

LETTER HOME

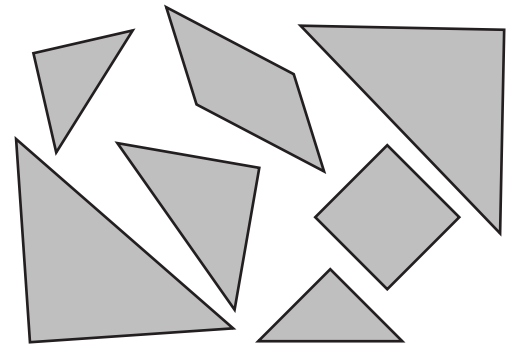
Analyzing Shapes

Dear Family Member:

In this unit, students will describe, compare and classify two-dimensional and three-dimensional shapes. At the start of the unit, students use a set of seven shapes to solve puzzles called tangrams. Although one aim is to have fun solving geometric puzzles, there are also mathematical goals. Students make, draw, and describe shapes to develop spatial visualization skills and develop language to compare and categorize shapes.

Describing Shapes. Help your child by asking him or her to identify shapes at home and to discuss the parts of common geometric shapes. Talking about the number of sides and vertices (corners) of various shapes—triangles, squares, pentagons, and so on—is worthwhile. You might also make a list of examples of right angles—square angles—at home. Comparing angles to see if they are more or less than a right angle will help your child understand angular measure.

Play Shape Finder. Name a property of a shape and try to identify and draw several shapes with that property. For example: If the property is a shape with 4 sides, a student may draw the following shapes. See Figures 1 and 2 for a list of properties and sample shapes.



The seven tans of tangrams—an old Chinese puzzle



Math Facts and Mental Math

This unit continues the systematic review and assessment of the multiplication facts.

Multiplication Facts. Students review the multiplication facts for the nines to increase fluency and to learn to apply multiplication strategies to larger numbers.

You can help your child review these facts using the flash cards that are sent home or by making a set of flash cards from index cards or scrap paper. Study facts in small groups each night. As your child goes through the flash cards, put the cards in three stacks: Facts I Know Quickly, Facts I Can Figure Out, and Facts I Need to Learn.

For Facts I Need to Learn, work on strategies for figuring them out. Good strategies include:

Doubling. To solve 2×9 , think $9 + 9 = 18$.

Reasoning from known facts. To solve 9×4 , think $9 \times 2 = 18$ and $18 + 18 = 36$. Or use 10×4 to solve 9×4 . $10 \times 4 = 40$ and $40 - 4 = 36$.

For Facts I Can Figure Out, use the flash cards to practice the facts for fluency.

For Facts I Know Quickly, help your child use mental math strategies to multiply 10s and 100s: $90 \times 200 = 18000$, $50 \times 90 = 4500$.

Thank you for taking the time to talk with your child about what he or she is doing in math.

Sincerely,

Property	Sample Shapes
4 sides (quadrilaterals)	
All right angles	
At least one pair of sides are parallel	
Only one pair of parallel sides	
Opposite sides are the same length	
All sides are equal	

Figure 1: A list of properties of 2-D shapes with sample shapes for Shape Finder

Property	Sample Shapes
At least one triangle face	hexagonal pyramid square pyramid triangular prism triangular pyramid
At least 12 edges	cube hexagonal prism hexagonal pyramid square prism rectangular prism
Opposite faces are parallel and congruent	cube cylinder hexagonal prism square prism rectangular prism triangular prism
At least one right angle	cube square prism
No vertices	sphere cylinder
At least one pair of parallel edges	cube hexagonal prism rectangular prism square prism square pyramid triangular prism
At least one rectangular face	cube hexagonal prism rectangular prism square prism square pyramid triangular prism

Figure 2: A list of properties of 3-D shapes with sample shapes for Shape Finder

Unit 11: Home Practice

Part 1 Triangle Flash Cards: 9s

Study for the quiz on the multiplication facts for the 9s. Take home your Triangle Flash Cards: 9s and the list of facts you need to study.

Ask a family member to choose one flash card at a time. He or she should cover the largest number. Solve a multiplication fact with the two uncovered numbers. Your teacher will tell you when the quiz on the multiplication facts for the 9s will be.

Part 2 Solve Problems with Addition and Subtraction

Use strategies you have learned to solve each problem.

1. $160 - 70 = \underline{\quad}$ 2. $120 - 50 = \underline{\quad}$ 3. $140 - 60 = \underline{\quad}$

4. $82 + \underline{\quad} = 100$ 5. $53 + \underline{\quad} = 100$ 6. $44 + \underline{\quad} = 100$

7. A. Show or tell how you solved Question 3.

B. Show or tell how you solved Question 5.

8. When Frank cleaned his mom's car he found some coins under the seats. His mom let him keep the coins and gave him \$.25 more for cleaning the car. Now he has \$2.00.

A. How much money did Frank find in the car? _____

B. Frank found a combination of quarters, dimes, and nickles. He found fewer than 15 coins. How many of each could he have found? Give two possible answers.

Part 3 Problem Solving with Multiplication and Division

Solve the following problems. Show how you found each answer.

1. One Saturday, 37 people volunteer to help restore a prairie. The team leader divides them into teams. He wants each team to have at least 5 people but not more than 8 people. Every person must be on a team. Show or tell all the ways the team leader can divide the group.

2. Mrs. Hix is planning for summer camp. Each cabin at the camp can hold 15 campers. There are 12 cabins. If all the cabins are full, how many campers can Mrs. Hix expect at camp? Show or tell how you know.

3. A group of 23 campers is going to visit the state capitol. Each car can carry no more than 3 campers. How many cars are needed? Show or tell how you know.

4. Some campers are going on a night hike. They will need one adult for every 6 campers who are hiking. If 32 campers sign up for the hike, how many adults will they need? Show or tell how you know.

Part 4 Thinking About Numbers

1. Beverly collected 728 pennies. She sorted them into 3 jars. Look at each sentence below and decide which jar you would choose if she let you keep the one with the most pennies. Explain why you chose that jar.

Jar A: Has as many pennies as the “2” stands for in 728.

Jar B: Has as many pennies as the “7” stands for in 728.

Jar C: Has as many pennies as the “8” stands for in 728.

2. **A.** Write a story for this multiplication sentence: $20 \times 3 = ?$

- B.** Use your story to label the number sentence to show what each number means.

$$20 \underline{\hspace{1cm}} \times 3 \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$$

3. **A.** How many leaves do 30 four-leaf clovers have?

- B.** Show or tell how you solved the problem.

4. **A.** If a +6 hopper starts at 0 and takes 9 hops, where will it land?

- B.** Write a number sentence to show how the hopper moves.

Part 5 Multiplication Strategies for the 9s

1. Jason said since he knows that $2 \times 9 = 18$, he can use a doubling strategy to solve 4×9 . Use Jason's strategy to solve 4×9 .
2. Carla said since she knows $10 \times 7 = 70$, she can use this to help her solve 9×7 . Show how to use 10×7 to solve 9×7 .
3. Luis said since he knows $8 \times 8 = 64$, he can use this fact to help him solve 8×9 . Show how to use 8×8 to solve 8×9 .

4. Show how to solve these problems.

A. $9 \times 5 =$

B. $6 \times 9 =$

C. $9 \times 9 =$

5. Julia uses a break-apart strategy to solve 13×9 . She thinks $10 + 3 = 13$, so she multiplies:

$$10 \times 9 + 3 \times 9 = 90 + 27$$

$$90 + 27 = 117$$

Use Julia's break-apart strategy to solve these problems.

A. $14 \times 9 =$

B. $19 \times 9 =$

C. $16 \times 9 =$

Part 6 It is About Time

1. Moe and Joe decided to run one mile. They both started to run at 2:09. Joe finished in 14 minutes. Moe finished at 2:22. Who finished first? Show or tell how you know.

2. **A.** Fern took her brothers to the park to play. They left their house at 10:20 am. It took them 15 minutes to walk to the park. What time did they arrive at the park?

B. Fern's mom told the children to be home for lunch at 12:30. What time do they need to leave the park to make sure they are home on time?

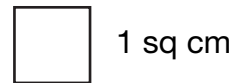
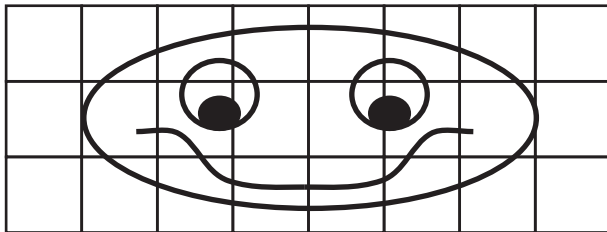
C. How long did Fern and her brothers have to play at the park? Show or tell how you know.

D. If Fern and her brothers left the house at 10:20 and arrived home for lunch at 12:30, how long were they gone?

3. Bessie Coleman School is having a special night for families. The evening starts at 6:00 with a family dinner. After dinner families will rotate to three different activity stations. They will spend 30 minutes at each activity. If the dinner takes 45 minutes, what time will the evening end? Show or tell how you know.

Part 7 Problem Solving with Shapes

1. What is the approximate area of Olga the Oval? _____



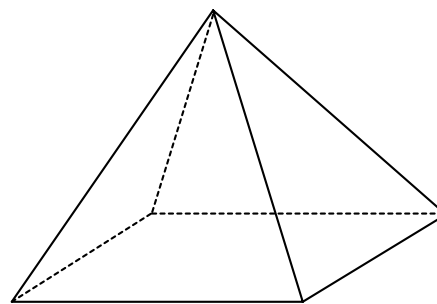
2. Miguel measured the perimeter of a rectangle. Two sides were each 8 centimeters long. The other two sides were each 15 centimeters long. What is the perimeter of the rectangle? Draw a picture and write a number sentence to show how you solved the problem.

3. Look at this shape. Count the number of

A. Vertices _____

B. Faces _____

C. Edges _____

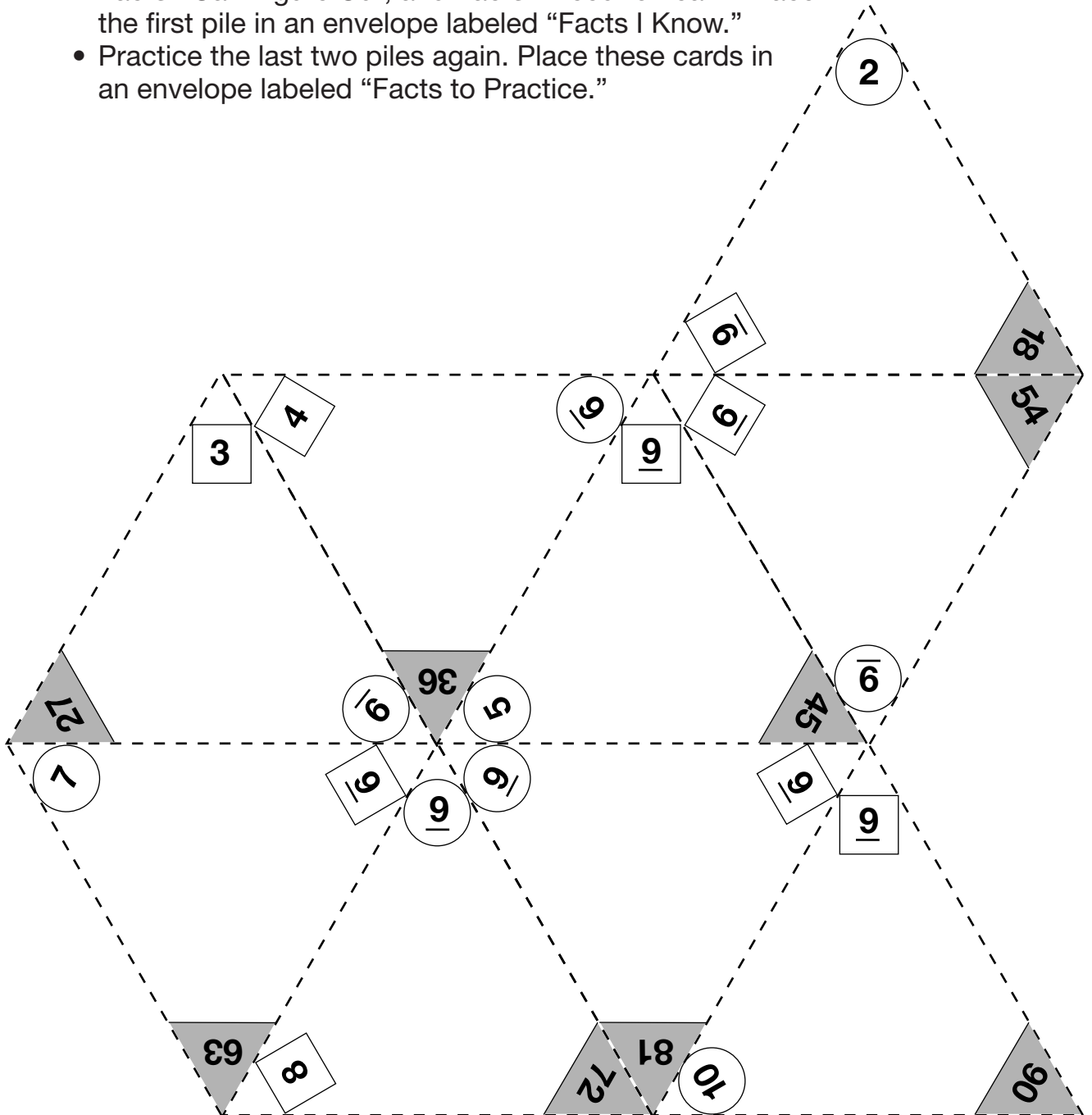


rectangular pyramid

D. Draw and name the shapes of each face.

Triangle Flash Cards: 9s

- Work with a partner. Each partner cuts out the flash cards.
- To quiz you on a multiplication fact, your partner covers the shaded number. Multiply the two uncovered numbers.
- Divide the used cards into three piles: Facts I Know Quickly, Facts I Can Figure Out, and Facts I Need to Learn. Place the first pile in an envelope labeled "Facts I Know."
- Practice the last two piles again. Place these cards in an envelope labeled "Facts to Practice."



Name _____ Date _____

Just Passing Time Check-In: Questions 13–15 Feedback Box

	Expectation	Check In	Comments
Solve elapsed-time problems involving time measurements to the nearest minute. <ul style="list-style-type: none"> • Given the start and end time for an event, find the elapsed time. [Q# 13] • Given the end time and the duration of the event, find the start time. [Q# 14] • Given the start time and duration of the event, find the end time. [Q# 15] 	E9		

	Yes ...	Yes, but ...	No, but ...	No ...
MPE2. Find a strategy. I choose good tools and an efficient strategy for solving the problem.				
MPE5. Show my work. I show or tell how I arrived at my answer so someone else can understand my thinking.				
MPE6. Use labels. I use labels to show what numbers mean.				

