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TRANSFORMATION OF SHAPES

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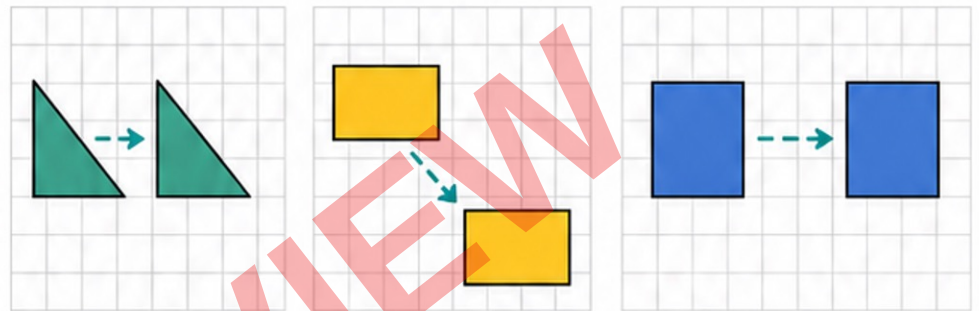


TRANSFORMATION OF SHAPES

Year 5 Maths

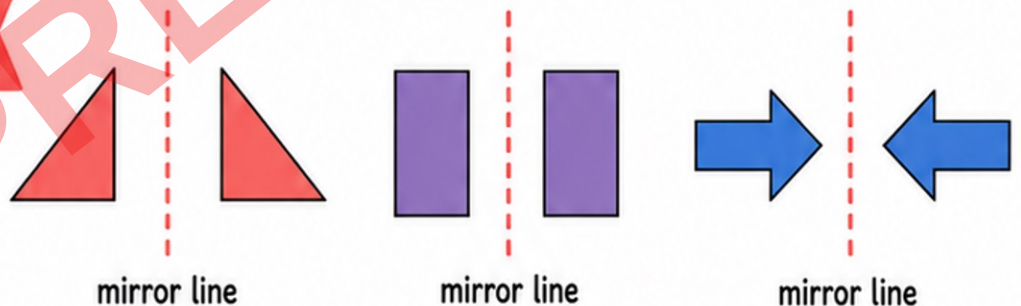
TRANSLATION

Slide a shape to a new position.



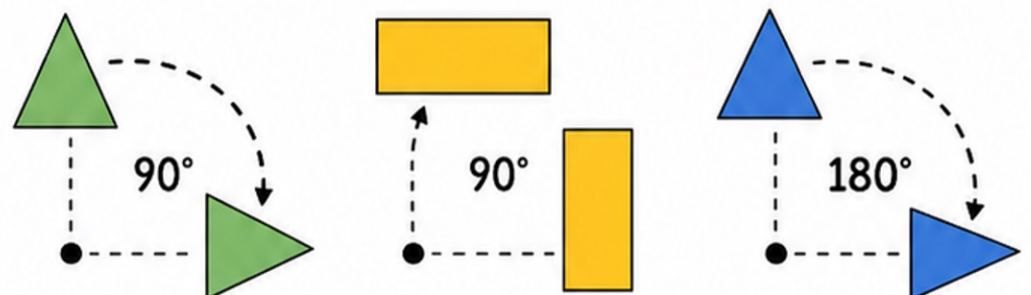
REFLECTION

Flip a shape across a mirror line.



ROTATION

Turn a shape around a fixed point.



The shape keeps the same size.

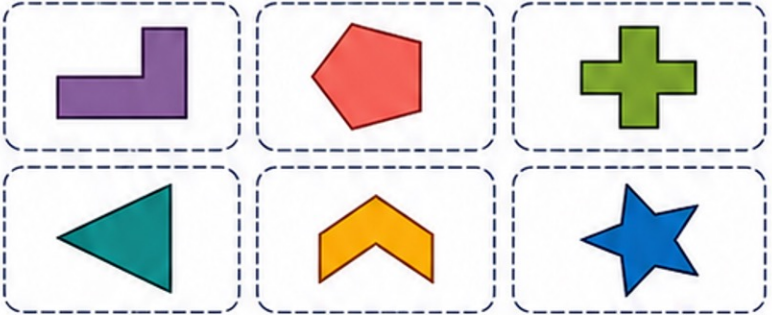


Transformation Trail

RULES

1. Roll and move.
2. Name the transformation.
3. Explain how you know.
4. First to the finish wins.

SHAPE CARDS



START

1 Translate 3 right

2 Reflect over line

3 Rotate 90° clockwise

4 Line symmetry

5 Order 2

6 Translate 2 up

7 Mirror match

8 Rotate 180°

9 Slide

10 Flip

11 Turn

12 **CHALLENGE!** Choose a card. Make a new transformation for a partner.

13 Reflect over line

14 Translate 4 left

15 Line symmetry

16 Rotate 90° anticlockwise

17 Order 2

18 Mirror match

19 Translate 1 down

20 Flip

21 Rotate 270° clockwise

22 Slide

23 Reflect over line

24 Line symmetry

25 **CHALLENGE!** Use any transformation. Explain your thinking.

26 Order 4

27 Turn

28 Mirror match

29 Translate 3 right

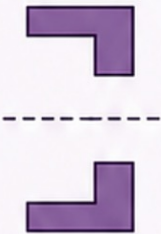
FINISH

Tip! The size and shape do not change. Only the position or direction does.

Rotate 90° clockwise



Reflect over line



Translate 2 up



Tip!

The size and shape do not change. Only the position or direction does.



Transformation Match Cards

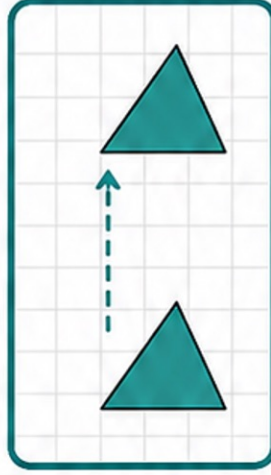
Year 5

Cut out the cards. Match each transformation word, description and diagram to make a set.



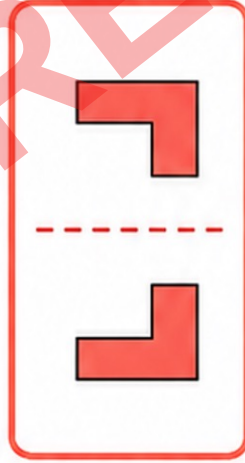
Translation

Slides without turning



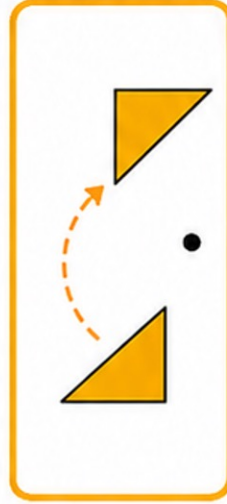
Reflection

Mirror image



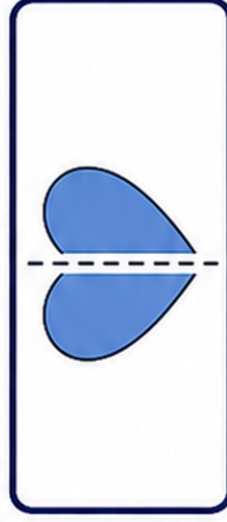
Rotation

Turns around a fixed point



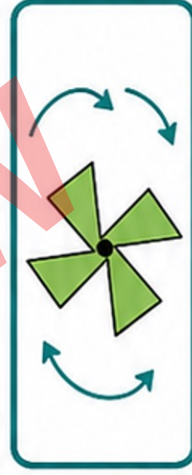
Line symmetry

Matching halves



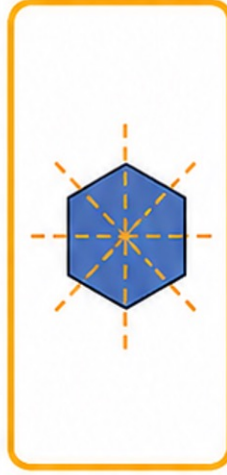
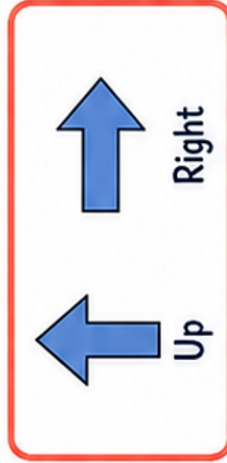
Rotational symmetry

Looks the same after a turn



Orientation

The direction a shape faces



Looks the same after a turn

Name: _____

Date: _____

Worksheet: Transformation Sort

Look at each diagram. Write translation, reflection or rotation. Then explain one clue.

translation = slide

reflection = flip

rotation = turn

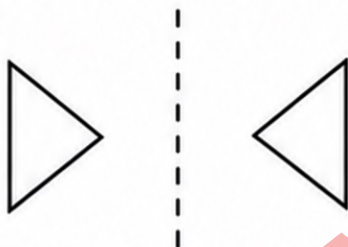
1.



