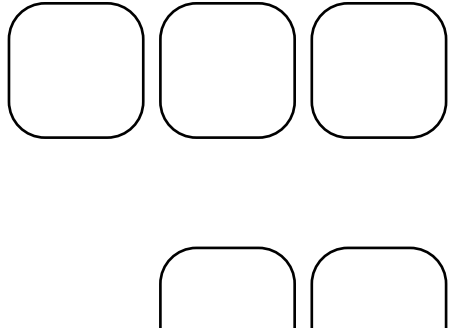
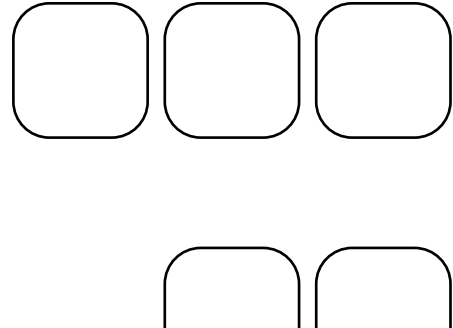
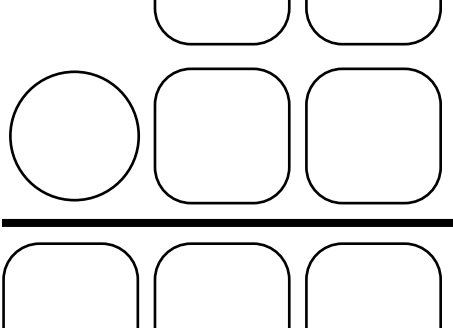
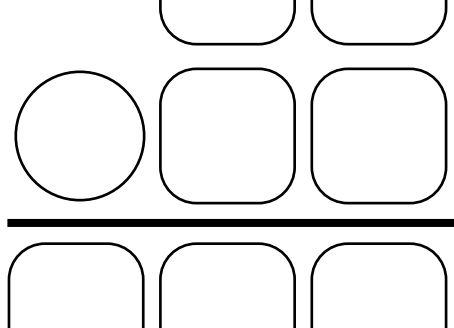
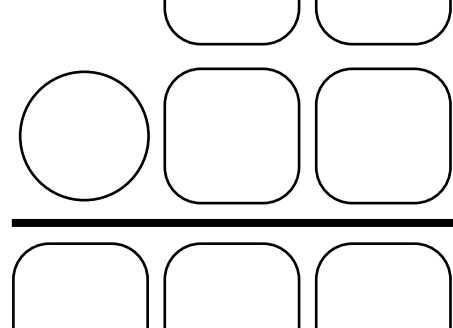
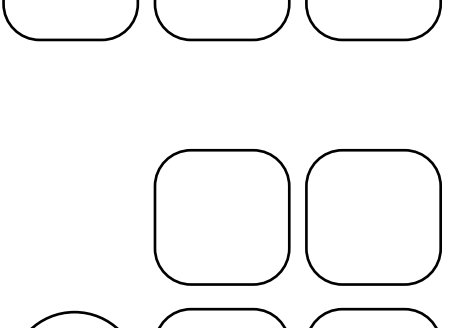
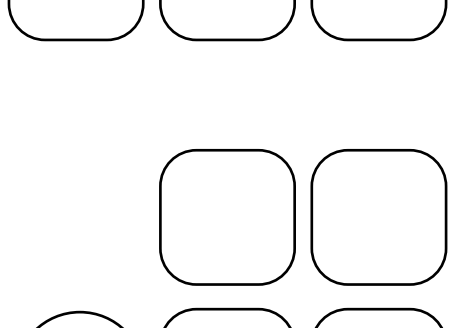
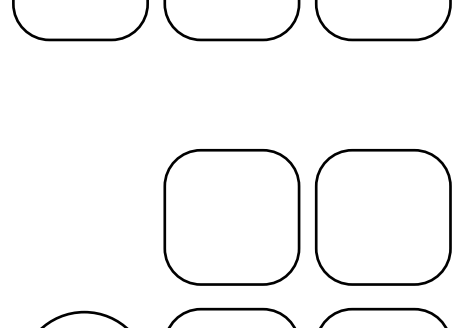
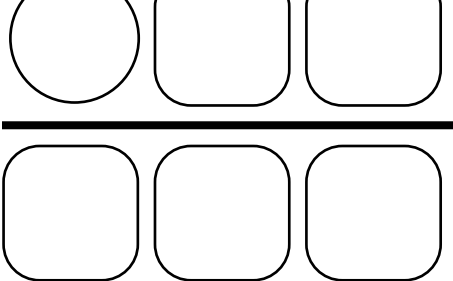
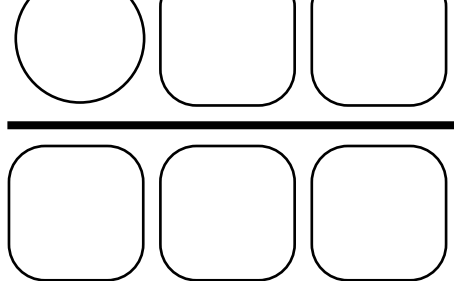
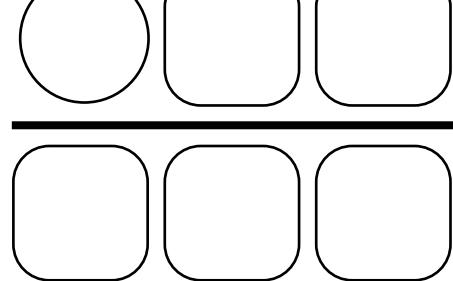
## Spinner Handout