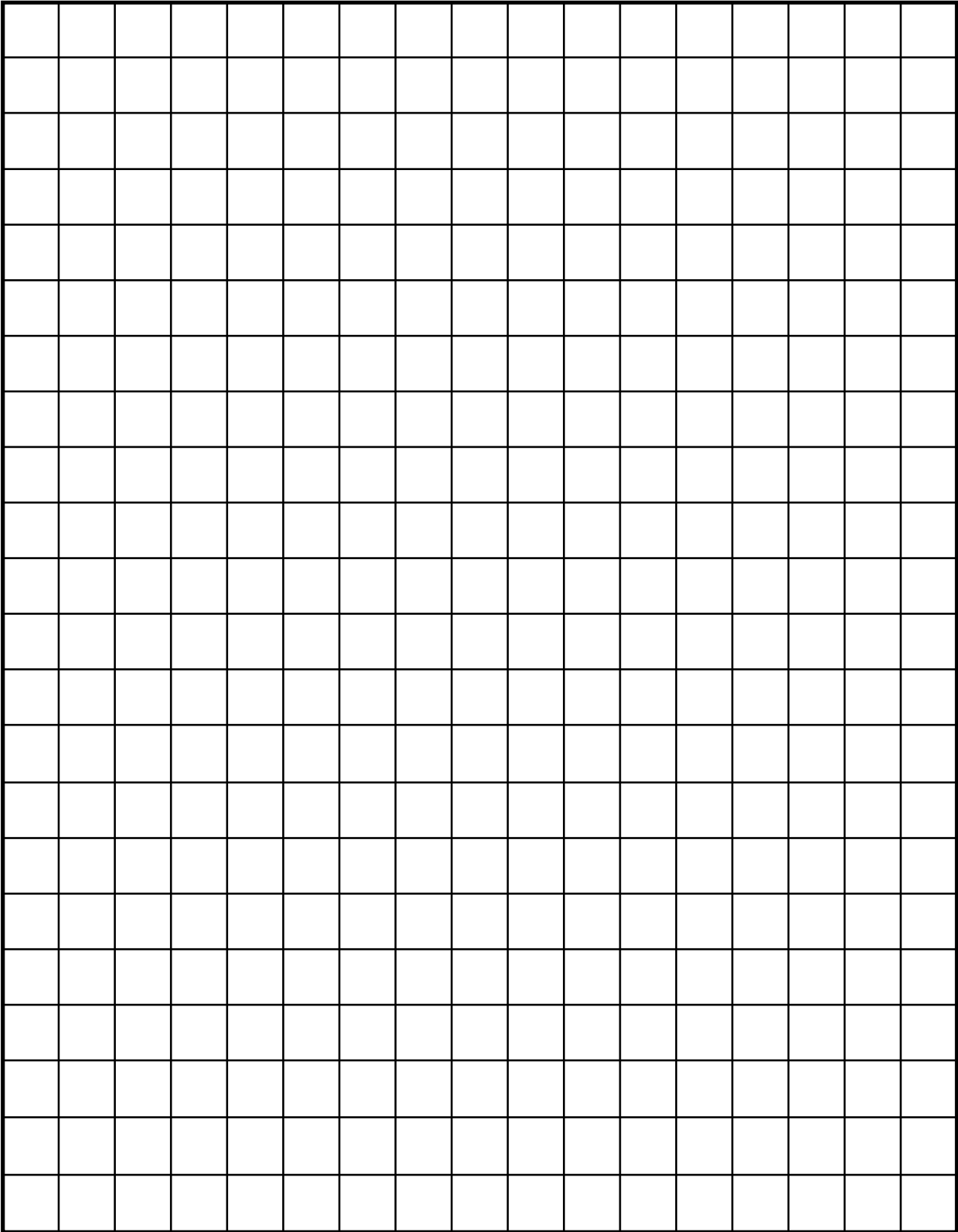
Multiplication Facts I Know

- Circle the facts you know well.
- Keep this table and use it to help you multiply.
- As you learn more facts, you may circle them too.

×	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

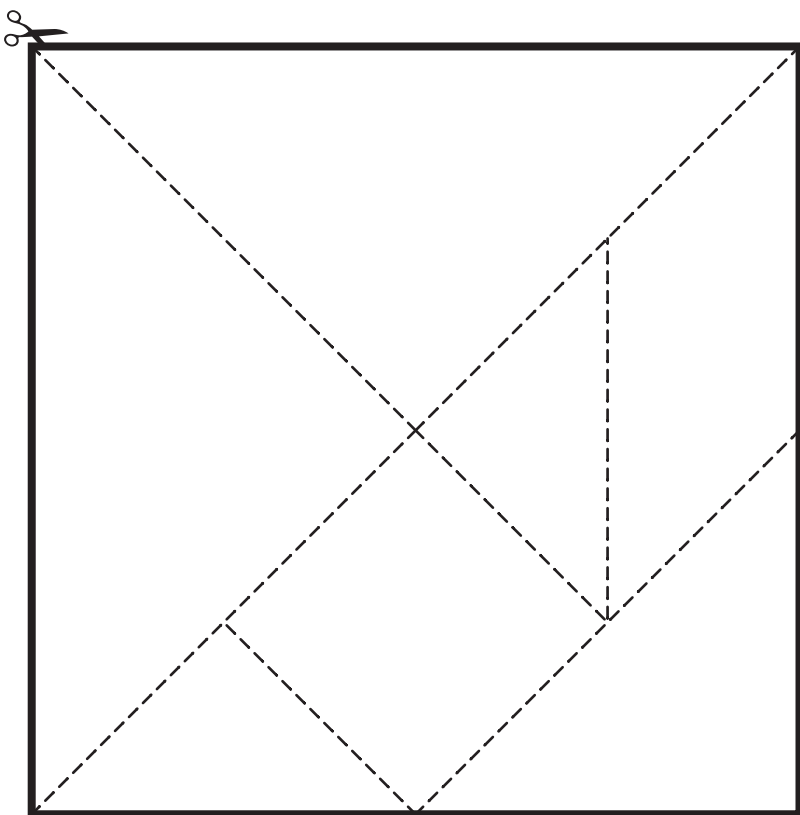
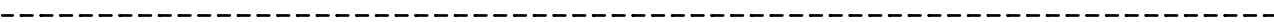
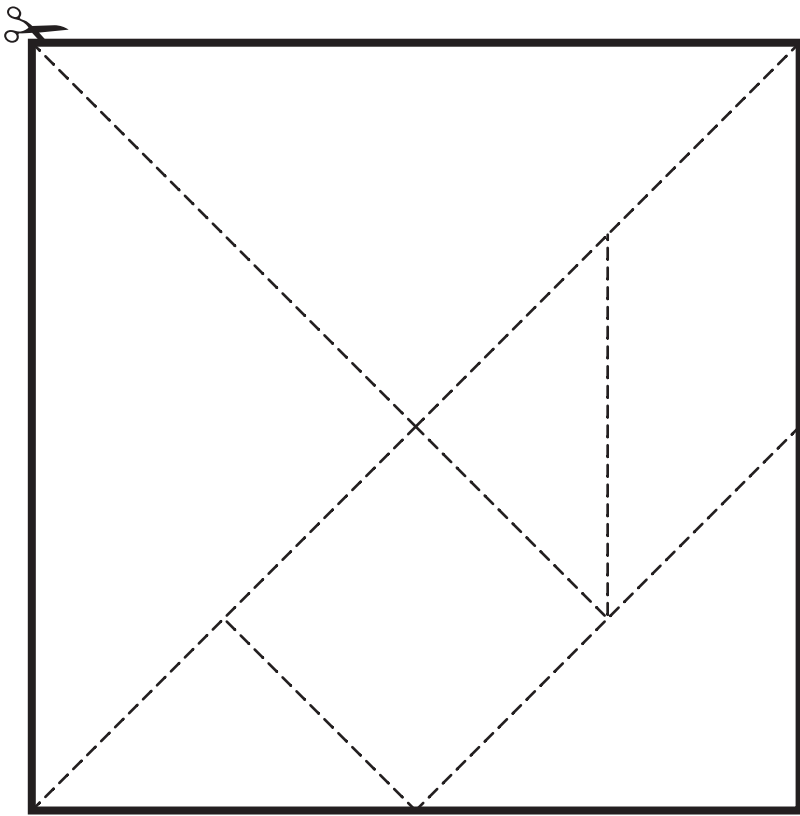
Name _____

Date _____



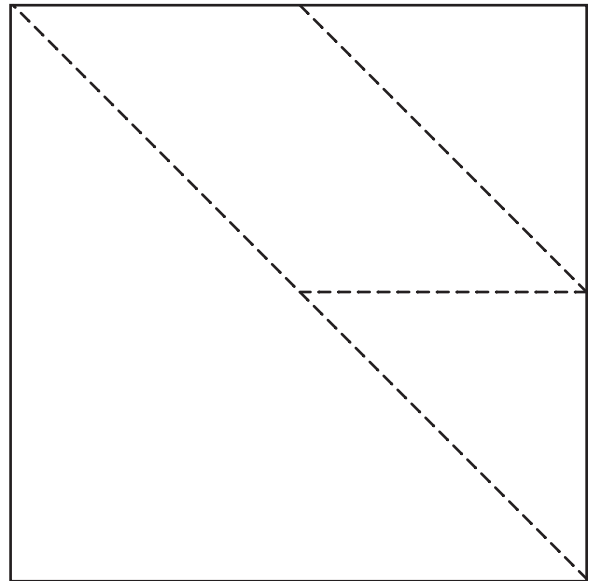
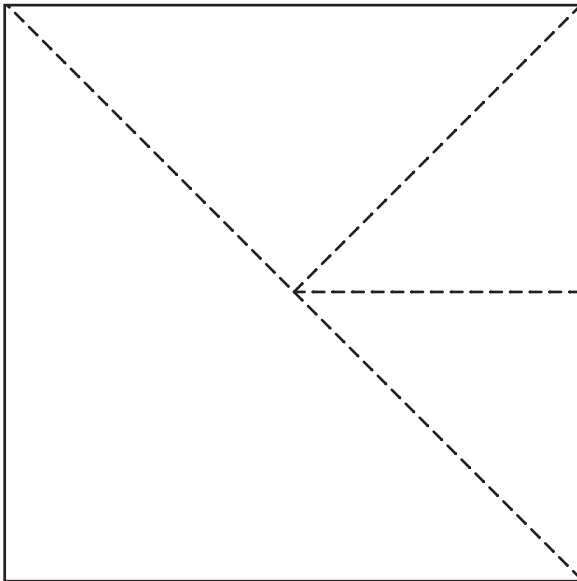
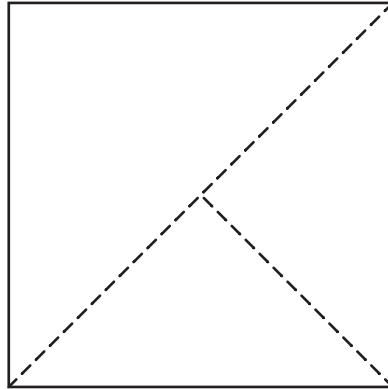
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Tangram Set



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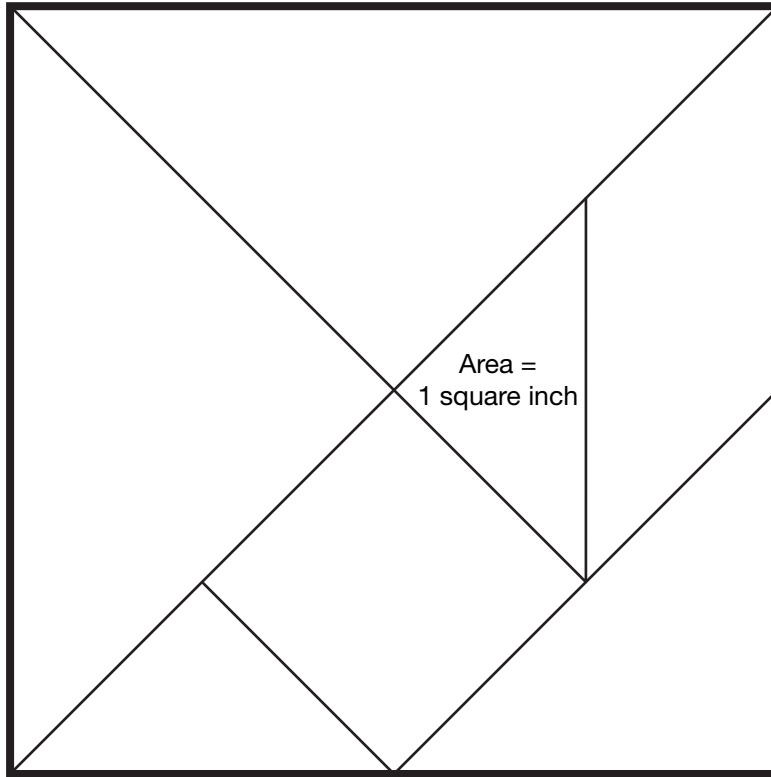
Using Tans to Make Squares



Find the Area

Use your tangram set to solve the problems.

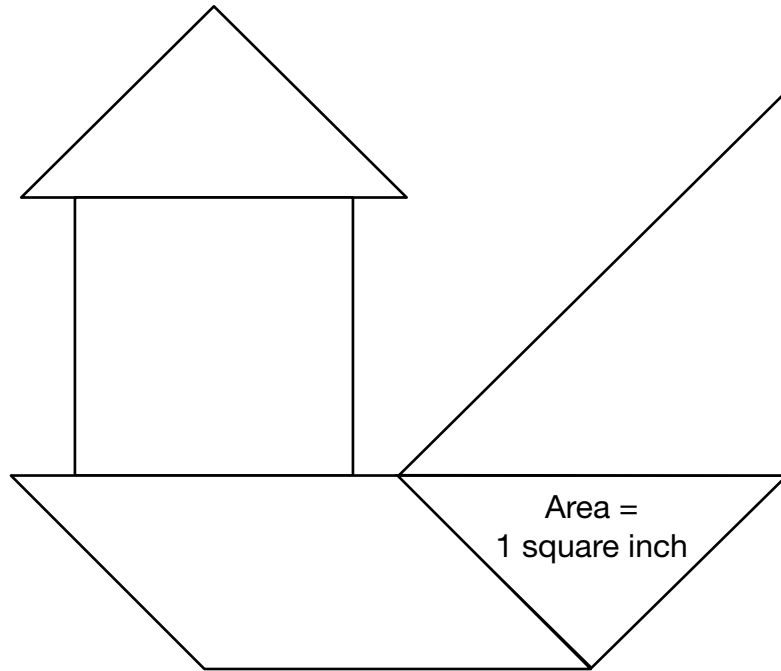
The area of the small triangle is 1 square inch.



1. **A.** Find the area of the whole square above.

