COMMON CORE SAMPLE PROMPTS FOR MATHEMATICS

KINDERGARTEN

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INTRODUCTION

This document is meant to be a resource tool for items aligned to the Common Core State Standards. The sample items provided are not exhaustive of what the standards mean, rather they are a gauge of what should be included in teaching first graders based on the intent of the Common Core State Standards. The items should be considered as formative assessment tasks to provide educators, students, and parents feedback about mathematical knowledge and inform educators about students' behavior, communication, and learning habits.

Observing students' interactions when solving these tasks is best. Howard County Public School System developed a rubric for Kindergarten, which is located in the answer key, and it is a great start for documenting students' progress towards their mathematical learning pathway.

Sites used to select assessment items include:

- Illustrative Mathematics
- Howard County Public School System
- North Carolina Department of Instruction
- Seattle Public Schools
- Engage New York

How to Use Various Aspects of This Document

- Analyze the way mathematics standards are conceptualized in each item or task.
- Identify the instructional shifts that need to occur to prepare students to address these more rigorous demands. Develop a plan to implement the necessary instructional changes.
- Recognize that the sample items and tasks are only one way of assessing the standard.
- Instruction should address "focus," coherence," and "rigor" of mathematics concepts.
- Instruction should embed mathematical practices when teaching mathematical content.
- For grades K–5, calculators should not be used as the concepts of number sense and operations are fundamental to learning new mathematics content in grades 6–12.

Your feedback is welcome. Please do not hesitate to contact Katia Foret at katia.foret@doe.k12.de.us or Rita Fry at rita.fry@doe.k12.de.us with suggestions, questions, and/or concerns.

Priorities in Mathematics

Grade	Priorities in Support of Rich Instruction and Expectations of Fluency and Conceptual Understanding
K–2	Addition and subtraction, measurement using whole number quantities
3–5	Multiplication and division of whole numbers and fractions
6	Ratios and proportional reasoning; early expressions and equations
7	Ratios and proportional reasoning; arithmetic of rational numbers
8	Linear algebra

Common Core State Standards for Mathematical Practices

	Mathematical Practices	Student Dispositions:	Teacher Actions to Engage Students in Practices:
Essential Processes for a Productive Math Thinker	**1. Make sense of problems and persevere in solving them**	▪ Have an understanding of the situation ▪ Use patience and persistence to solve problem ▪ Be able to use different strategies ▪ Use self-evaluation and redirections ▪ Communicate both verbally and written ▪ Be able to deduce what is a reasonable solution	▪ Provide open-ended and rich problems ▪ Ask probing questions ▪ Model multiple problem-solving strategies through Think-Aloud ▪ Promote and value discourse ▪ Integrate cross-curricular materials ▪ Promote collaboration ▪ Probe student responses (correct or incorrect) for understanding and multiple approaches ▪ Provide scaffolding when appropriate ▪ Provide a safe environment for learning from mistakes
	6. Attend to precision	▪ Communicate with precision—orally and written ▪ Use mathematics concepts and vocabulary appropriately ▪ State meaning of symbols and use them appropriately ▪ Attend to units/labeling/tools accurately ▪ Carefully formulate explanations and defend answers ▪ Calculate accurately and efficiently ▪ Formulate and make use of definitions with others ▪ Ensure reasonableness of answers ▪ Persevere through multiple-step problems	▪ Encourage students to think aloud ▪ Develop explicit instruction/teacher models of thinking aloud ▪ Include guided inquiry as teacher gives problem, students work together to solve problems, and debrief time for sharing and comparing strategies ▪ Use probing questions that target content of study ▪ Promote mathematical language ▪ Encourage students to identify errors when answers are wrong
Reasoning and Explaining	**2. Reason abstractly and quantitatively**	▪ Create multiple representations ▪ Interpret problems in contexts ▪ Estimate first/answer reasonable ▪ Make connections ▪ Represent symbolically ▪ Talk about problems, real-life situations ▪ Attend to units ▪ Use context to think about a problem	▪ Develop opportunities for problem-solving strategies ▪ Give time for processing and discussing ▪ Tie content areas together to help make connections ▪ Give real-world situations ▪ Demonstrate thinking aloud for students' benefit ▪ Value invented strategies and representations ▪ More emphasis on the process instead of on the answer
	3. Construct viable arguments and critique the reasoning of others	▪ Ask questions ▪ Use examples and counter examples ▪ Reason inductively and make plausible arguments ▪ Use objects, drawings, diagrams, and actions ▪ Develop ideas about mathematics and support their reasoning ▪ Analyze others arguments ▪ Encourage the use of mathematics vocabulary	▪ Create a safe environment for risk-taking and critiquing with respect ▪ Provide complex, rigorous tasks that foster deep thinking ▪ Provide time for student discourse ▪ Plan effective questions and student grouping ▪ Probe students

Mathematical Practices		Students:	Teacher(s) promote(s) by:
Modeling and Using Tools	**4. Model with mathematics**	▪ Realize that mathematics (numbers and symbols) is used to solve/work out real-life situations ▪ Analyze relationships to draw conclusions ▪ Interpret mathematical results in context ▪ Show evidence that they can use their mathematical results to think about a problem and determine if the results are reasonable—if not, go back and look for more information ▪ Make sense of the mathematics	▪ Allowing time for the process to take place (model, make graphs, etc.) ▪ Modeling desired behaviors (think alouds) and thought processes (questioning, revision, reflection/written) ▪ Making appropriate tools available ▪ Creating an emotionally safe environment where risk-taking is valued ▪ Providing meaningful, real-world, authentic, performance-based tasks (non-traditional work problems) ▪ Promoting discourse and investigations
	5. Use appropriate tools strategically	▪ Choose the appropriate tool to solve a given problem and deepen their conceptual understanding (paper/pencil, ruler, base ten blocks, compass, protractor) ▪ Choose the appropriate technological tool to solve a given problem and deepen their conceptual understanding (e.g., spreadsheet, geometry software, calculator, web 2.0 tools) ▪ Compare the efficiency of different tools ▪ Recognize the usefulness and limitations of different tools	▪ Maintaining knowledge of appropriate tools ▪ Modeling effectively the tools available, their benefits, and limitations ▪ Modeling a situation where the decision needs to be made as to which tool should be used ▪ Comparing/contrasting effectiveness of tools ▪ Making available and encouraging use of a variety of tools
Seeing Structure and Generalizing	**7. Look for and make use of structure**	▪ Look for, interpret, and identify patterns and structures ▪ Make connections to skills and strategies previously learned to solve new problems/tasks independently and with peers ▪ Reflect and recognize various structures in mathematics ▪ Breakdown complex problems into simpler, more manageable chunks ▪ "Step back" or shift perspective ▪ Value multiple perspectives	▪ Being quiet and structuring opportunities for students to think aloud ▪ Facilitating learning by using open-ended questions to assist students in exploration ▪ Selecting tasks that allow students to discern structures or patterns to make connections ▪ Allowing time for student discussion and processing in place of fixed rules or definitions ▪ Fostering persistence/stamina in problem solving ▪ Allowing time for students to practice
	8. Look for and express regularity in repeated reasoning	▪ Identify patterns and make generalizations ▪ Continually evaluate reasonableness of intermediate results ▪ Maintain oversight of the process ▪ Search for and identify and use shortcuts	▪ Providing rich and varied tasks that allow students to generalize relationships and methods and build on prior mathematical knowledge ▪ Providing adequate time for exploration ▪ Providing time for dialogue, reflection, and peer collaboration ▪ Asking deliberate questions that enable students to reflect on their own thinking ▪ Creating strategic and intentional check-in points during student work time

For classroom posters depicting the Mathematical Practices, please see: http://seancarberry.cmswiki.wikispaces.net/file/detail/12-20math.docx

COUNTING AND CARDINALITY (CC)

Cluster: Know number names and the count sequence.

K.CC.1 – Count to 100 by ones and by tens.

K.CC.2 – Count forward beginning from a given number within the known sequence (instead of having to begin at 1).

K.CC.3 – Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).

Cluster: Count to tell the number of objects.

K.CC.4 – Understand the relationship between numbers and quantities; connect counting to cardinality.

a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.

b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.

c. Understand that each successive number name refers to a quantity that is one larger.

K.CC.5 – Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle; or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.

Cluster: Compare numbers.

K.CC.6 – Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies. (Include groups with up to ten objects.)

K.CC.7 – Compare two numbers between 1 and 10 presented as written numerals.

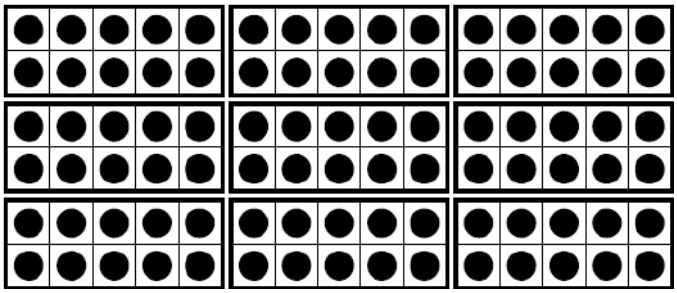
Additional sample formative assessment material can be downloaded from Engageny.org under their New York State Mathematics Curriculum Materials:

http://www.engageny.org/sites/default/files/resource/attachments/g1-m1-full-module.pdf

Task 1 – K.CC.1

Use the hundreds chart and ten-frames to count to 100 by ones and by tens.

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

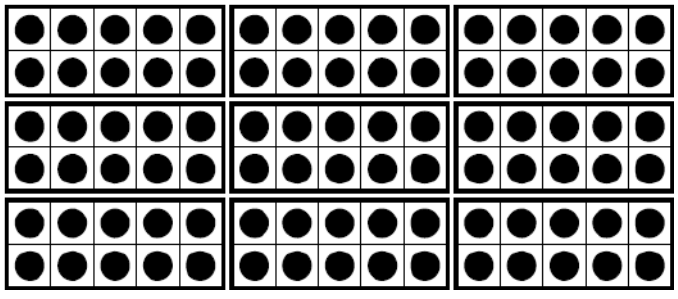


To download additional charts, check out
http://wps.ablongman.com/ab_vandewalle_math_6/0%2C12312%2C3547876-%2C00.html

Task 2 – K.CC.2

Use the hundreds chart and the ten-frames to count forward from a given number, instead of having to begin at 1.

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



Directions:

1. Tell students that you are going to play some number games with them.
2. Give students the recording sheet to record the numbers that you say aloud—6, 15, 13, 9, 4, 20).
3. Say each number slowly and watch how students write the number.
4. Next, show students the sheet with sets. Ask students to count the sets and record how many. Watch how they count the set and write the numeral.

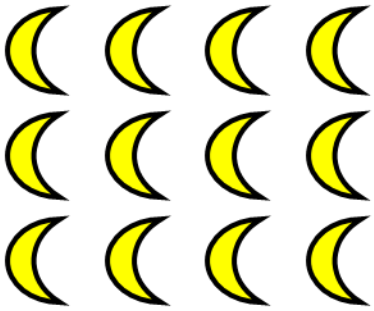
Numbers Recording Sheet

a. _____ b. _____

c. _____ d. _____

e. _____ f. _____

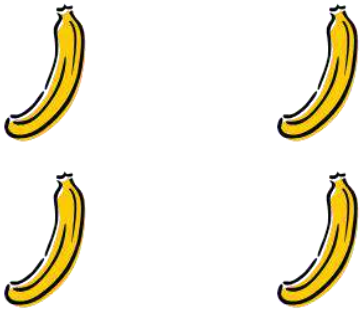
 = _____

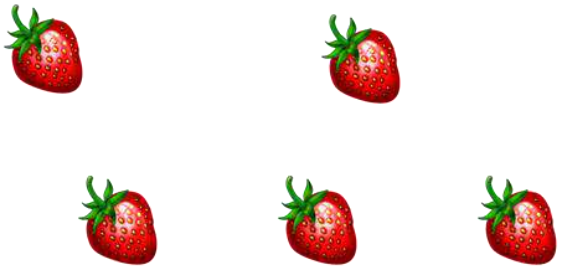
 = _____

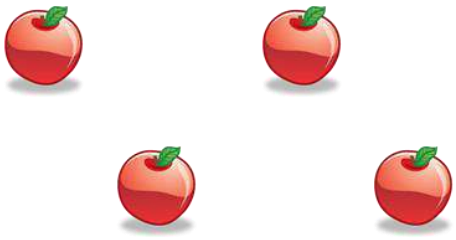
 = _____

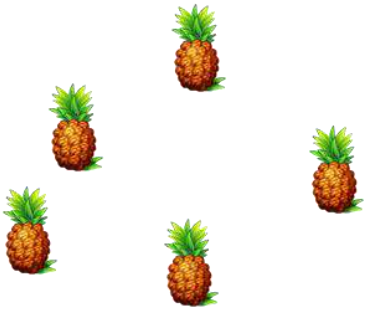
Task 4 – K.CC.3

Count and write how many. Then, circle each count of four.