# Spinner Math

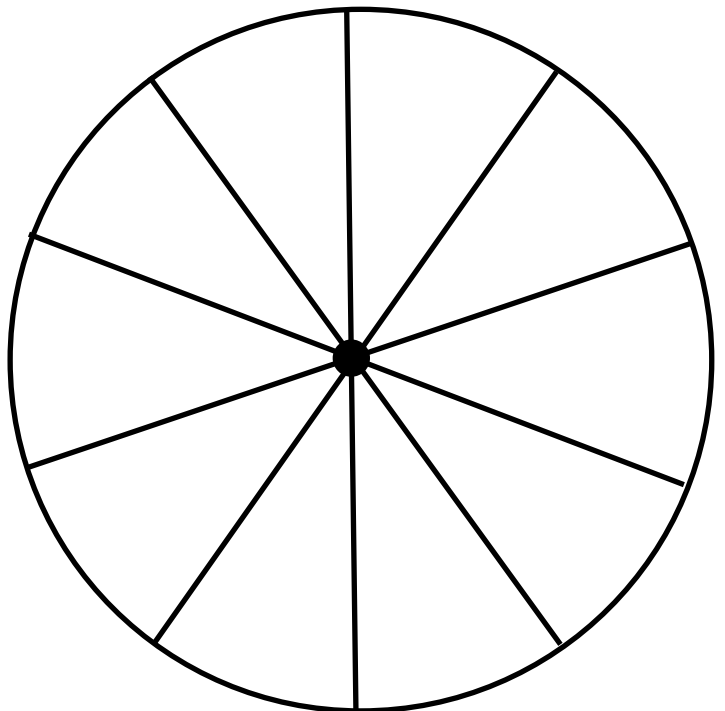
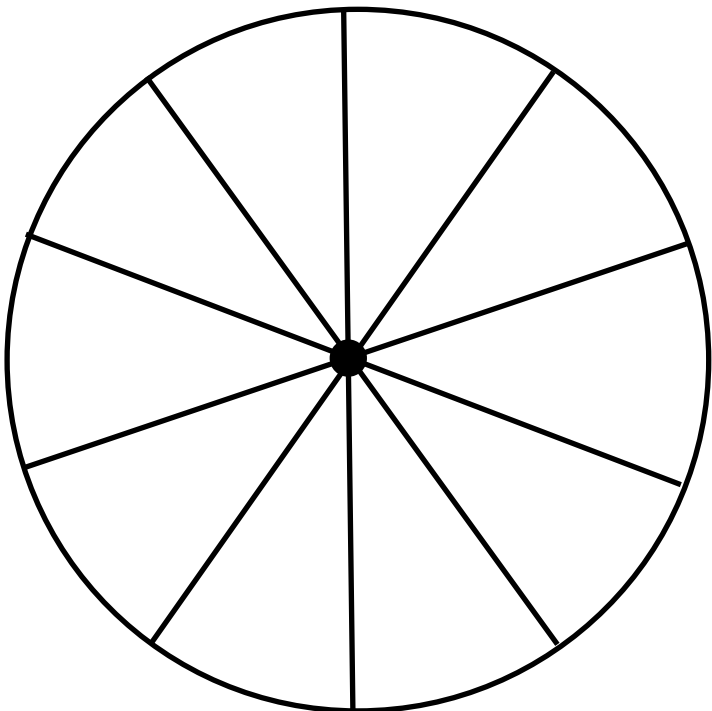
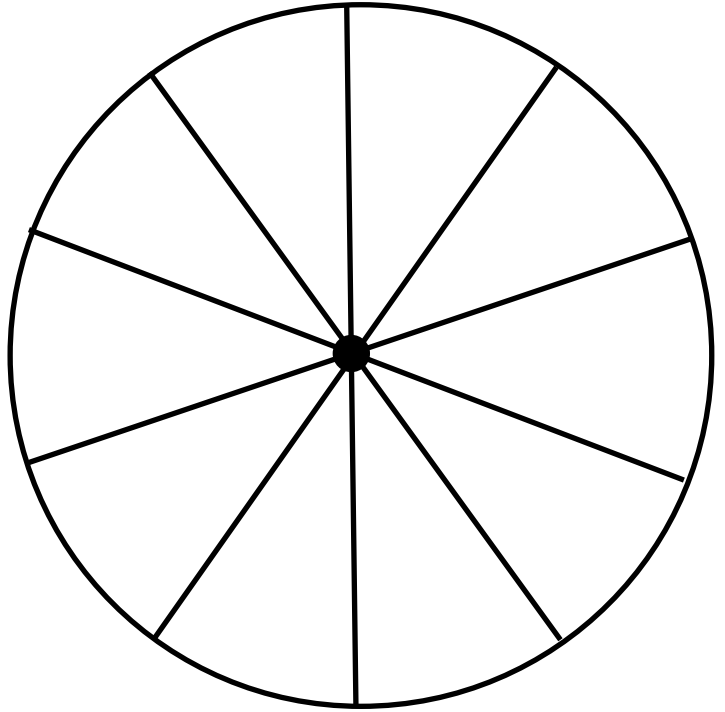
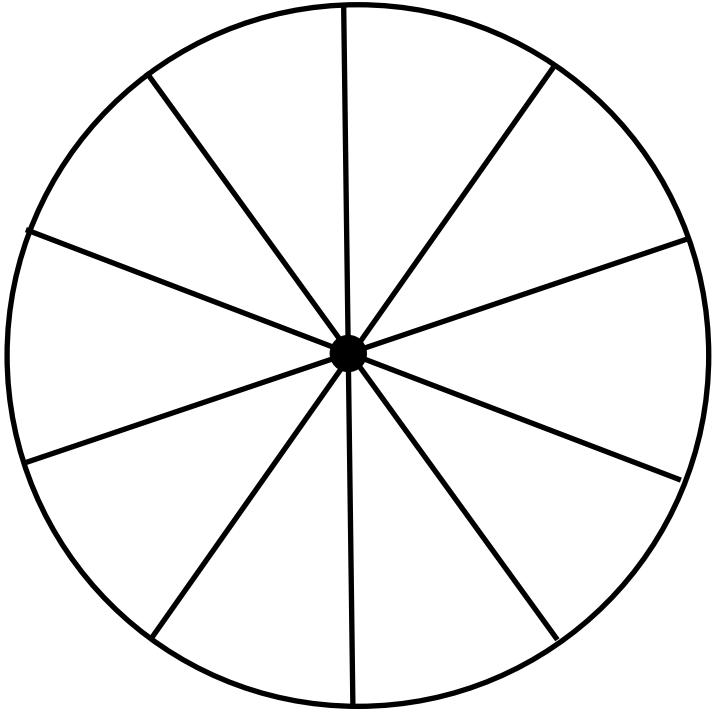
## Spinner Math Handout

# Spinner Math

## Blank Spinner Handout

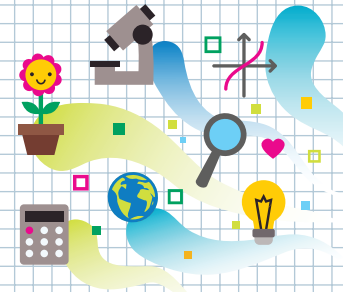
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# HEADS IN, HEARTS IN

## Storied Math Instructions for Set-Up

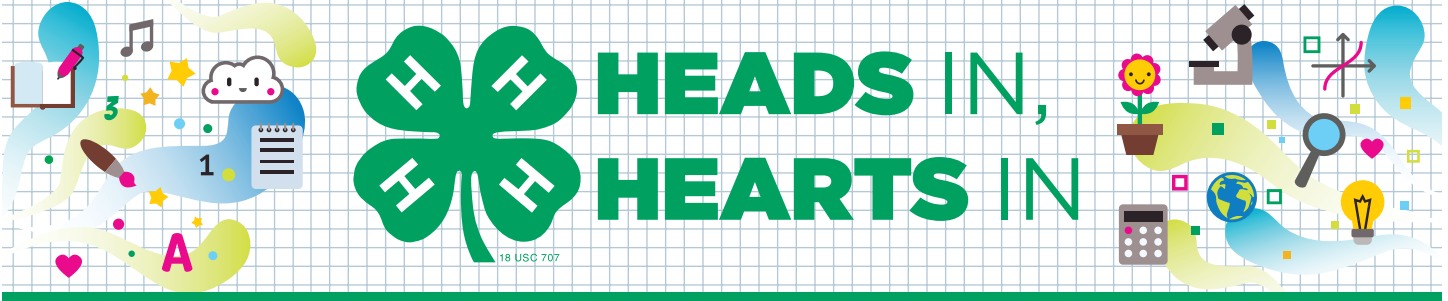


### Supplies

- “Guide for Families” handout
- Clear plastic standup display (optional)
- “Storied Math” (“Addition,” “Subtraction,” “Multiplication” and “Division” handouts, one of each per participant or family)
- Pencils
- Display table

### Activity Preparation

- ▶ Purchase or locate items on supply list.
- ▶ Print one copy of the “Guide for Families” handout. Laminate or place in a clear plastic standup display to allow participants to see it more readily.
- ▶ Print “Storied Math” handouts.
- ▶ Set up the display table and arrange needed supplies.