Transformation: _____

Clue: _____

2.



Transformation: _____

Clue: _____

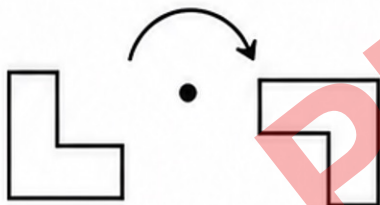
3.



Transformation: _____

Clue: _____

4.



Transformation: _____

Clue: _____

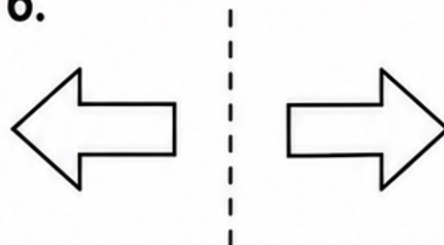
5.



Transformation: _____

Clue: _____

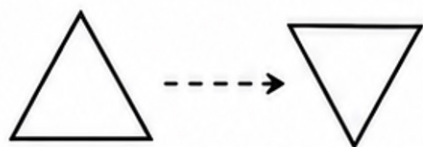
6.



Transformation: _____

Clue: _____

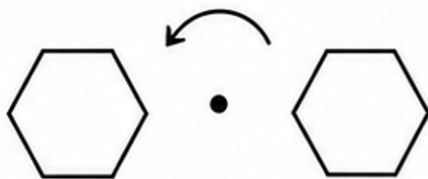
7.



Transformation: _____

Clue: _____

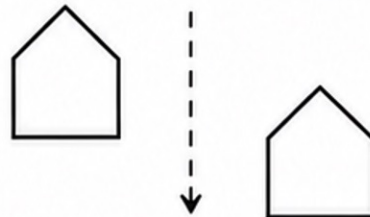
8.



Transformation: _____

Clue: _____

9.



Transformation: _____

Clue: _____

Name: ANSWERS

Date: _____

Worksheet: Transformation Sort

Look at each diagram. Write translation, reflection or rotation. Then explain one clue.

translation = slide

reflection = flip

rotation = turn

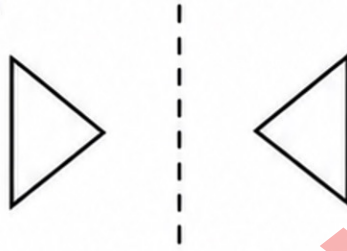
1.



Transformation: Translation

Clue: slides right

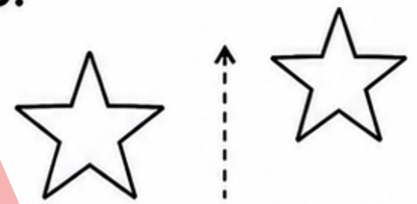
2.



Transformation: Reflection

Clue: mirror line

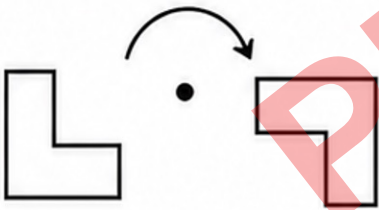
3.



Transformation: Translation

Clue: slides up

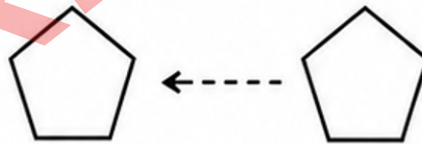
4.



Transformation: Rotation

Clue: turns around point

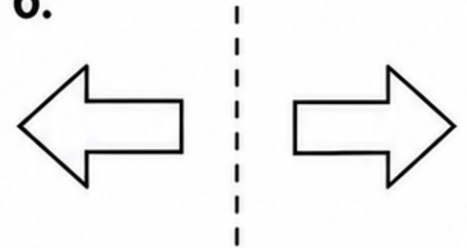
5.



Transformation: Translation

Clue: slides left

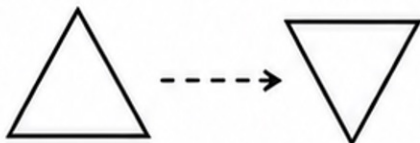
6.



Transformation: Reflection

Clue: mirror line

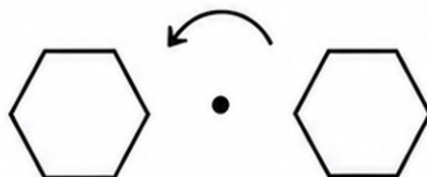
7.



Transformation: Rotation

Clue: turns 180°

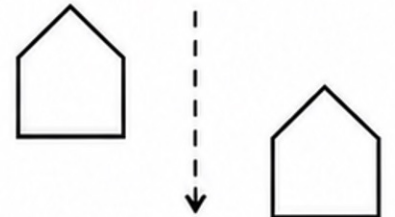
8.



Transformation: Rotation

Clue: turns around point

9.



Transformation: Translation

Clue: slides down

Name: _____

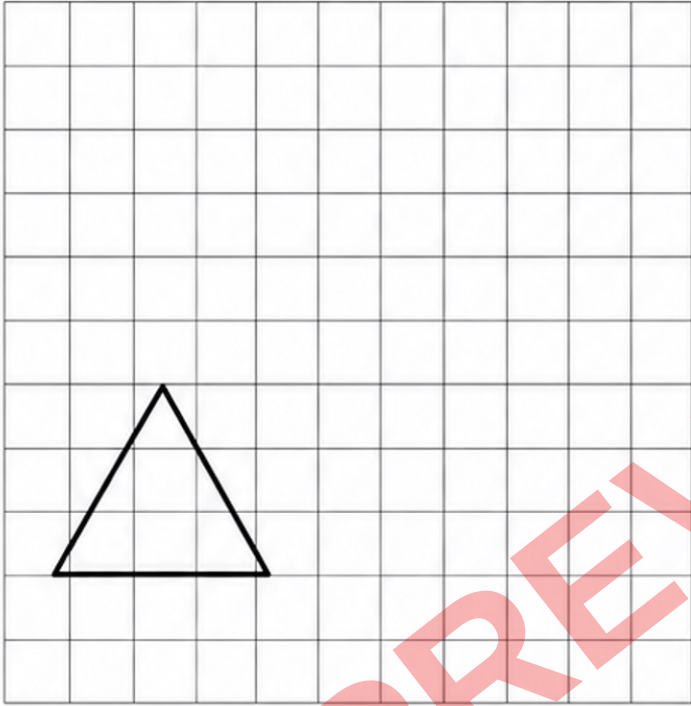
Date: _____

Worksheet: Translation Grid Practice

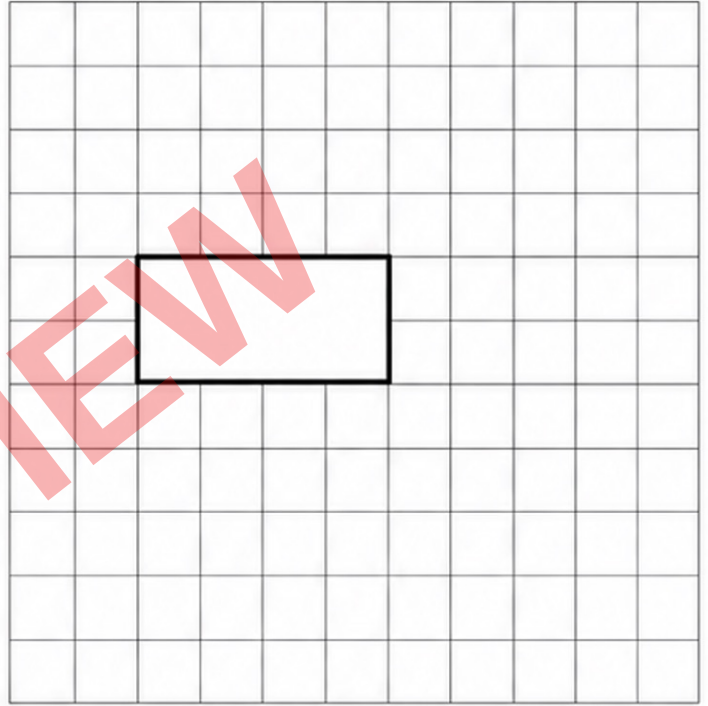
Translate each shape. Count squares carefully.
The shape must keep the same size and direction.

Across first,
then up or down.