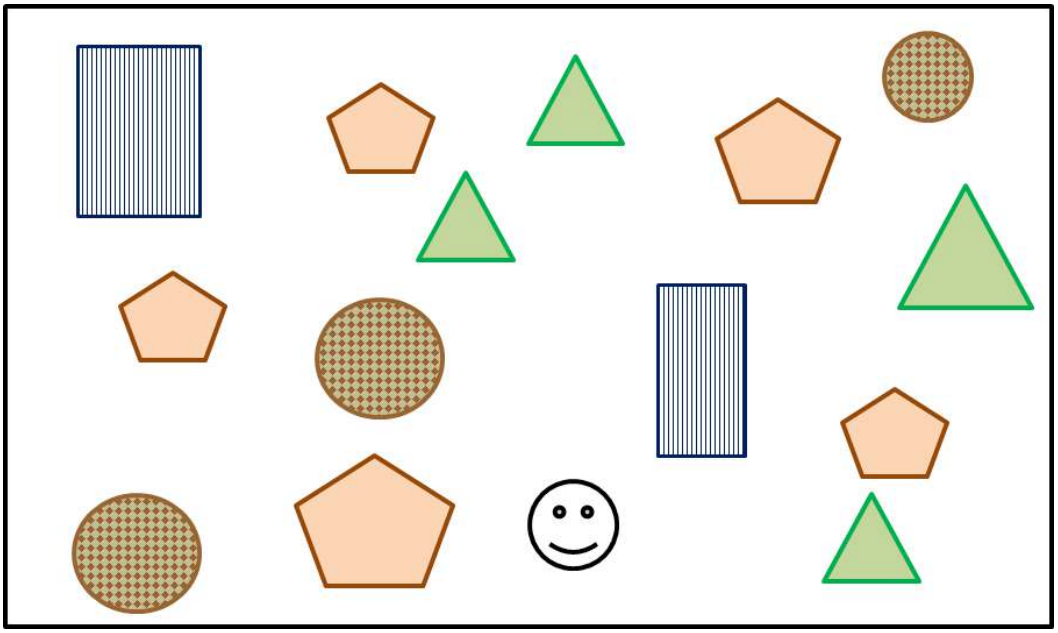


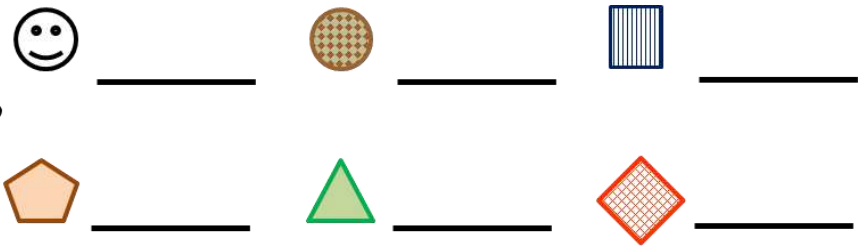




Task 5 – K.CC.3

Count the shapes and write the numbers. Mark each shape as you count.





How many?

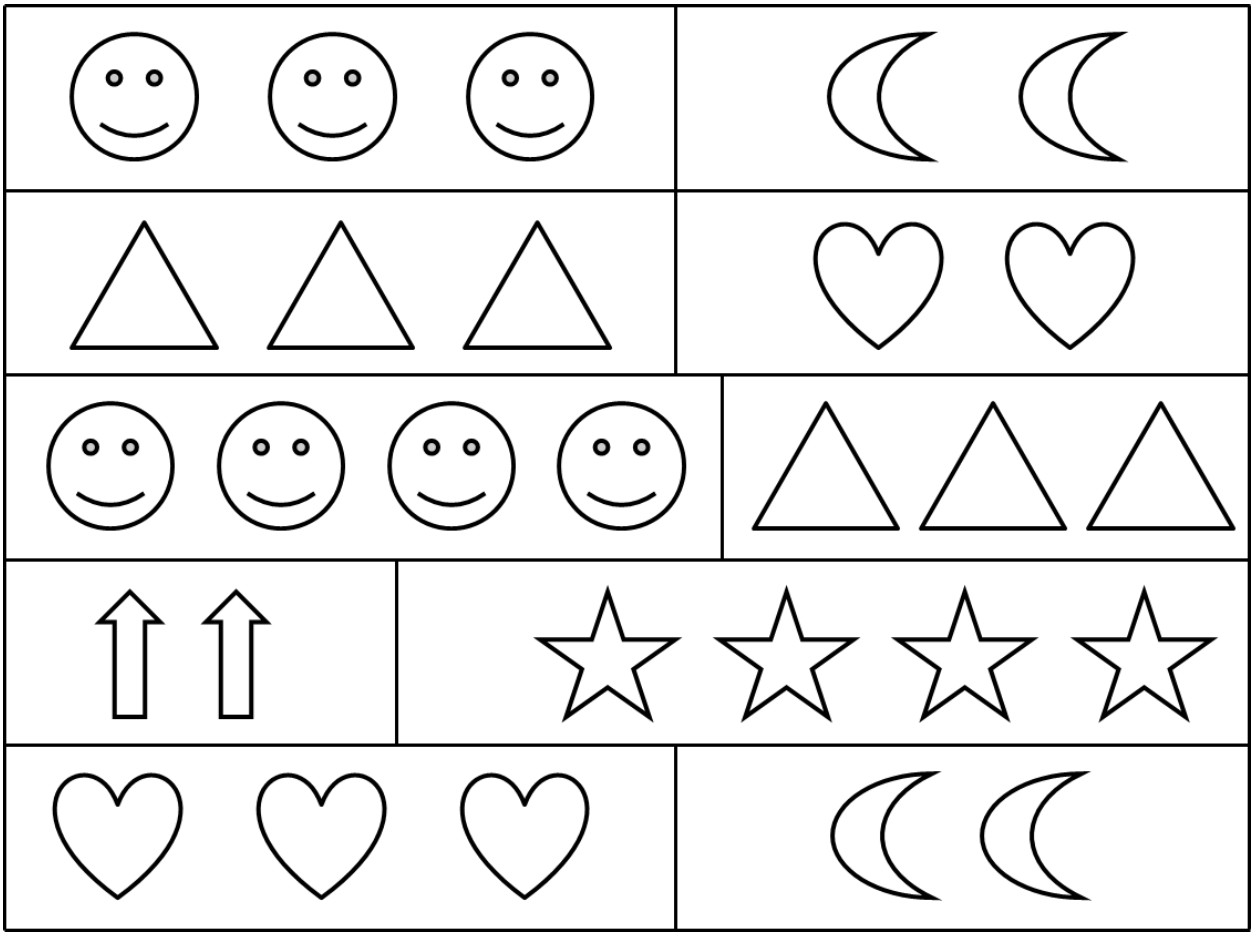
Write the missing numbers:

0, 1, _____, 3, _____, _____

_____, _____, 3, 2, 1, _____

Task 6 – K.CC.4

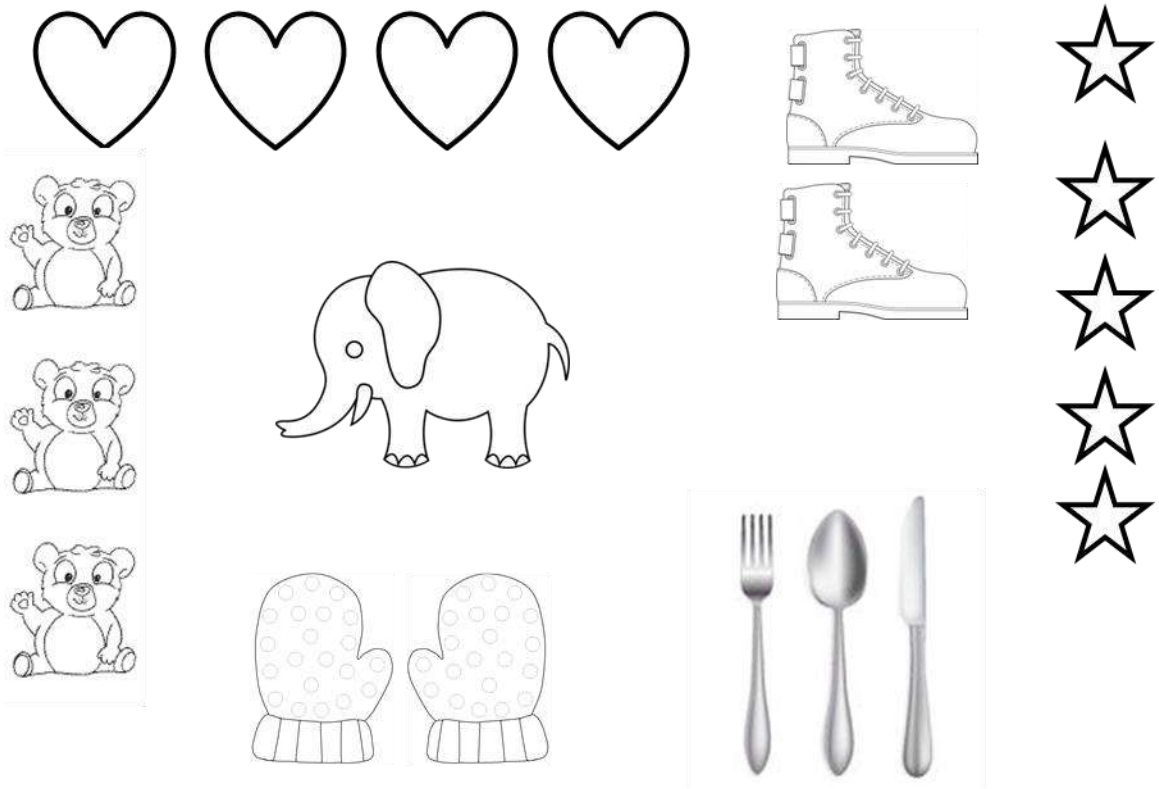
Look at the shelf. Color in red the things that are in groups of 2.



Task 7 – K.CC.4

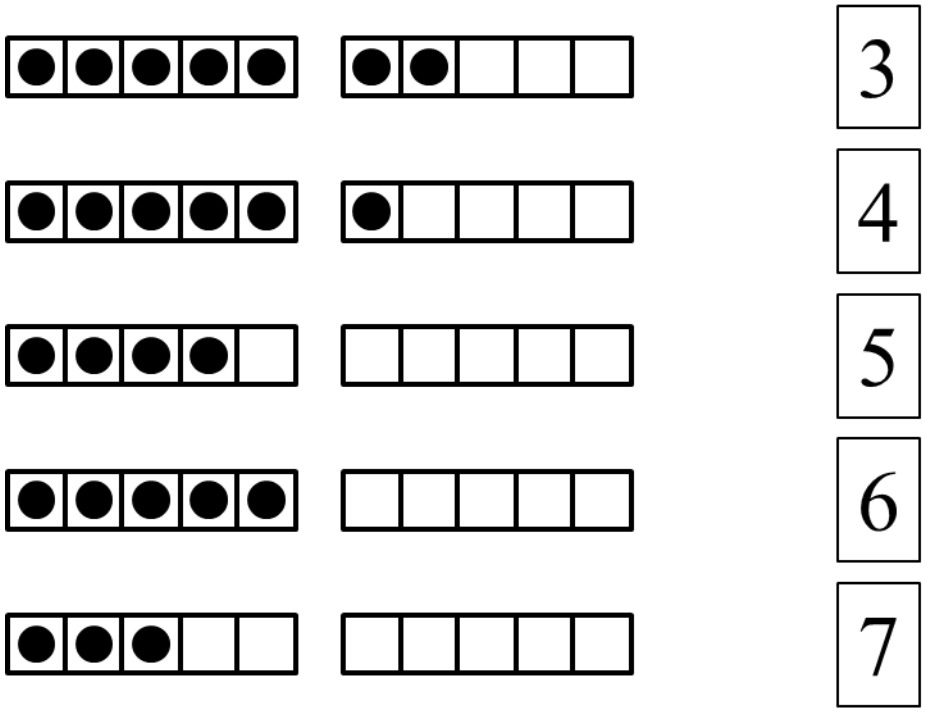
Color each numeral card. Count the objects in each group. Then color the group of objects the same color as the numeral card that it matches.

1	2	3	4	5
Green	Blue	Brown	Yellow	Red



Task 8 – K.CC.4

Draw a line from the numeral to the 5-group cards it matches.



Fill in the missing numbers.