## Storied Math

### Guide for Families

#### Learning Objectives

##### What you need to know:

A **word problem** (or **story problem**) is a written story that introduces a math problem that needs to be solved. Word problems use real-life scenarios that help you practice solving problems and practice math skills such as adding, subtracting, multiplying and dividing.

##### What you will do and learn:

You will practice solving math problems using stories. You will draw a picture of the problem, create an equation and write your answer.

#### Instructions

1. Select one "Storied Math" handout: "Addition," "Subtraction," "Multiplication" or "Division." Read the stories and then fill in the handout by drawing a picture of the problem, writing an equation of the problem and then writing your answer.
2. Complete the additional "Storied Math" handout pages.

# Storied Math

## Addition Handout

### The Apple Orchard

Austin, Will and Neveah went to pick apples in an apple orchard. When they went to pick up their baskets, they saw a sign that said the orchard had 11 different kinds of red apples, 2 different kinds of green apples and 7 different kinds of yellow apples. *How many kinds of apples does the orchard have in total?*

**My Equation:**

$$\underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$$

**My Picture:**

While picking apples in the orchard, Austin, Will and Neveah got hungry. Austin ate 5 apples, Will ate 2 apples and Neveah ate 7. *How many apples did they eat in total?*

**My Equation:**

$$\underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$$

**My Picture:**

*Will picked 11 sweet apples, 8 tangy apples and 17 tart apples to make an apple pie. How many apples did Will pick in total?*

**My Equation:**

$$\underline{\quad} + \underline{\quad} + \underline{\quad} = \underline{\quad}$$

**My Picture:**

# Storied Math

## Subtraction Handout

### Arianna's Birthday

It's Arianna's birthday and she is throwing a party. She sent out 31 invitations to her friends and 12 people said they can't come to the party. *How many people will be attending Arianna's party?*

**My Equation:**

$$\underline{\quad\quad} - \underline{\quad\quad} = \underline{\quad\quad}$$

**My Picture:**

Arianna picked up 26 balloons to decorate her house. When putting the balloons in her car, 2 balloons popped and then 7 balloons blew away in the wind. *How many balloons does she have left to decorate with?*

**My Equation:**

$$\underline{\quad\quad} - \underline{\quad\quad} - \underline{\quad\quad} = \underline{\quad\quad}$$

**My Picture:**

Arianna made a delicious chocolate cake for everyone to eat at the party. Arianna cut the cake and gave a piece to each of her 19 guests but then 5 people said they didn't want cake and 2 people said they were allergic to chocolate. *How many pieces of cake did Arianna's guests eat?*

**My Equation:**

$$\underline{\quad\quad} - \underline{\quad\quad} - \underline{\quad\quad} = \underline{\quad\quad}$$

**My Picture:**

# Storied Math

## Multiplication Handout

### A Day at the Aquarium

Jamari and Clara went to the aquarium. Each person who enters the aquarium gets 2 wristbands. There are 17 people in the aquarium. *How many wristbands are there?*

**My Equation:**

$$\underline{\quad\quad} \times \underline{\quad\quad} = \underline{\quad\quad}$$

**My Picture:**

Jamari and Clara go to look at the jellyfish. They see 3 different jellyfish. Each jellyfish has 15 tentacles. *How many tentacles are in the tank?*

**My Equation:**

$$\underline{\quad\quad} \times \underline{\quad\quad} = \underline{\quad\quad}$$

**My Picture:**

They go to look at shrimp next. There are 8 shrimp in each tank and Jamari and Clara see 6 tanks. *How many shrimp are there?*

**My Equation:**

$$\underline{\quad\quad} \times \underline{\quad\quad} = \underline{\quad\quad}$$

**My Picture:**

# Storied Math

## Division Handout

### Damien's Garden

Damien is planting a vegetable garden this summer. He has 15 different kinds of vegetables to plant and 5 rows in his garden. *How many kinds of vegetables will be in each row?*

**My Equation:**

$$\underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

**My Picture:**

Damien's zucchinis are ready to be picked. He picks 27 zucchinis and divides them equally into 3 bunches to give them to his neighbors. *How many zucchinis are in each bunch?*

**My Equation:**

$$\underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

**My Picture:**

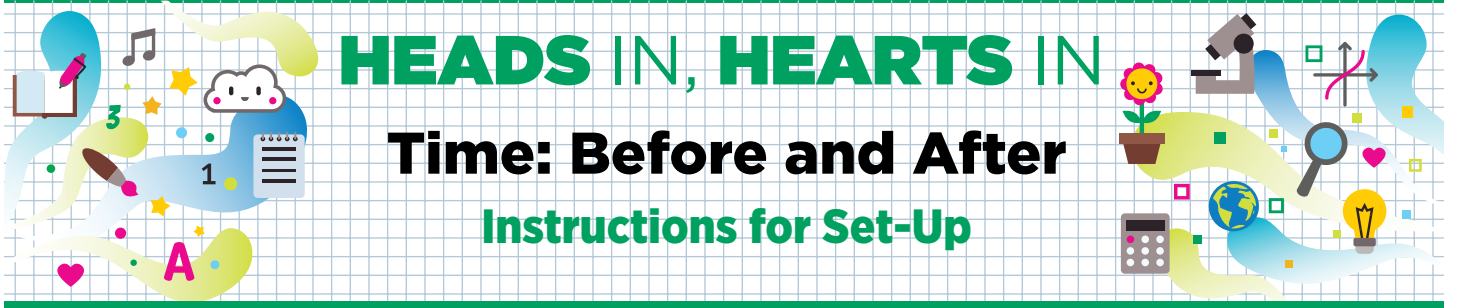
Damien is picking his cabbages from the garden. He needs to pick 45 cabbages and he can fit 9 cabbages into each basket. *How many baskets will he need to use?*