B. Explain how you found the area of the whole square.

2. Find the area of the shape below.



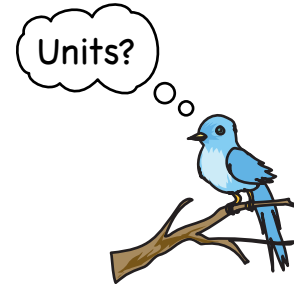
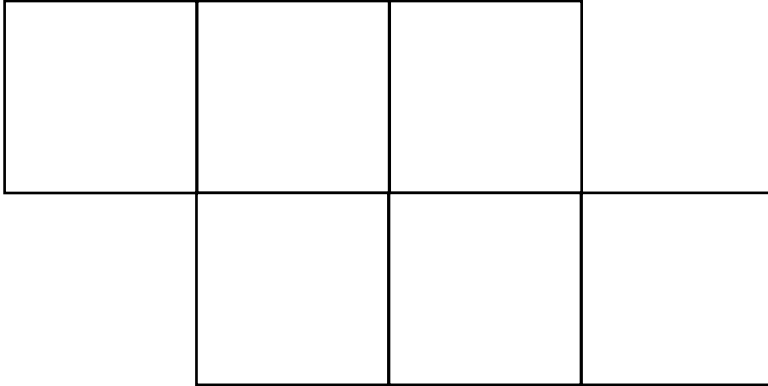
Name _____ Date _____

Find the Area Feedback Box	Expectation	Check In	Comments
Measure the area of 2-dimensional shapes. [Q# 1–2]	E10		

	Yes ...	Yes, but ...	No, but ...	No ...
MPE2. Find a strategy. I choose good tools and an efficient strategy for solving the problem. [Q# 1–2]				
MPE5. Show my work. I show or tell how I arrived at my answer so someone else can understand my thinking. [Q# 1B]				
MPE6. Use labels. I use labels to show what numbers mean. [Q# 1A]				

Shapes with Six Tiles

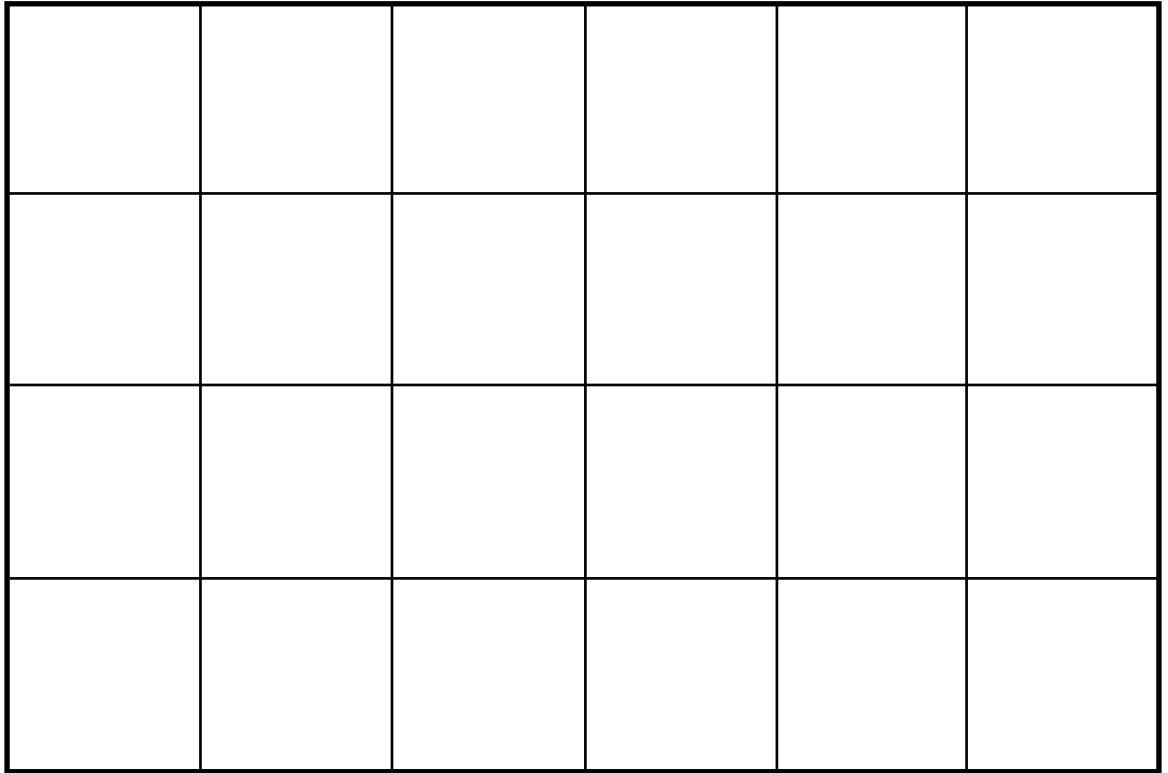
1. The shape below is made from 6 square tiles.



- A. Show or tell how to find the perimeter.

- B. Show or tell how to find the area.

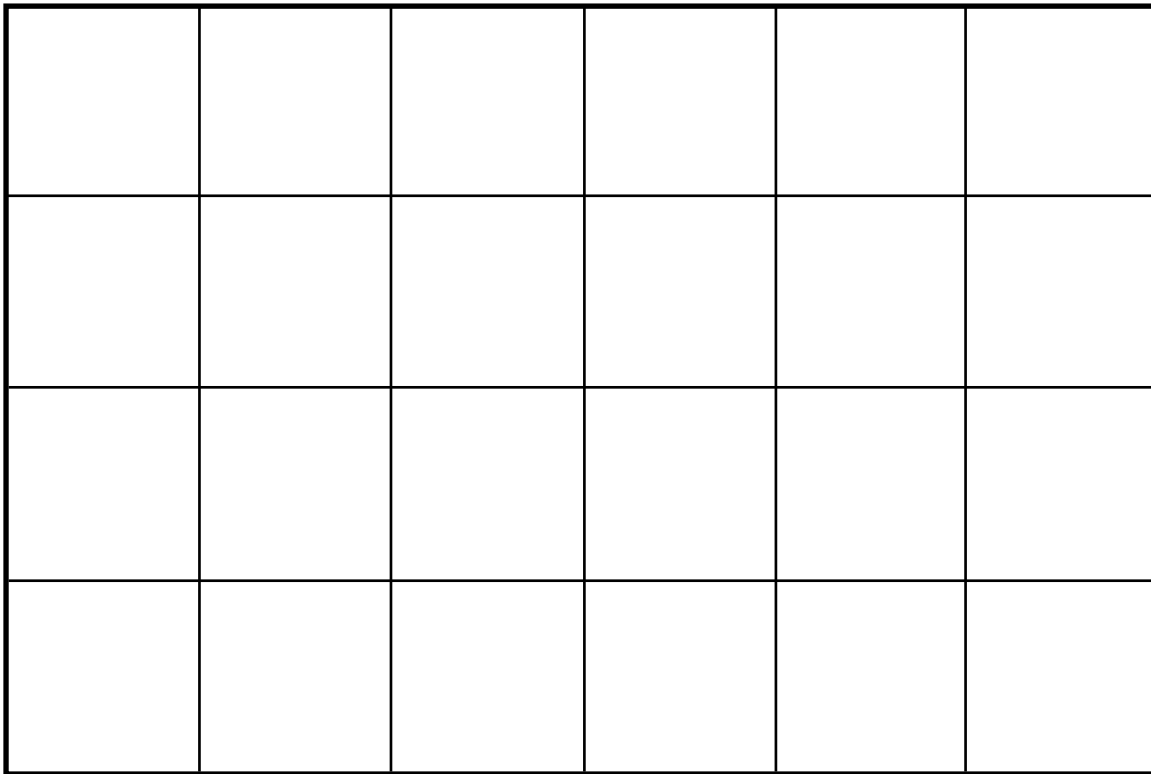
- 2. A.** Using six square tiles, make a shape that has a different perimeter than the shape in Question 1. Trace the shape on the grid.



- B.** Show or tell how to find the perimeter.

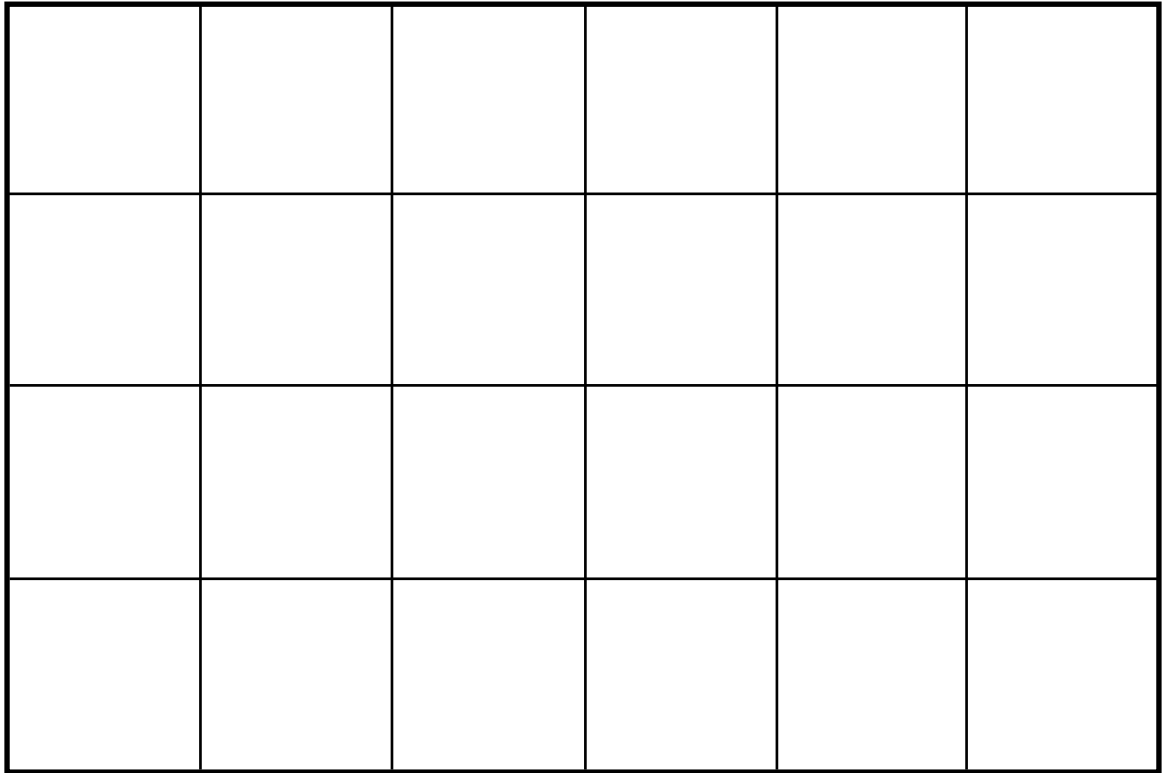
- C.** Show or tell how to find the area.

- 3. A.** Using six square tiles, make another shape that has a different perimeter than the shapes in Questions 1 and 2. Trace the shape on the grid.



- B.** Show or tell how to find the perimeter.
- C.** Show or tell how to find the area.
- 4. A.** Compare the shapes in Questions 1–3. What do you notice about the area of the three shapes?
- B.** Can different shapes have the same area but different perimeters? Give an example to support your thinking.

5. **A.** Use square tiles to make an interesting shape. Trace the shape on the grid.



- B.** Complete the table below with information about your shape.

My Tile Shape

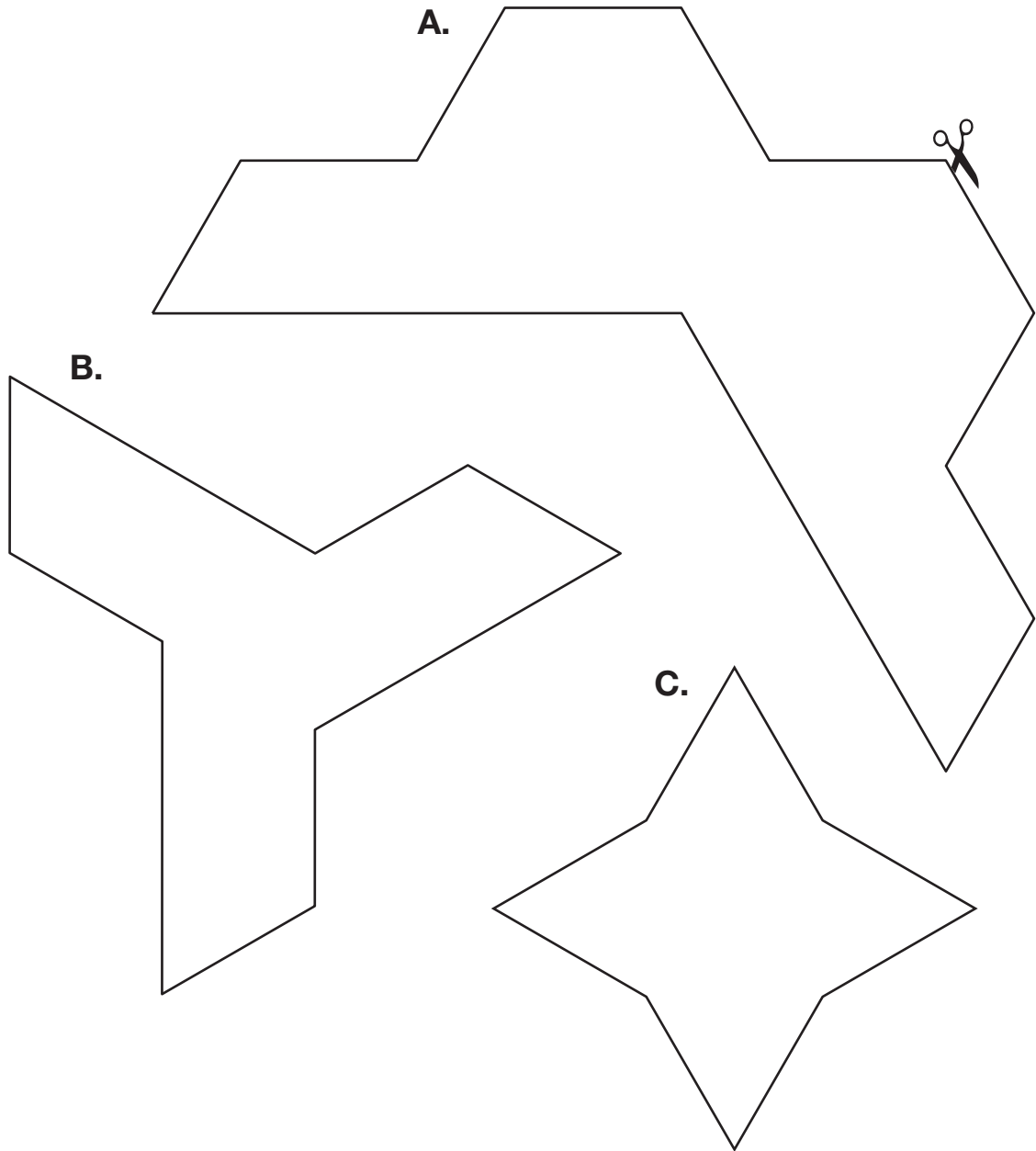
No. of Sides	No. of Vertices	Area (sq. in.)	Perimeter (inches)