_____, 5, _____, 7

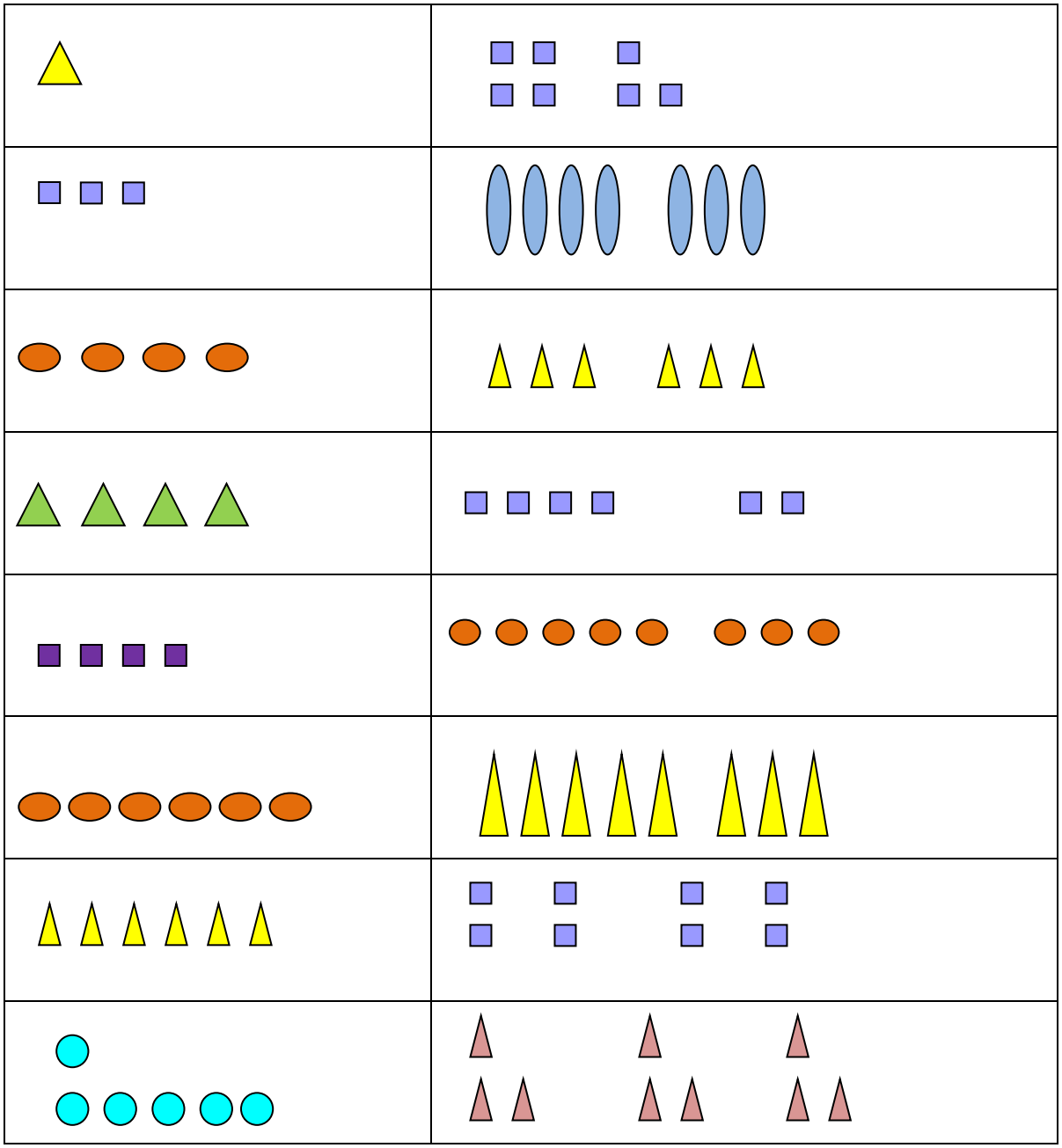
7, 6, _____, 4, _____, 2

1, _____, 3, _____, 5, _____, _____

7, _____, 5, _____, _____, 2, 1

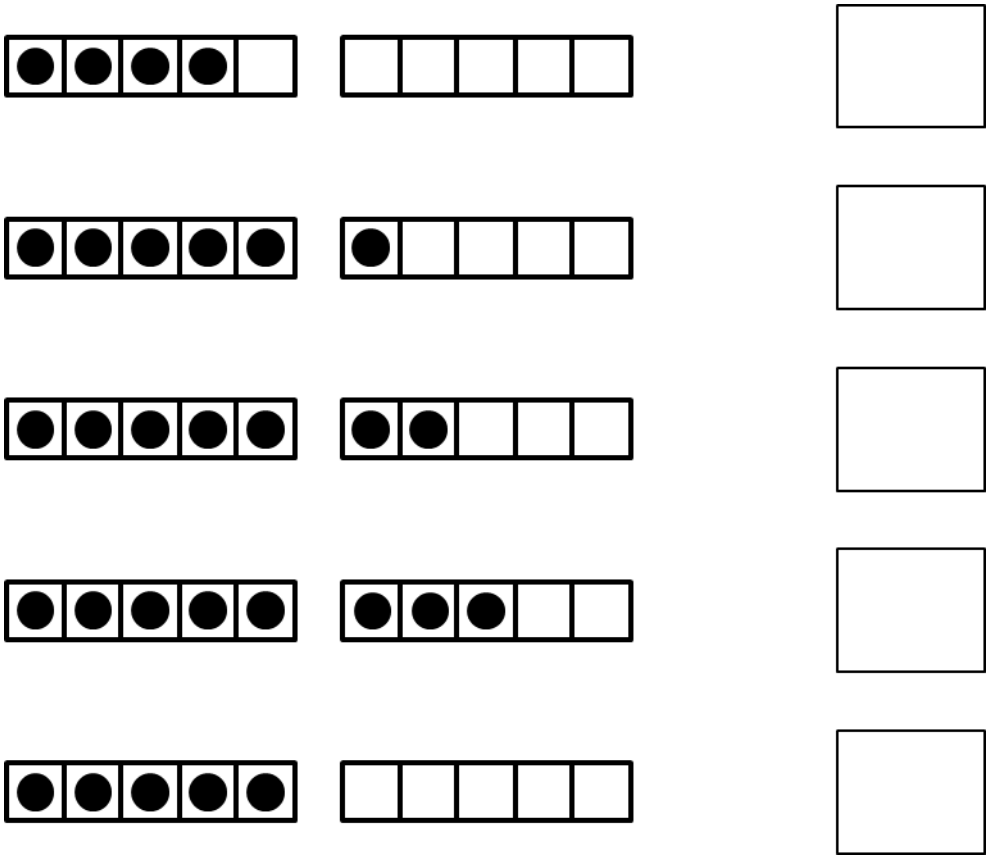
Task 9 – K.CC.4

In each group of shapes, draw 1 more shape and write how many total shapes are in that box. Explain to your partner how you counted the objects.



Task 10 – K.CC.5

Count how many. Write the number in the box.



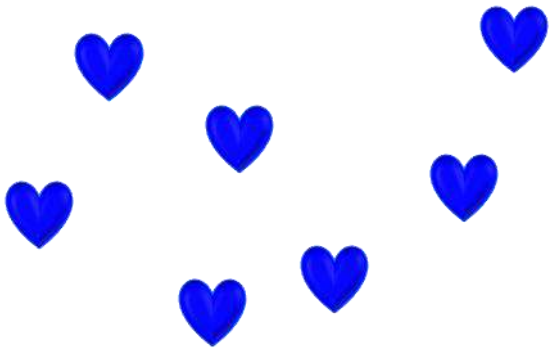
Task 11 – K.CC.5

1. 

How many? _____

2. 

How many? _____

3. 

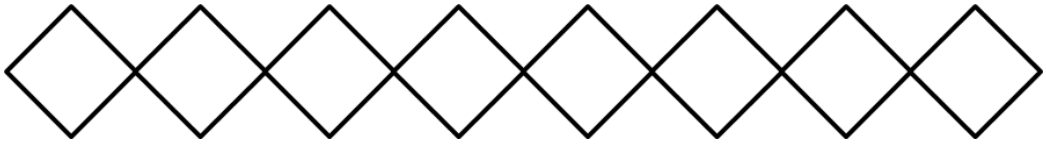
How many? _____

4. Draw 16 circles.

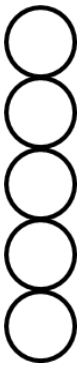
Task 12 – K.CC.5

1. Color 5 ladybugs. Color the remaining ladybugs a different color. Count all the ladybugs and write how many there are.

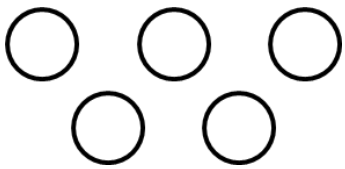
2. Color 5 diamonds. Color the remaining diamonds a different color. Count all the diamonds and write how many there are.



3. Color 5 circles then draw 3 circles to the right. Count all the circles and write how many there are.

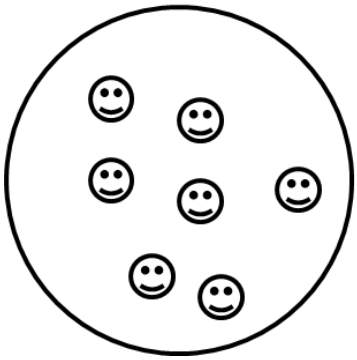


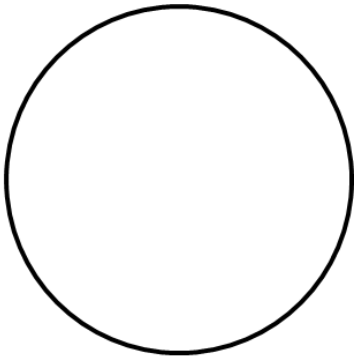
4. Color 5 circles then draw 3 circles below. Count all the circles and write how many.



Task 13 – K.CC.6

1. Draw a set that has a greater number of objects.





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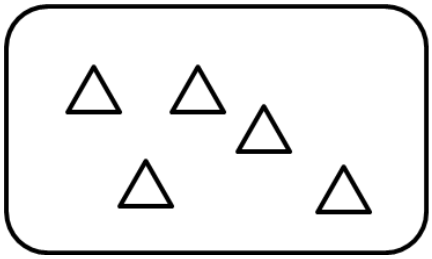
2. Draw a set that has less shapes.



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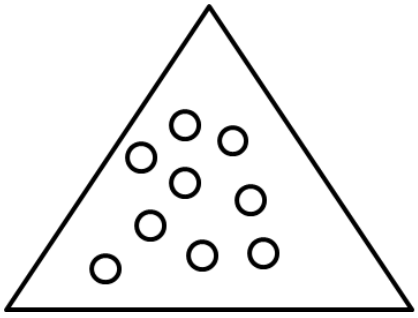
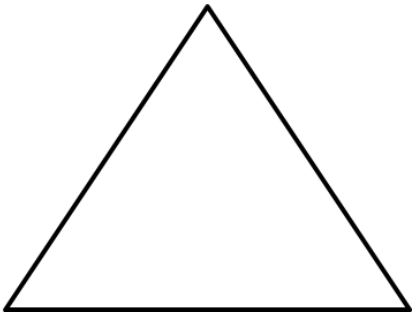
3. Draw a set that has an equal amount of circles.





Task 14 – K.CC.7

For each pair of numbers, circle the number that is greater.

5	**7**
4	**2**
0	**10**
6	**9**

OPERATIONS AND ALGEBRAIC THINKING (OA)

Cluster: Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

K.OA.1 – Represent addition and subtraction with objects, fingers, mental images, drawings (drawings need not show details, but should show the mathematics in the problem), sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.

K.OA.2 – Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.

K.OA.3 – Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1).

K.OA.4 – For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.

K.OA.5 – Fluently add and subtract within 5.

Task 15 – K.OA.1

Directions:

1. Tell students that you are going to tell them some story problems and they can solve the problems using whichever way they like: act out, draw a picture, use manipulative, use the provided equation "frame" and number cards, etc.
2. Choose 2 or 3 story problems for students to solve:
   a. Joe had 9 blocks and gave 5 to Bill. How many blocks does Joe have left?
   b. Al has 4 red balls and 6 blue balls. How many balls does he have in all?
   c. Sarah has 5 marbles. Barb has 2 more than Sarah. How many marbles does Barb have?
   d. Lisa has 10 blocks. Some are blue. 6 are red. How many are blue?
   e. Mary had 8 cookies. She ate 2. How many cookies are left?

Considerations:

Watch how students solve the problem(s):

- Which strategy do they use to solve?
- Do they try several different strategies to solve or just one?
- Can the students explain their thinking?
- Do the students double-check their work?
- Did some students apply a correct strategy but get an incorrect answer? Can they "fix it" if prompted?

Equation Frame

_____ + _____ = _____

_____ − _____ = _____

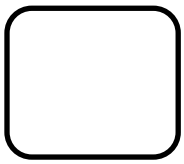
Number Cards

0	1	2
3	4	5
6	7	8
9	10	

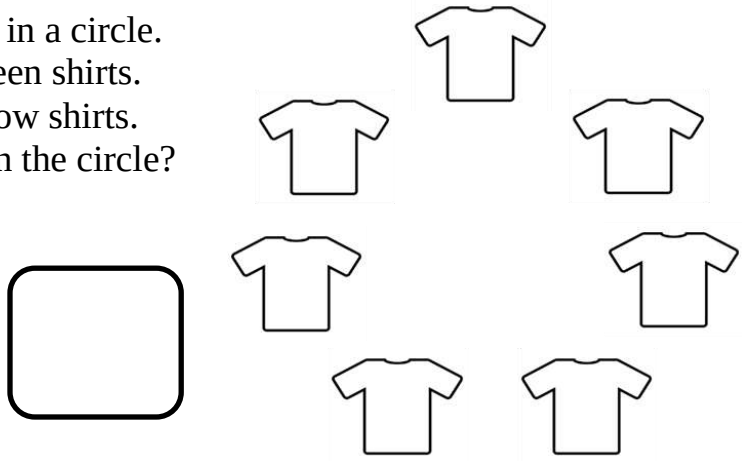
Task 16 – K.OA,2

1. Janet went to the store. She bought 6 chocolate chip cookies and 3 sugar cookies.

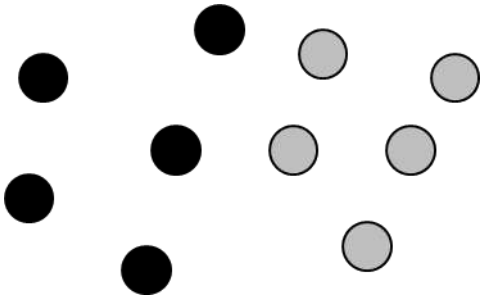
   How many cookies did she buy?