**My Equation:**

$$\underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

**My Picture:**



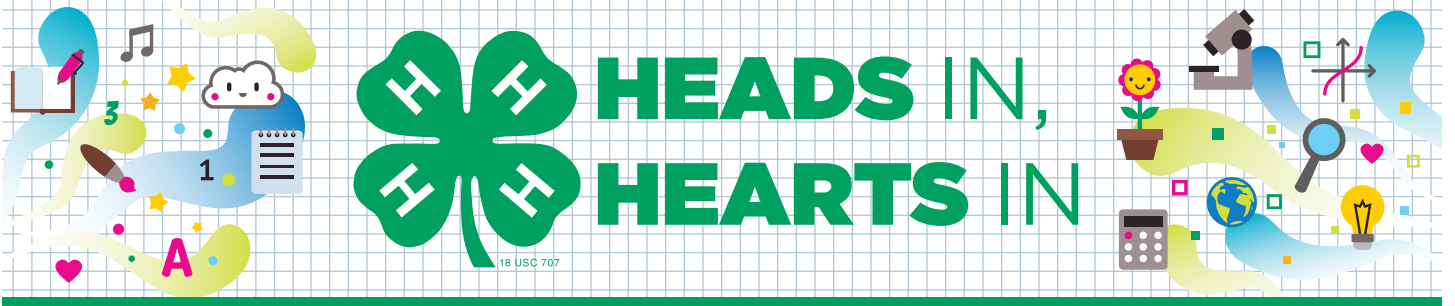


## Supplies

- “Guide for Families” handout
- Clear plastic standup display (optional)
- “Before and After” handout (one per participant or family)
- “Clock” handout
- Scissors
- Dry-erase crayons or dry-erase markers
- Soft cloth to erase dry-erase crayon or dry-erase marker
- Display table

## Activity Preparation

- ▶ Purchase or locate items on supply list.
- ▶ Print one copy of the “Guide for Families” handout. Laminate or place in a clear plastic standup display to allow participants to see it more readily.
- ▶ Print one copy of the “Before and After” handout per participant or family. Laminate or place in a clear sheet.
- ▶ Print at least one copy of the “Clock” handout on durable paper or laminate. Cut the clocks apart.
- ▶ Set up the display table and arrange needed supplies.



## Time: Before and After

### Guide for Families

#### Learning Objectives

##### What you need to know:

Telling time is an important skill to learn. It's also important to successfully identify periods of time before and after a set time. You'll be able to know if you're running late, have extra time or be right on time.

##### What you will do and learn:

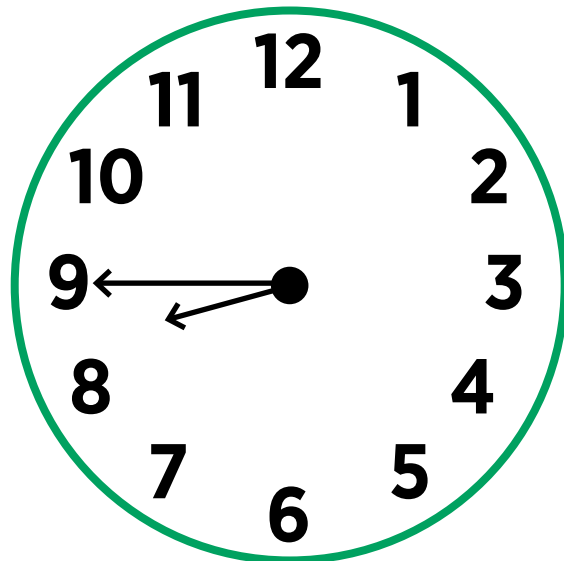
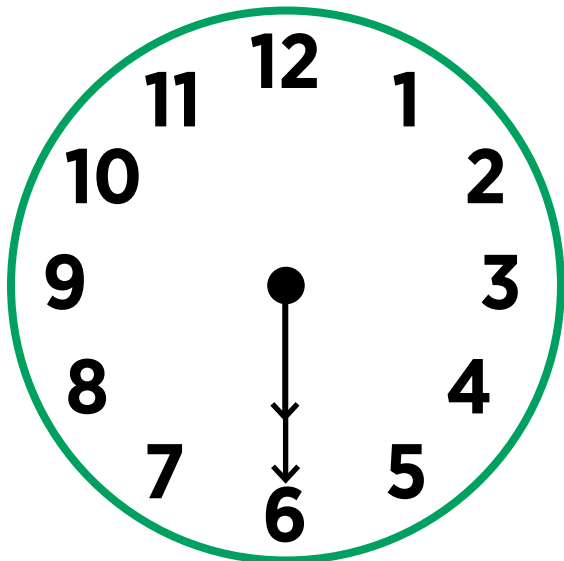
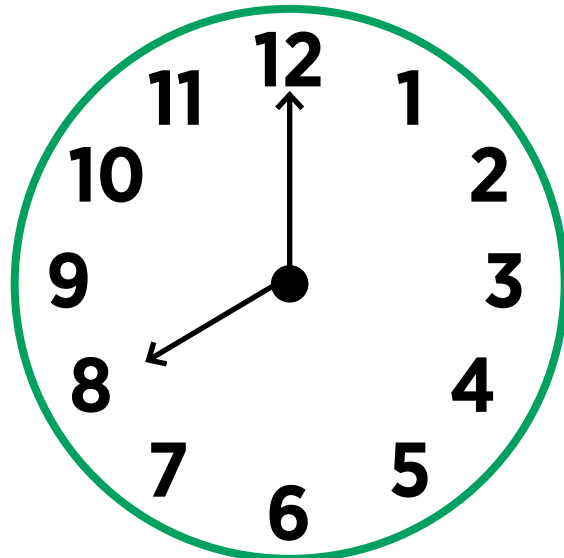
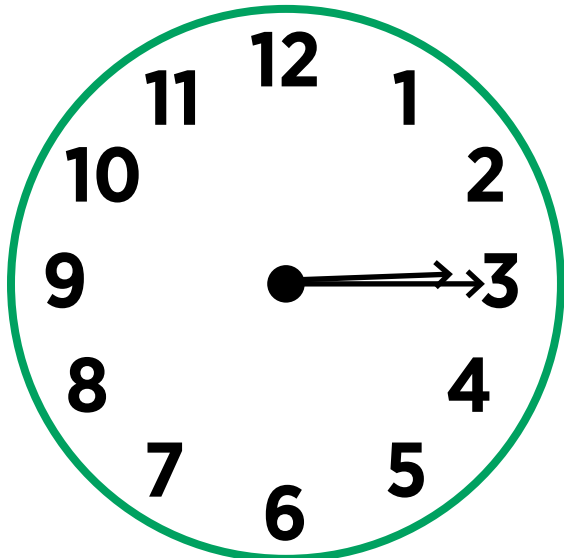
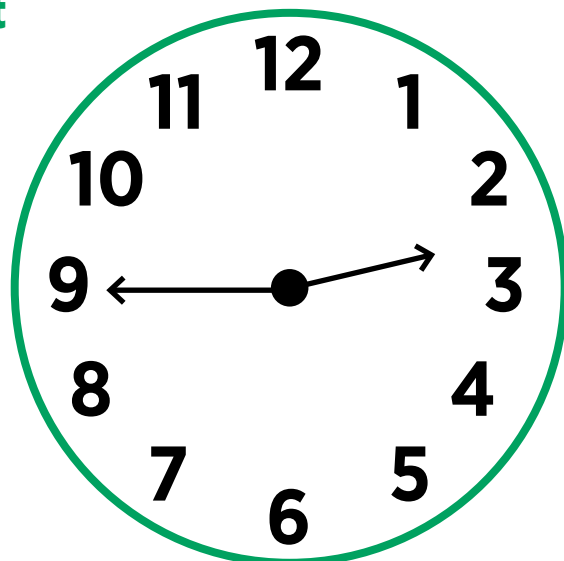
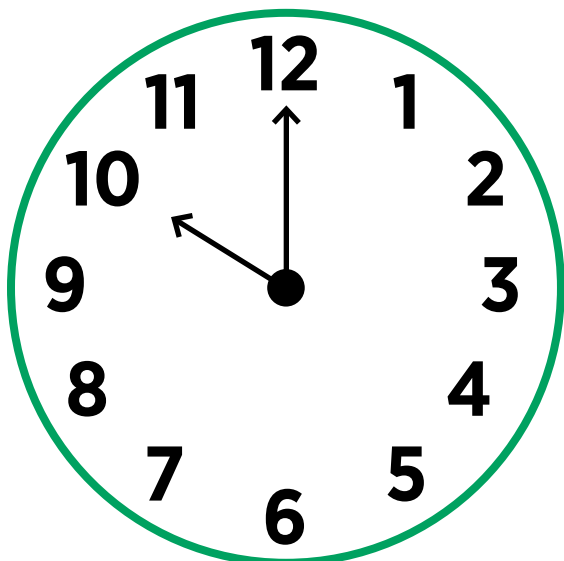
This activity will help you practice telling time. In this activity, you'll identify what time it is and then discover what time it is 15 minutes, 30 minutes, 45 minutes and 1 hour before and after that time.