**Shapes with Six Tiles
Feedback Box**

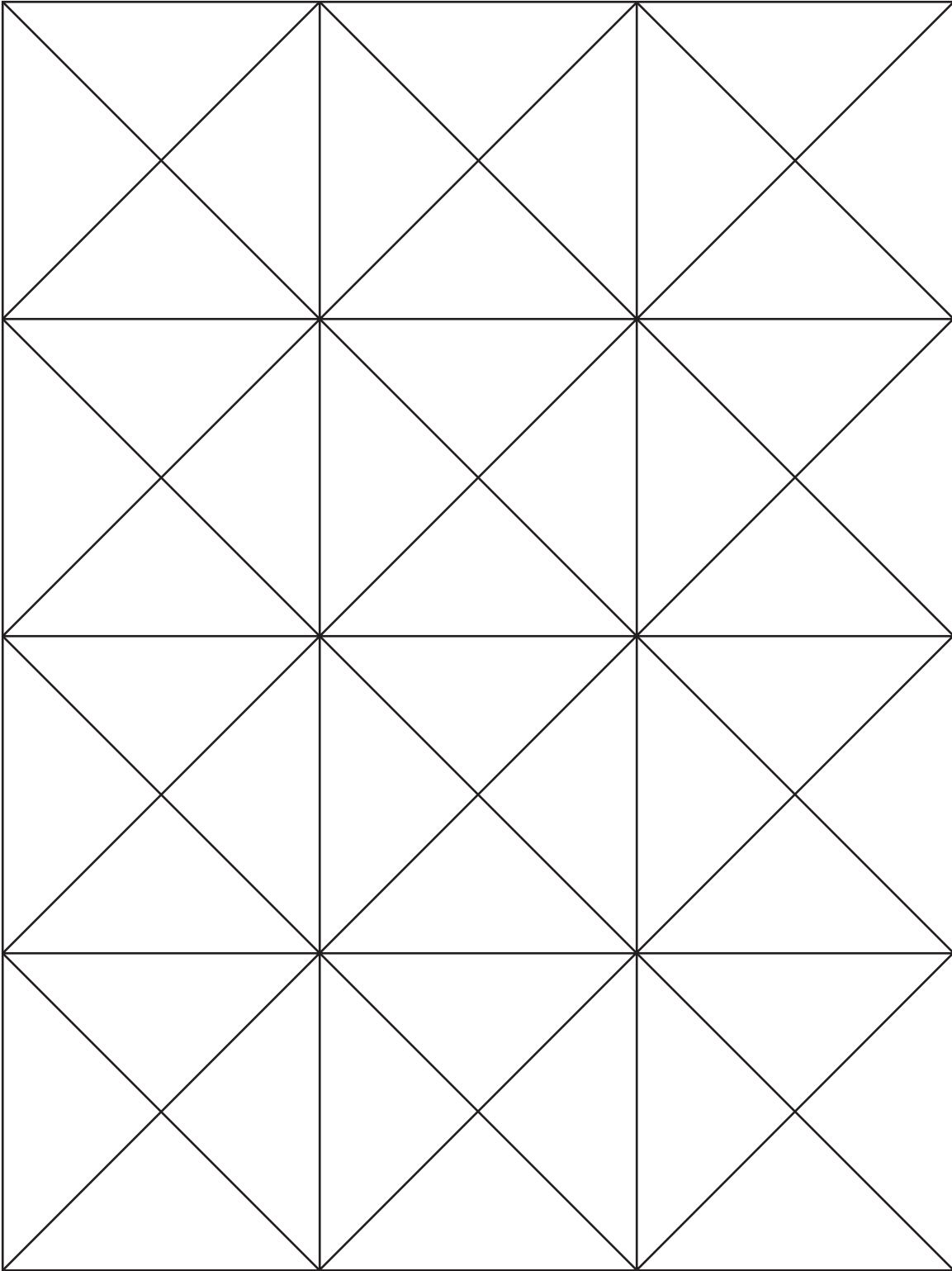
	Expectation	Check In	Comments
Describe and analyze two-dimensional shapes using their properties. [Q# 5]	E1		
Recognize that shapes can have the same area but different perimeters. [Q# 4]	E8		
Measure the area and perimeter of two-dimensional shapes. [Q# 1–3, 5]	E10		

Lines of Symmetry

1. Cut out the shapes.
2. Fold the shapes to see if they have any lines of symmetry.
3. Draw the lines of symmetry on each shape.



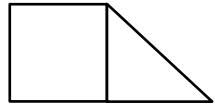
Right Triangle



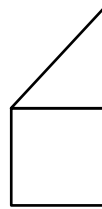
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Investigating Shapes

1. Luis and Sam each made a shape with a triangle and a square.



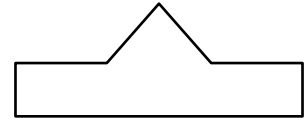
Luis's shape



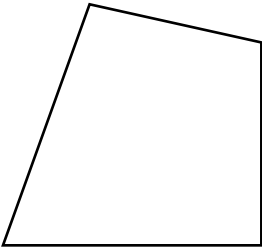
Sam's shape

Sam thinks their shapes are congruent. Luis thinks their two shapes are different. Do you agree with Sam or Luis? Explain your answer.

2. Draw the line(s) of symmetry on this shape.



3. Describe the properties of the shape by completing the table.

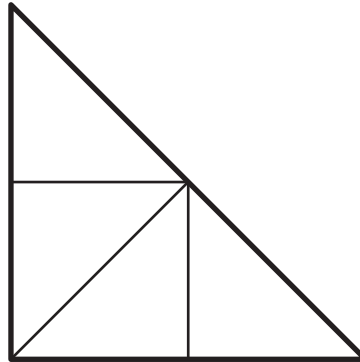
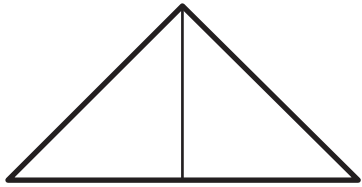
Shape	Sides	Vertices	Lines of Symmetry
			

Investigating Shapes Feedback Box

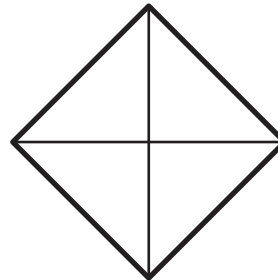
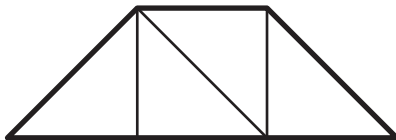
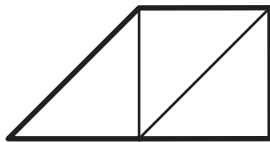
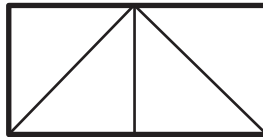
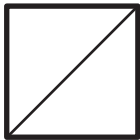
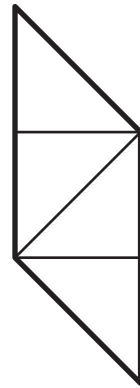
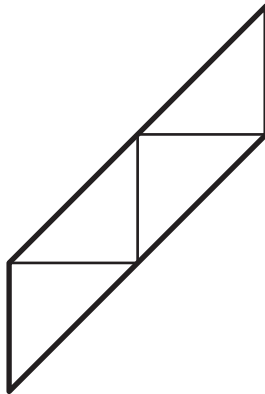
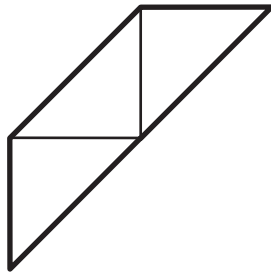
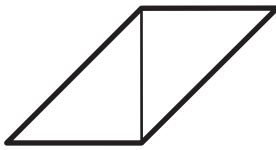
	Expect- ation	Check In	Comments
Describe and analyze two-dimensional shapes using their properties.	E1		
Identify congruent shapes.	E5		
Identify lines of symmetry.	E6		

Shapes from Triangles

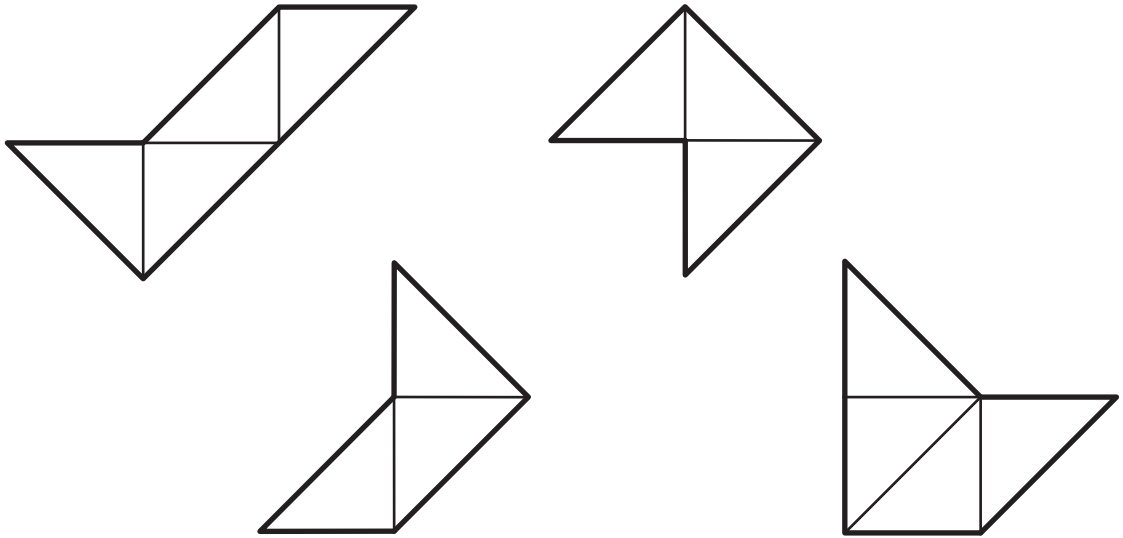
Group 1



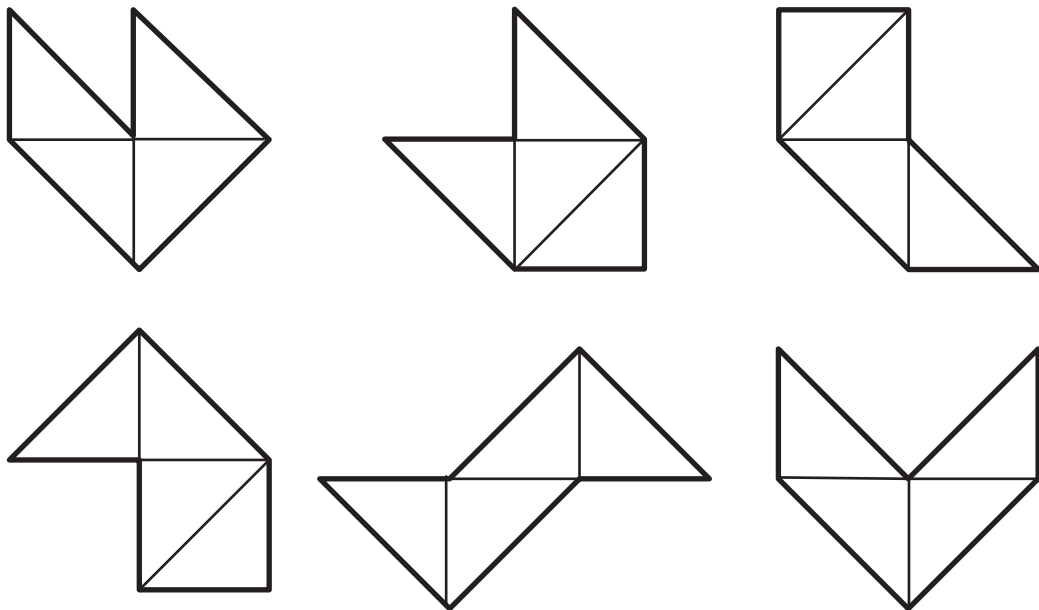
Group 2



Group 3



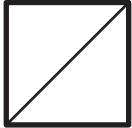
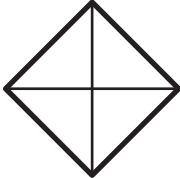

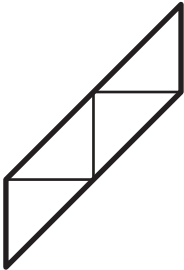
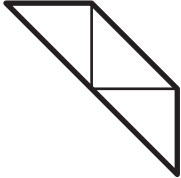

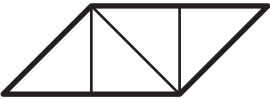
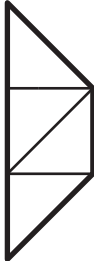
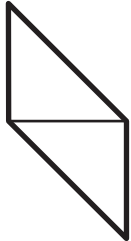

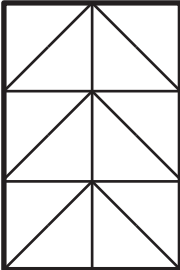
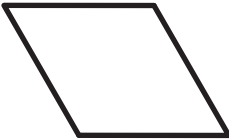
Group 4



Name _____

Date _____

Quadrilateral Sort Cards

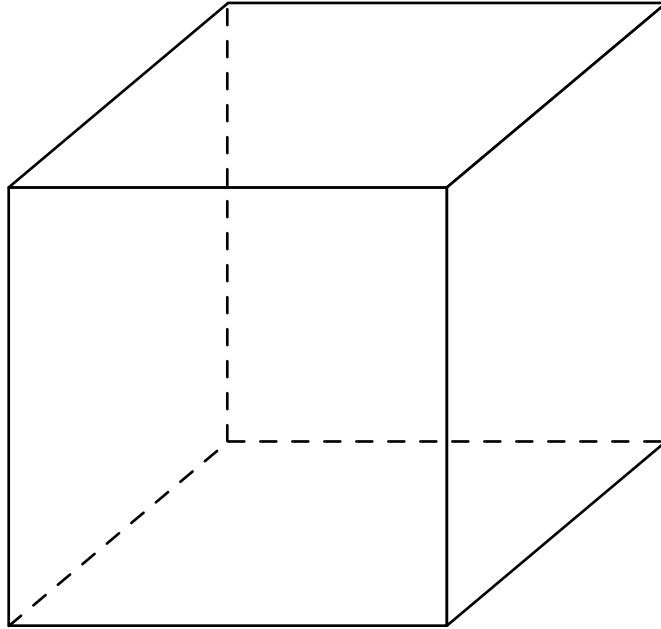
		
		
		
		