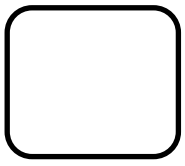


2. Some children were sitting in a circle.
   4 of them were wearing green shirts.
   The rest were wearing yellow shirts.
   How many children were in the circle?



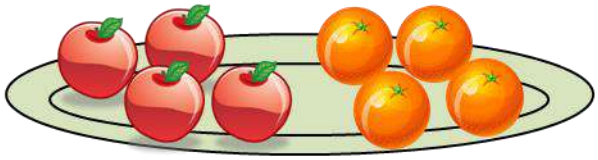
3. Jerry spilled his bag of marbles. Circle the group of gray marbles. Circle the group of black marbles. How many marbles spilled?



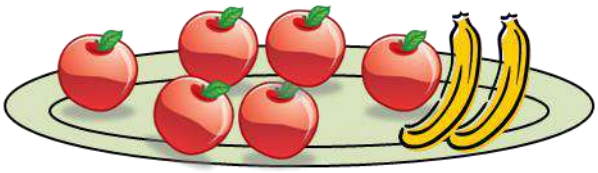


Task 17 – K.OA.1

Write an expression that matches the groups on each plate.

1. 

□ + □ = □

2. 

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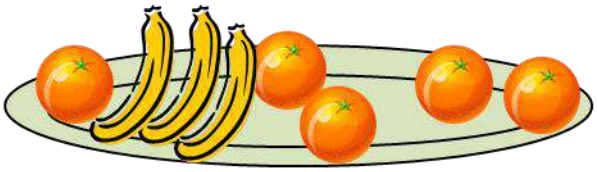
3. 

□ + □ = □

Task 18 – K.OA.2

Solve each problem:

1. Tom has 4 blue cars. Nancy has 3 red cars. How many cars do they have all together?

2. Jenny made 9 cookies with her mom. She gave 5 cookies away to her friends. How many cookies does Jenny have left?

3. Solve the equations and draw a picture to match the problem.

5 + 2 = _____	_____ = 3 + 3
_____ = 1 + 6	0 + 8 = _____

Task 19 – K.OA.3

Directions:

1. Distribute 10 connecting cubes to a pair of students.
2. Have the students sit back to back. One student (the builder) will create a tower of 10 cubes. Now the builder will break the stick into two pieces.
3. The builder will keep one of the broken pieces of the stick (hidden from view) and give the other broken stick to their partner.
4. The builder will ask, "How many cubes do I have"?
5. The other partner will need to figure out how many more connecting cubes is needed to make 10 (how many cubes the builder still has).

Considerations:

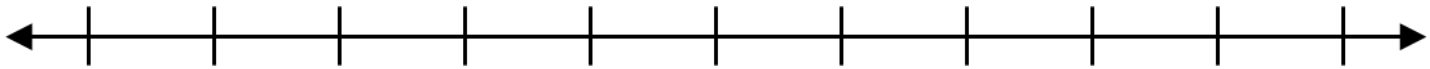
Watch how students recognize the amount they need to count.

- When counting their cubes, do they understand that the amount that they counted is the quantity they have? If they do not, practice more counting using one-to-one correspondence with them instead of continuing with this task.
- When the partner is figuring out how many cubes the builder hid, are they able to recognize the amount that they have by just looking at the cubes, or do they use one-to-one correspondence to count how many?
- Do they count on their fingers to calculate the missing amount?
- Students could use the attached part-part whole mat to assist them with this activity.

Use the attached part-part whole, number line, and equation to solve this problem.

Part-Part Whole, Number Line, and Equation Template

Part	Part
Whole (Total)	

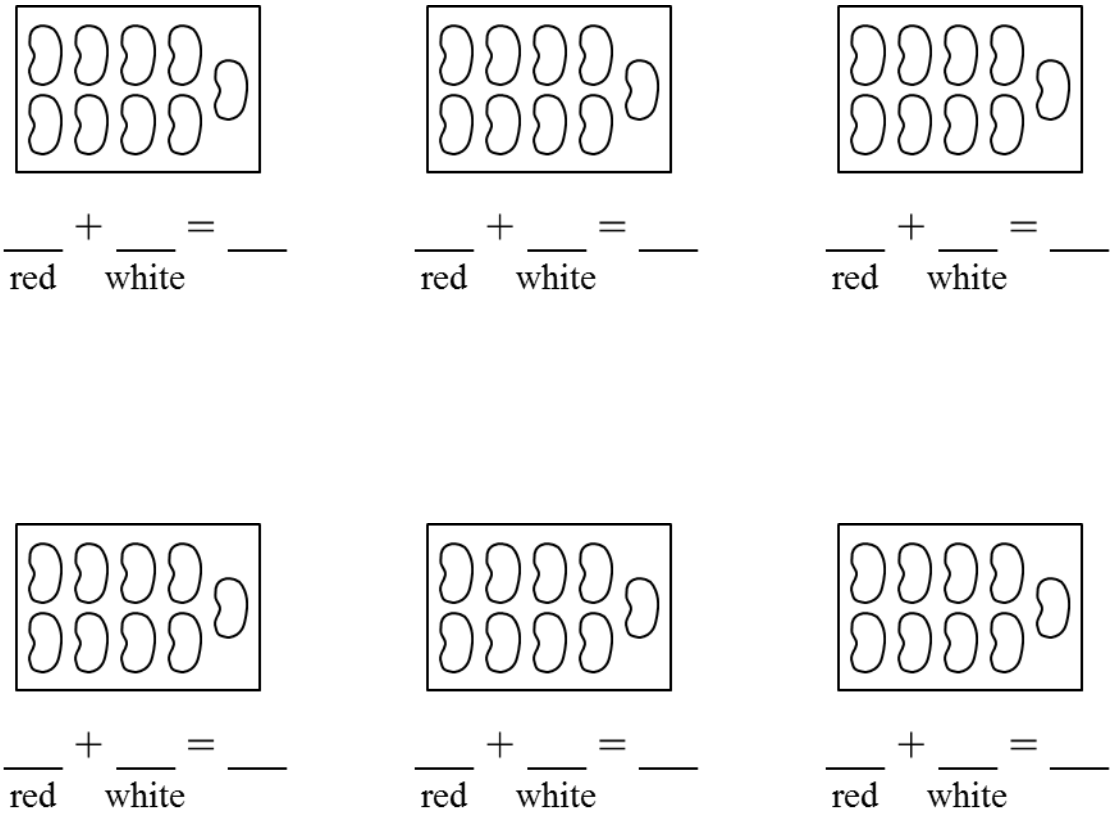


Number Sentence: _____

Task 20 – 1.OA.3

Spill the Beans!

Directions: Spill the beans. Color the bean shapes to show the red and white sides. Write a number sentence to go with each spill.



Task 21 – K.OA.4

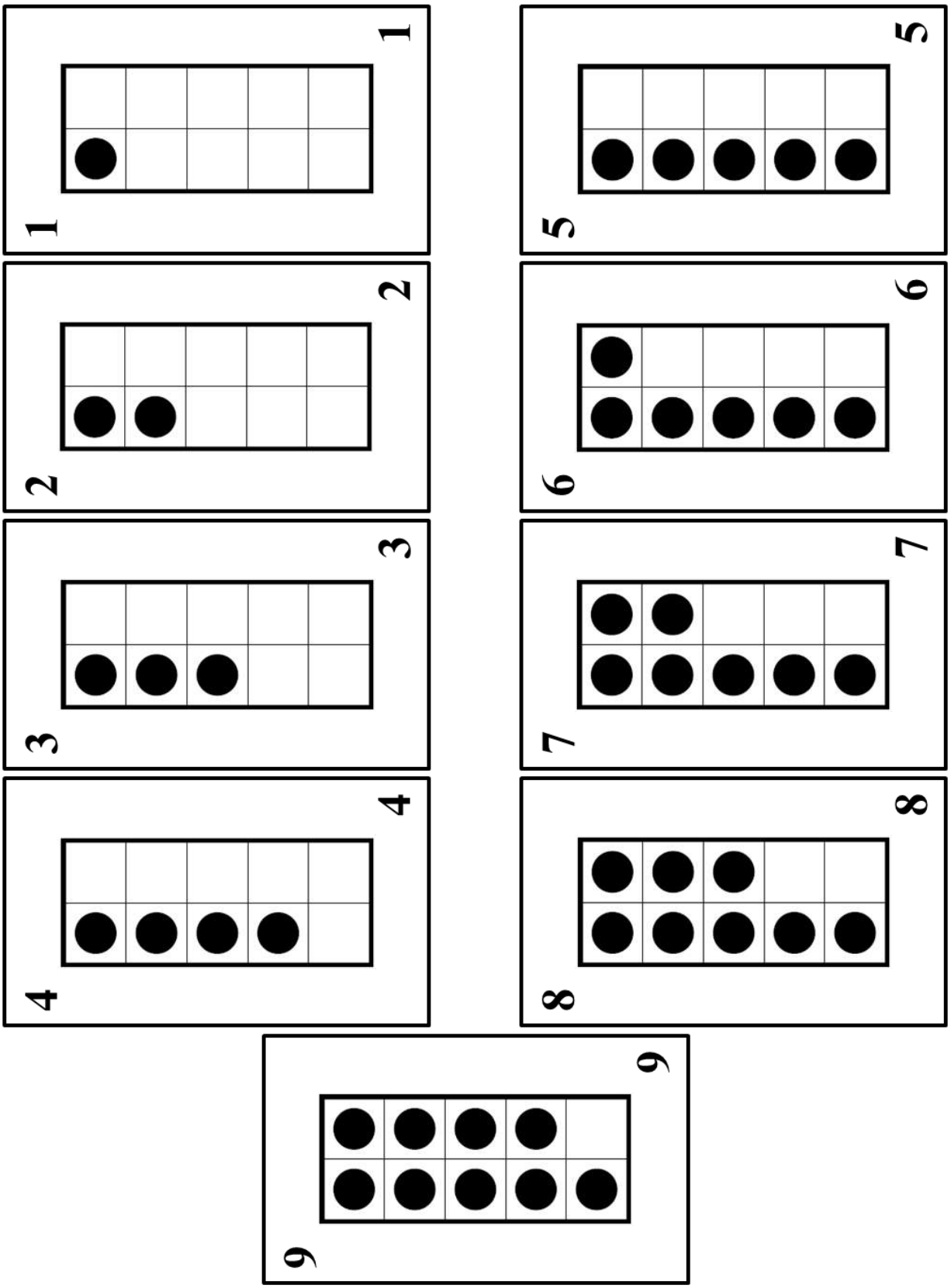
Directions:

1. Copy and cut one deck of the attached cards.
2. Distribute the cards to students.
3. Have students shuffle the cards. Place the deck face down in a pile.
4. Have them turn five cards over, face up.
5. The first player, player A, will look for two cards with a sum of ten. The student will pick up the cards and state the number sentence. They will replace the two cards with two new cards from the deck. So, now there is a total of five cards face up.
6. The second player, player B, looks at the five cards and takes their turn as player A did.
7. Keep taking turns until all of the cards are used.
8. If a player cannot make ten, they may draw another card and place it on top of one of the five cards displayed already.

Considerations:

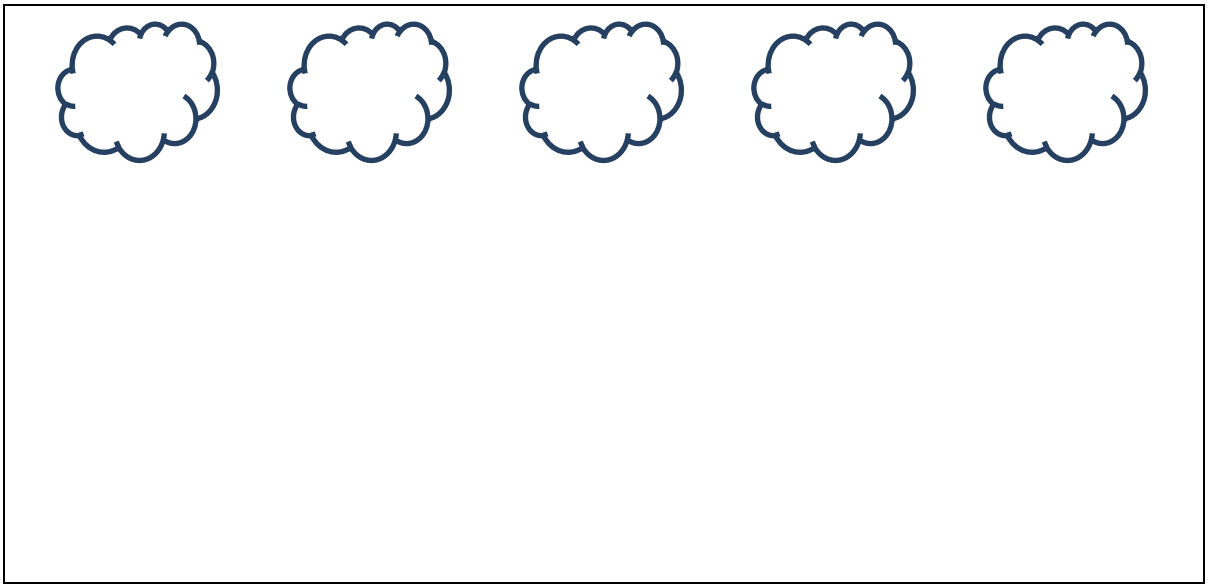
Watch how students make ten.