#### Instructions

1. Take a "Before and After" handout.
2. Choose a clock from the table and place it in the center of the "Before and After" handout.
3. Using a dry-erase crayon or dry-erase marker, on the left, draw the time before the time on the clock. (The "Before and After" handout will tell you which amount of time to choose: 15 minutes, 30 minutes, 45 minutes or 1 hour.) Write the time below the clock such as 8:00.
4. Using a dry-erase crayon or dry-erase marker, on the right, draw the time after the time on the clock. (The "Before and After" handout will tell you which amount of time to choose: 15 minutes, 30 minutes, 45 minutes or 1 hour.) Write the time below the clock such as 9:00.
5. Erase your answer.
6. Choose a new clock or choose a new "Before and After" handout.

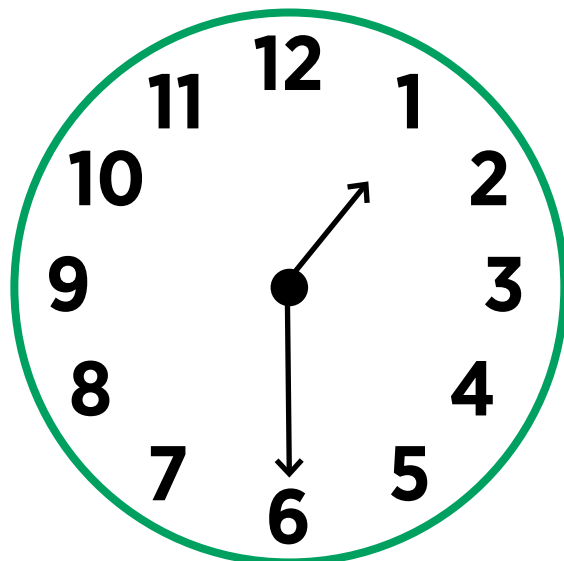
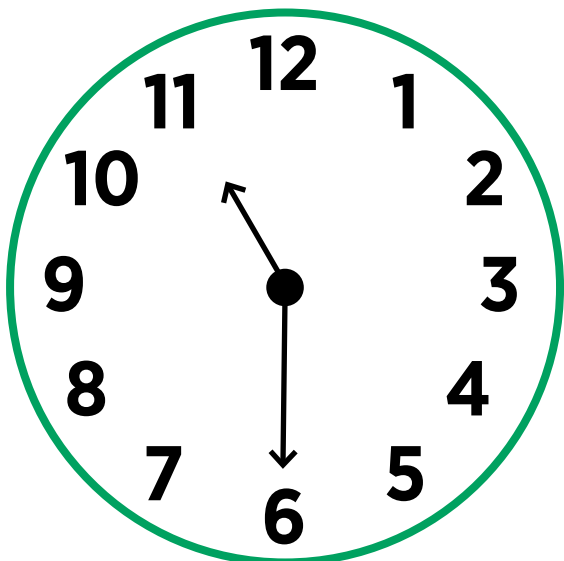
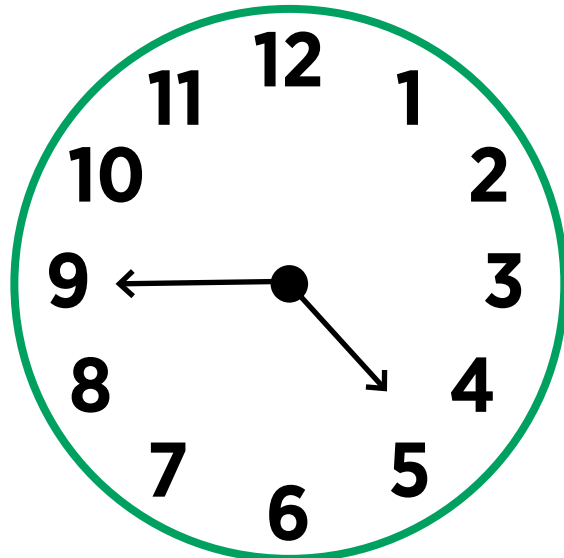
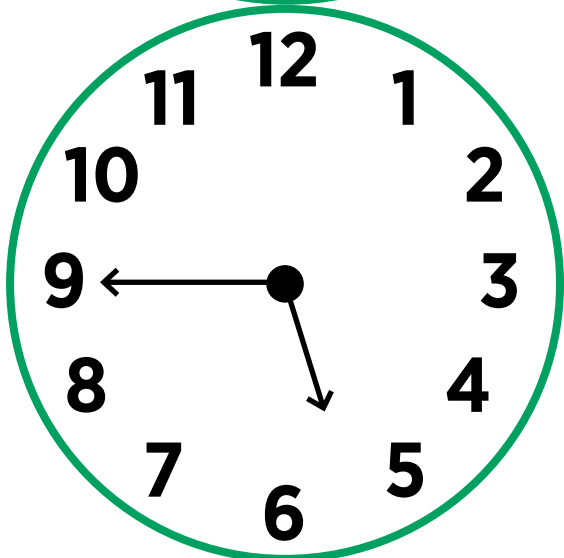
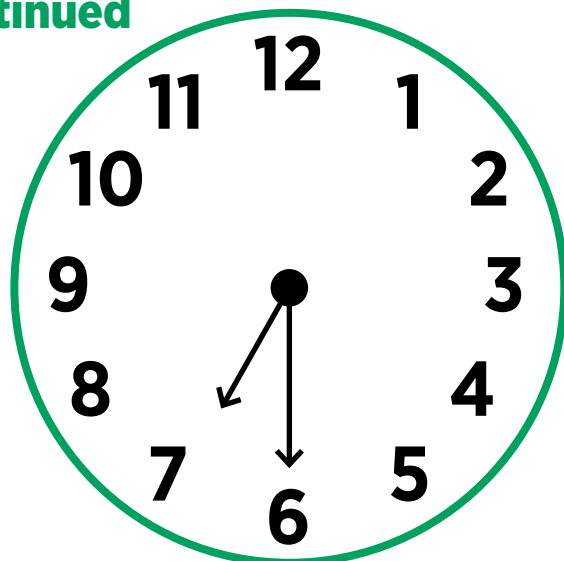
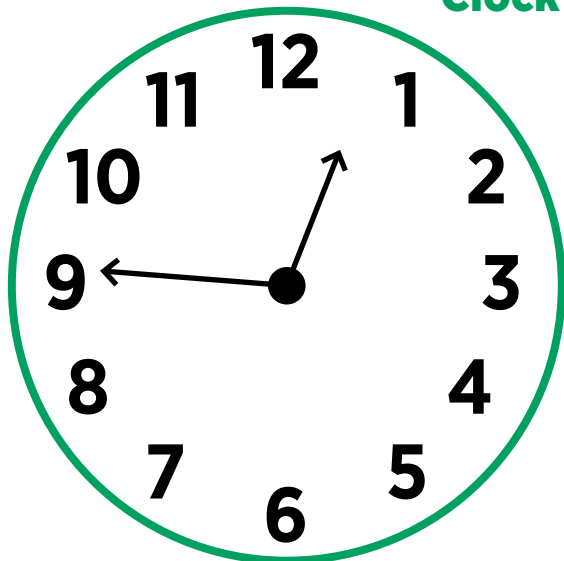
# Time: Before and After