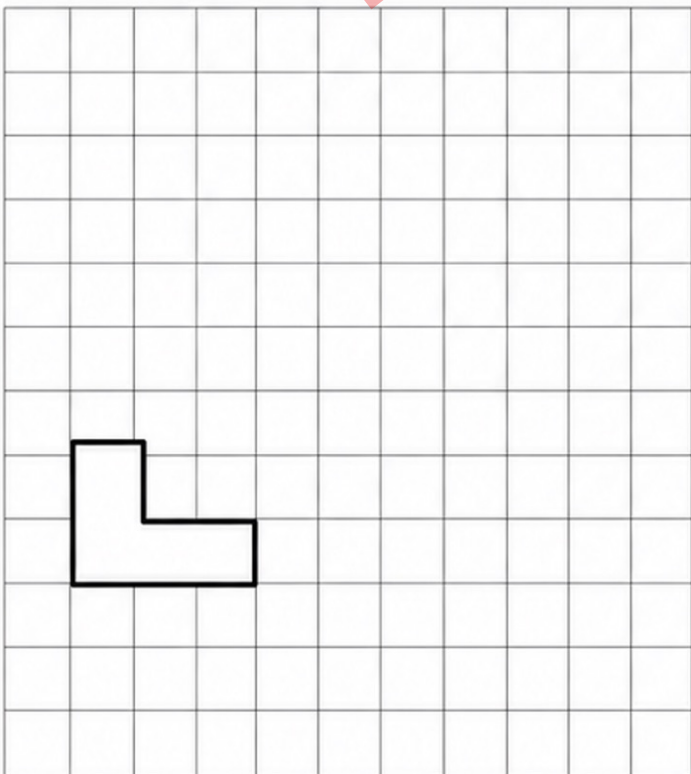
1. Translate 4 right and 2 up.



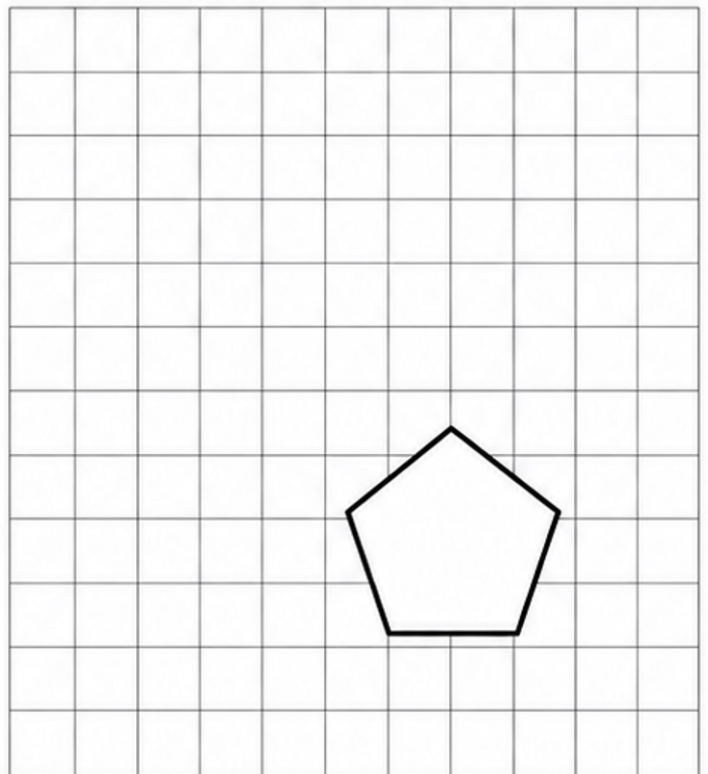
2. Translate 3 left and 1 down.



3. Translate 5 right.



4. Translate 2 left and 3 up.



Name: ANSWERS

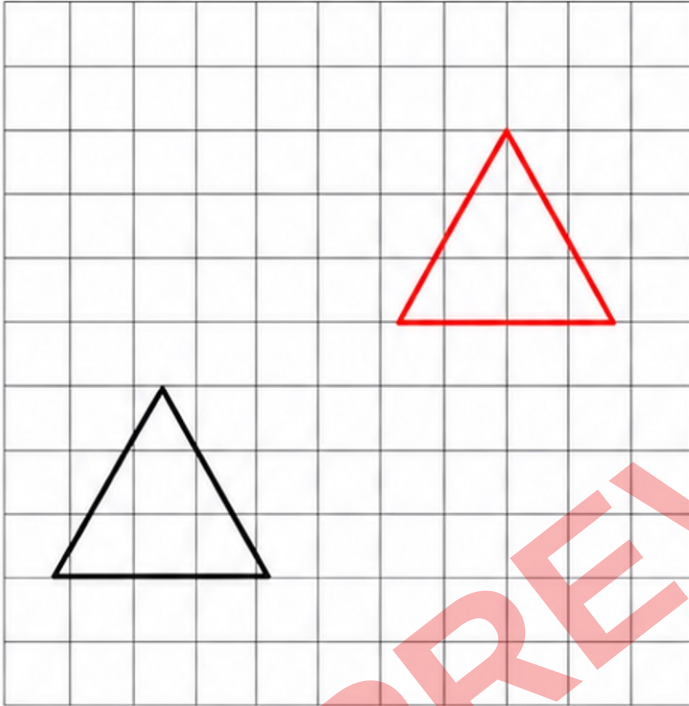
Date: _____

Worksheet: Translation Grid Practice

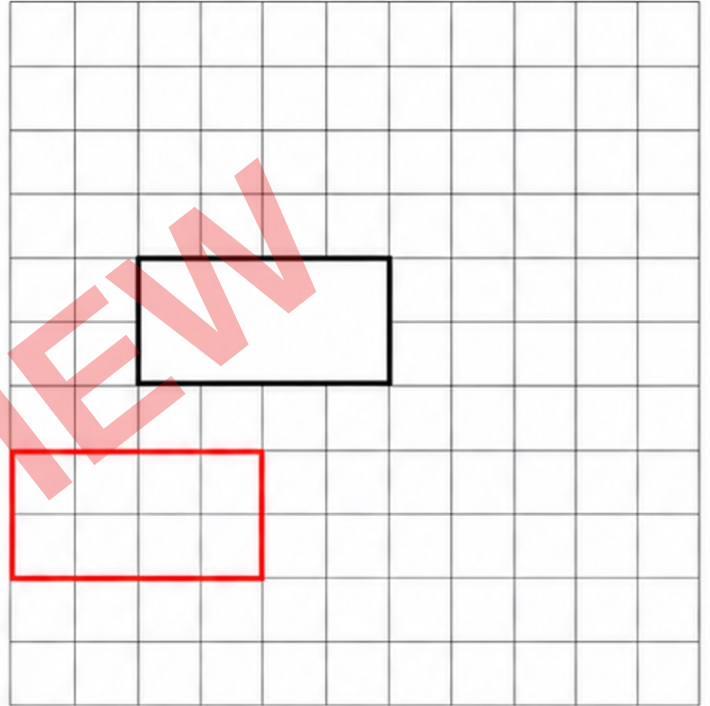
Translate each shape. Count squares carefully.
The shape must keep the same size and direction.

Across first,
then up or down.

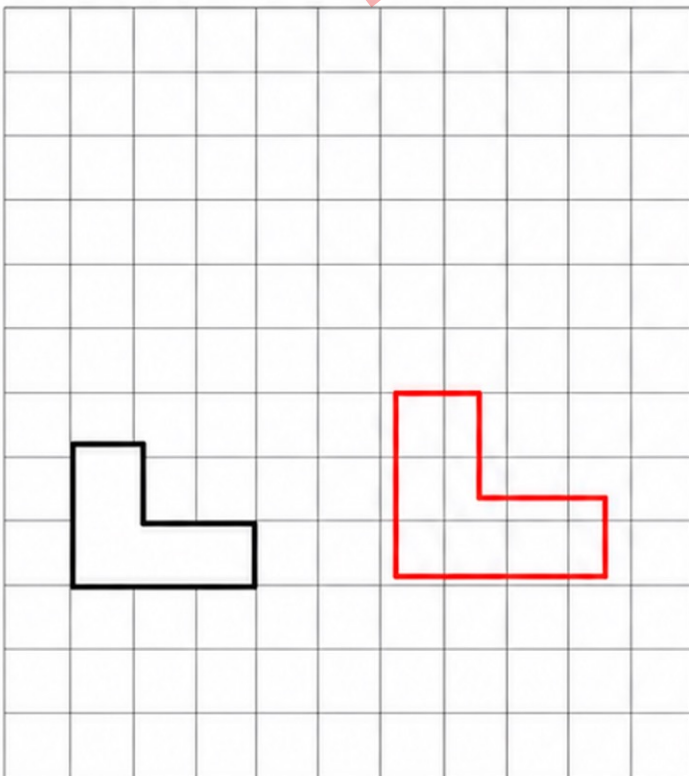
1. Translate 4 right and 2 up.