- Do they have a strategy to make ten?
- Do they pick a large number and count up to see how much more to make ten?
- Are they able to quickly see the other pair to make ten?
- A possible way to differentiate this game is to give students permission to use more than two cards if they can and have them record their number sentences by writing the number sentence.

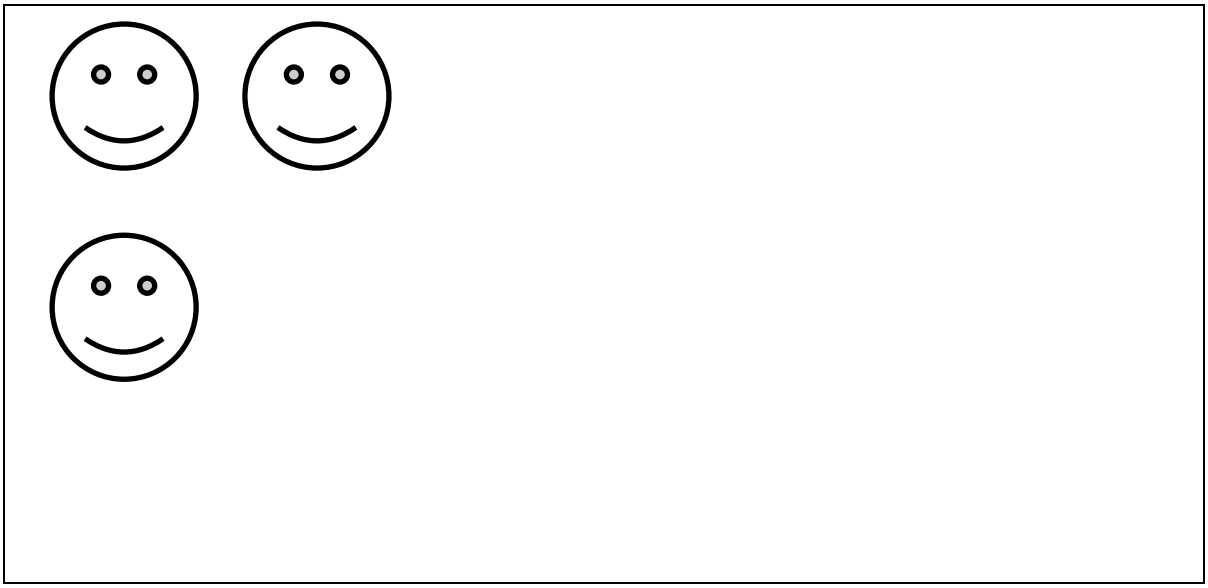

1
1
2
2
3
3
4
4
5
5
6
6
7
7
8
8
9
9

Task 22 – K.OA.4

Draw enough  to make 10.



Draw enough  to make 10.



Task 23 – K.OA.5

Complete the addition and subtraction number sentences.

a. $4 - 2 =$ _____

b. $2 + 2 =$ _____

c. $3 + 1 =$ _____

d. $1 + 0 =$ _____

e. $5 - 1 =$ _____

f. $4 - 4 =$ _____

NUMBERS AND OPERATIONS IN BASE TEN (NBT)

Cluster: Work with numbers 11-19 to gain foundations for pace value.

K.NBT.1 – Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (such as 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

Task 24 – K.NBT.1

Directions:

1. Make or have students make a tens stick by snapping together ten snap cubes.
2. Have some other loose snap cubes to represent ones.
3. Distribute one "ten" and nine "ones" to a pair of students.
4. As a pair, draw a number card and represent that number using snap cubes. Use the additional black line master to have students record their number sentences. Students can draw the number sentence or write the number. Be sure to model what one example would be. For example, if they drew 14, they would record:

   $$10 + 4 = 14$$

   $$14 = 10 + 4$$

5. Repeat with the other number cards. You may want to place the recording chart in a sleeve.

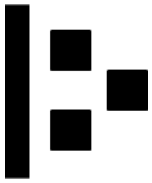
My number card is _____.

_____ + _____ = _____

_____ + _____ = _____

Task 25 – K.NBT.1

Complete each row to represent the same number.

Number	Picture	Equation
16		
		10 + 8
		
		10 + 5
12		

MEASUREMENT AND DATA (MD)

Cluster: Describe and compare measurable attributes.

K.MD.1 – Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.

K.MD.2 – Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter.*

Classify objects and count the number of objects in each category.

K.MD.3 – Classify objects into given categories; count the numbers of objects in each category and sort the categories by count. (Limit category counts to be less than or equal to 10.)

Directions:

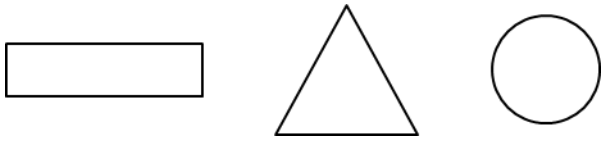
1. Choose several blocks to show student(s).
2. Assess individual students or small groups of students.
3. Pick one block to describe for students so that students understand the task—for example, "All of the sides are the same length."
4. Ask a student to choose a different block and describe it—for example, they might say, "This block has 2 long sides and 2 shorter sides."
5. Can the student describe more than one attribute? For example:
   - Does the student only describe length?
   - Do they consider width or weight? For example, "it is heavier than the cube." or "If you line up 2 of these blocks, they are the same length as that block."

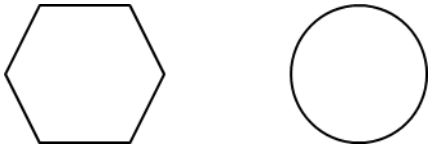
Considerations:

Watch how the students describe attributes.

- Do they only focus on attributes that are not measurable? (Material, color, e.g., "This block is red. It is made of foam.")
- Do they quickly note length or width or weight? (With a typical short rectangular prism, 5½" x 3" x 1¼", a student might say, "Both of these long sides are the same length. These two ends are shorter.")
- Do they compare blocks in terms of an attribute?
- Does it make sense that some blocks have some attributes that are equal? (If a student has a typical longer rectangular prism, 11" x 3" 1¼", as well as the shorter rectangular prism described above, do they notice that the ends are still the same length as the shorter block described above?)
- Can students discuss and justify their ideas?

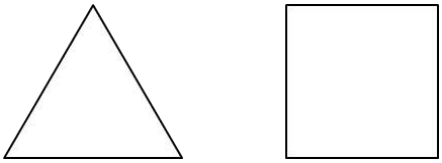
Teacher assesses #4 with each student individually:

1. Color the shape with the most sides. 

2. Color the shape with a curved side. 

3. Put an "X" on the shape with the fewest corners. 

4. Compare these two shapes. (Students must give 3 attributes that are either the same or different.)



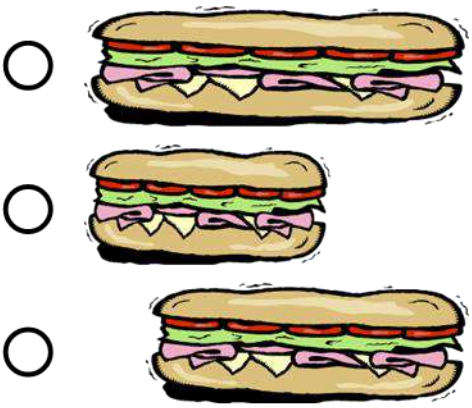
a. _____

b. _____

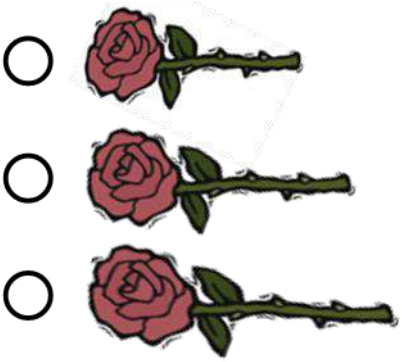
c. _____

Task 27 – K.MD.2

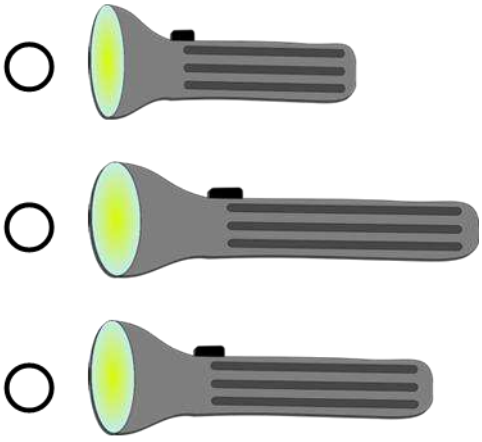
Which sandwich is **shorter**? Select the **shorter** sandwich.



Which rose is the **shortest**? Select the **shortest** rose.

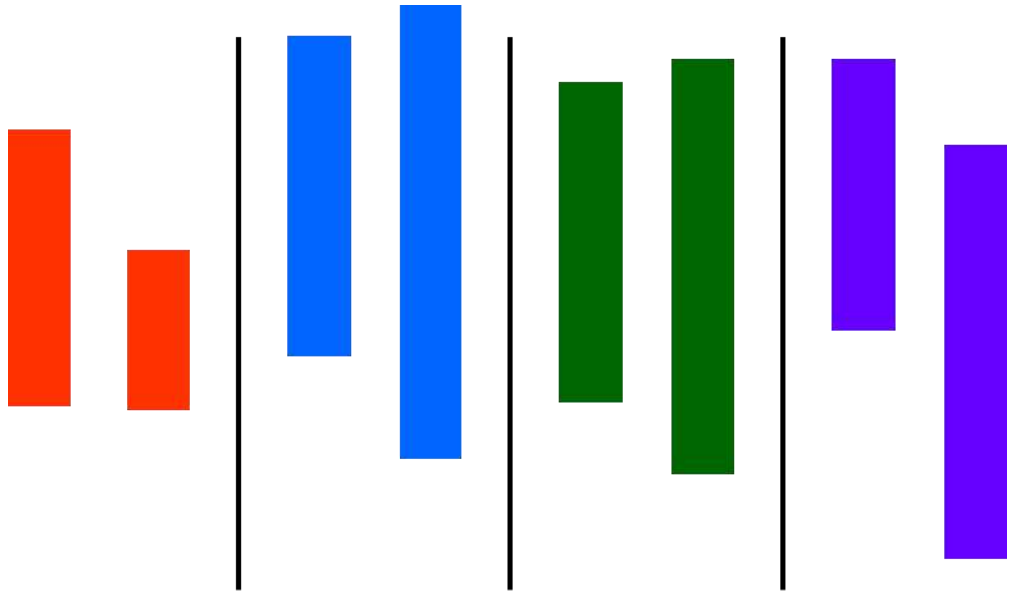


Which flashlight is the **longest**? Select the **longest** flashlight.



Task 28 – K.MD.2

Imagine the paper strips are lying flat on a table. In each pair, circle the taller one.