## Clock Handout



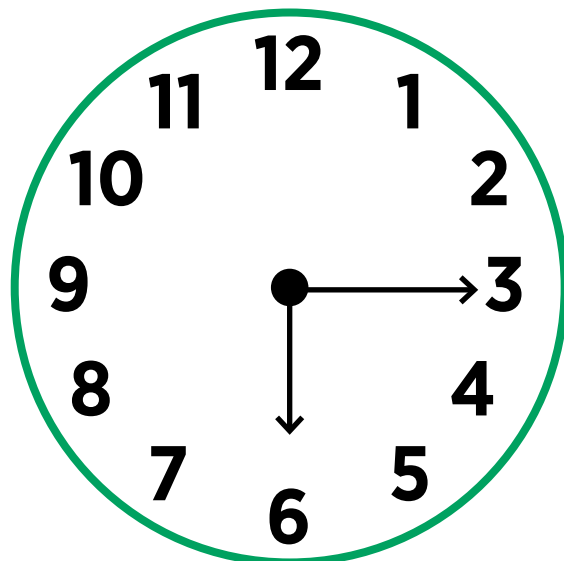
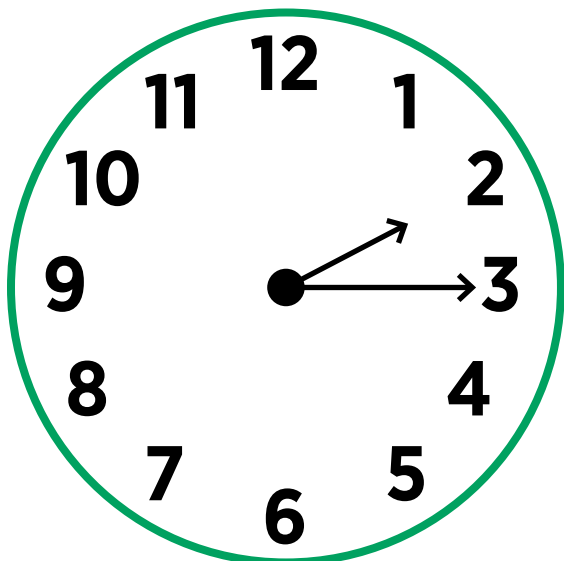
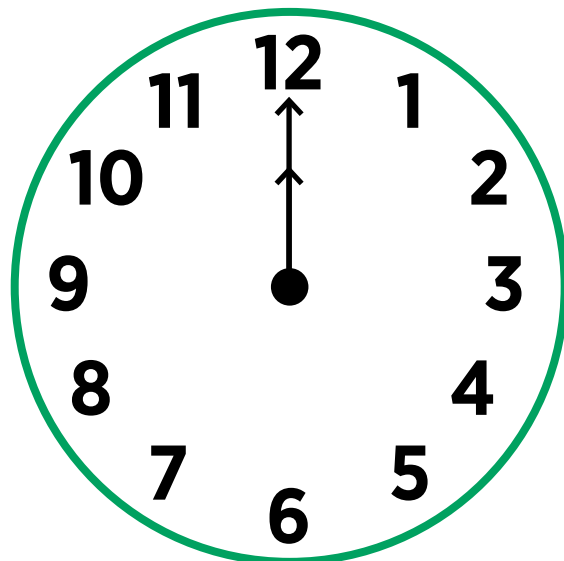
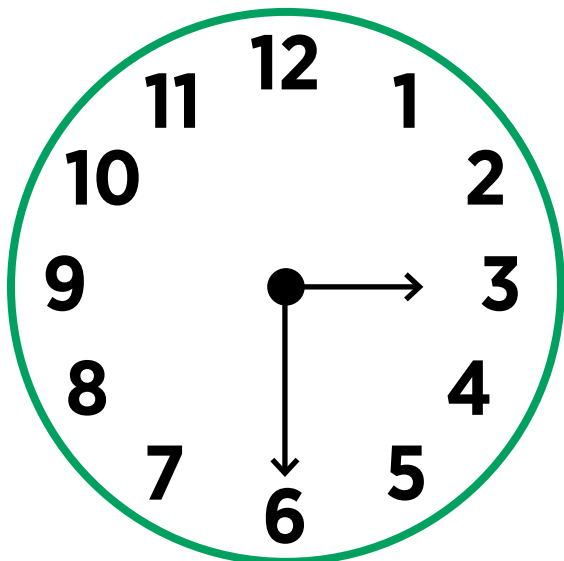
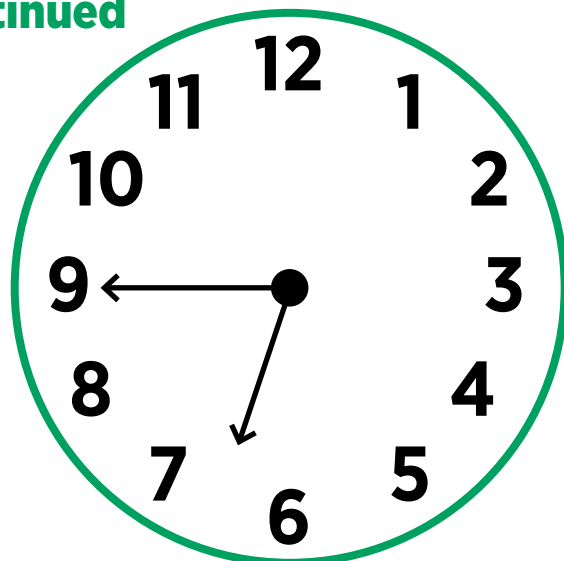
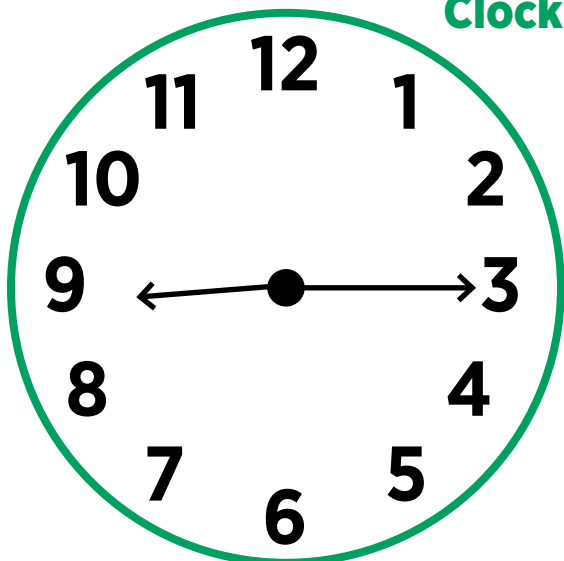
# Time: Before and After