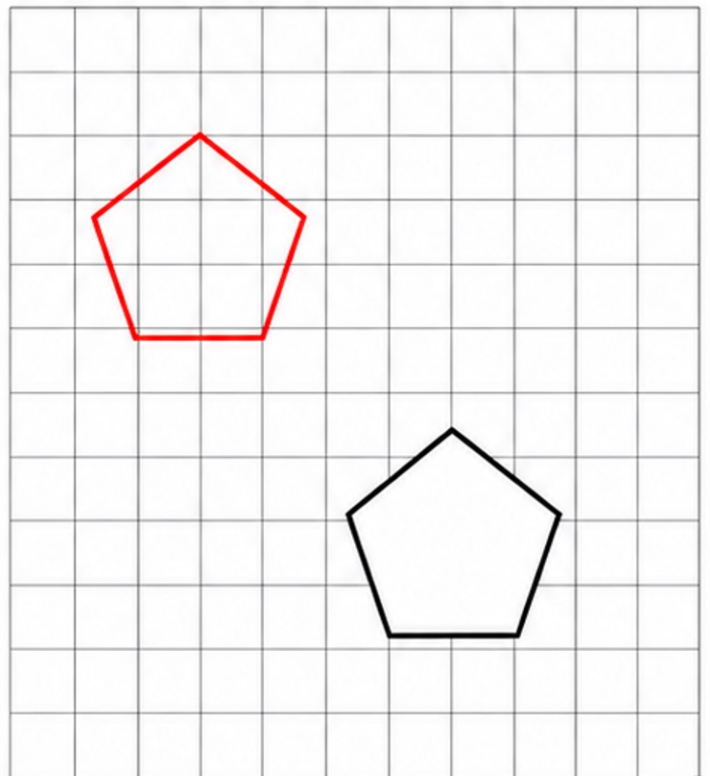
2. Translate 3 left and 1 down.



3. Translate 5 right.



4. Translate 2 left and 3 up.



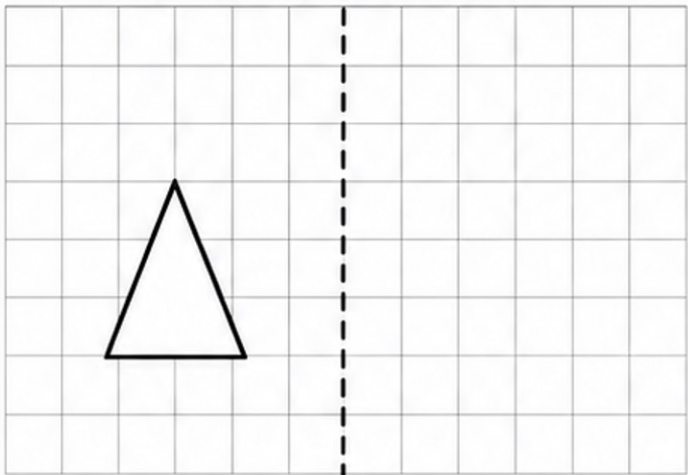
Name: _____

Date: _____

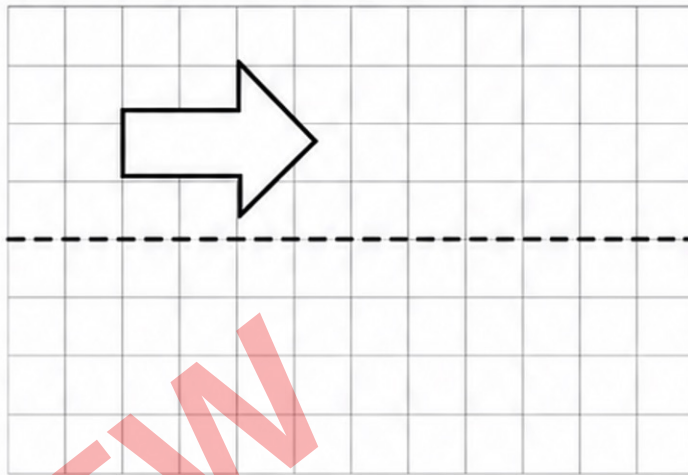
Worksheet: Reflection and Rotation Practice

Draw each transformed shape. Check whether the shape flips over a line or turns around a point.

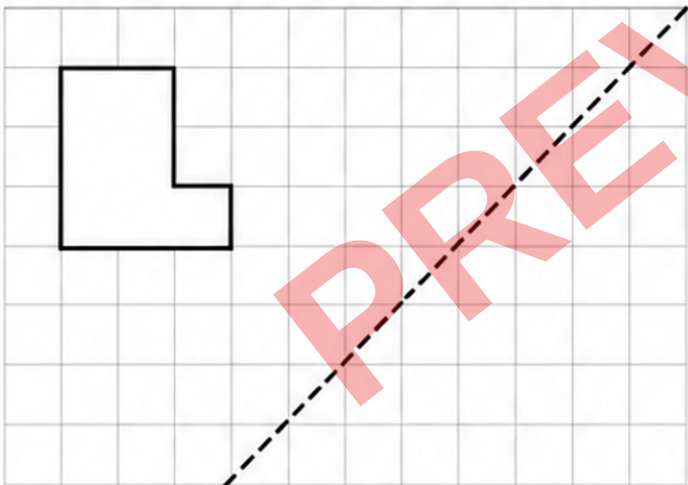
1. Reflect over the vertical line.



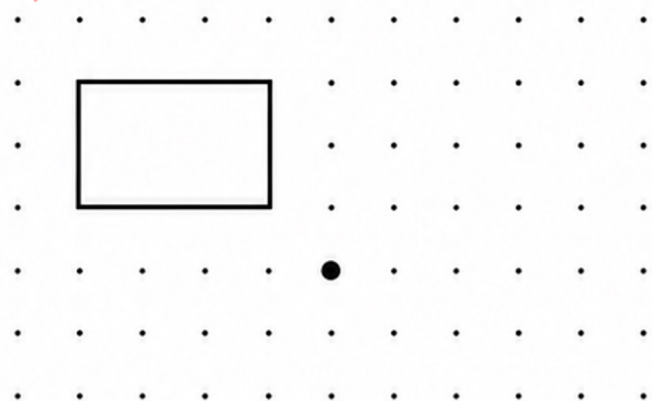
2. Reflect over the horizontal line.



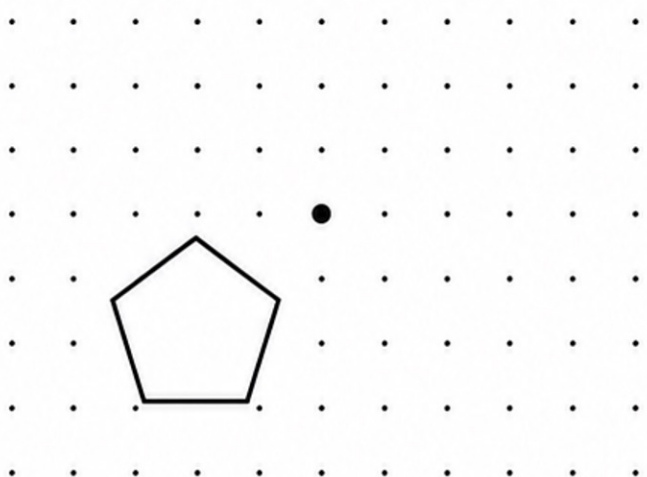
3. Reflect over the diagonal line.



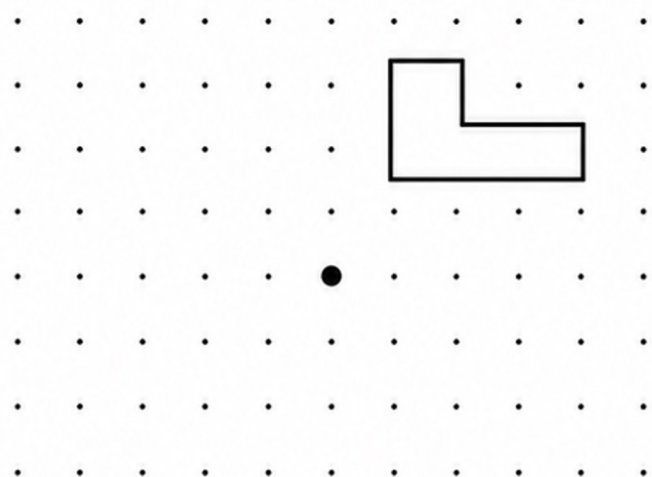
4. Rotate 90° clockwise.
The black dot is the centre of rotation.