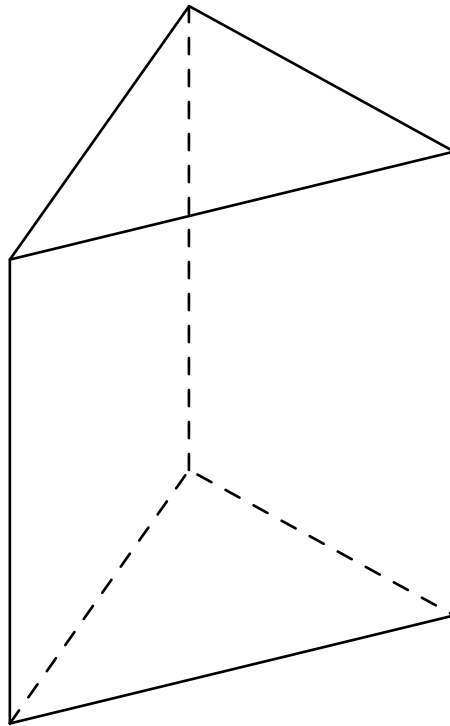
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Large 3-D Shapes

rectangular prism
cube

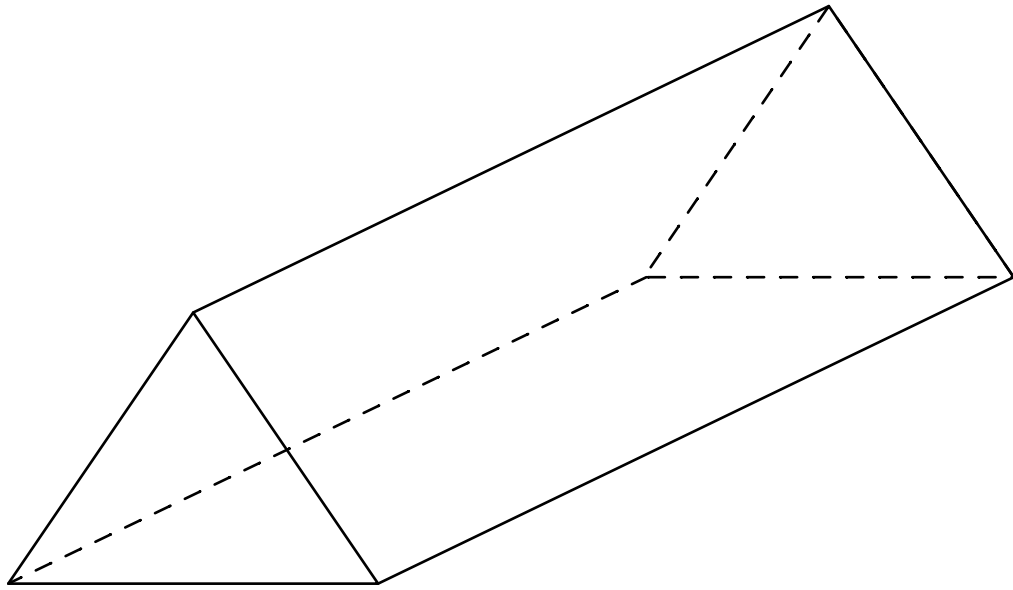


triangular prism

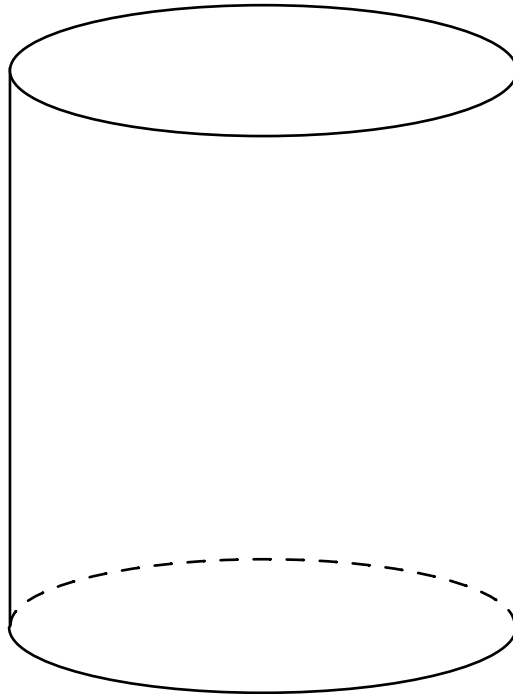


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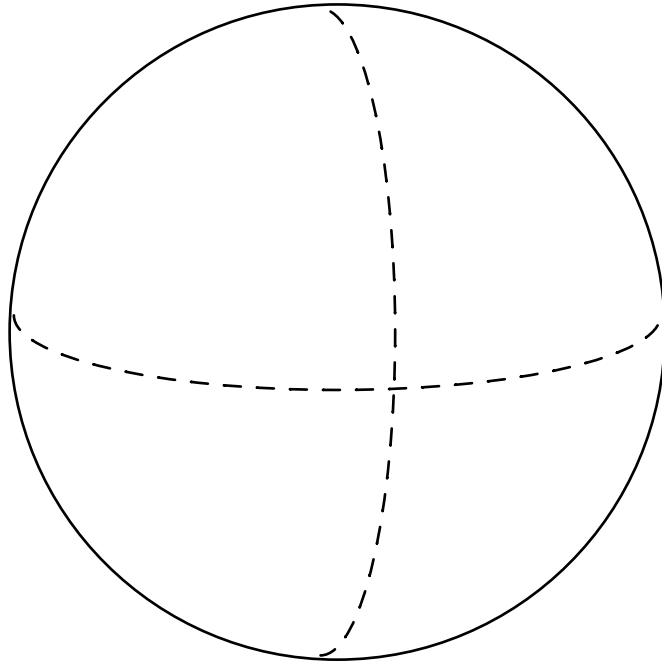
triangular prism



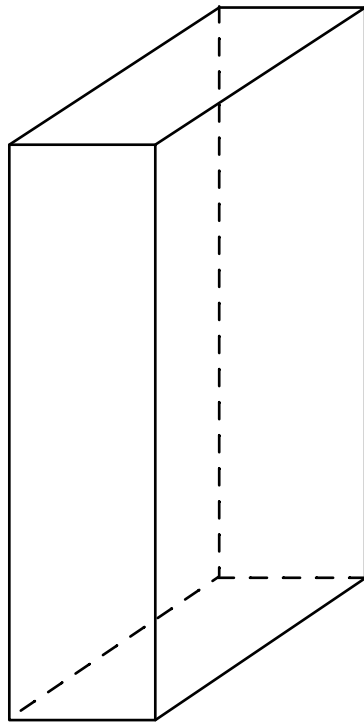
cylinder



sphere

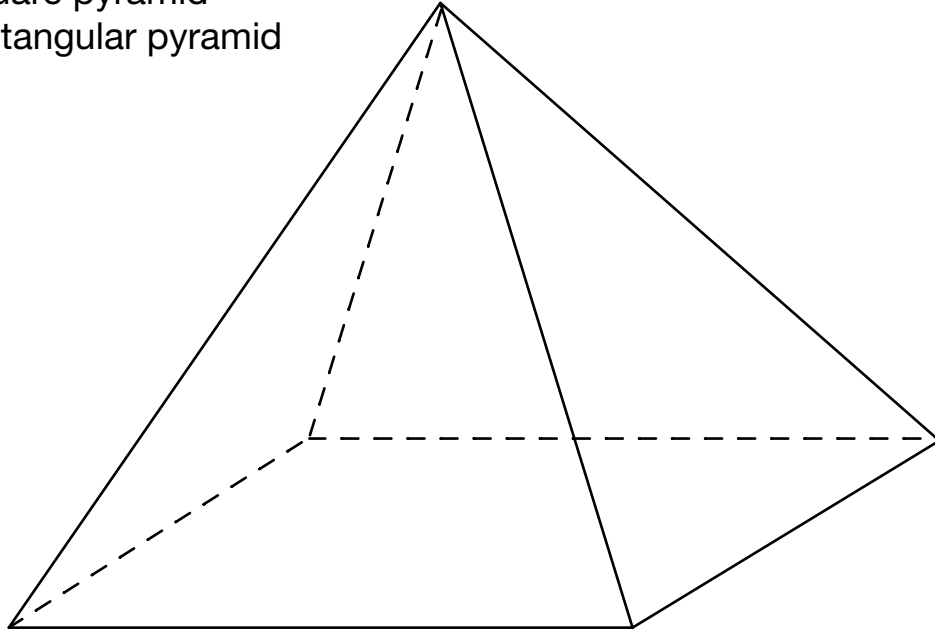


rectangular prism

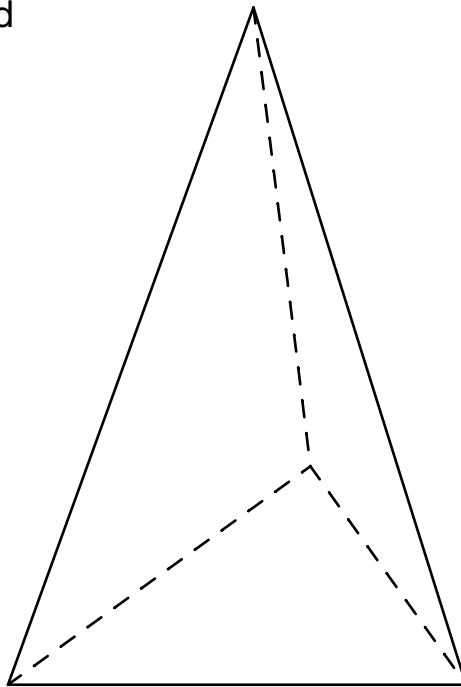


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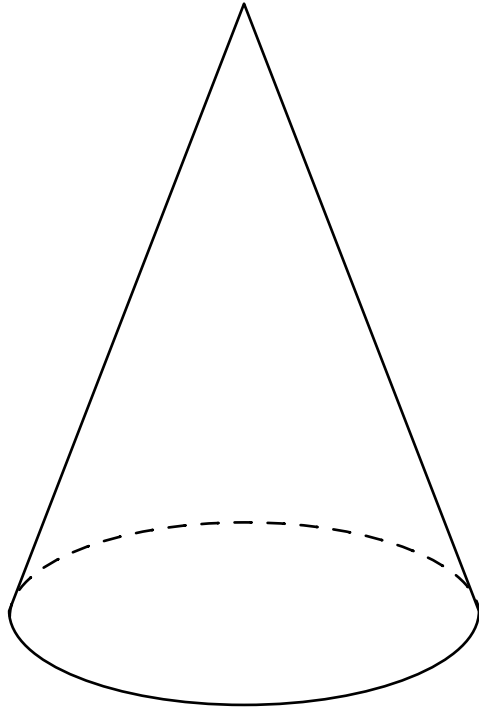
square pyramid
rectangular pyramid



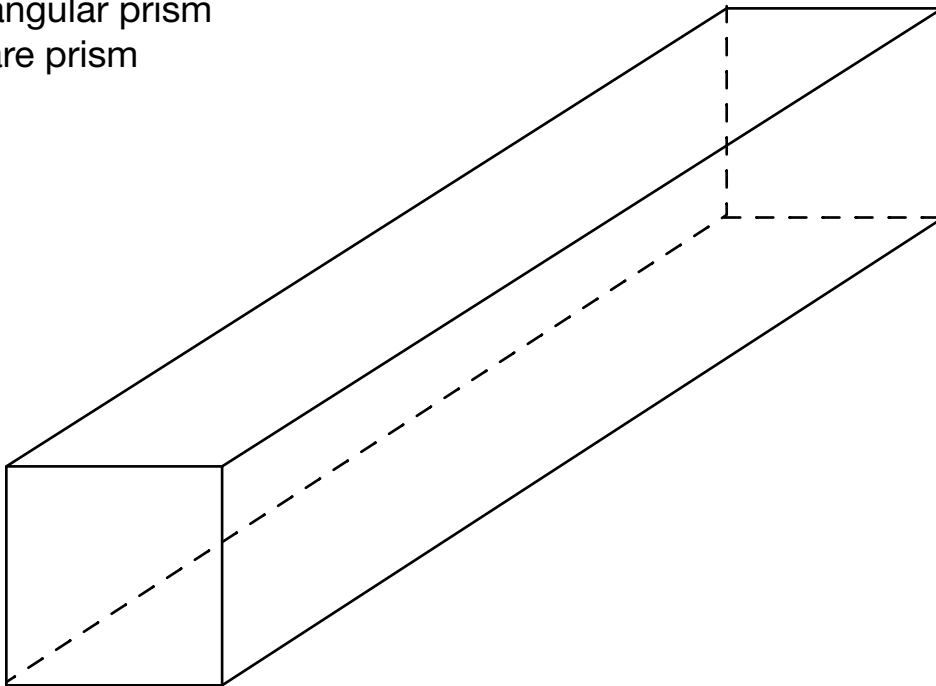
triangular pyramid



cone

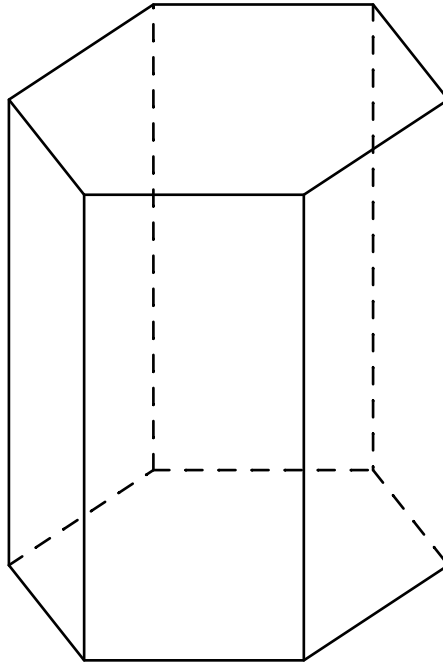


rectangular prism
square prism

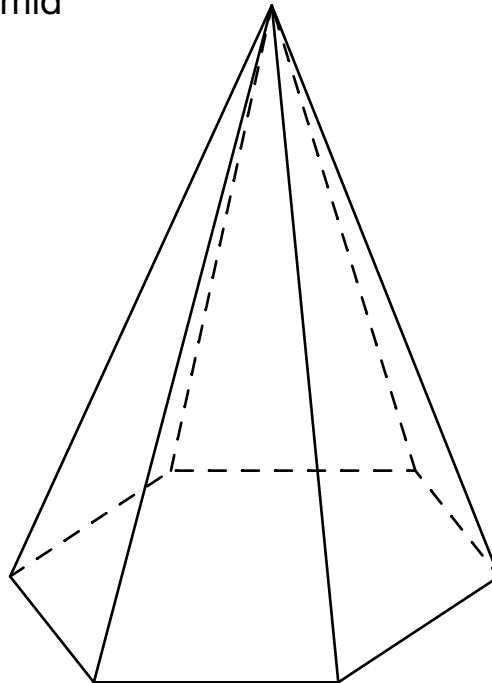


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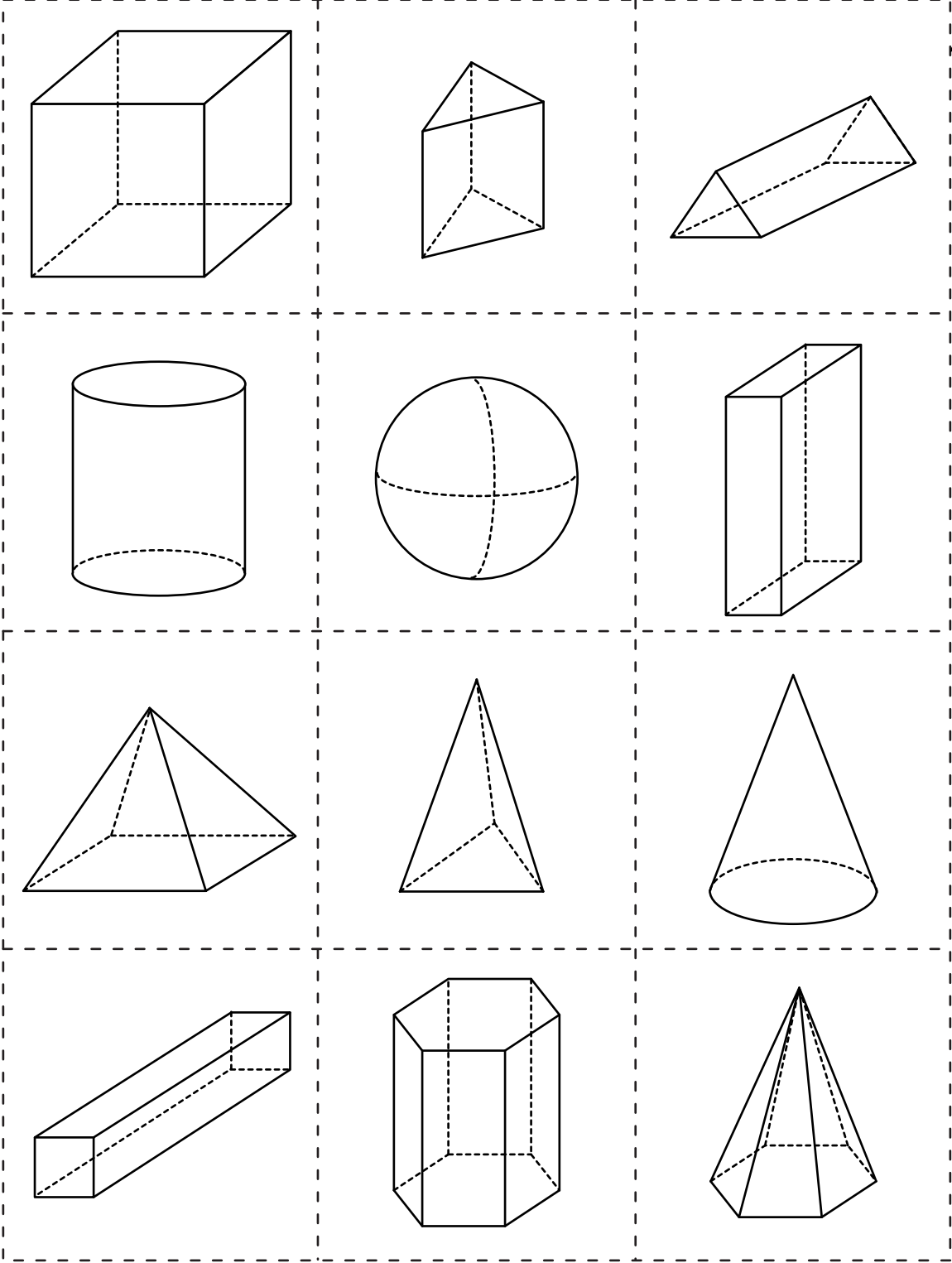
hexagonal prism