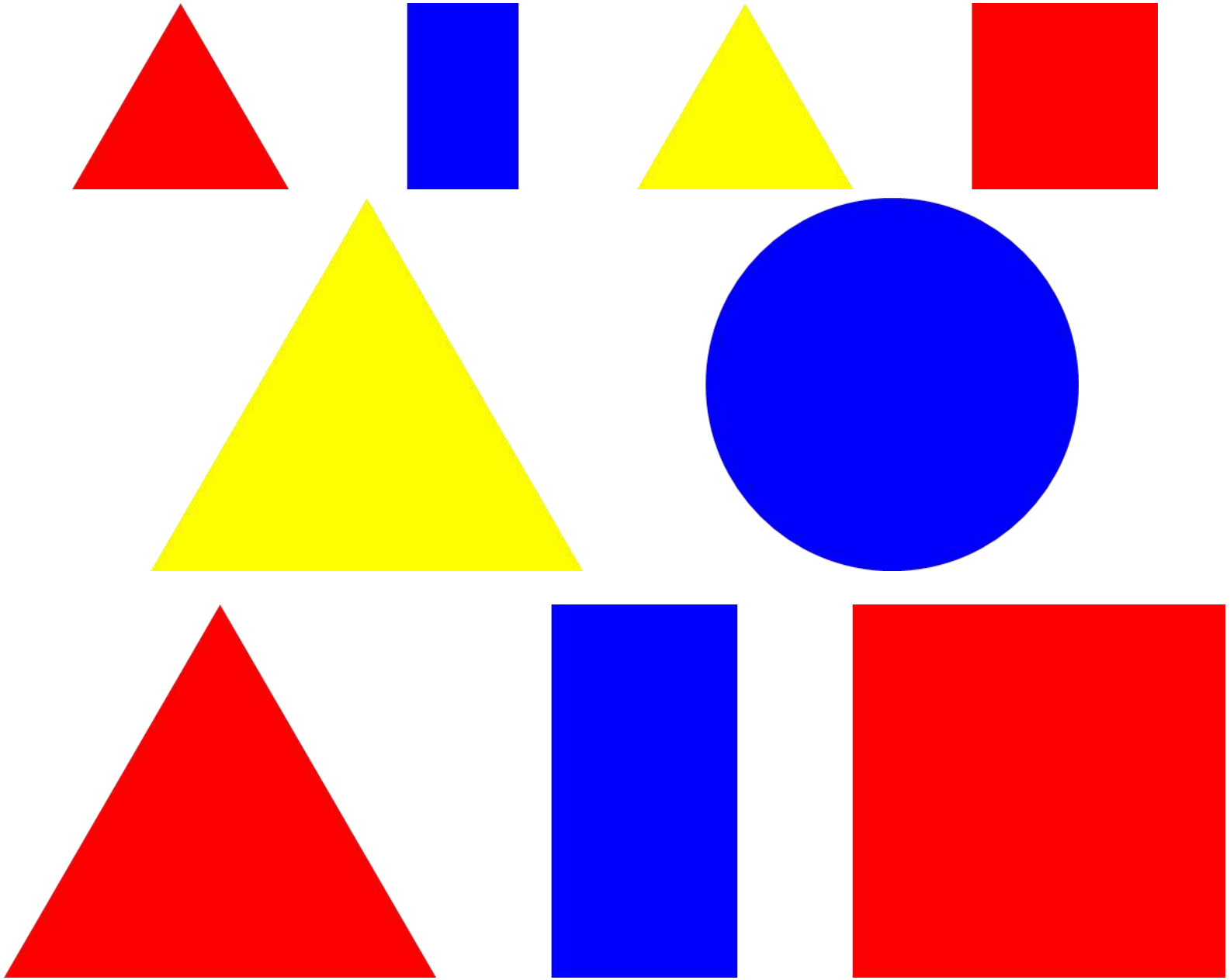
Task 29 – K.MD.3

Directions:

1. Print and cut a color copy of the attached picture cards or use the following attribute blocks from your classroom (thick or thin; use the same for entire set):
   a. 1 small and 1 large red triangle
   b. 1 small and 1 large yellow triangle
   c. 1 small and 1 large blue rectangle
   d. 1 small and 1 large red square
   e. 1 large blue circle
2. Assess individual students.
3. Tell students they are going to sort shapes into different groups.
4. After each sort, put all pictures or blocks back together.

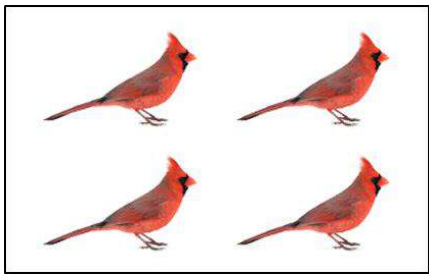
Ask students:

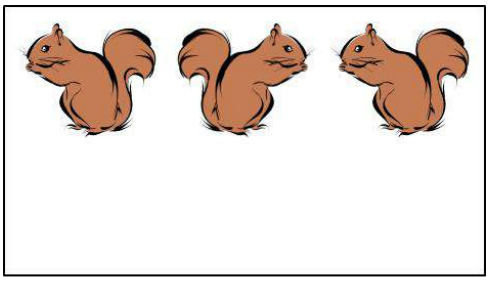
1. Sort the pictures, or blocks, by shape. Why do they belong together?
2. Sort the pictures, or blocks, by size. Are any of the groups equal?
3. Sort the pictures, or blocks, by color. Are any of the groups equal?

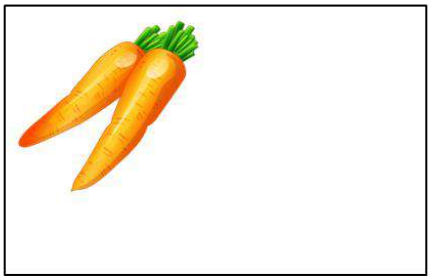


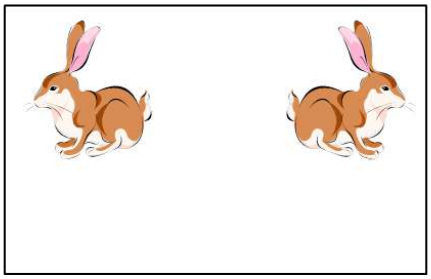
Task 30 – K.MD.3

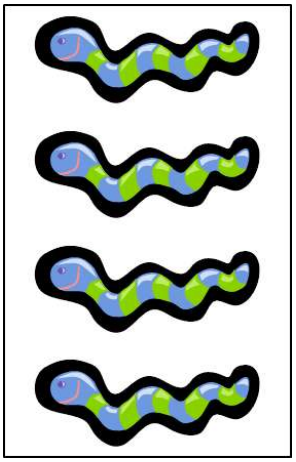
Draw a line to match the groups that have the same number.







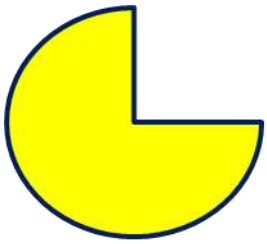


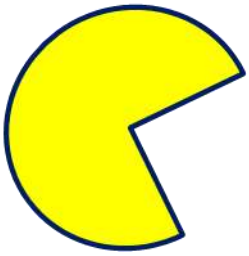


Task 31 – K.MD.3

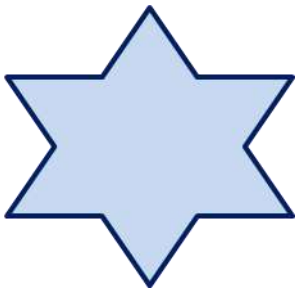
Look at the pairs of pictures. Are they the same? Circle your answer. Then, explain your answer to an adult or a friend.

Are these the same? **Yes** **No**





Are these the same? **Yes** **No**



Are these the same? **Yes** **No**

GEOMETRY (G)

Cluster: Identify and describe shapes (such as squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).

K.G.1 – Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above*, *below*, *in front of*, *behind*, and *next to*.

K.G.2 – Correctly name shapes regardless of their orientations or overall size.

K.G.3 – Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").

Cluster: Analyze, compare, create, and compose shapes.

K.G.4 – Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).

K.G.5 – Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.

K.G.6 – Compose simple shapes to form larger shapes. For example, "can you join these two triangles with full sides touching to make a rectangle?"

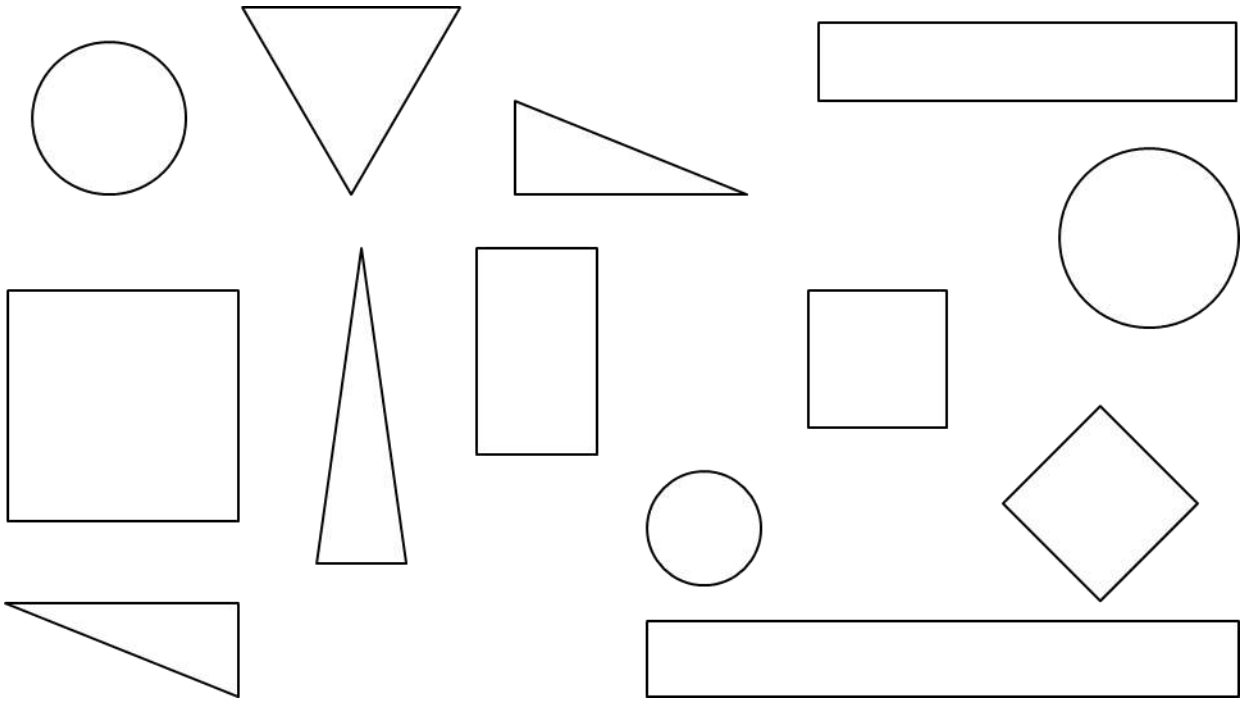
Task 32 – K.G.2

Color the squares blue.

Color the rectangles green.

Color the triangles yellow.

Color the circles red.



Task 33 – K.G.3

Directions:

1. Show a collection of two-dimensional and three-dimensional shapes. These can be models from your math maniputlative kits or actual items from around the classroom.
2. Ask students to sort the objects into the categories "Two-Dimensional" or "Three-Dimensional."

Considerations:

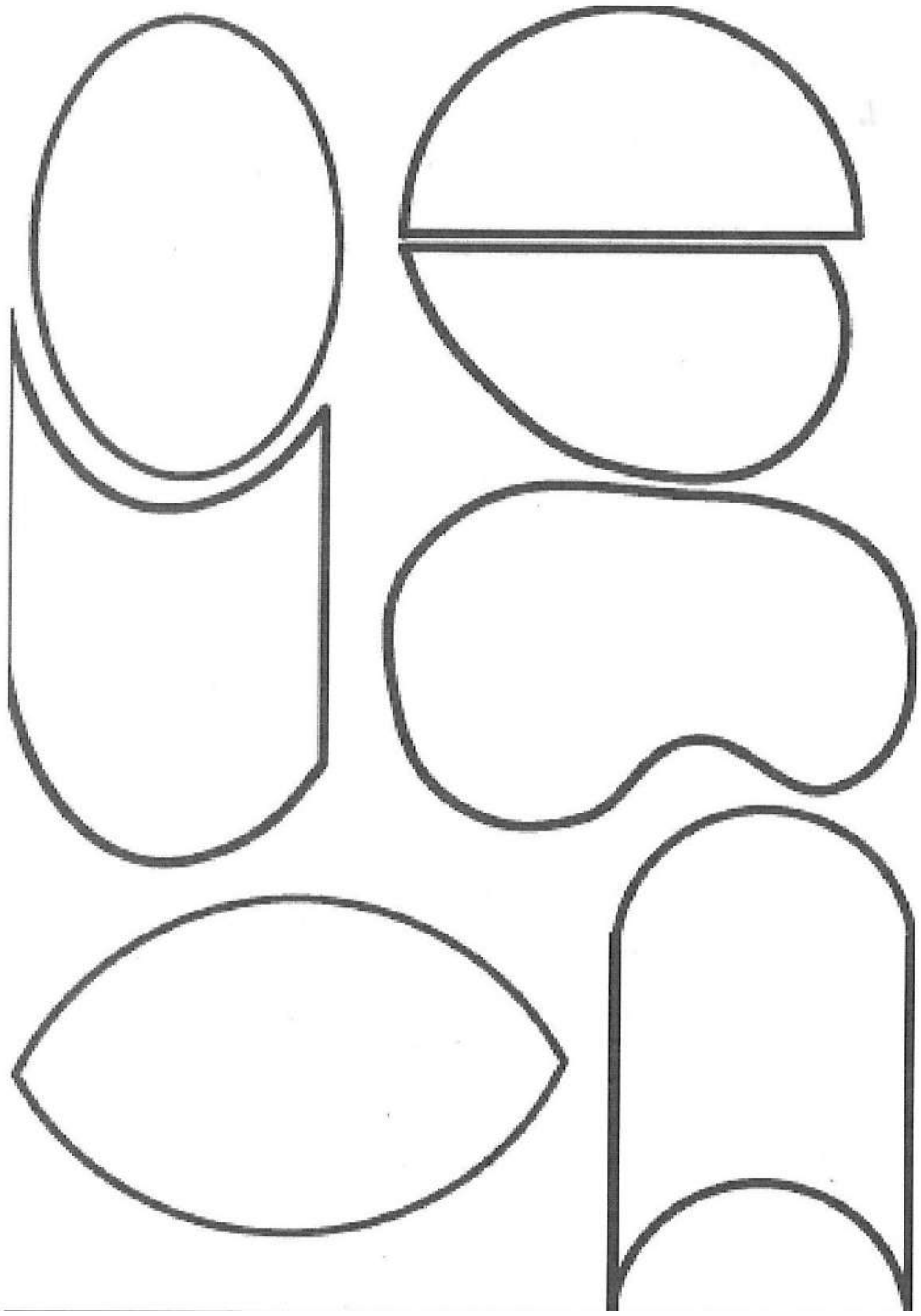
- Can students correctly categorize the shapes, regardless of orientation or size?
- If students categorize a shape(s) incorrectly, if prompted to double-check, can they find any errors?
- Can students discuss and justify their ideas?
- Do students understand that two-dimensional shapes are "flat" and three-dimensional shapes are "solid"?
- Do they relate three-dimensional objects as 3D, like in the movies? (real-world connection)
- If prompted, are students able to further categorize within larger two-dimensional shapes and three-dimensional shapes? (Those that have curved surfaces or straight surfaces.)