5. Rotate 90° anticlockwise.
The black dot is the centre of rotation.



6. Rotate 180° .
The black dot is the centre of rotation.



Name: _____

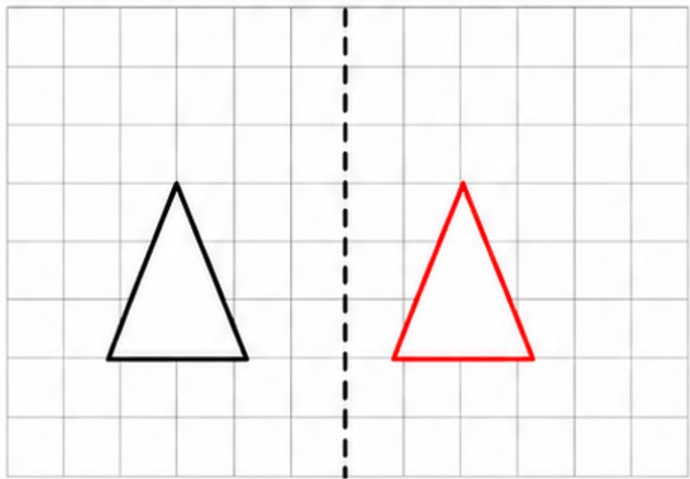
ANSWERS

Date: _____

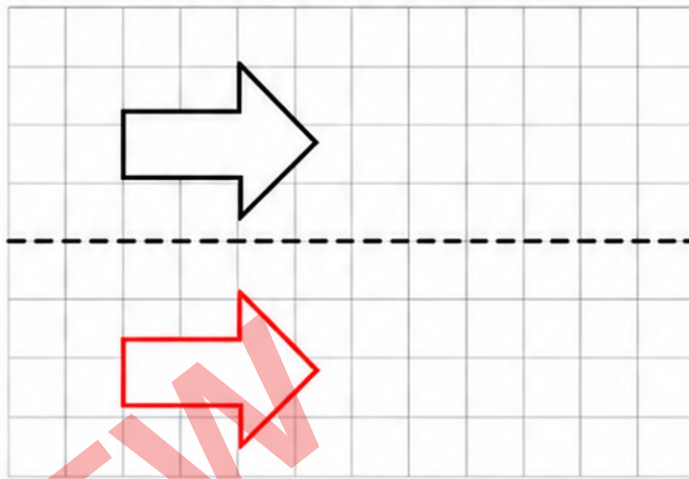
Worksheet: Reflection and Rotation Practice

Draw each transformed shape. Check whether the shape flips over a line or turns around a point.

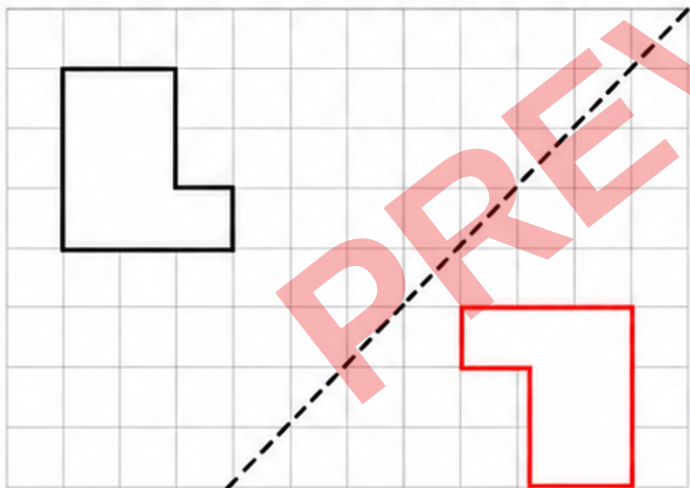
1. Reflect over the vertical line.



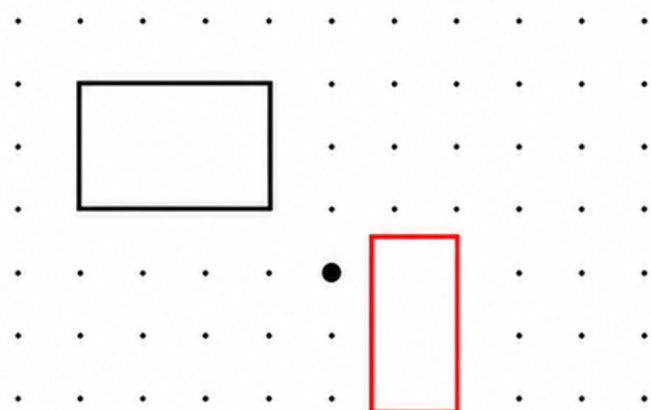
2. Reflect over the horizontal line.



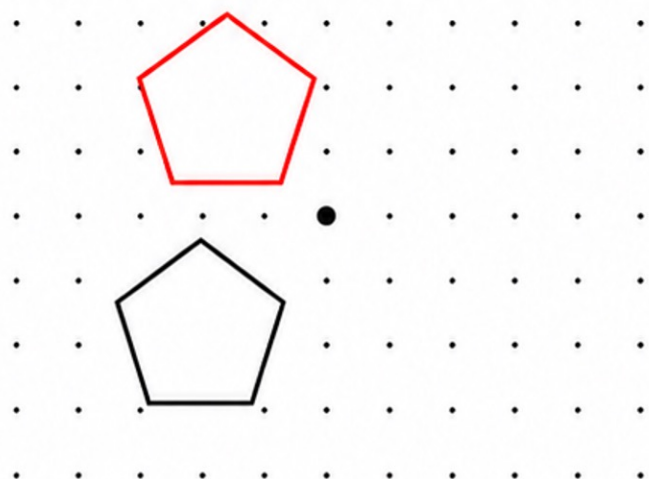
3. Reflect over the diagonal line.



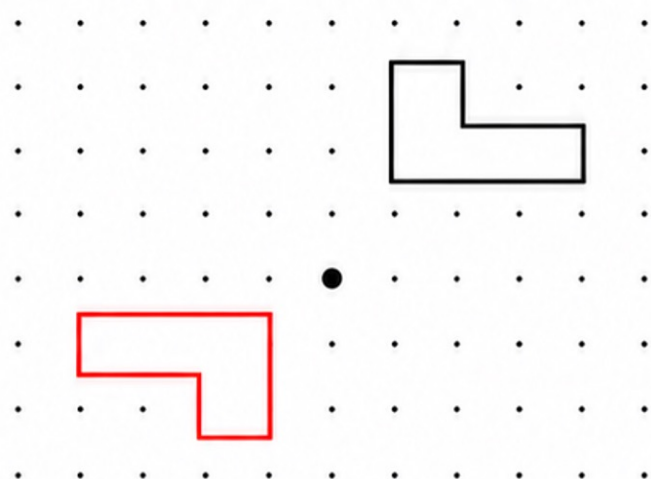
4. Rotate 90° clockwise.
The black dot is the centre of rotation.



5. Rotate 90° anticlockwise.
The black dot is the centre of rotation.



6. Rotate 180° .
The black dot is the centre of rotation.



Name: _____

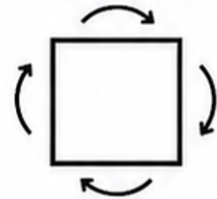
Date: _____

Worksheet: Rotational Symmetry Hunt

A shape has rotational symmetry if it matches itself after a turn of less than 360° .

Write the order of rotational symmetry.

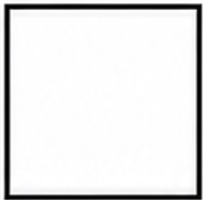
EXAMPLE



A square has order 4.

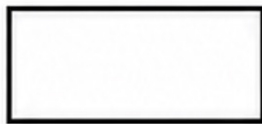
Part A: Write the order of rotational symmetry for each shape.

1.



Order: _____

2.



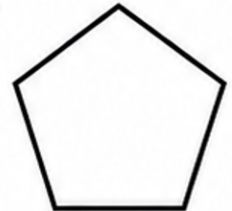
Order: _____

3.



Order: _____

4.



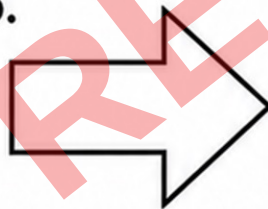
Order: _____

5.



Order: _____

6.



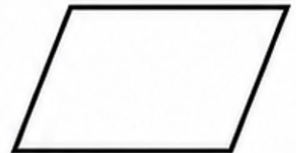
Order: _____

7.



Order: _____

8.



Order: _____

Part B: Draw two shapes with order 2 rotational symmetry.



Part C: Explain how you checked one shape.

Name: _____

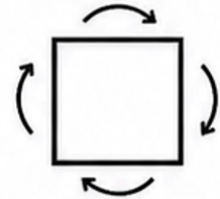
ANSWERS

Date: _____

Worksheet: Rotational Symmetry Hunt

A shape has rotational symmetry if it matches itself after a turn of less than 360° .

Write the order of rotational symmetry.

EXAMPLE

A square has order 4.

Part A: Write the order of rotational symmetry for each shape.

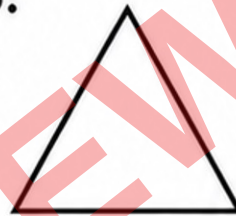
1.

Order: 4

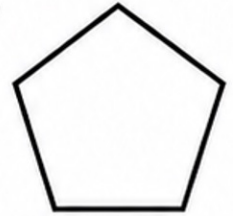
2.

Order: 2

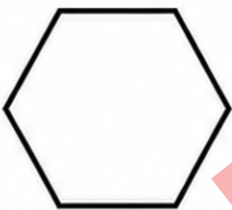
3.

Order: 3

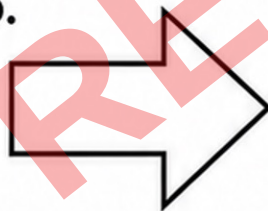
4.