hexagonal pyramid

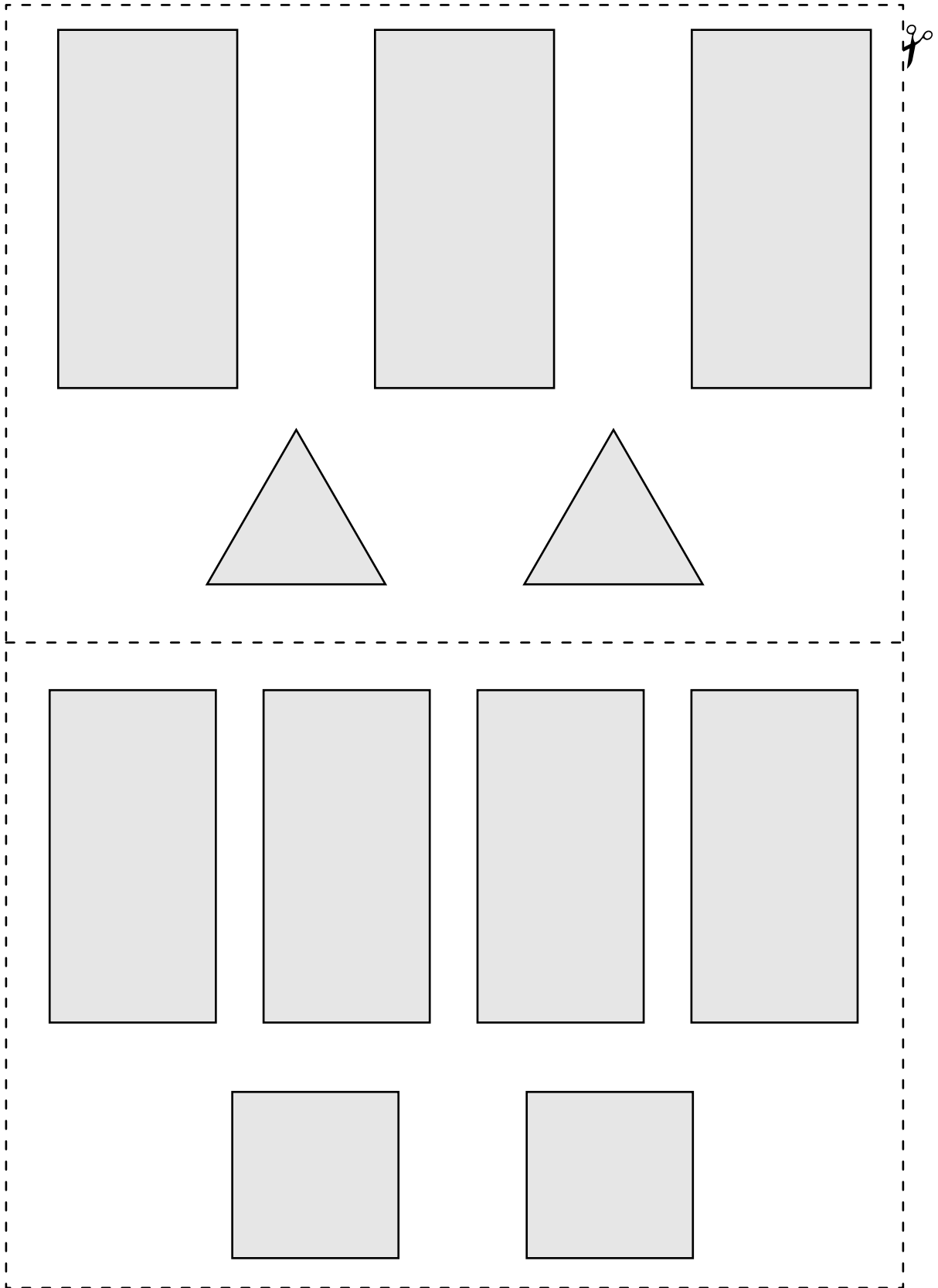


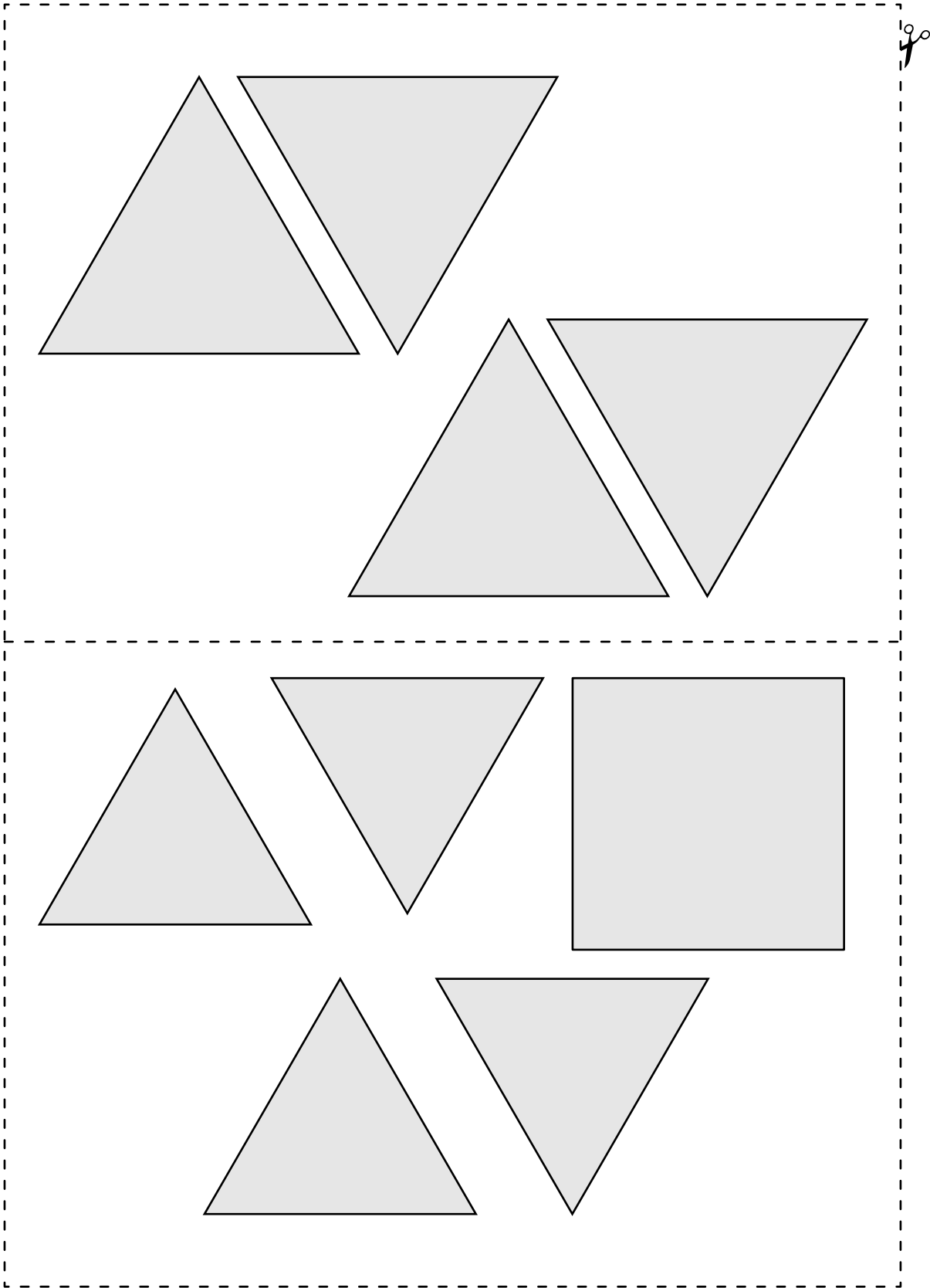
3-D Shape Sort Cards



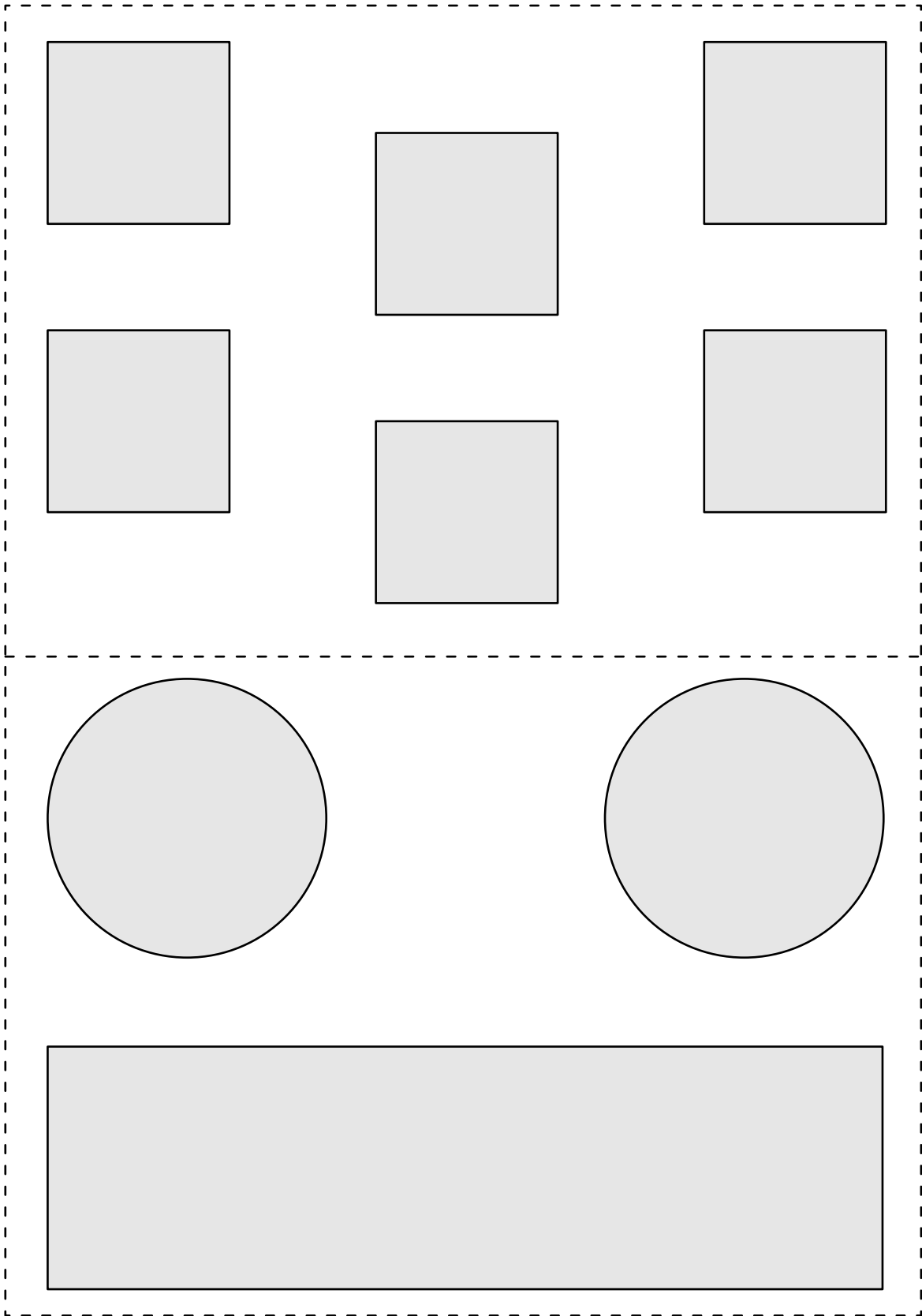
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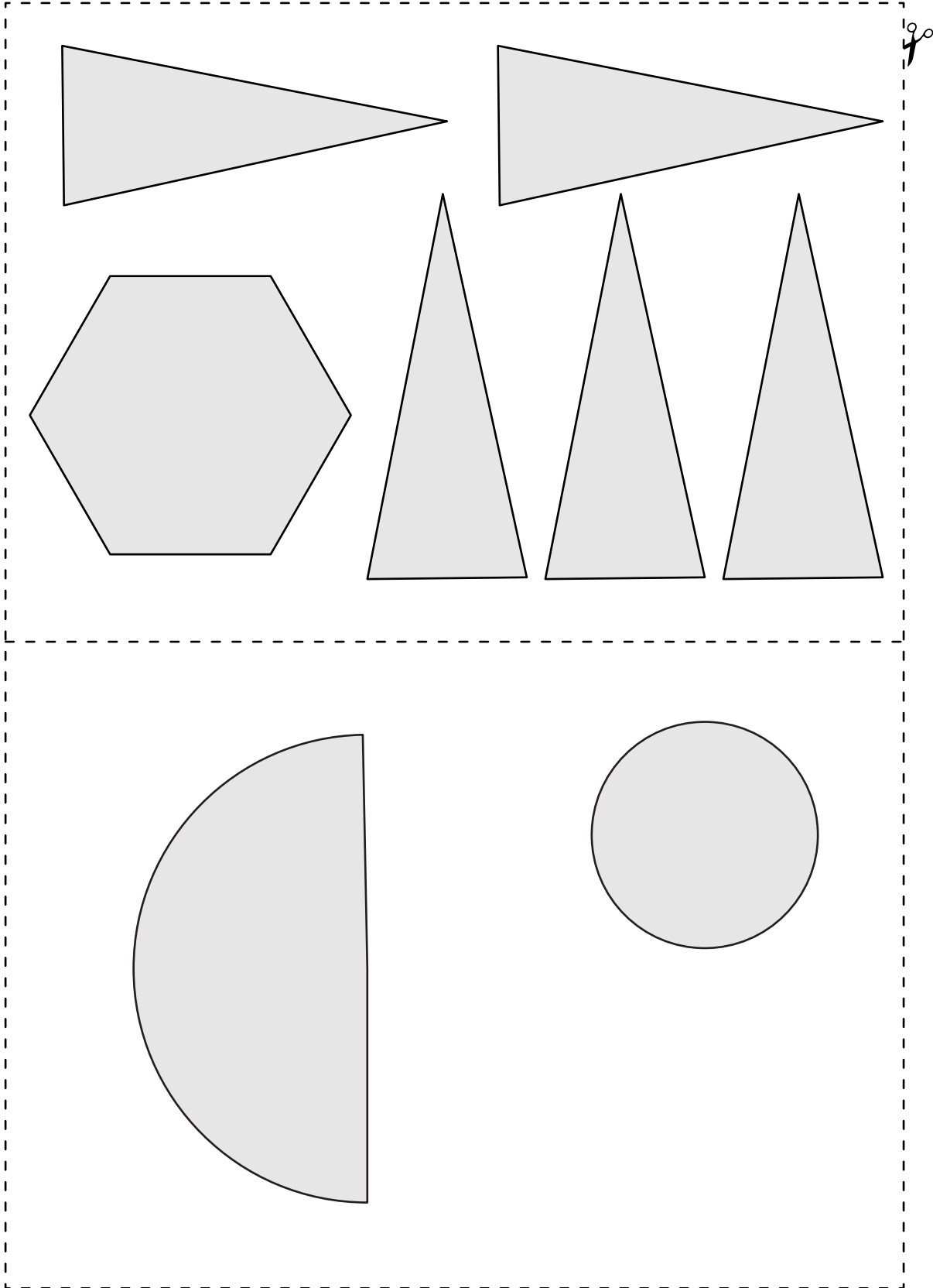
Faces of 3-D Shapes Cards