## Clock Handout, continued



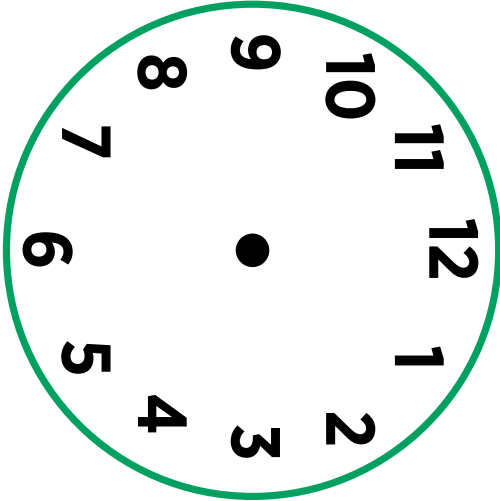
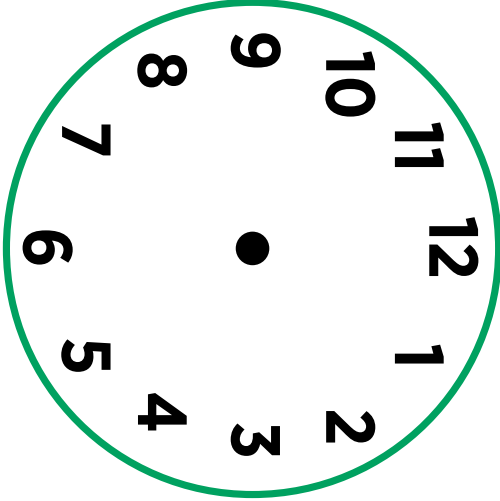
# Time: Before and After

Clock Handout, continued



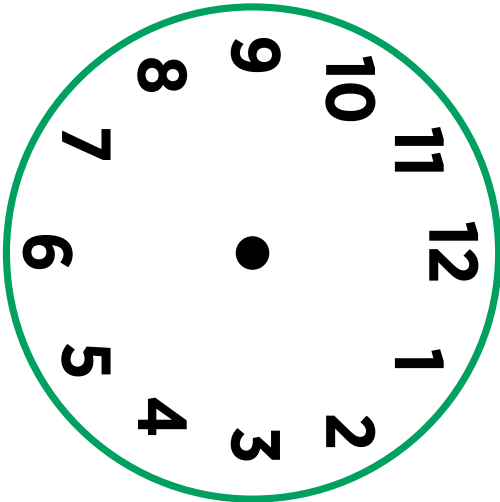
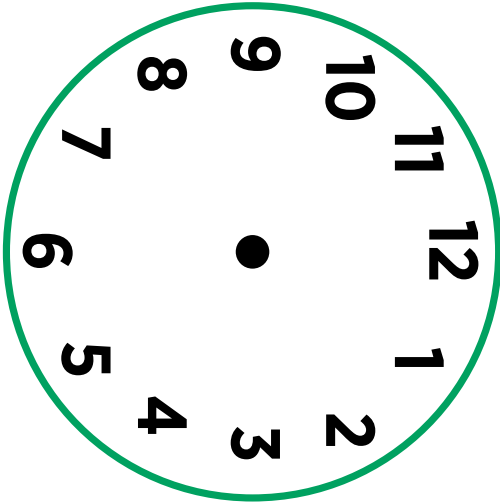
# Time: Before and After

## Before and After Handout

One Hour Before	Time	One Hour After
 <input data-bbox="123 323 293 808" type="text"/>	          	 <input data-bbox="123 1438 293 1923" type="text"/>

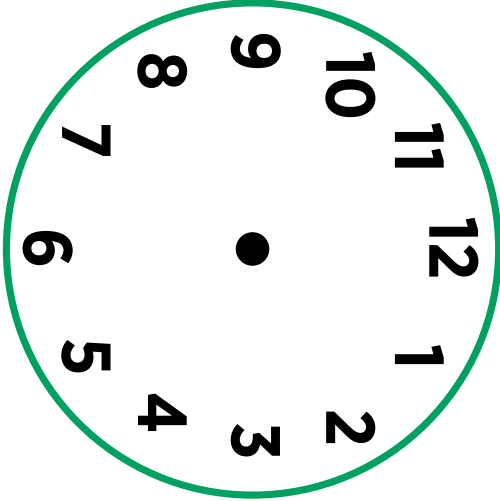
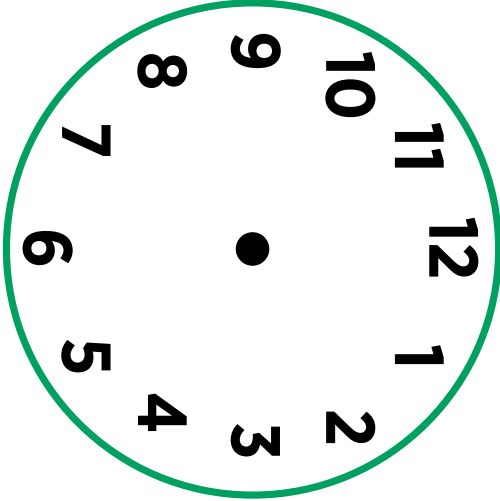
# Time: Before and After

## Before and After Handout, continued

<p style="text-align: center;"><b>45 Minutes Before</b></p>	<div style="text-align: center;">  </div> <div style="border: 1px solid black; height: 30px; width: 100%; margin-top: 10px;"></div>
<p style="text-align: center;"><b>Time</b></p>	<div style="border: 1px solid black; height: 276px; width: 100%;"></div>
<p style="text-align: center;"><b>45 Minutes After</b></p>	<div style="text-align: center;">  </div> <div style="border: 1px solid black; height: 30px; width: 100%; margin-top: 10px;"></div>