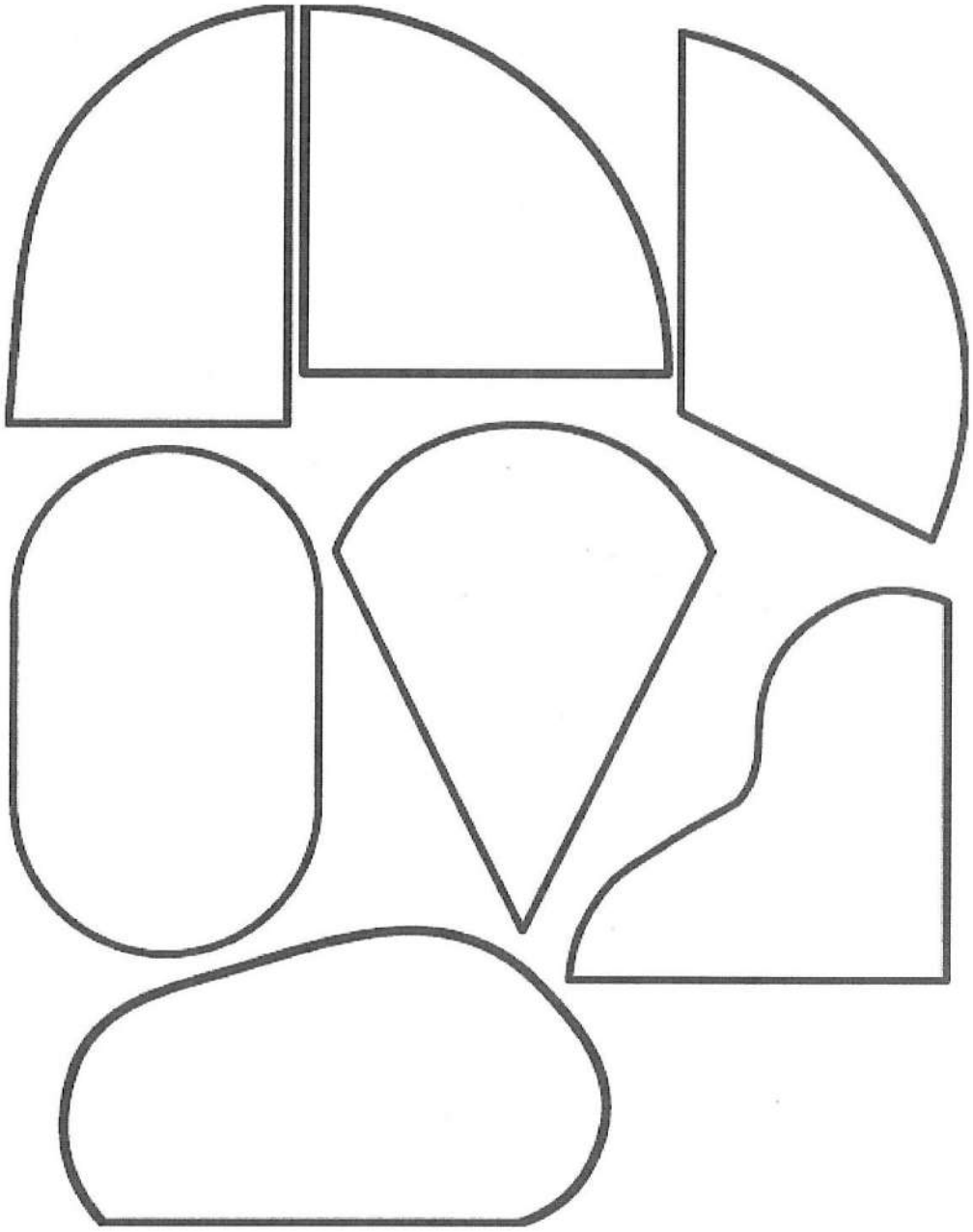
Two-Dimensional Shapes

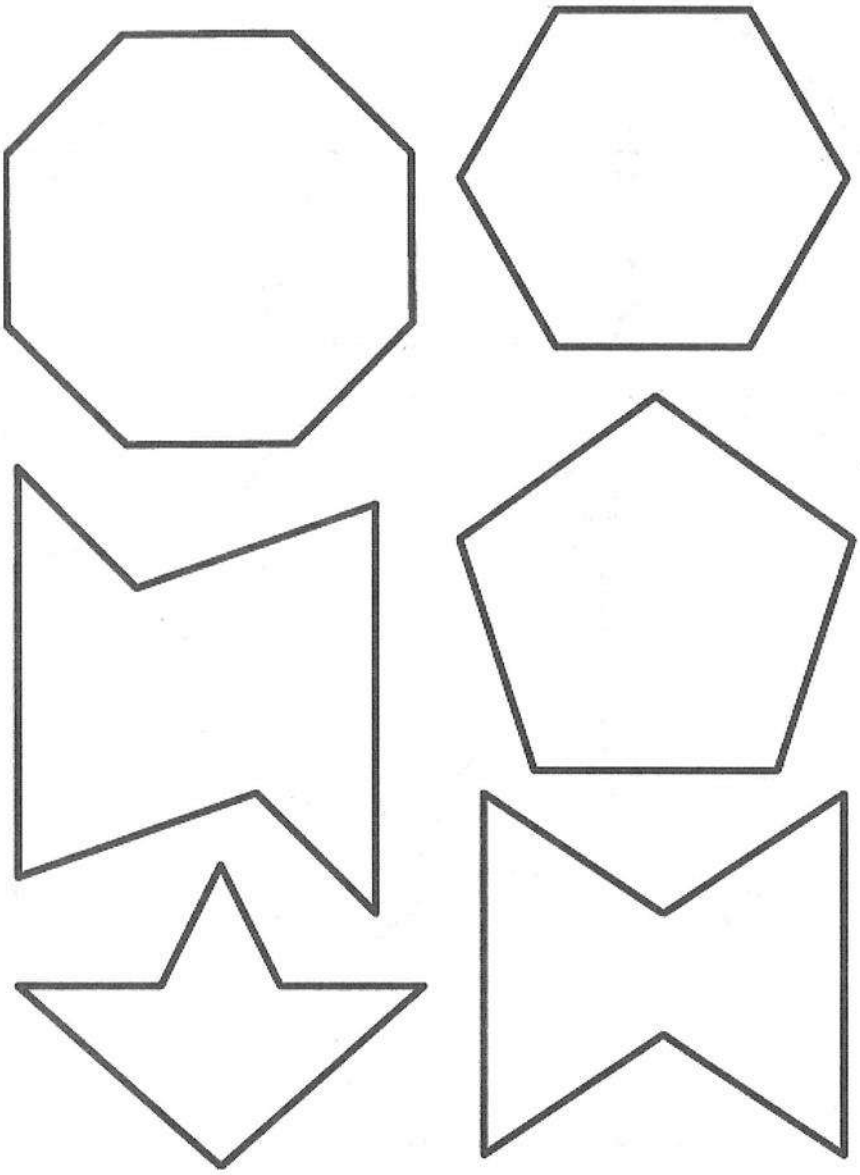
Three-Dimensional Shapes

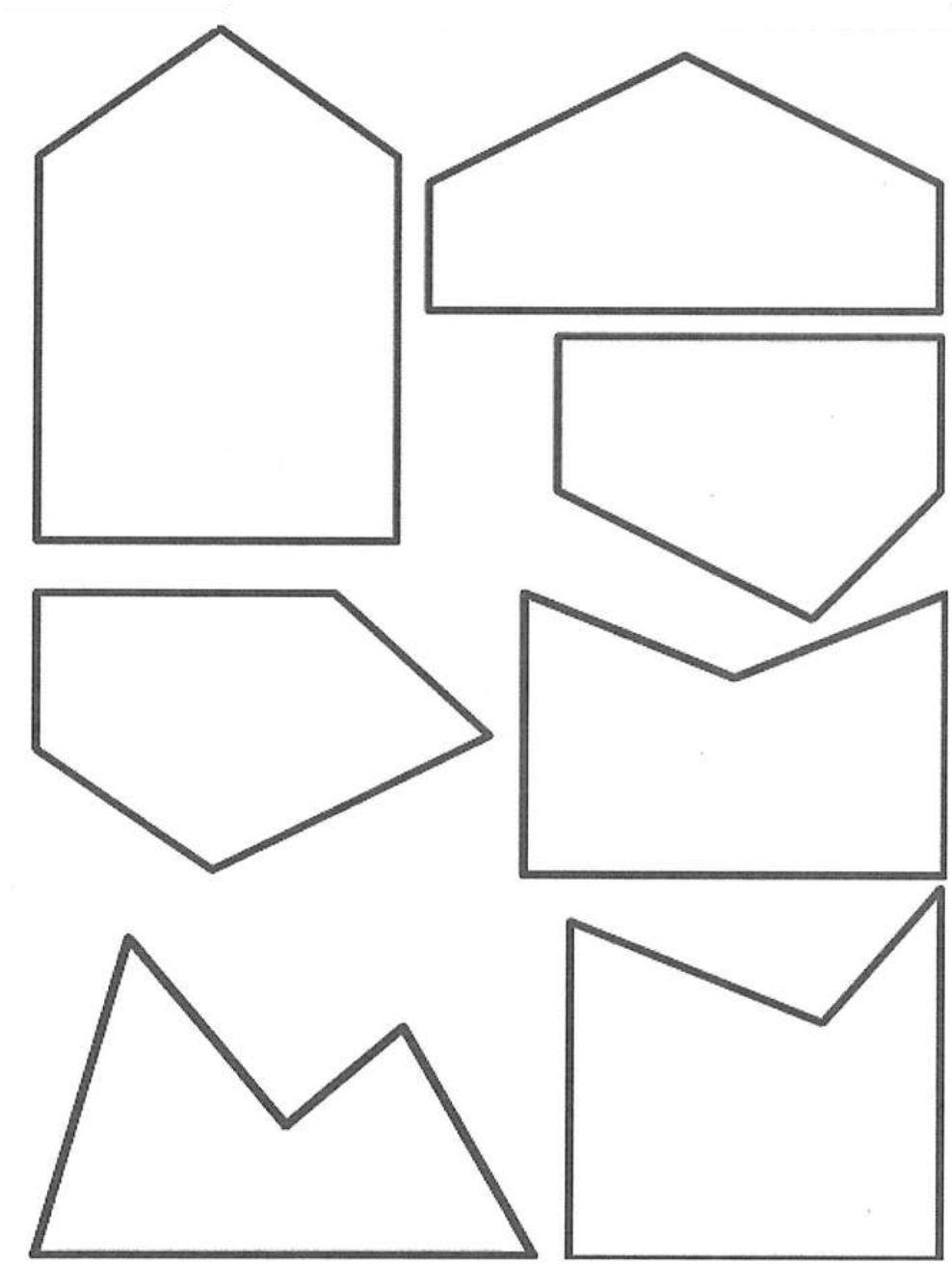
Directions:

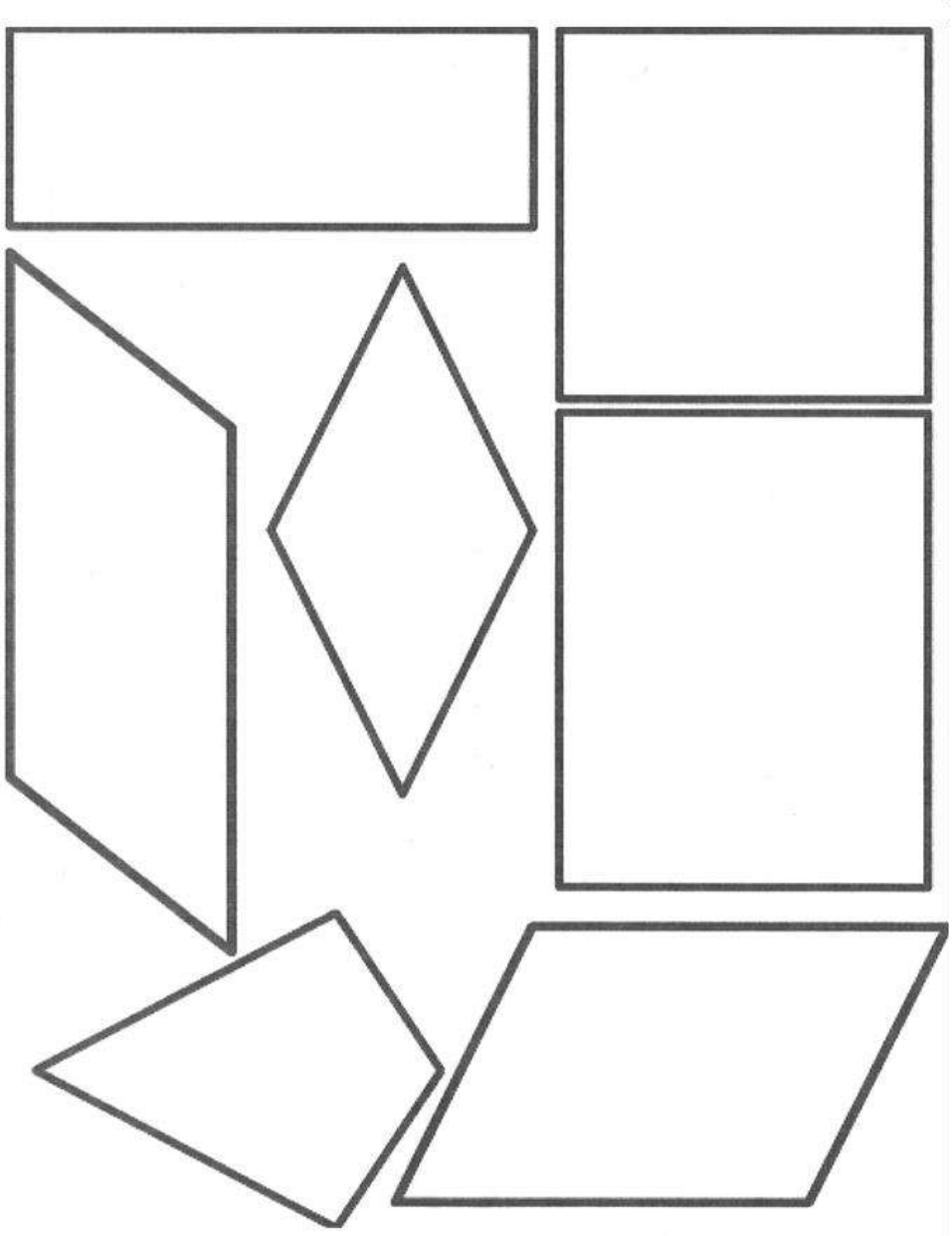
1. Copy and cut one set of shapes for each group of students—students could be in groups of four).
2. The teacher will also need a set. Pull the students up front and display all or some of the shapes, depending on the needs of your students. Ask them what they notice about the shapes. Chart important vocabulary words as they discuss the shapes. Words may include curves, rectangles, triangles, squares, corners, sides, etc. Next, pick just two shapes and discuss how they are different and how they are alike.
    a. Have each child select two shapes and share with the group one way the two shapes are alike and one way they are different.
    b. Next, the teacher will sort some shapes under a common rule. For example, pull out all of the triangles. Ask the students if anyone can discover their secret rule.
3. Provide students with a time to discover and then share a common rule with their group and have the members of their group state the rule.

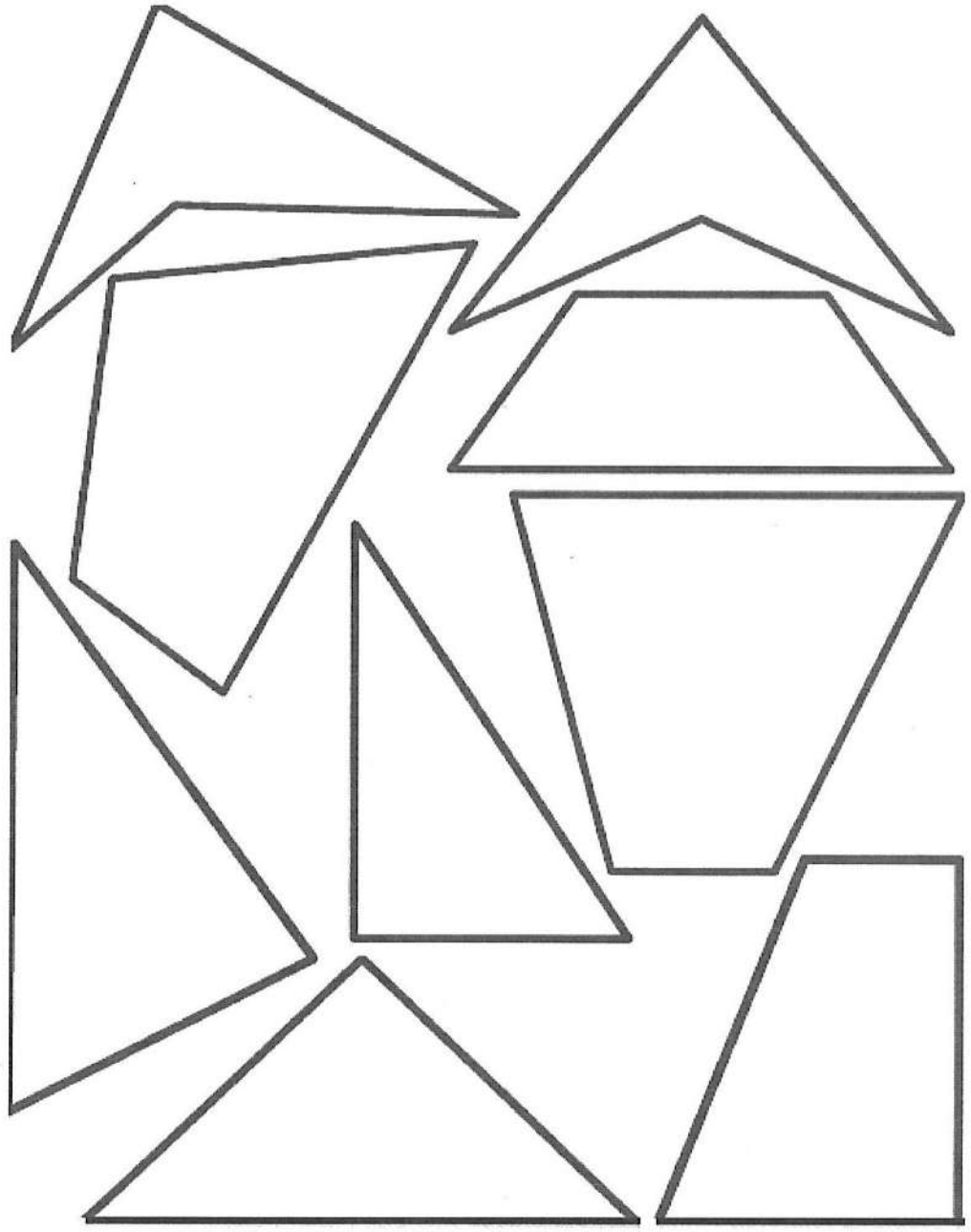


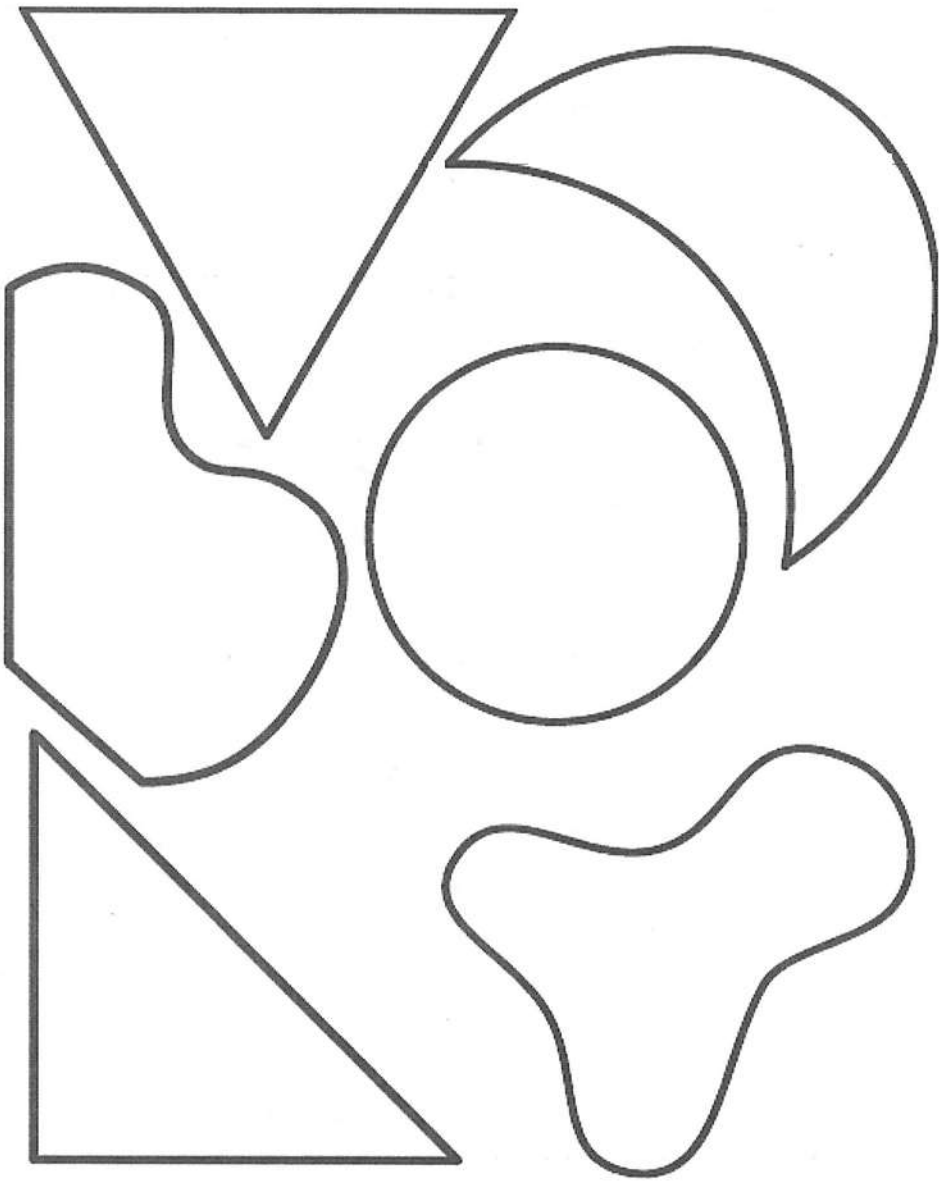












Task 35 – K.G.5

Draw a shape…

… that has 4 equal sides.

… that has no sides.

… that has less than four sides.

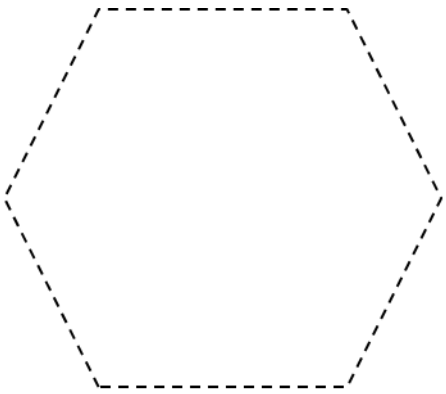
Task 36 – K.G.6

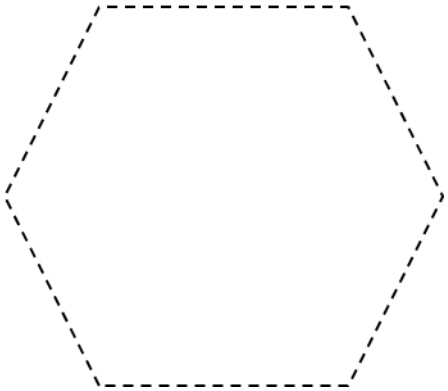
Note: You will need tangrams or attribute blocks and pattern blocks.

1. Use two triangles and make a new shape. Draw what you made.

2. Put two squares together and make a new shape. Draw what you made.

3. Use shapes to make a hexagon in two different ways. Show your work.





RUBRIC FOR KINDERGARTEN ITEMS

Kindergarten Rubric

The following rubric can be used where observing students' interactions at solving the problems and tasks.

Not Yet: Student shows evidence of misunderstanding, incorrect concept, or procedure.		**Got It:** Student essentially understands the target concept.
Needs Improvement (N)	**With Assistance (W)**	**Independent (I)**
Unsatisfactory: Little Accomplishment	**Marginal: Partial Accomplishment**	**Proficient: Substantial Accomplishment**	**Excellent: Full Accomplishment**
The task is attempted and some mathematical effort is made. There may be fragments of accomplishment but little or no success. Further teaching is required.	Part of the task is accomplished, but there is lack of evidence of understanding or evidence of not understanding. Further teaching is required.	Student could work to full accomplishment with minimal feedback from teacher. Errors are minor. Teacher is confident that understanding is adequate to accomplish the objective with minimal assistance.	Strategy and execution meet the content, process, and qualitative demands of the task or concept. Student can communicate ideas. May have minor errors.

Adapted from Van de Walle, J. (2004) Elementary and Middle School Mathematics: Teaching Developmentally. Boston: Pearson Education, 65
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