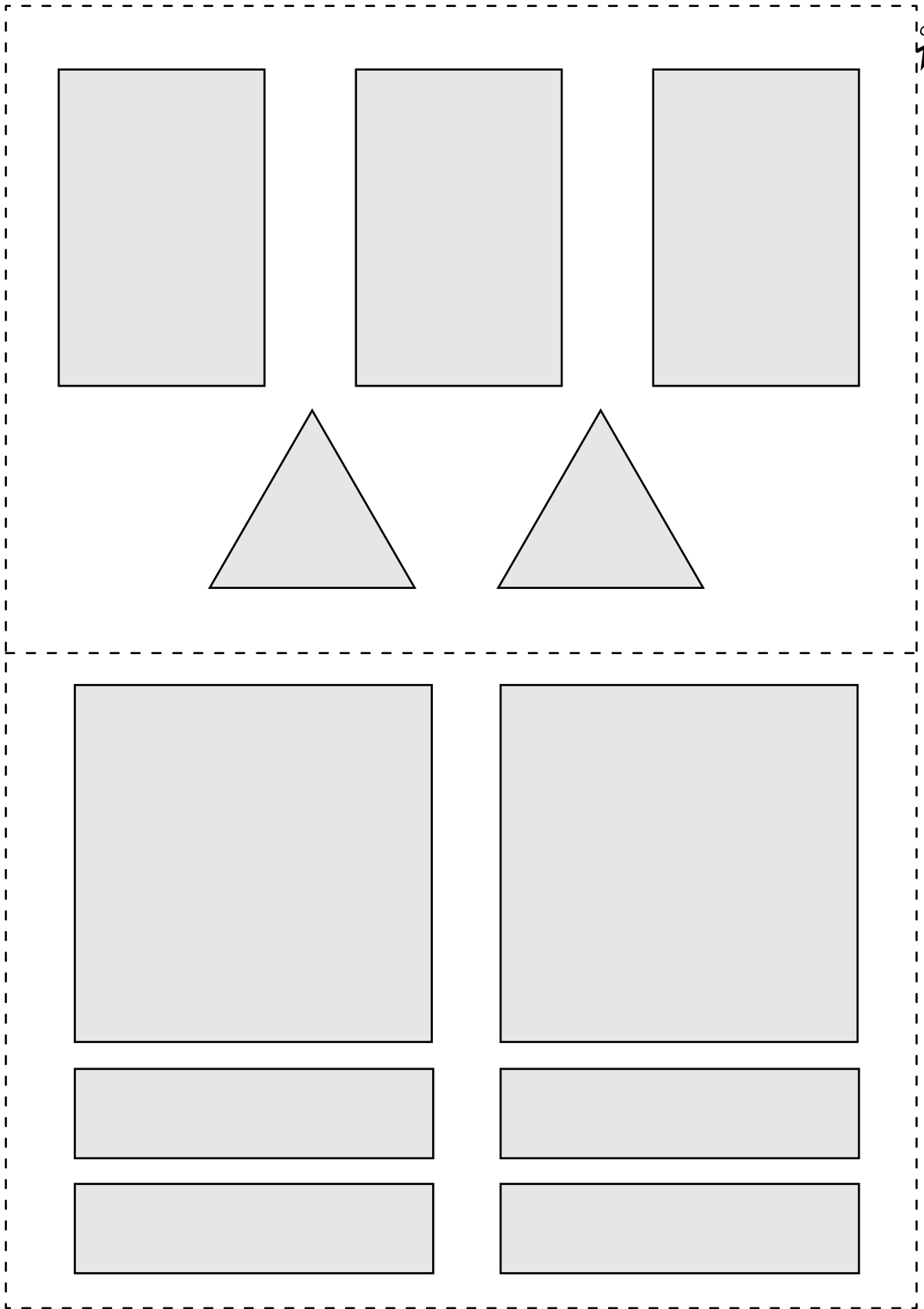


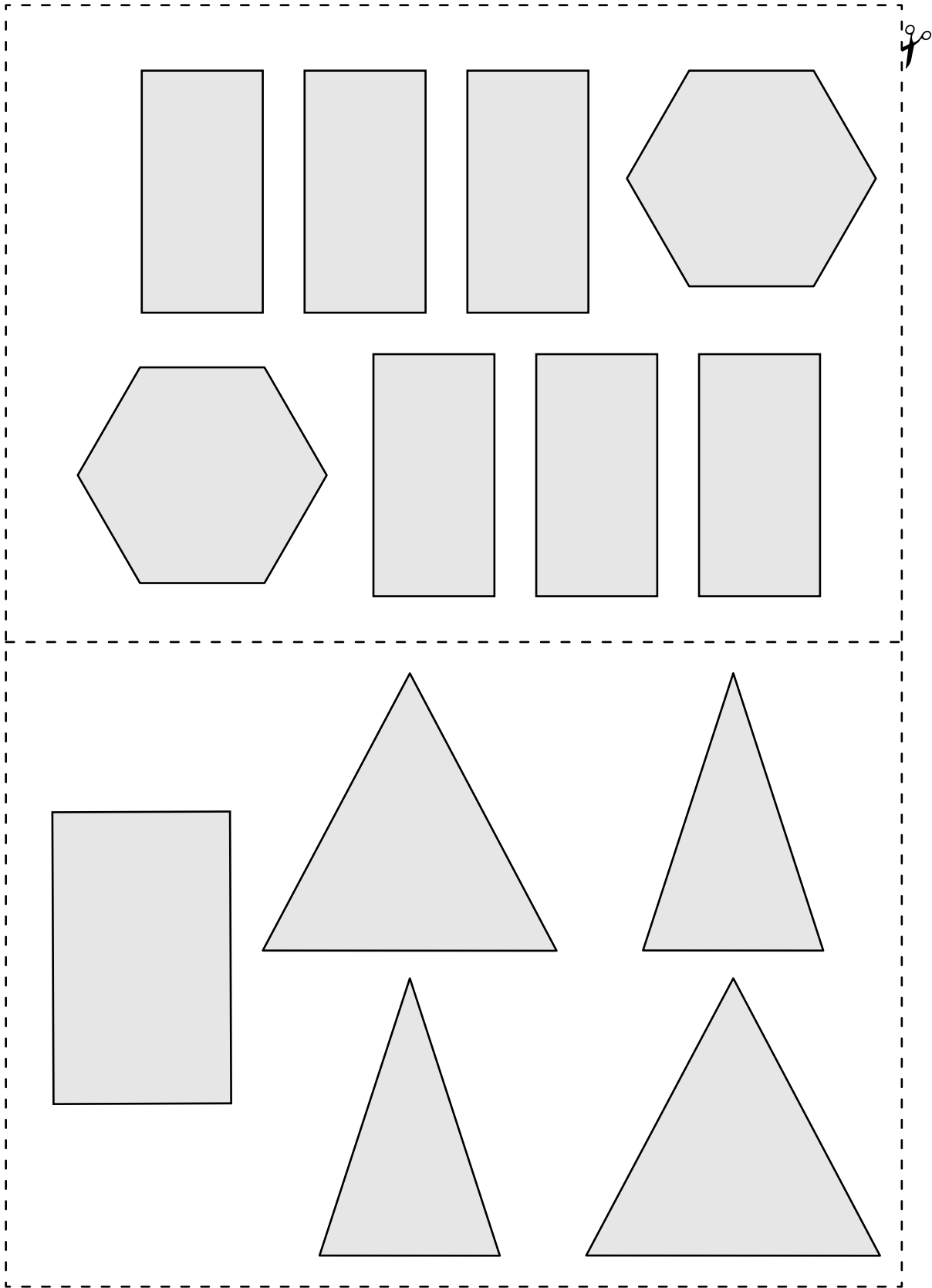
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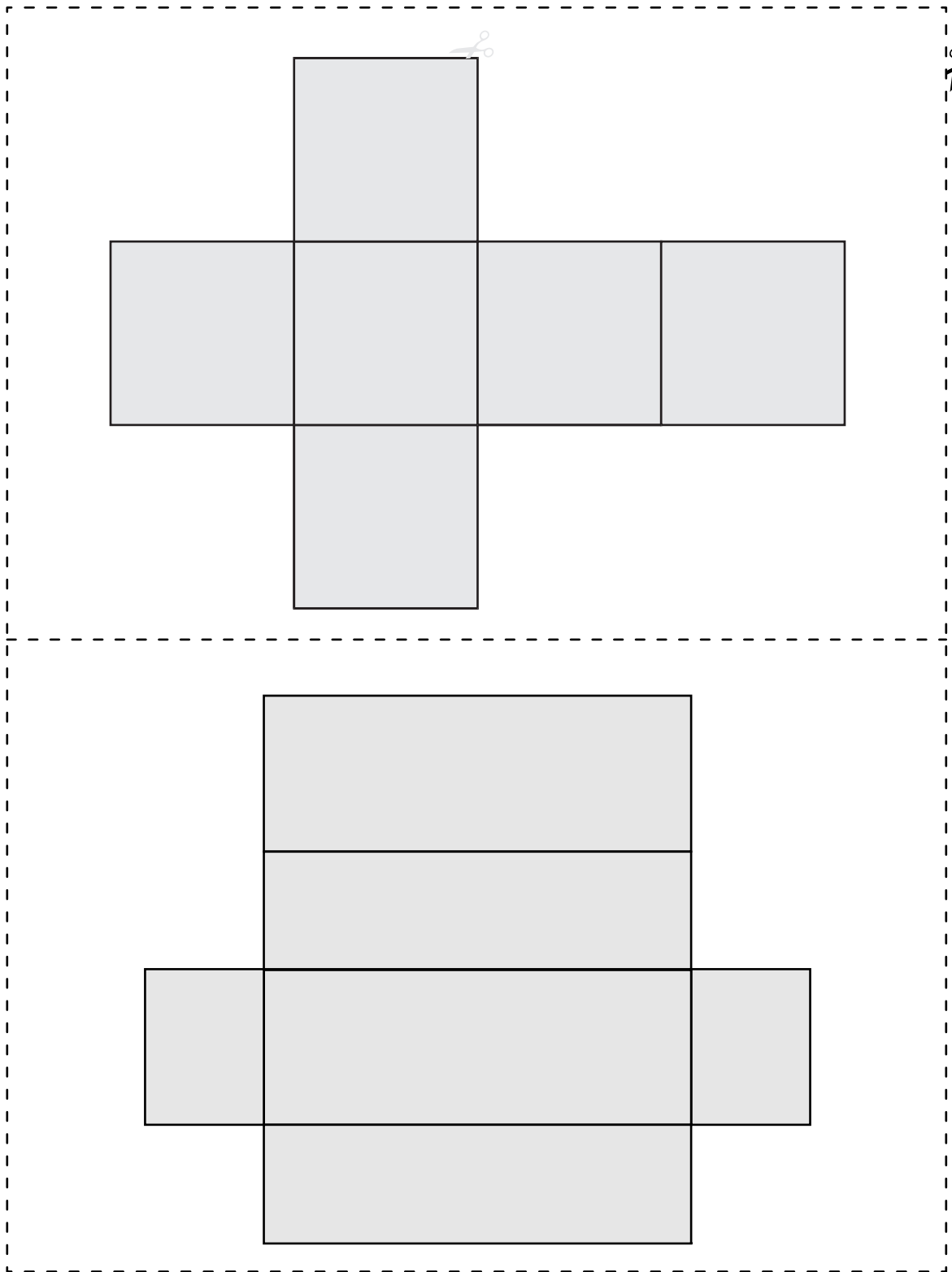