# Time: Before and After

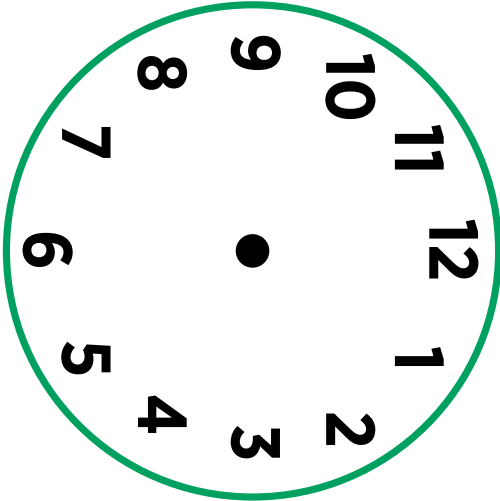
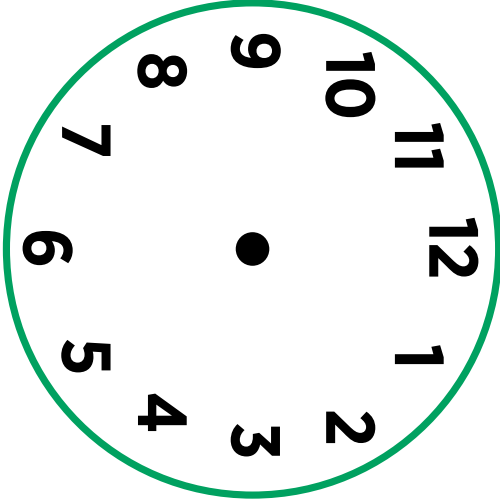
## Before and After Handout, continued

30 Minutes Before	Time	30 Minutes After
<div style="text-align: center;">  </div> <div style="border: 1px solid black; height: 30px; width: 100%; margin-top: 10px;"></div>		<div style="text-align: center;">  </div> <div style="border: 1px solid black; height: 30px; width: 100%; margin-top: 10px;"></div>



# Time: Before and After

## Before and After Handout, continued

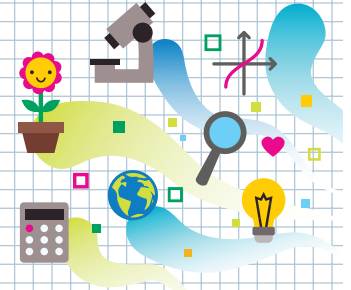
15 Minutes Before	Time	15 Minutes After
 <input data-bbox="123 323 293 808" type="text"/>		 <input data-bbox="123 1438 293 1923" type="text"/>



# HEADS IN, HEARTS IN

## Twisting Place Value

### Instructions for Set-Up



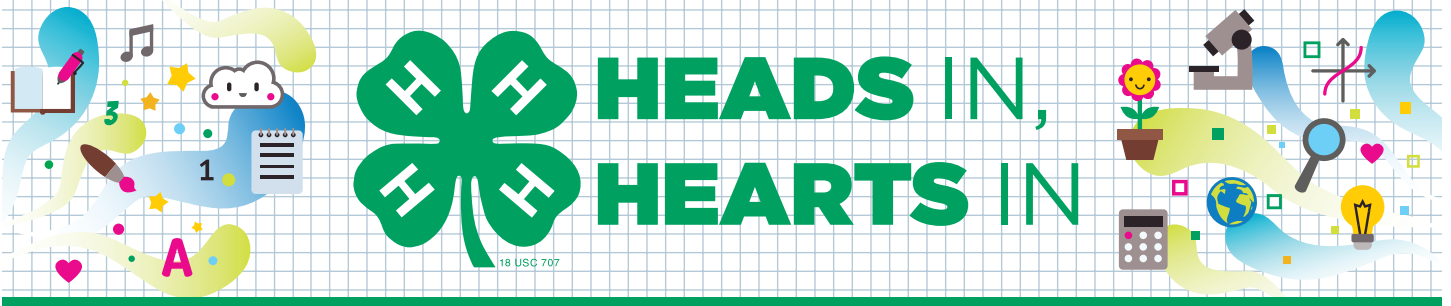
### Supplies

- “Guide for Families” handout
- Clear plastic standup display (optional)
- “What Is Place Value?” handout (1 per participant or family)
- “Place Value” Handout (1 per participant or family)
- Plastic foam cups (3–7 per participant or family)
- Markers
- Pencils
- Display table

### Activity Preparation

- ▶ Purchase or locate items on supply list.
- ▶ Print one copy of the “Guide for Families” handout. Laminate or place in a clear plastic standup display to allow participants to see it more readily.
- ▶ Print one “What Is Place Value?” handout per participant or family.
- ▶ Print one “Place Value” handout per participant or family.
- ▶ Write the numbers 0 through 9 horizontally on the brim of each plastic foam cup.
- ▶ Understanding place value is a progression. If you are doing this activity with younger children, you may choose to use only 2 or 3 cups (representing ones, tens and hundreds) to simplify the activity.
- ▶ In the thousands place setting, write the numbers in a color different from the rest. Also, add a comma after the number to help participants understand the thousands place setting.
- ▶ Use the photo as a guide to create your cups.





# Twisting Place Values

## Guide for Families

### Learning Objectives

#### What you need to know:

**Place value** is the value of each digit in a number. The position of each digit in a number tells you its place value. For example, in the number 237, the number 2 is in the hundreds position, the number three is in the tens position and the number 7 is in the ones position. The **place value chart** demonstrates this concept. It includes ones, tens, hundreds, thousands, ten thousands, hundred thousands and millions.

#### What you will do and learn:

In this activity, you will practice identifying and saying the place value for numbers.

### Instructions

1. Look at the place value chart on the “What Is Place Value?” handout. Use this as a guide to help you in this activity.
2. Take three cups and stack them together.
3. Twist the cups until the numbers align horizontally to show you a 3-digit number (for example, 321).
4. Use the “Place Value” handout to practice saying the number, writing the number in standard form and writing the number in expanded form.
5. Next, twist the cups to create a new number. Use the “Place Value” handout to say and write that number.
6. Repeat the activity, adding additional cups up to seven to create longer numbers using additional place values such as thousands, ten thousands, hundred thousands, millions and so on.

# Twisting Place Values

## What Is Place Value? Handout

**Millions**

**Hundred-Thousands**

**Ten-Thousands**

**Thousands**

**Hundreds**

**Tens**

**Ones**

**1**

**,**

**2**

**3**

**4**

**,**

**5**

**6**

**7**

**Place Value**

# Twisting Place Values

## Place Value Handout

**Say the number.**

**(Example, say “ Three thousand, five hundred, sixty one.”)**

**Write the number in standard form.**

**(Example: 3,561)**

**Write the number in expanded form.**

**(Example: 3,000 + 500 + 60 + 1)**