Order: 5

5.

Order: 6

6.

Order: 1

7.

Order: 1

8.

Order: 2

Part B: Draw two shapes with order 2 rotational symmetry.



Part C: Explain how you checked one shape.

I turned the shape and counted each time it matched itself before 360° .

Name: _____

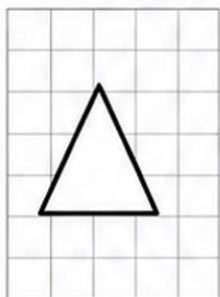
Date: _____

Worksheet: Combined Transformations Challenge

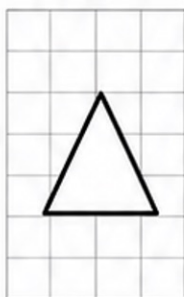
Follow each two-step path. Name both transformations in order.

Use precise words: translate, reflect, rotate.

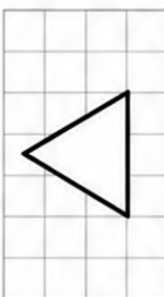
1. Shape A



Shape B



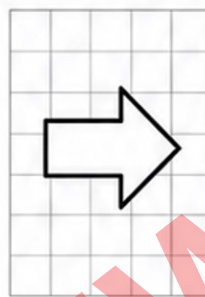
Shape C



Step 1: _____

Step 2: _____

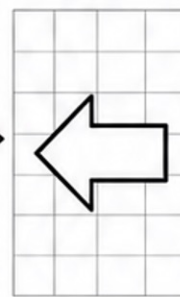
2. Shape A



Shape B



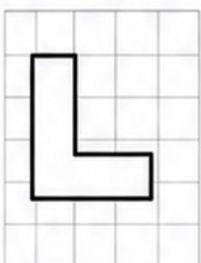
Shape C



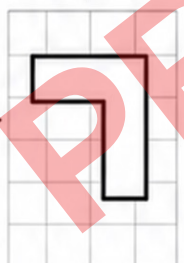
Step 1: _____

Step 2: _____

3. Shape A



Shape B



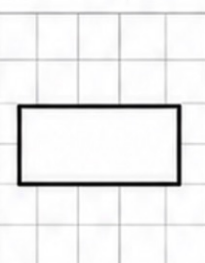
Shape C



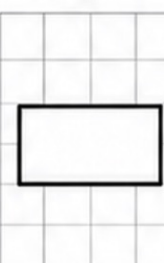
Step 1: _____

Step 2: _____

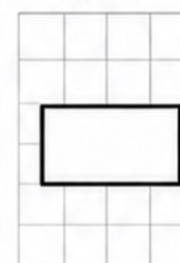
4. Shape A



Shape B



Shape C

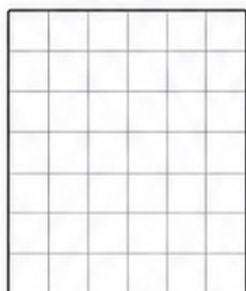


Step 1: _____

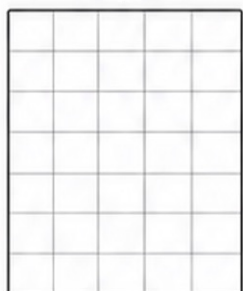
Step 2: _____

Create your own two-step transformation

Shape A



Shape B



Shape C



Step 1: _____

Step 2: _____

Name: **ANSWERS**

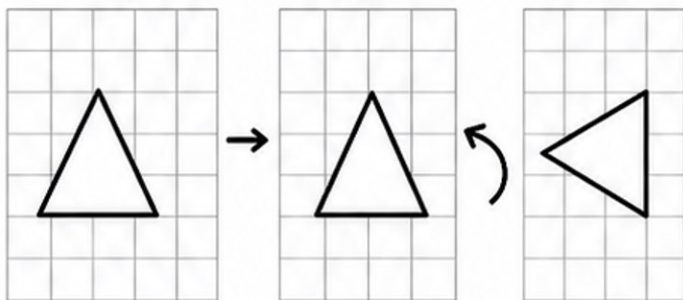
Date: _____

Worksheet: Combined Transformations Challenge

Follow each two-step path. Name both transformations in order.

Use precise words: translate, reflect, rotate.

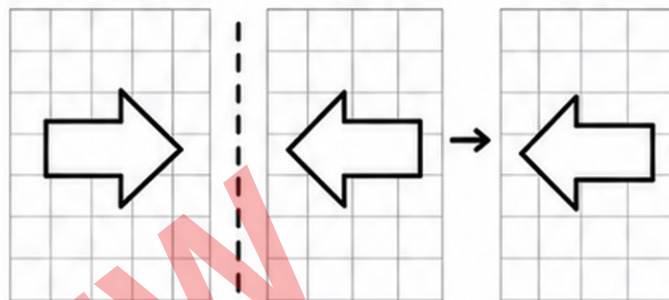
1. Shape A Shape B Shape C



Step 1: **Translation.**

Step 2: **Rotation.**

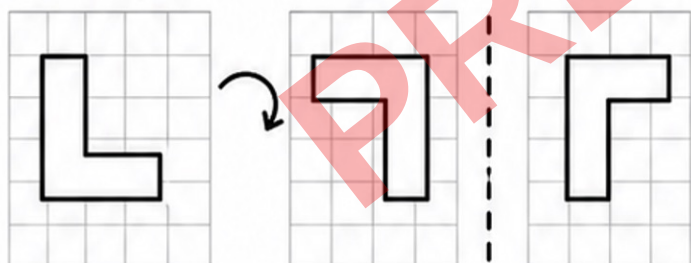
2. Shape A Shape B Shape C



Step 1: **Reflection.**

Step 2: **Translation.**

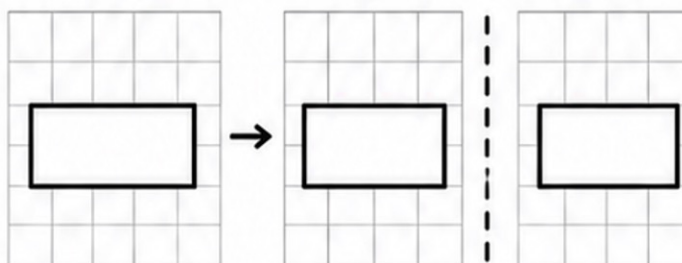
3. Shape A Shape B Shape C



Step 1: **Rotation.**

Step 2: **Reflection.**

4. Shape A Shape B Shape C

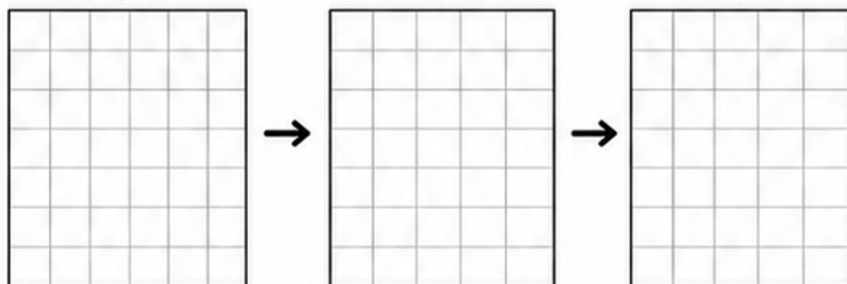


Step 1: **Translation.**

Step 2: **Reflection.**

Create your own two-step transformation

Shape A Shape B Shape C



Step 1: _____

Step 2: _____

**Sample answer: translate right,
then rotate 90° clockwise.**

Name: _____

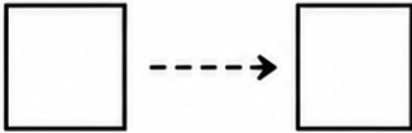
Date: _____

Assessment: Tile Pattern Transformations

Translation, reflection, rotation and symmetry

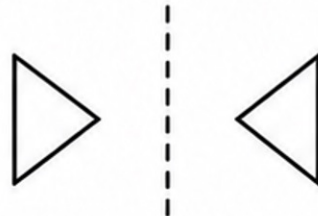
A. Name the transformation: Write translation, reflection or rotation.

1.



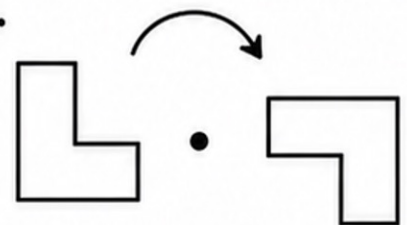
Transformation: _____

2.



Transformation: _____

3.