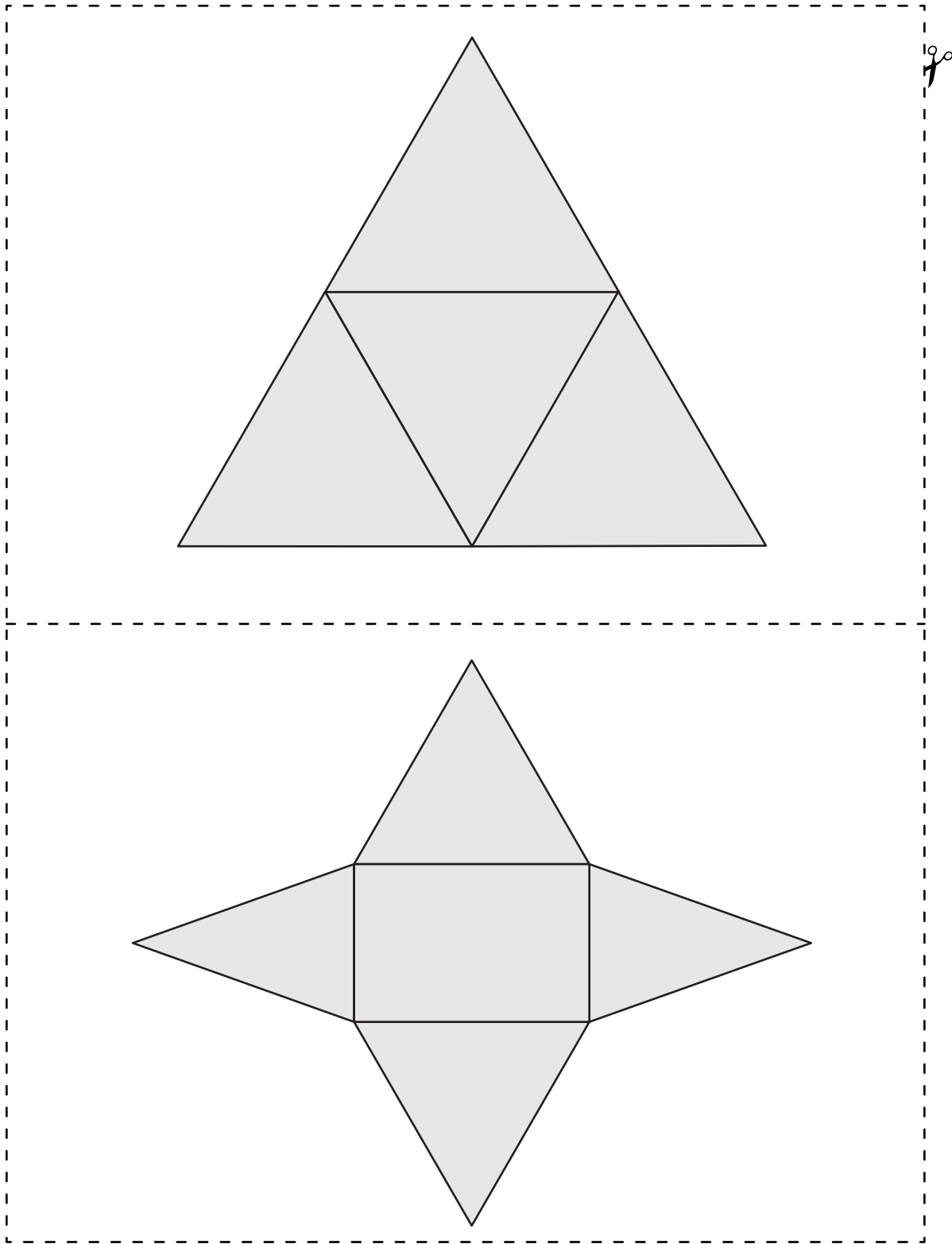
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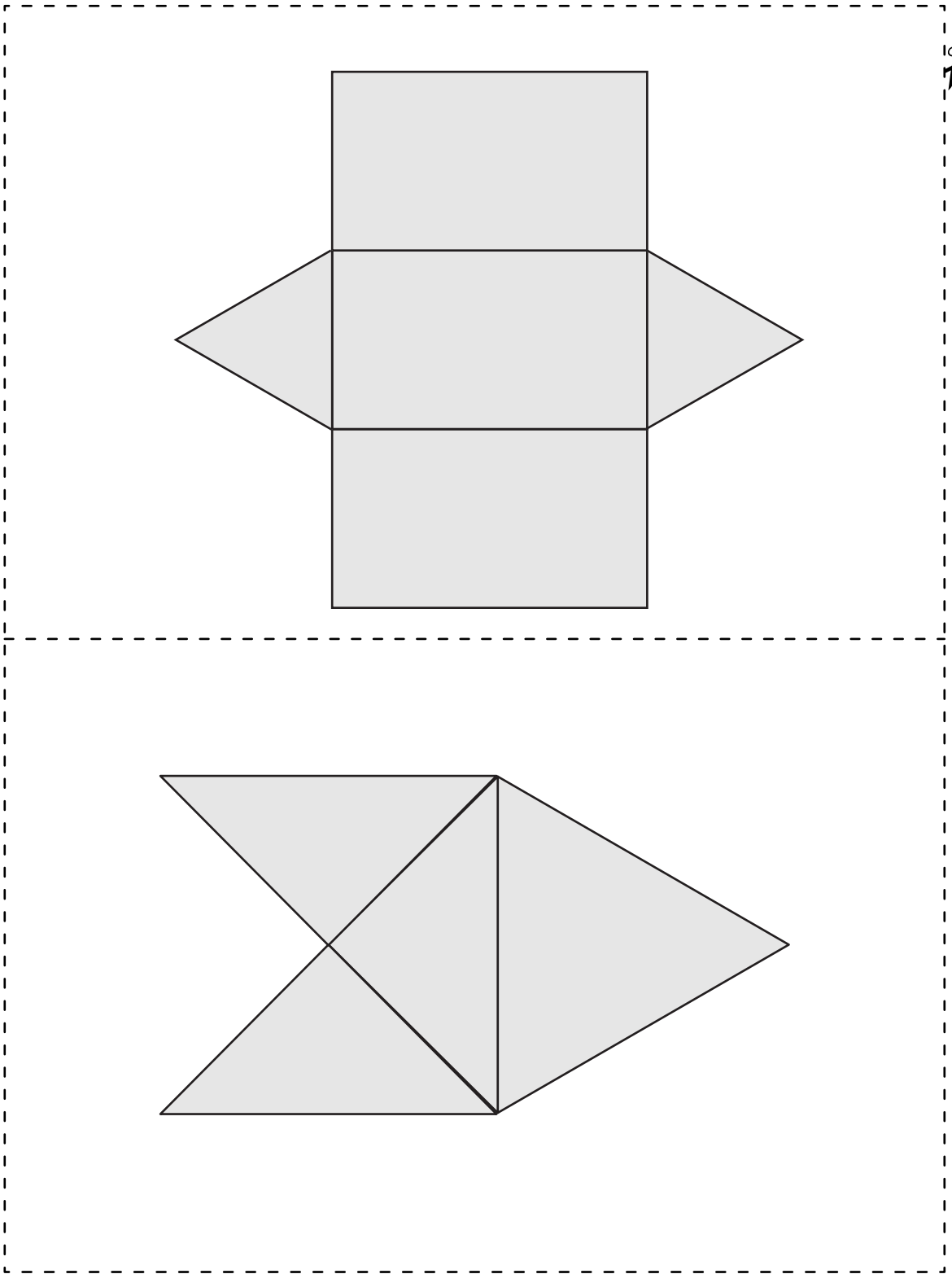


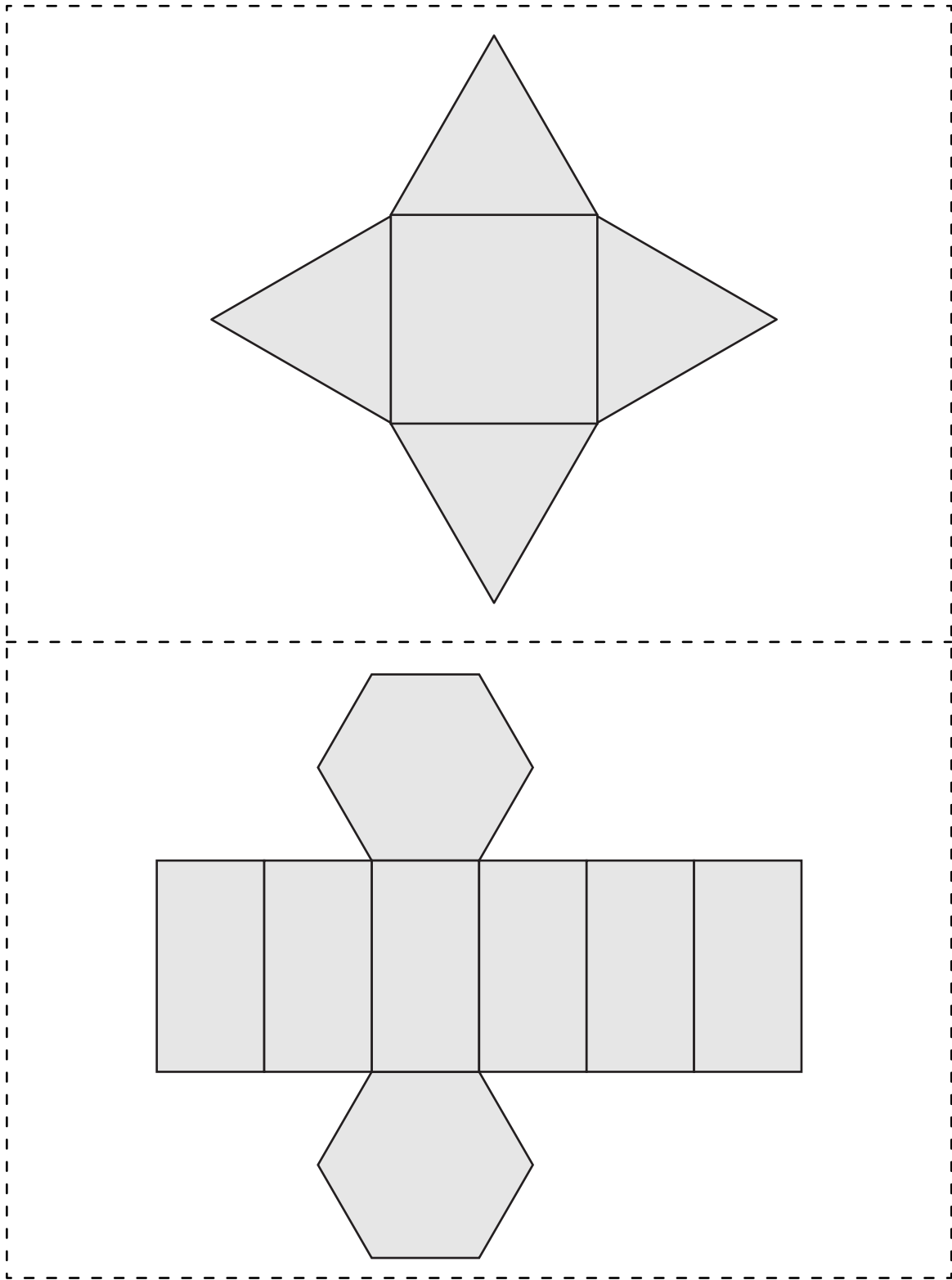
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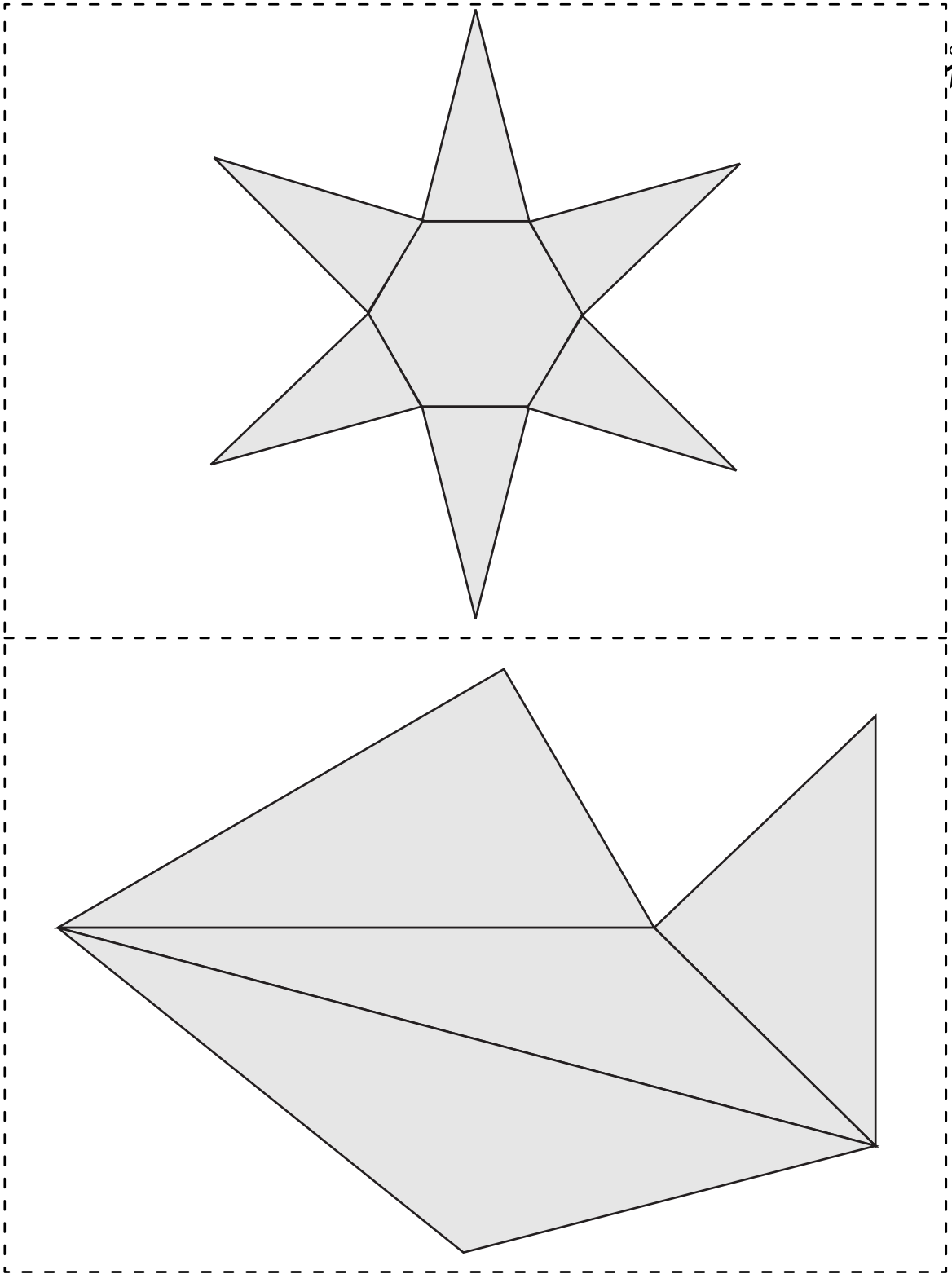


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Mystery Sort: Faces

The object of the game is to guess how the shapes are sorted.
This game is for two or more of players.

Materials

- One set of *Faces of 3-D Shapes Cards* or other representations of shapes.
- “Yes” and “No” cards cut from the bottom of this page
- Category Cards cut from the bottom of this page, optional

Directions

1. One player is selected as the leader of the round. The leader chooses one of the categories shown on the cards to sort the shapes and keeps the category a secret. For example: no parallel faces.
2. The leader places the “Yes” and “No” cards to show two places to sort the shape cards.
3. The leader starts placing shape cards into two piles using the category. If the shape fits the category, it is placed with the “Yes” card. If the shape does not fit, it is placed with the “No” card. The leader does not need to include all the shapes.
4. As the leader places the shapes, players try to guess the category. If they guess incorrectly, they are not allowed to guess again.
5. The player who guesses the category correctly is the winner and leads the next round.

Category Cards

At least one set of parallel faces	No parallel faces	At least one set of congruent faces
All faces are congruent	At least three rectangular faces	All rectangular faces
Has a top vertex	Has a top vertex and triangular-shaped faces	At least one hexagonal face
YES		NO

Mystery Sort: 3-D Shapes

The object of the game is to guess how the shapes are sorted.
This game is for two or more players.

Materials

- One set of *3-D Shape Cards* or other representations of shapes
- “Yes” and “No” cards cut from the bottom of this page
- Category cards cut from this page, optional

Directions

1. One player is selected as the leader of the round. The leader chooses one of the categories shown on the cards to sort the shapes and keeps the category a secret. For example, pyramids.
2. The leader places the “Yes” and “No” cards to show two places to sort the cards.
3. The leader starts placing shapes into two piles using the category. If the shape fits the category, it is placed with the “Yes” card. If the shape does not fit, it is placed with the “No” card. The leader does not need to include all the shapes.
4. As the leader places the shapes, players try to guess the category. If they guess incorrectly they are not allowed to guess again.
5. The player who guesses the category correctly is the winner and leads the next round.

Category Cards

Cylinders	Pyramids	Cones
Prisms	Prisms with rectangles	Curved surfaces
Shapes with angles	Shapes with parallel edges	Shapes with congruent faces
YES		NO

Name _____ Date _____

Sorting 3-D Shapes Check-In: Questions 2–3 Feedback Box

	Expectation	Check In	Comments
Describe and analyze three-dimensional shapes using their properties.	E2		
Classify three-dimensional shapes using their properties.	E4		
Justify conclusions using geometric properties.	E7		

Yes ...

Yes, but ...

No, but ...

No ...

MPE1. Know the problem. I read the problem carefully. I know the questions to answer and what information is important.				
MPE3. Check for reasonableness. I look back at my solution to see if my answer makes sense. If it does not, I try again.				
MPE5. Show my work. I show or tell how I arrived at my answer so someone else can understand my thinking.				