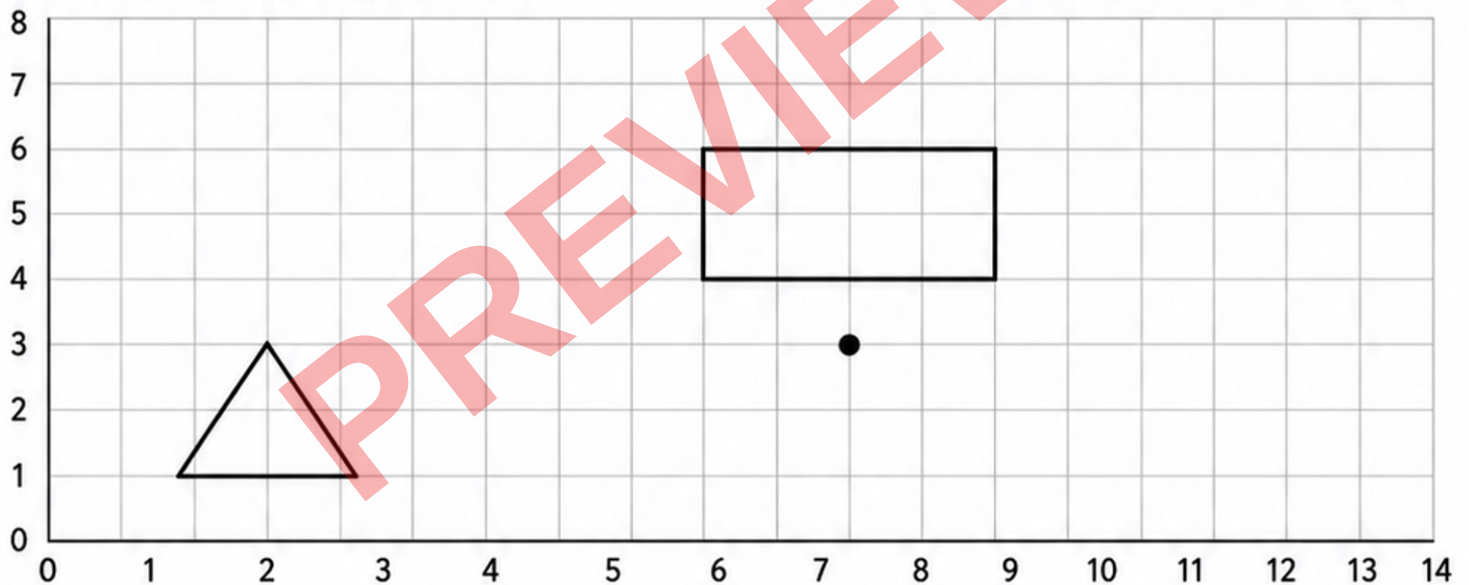


Transformation: _____

B. Draw the transformations:

Translate the triangle 3 right and 2 up.

Rotate the rectangle 90° clockwise around the dot.



C. Symmetry check: Write the order of rotational symmetry.

Draw a symmetry line if there is one.

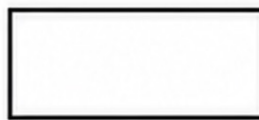
1.



Order: _____

Line of symmetry: _____

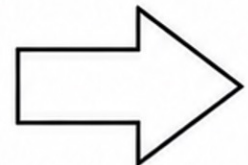
2.



Order: _____

Line of symmetry: _____

3.



Order: _____

Line of symmetry: _____

D. Explain: How is a reflection different from a rotation?

Name: ANSWERS

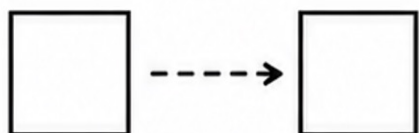
Date: _____

Assessment: Tile Pattern Transformations

Translation, reflection, rotation and symmetry

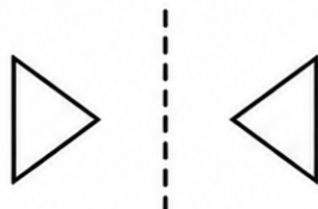
A. Name the transformation: Write translation, reflection or rotation.

1.



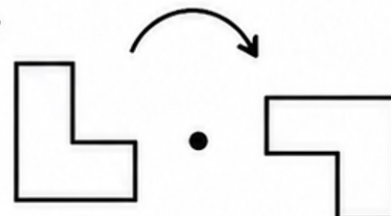
Transformation: Translation

2.



Transformation: Reflection

3.

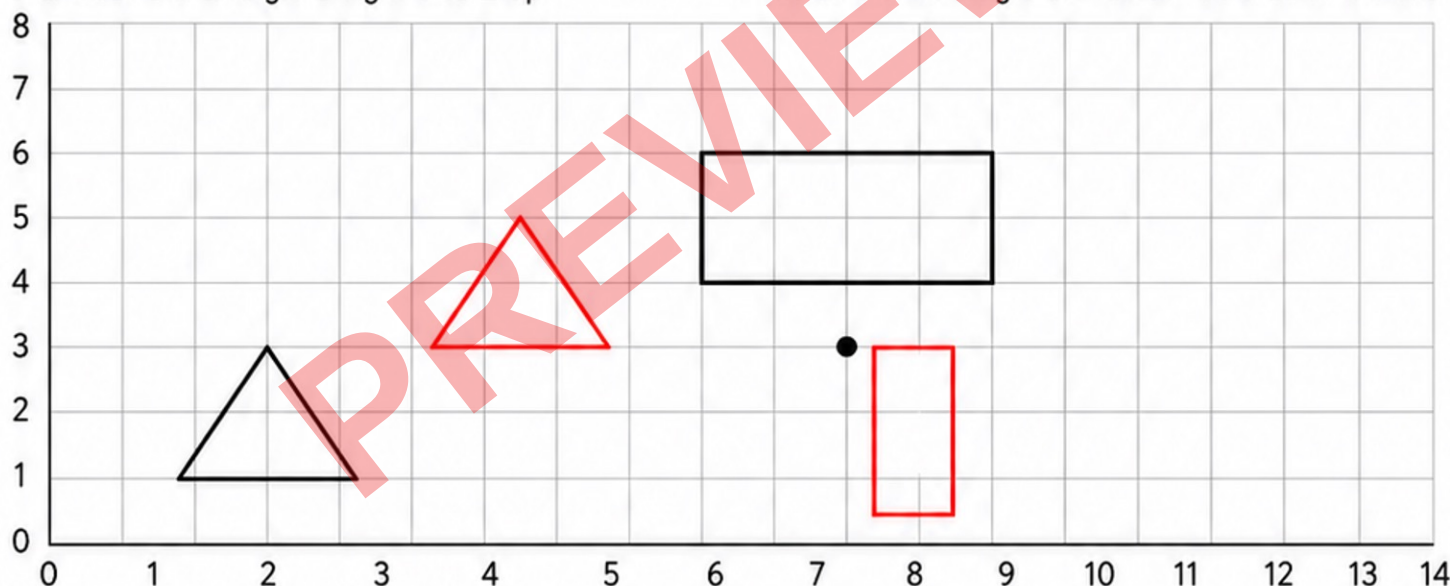


Transformation: Rotation

B. Draw the transformations:

Translate the triangle 3 right and 2 up.

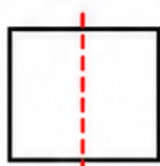
Rotate the rectangle 90° clockwise around the dot.



C. Symmetry check: Write the order of rotational symmetry.

Draw a symmetry line if there is one.

1.



Order: 4

Line of symmetry: -----

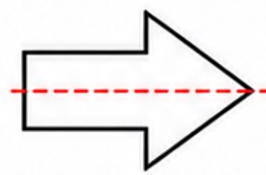
2.



Order: 2

Line of symmetry: -----

3.



Order: 1

Line of symmetry: -----

D. Explain: How is a reflection different from a rotation?

A reflection flips across a line. A rotation turns around a point.

TRANSFORMATION OF SHAPES Rubric



Year 5 Maths

	BEGINNING	DEVELOPING	ACHIEVING	CONFIDENT	EXCEEDING
Identifies transformations   	Limited understanding. Needs support to identify transformations.	Identifies some transformations but makes errors or needs help.	Correctly identifies translation, reflection and rotation in most situations.	Accurately identifies transformations consistently and explains choices clearly.	Confidently identifies all transformations in complex situations and justifies choices thoroughly.
Performs transformations   	Struggles to perform transformations. Many errors or incomplete attempts.	Performs some transformations with errors or inaccuracies.	Performs translations, reflections and rotations correctly in most cases.	Performs transformations accurately and neatly with correct directions and positions.	Performs transformations with precision and flexibility in complex multi-step tasks.
Symmetry reasoning   	Limited understanding of symmetry. Needs support to identify lines or order.	Identifies some lines or orders of symmetry but with errors.	Correctly identifies lines of symmetry and order of rotational symmetry in most cases.	Accurately identifies and explains lines of symmetry and order of rotational symmetry clearly.	Explains symmetry ideas in detail and applies to a variety of shapes and situations.
Explains thinking 	Explanations are limited or unclear. Uses incorrect vocabulary.	Provides a basic explanation but with gaps or unclear reasoning.	Explains thinking using correct mathematical vocabulary and logical reasoning.	Explains clearly, using precise vocabulary and relating ideas confidently.	Explains in depth, using precise language, justifying choices and connecting ideas.

Teacher comments:

Transformation Of Shapes



Learning Goal

We can describe and perform translations, reflections and rotations of shapes.



Transformations Move Shapes

A transformation changes a shape's position or orientation, but
not its size.



Translation Means Slide

A translated shape moves to a new position and keeps facing the same direction.



Reflection Means Flip

A reflected shape flips across a mirror line to create a matching image.



Rotation Means Turn

A rotated shape turns around a fixed point, clockwise or anticlockwise.



Use Grids Carefully

Count squares across and up or down so every point moves the same way.



Line Symmetry

A line of symmetry splits a shape into two matching halves.



Rotational Symmetry

The order tells how many times a shape matches itself in one full turn.



Combine Transformations

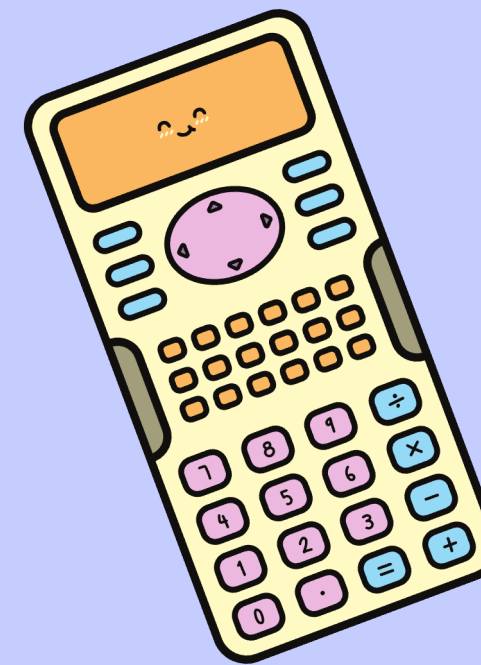
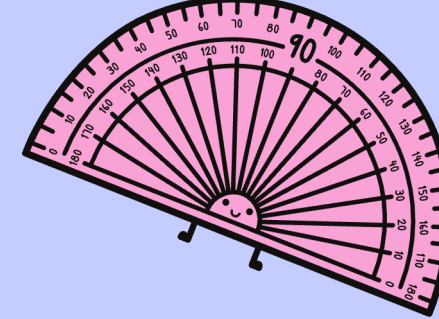
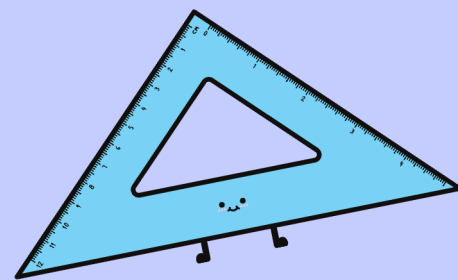
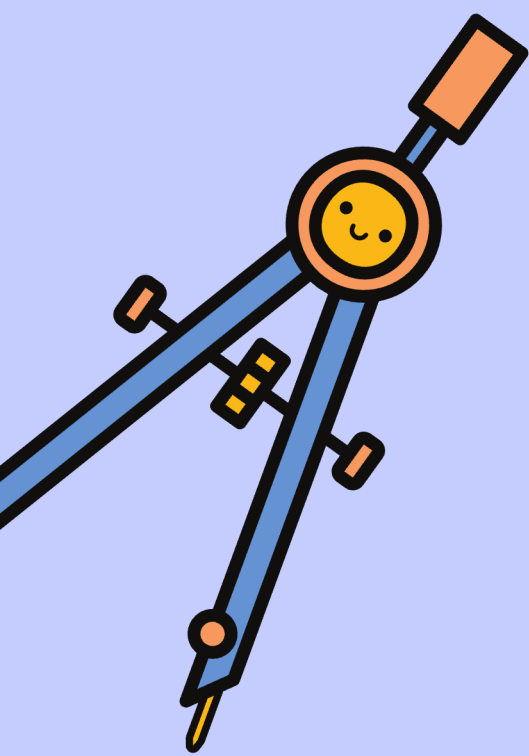
Some shapes need two transformations, such as a translation followed by a rotation.



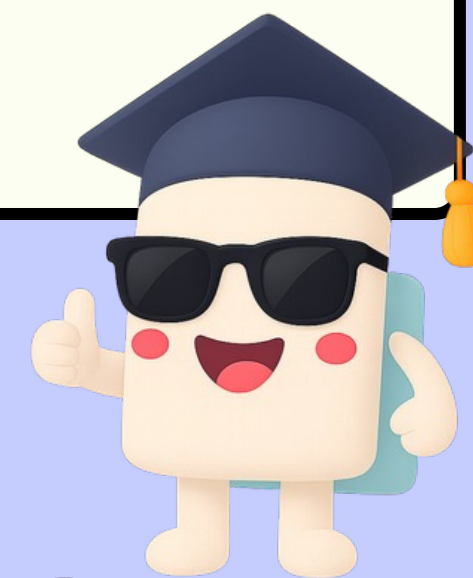
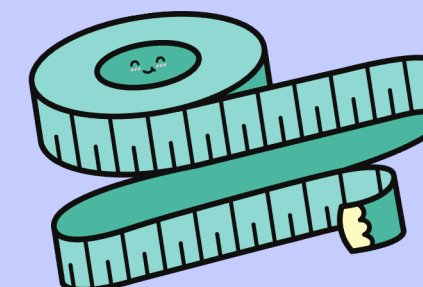
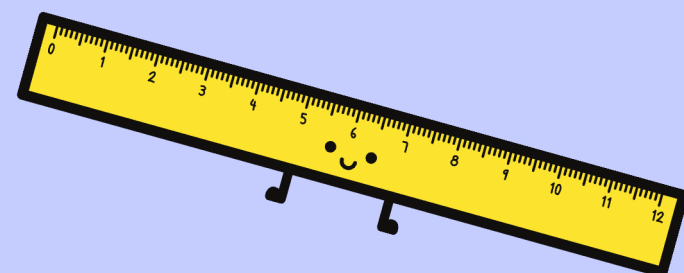
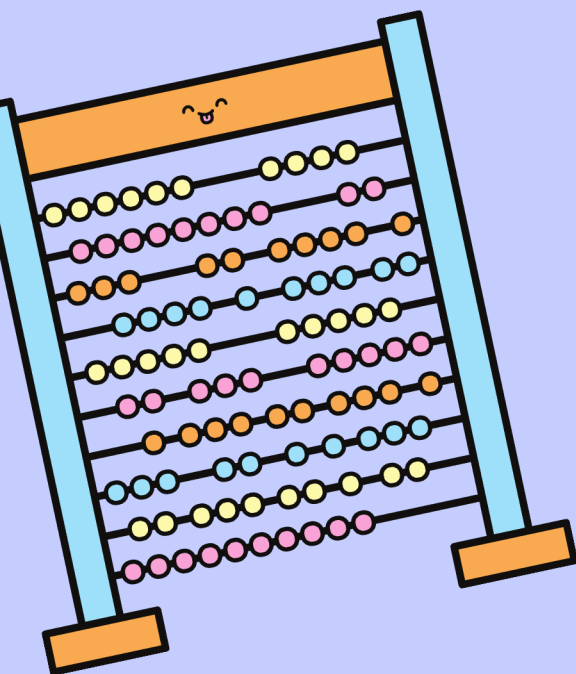
Assessment Task

Use transformations and symmetry to solve tile-pattern challenges
and explain your thinking.





Great Work!



Transformation Of Shapes Quiz



Question 1

Question 1

True or false: A translation slides a shape to a new position.



Answer 1

Answer 1

True.



Question 2

Question 2

Which transformation makes a mirror image?

A. Translation

B. Reflection

C. Rotation

D. Estimation



Answer 2

Answer 2

B. Reflection.



Question 3

Question 3

What stays the same when a shape is translated, reflected or rotated?



Answer 3

Answer 3

The shape's size stays the same.



Question 4

Question 4

True or false: A rotation turns a shape around a fixed point.



Answer 4

Answer 4

True.



Question 5

Question 5

A shape is moved 4 squares right and 2 squares up. What transformation is this?

- A. Reflection
- B. Rotation
- C. Translation
- D. Symmetry



Answer 5

Answer 5

C. Translation.



Question 6

Question 6

What is a line of symmetry?



Answer 6

Answer 6

A line that divides a shape into two matching halves.



Question 7

Question 7

Which shape has rotational symmetry order 4?

A. Square

B. Arrow

C. Heart

D. Letter L



Answer 7

Answer 7

A. Square.



Question 8

Question 8

True or false: A reflection uses a mirror line.



Answer 8

Answer 8

True.



Question 9

Question 9

Name two transformations that could be used in a two-step path.



Answer 9

Answer 9

Examples include translation, reflection and rotation.



Question 10

Question 10

A rectangle has rotational symmetry order 2. What does that mean?

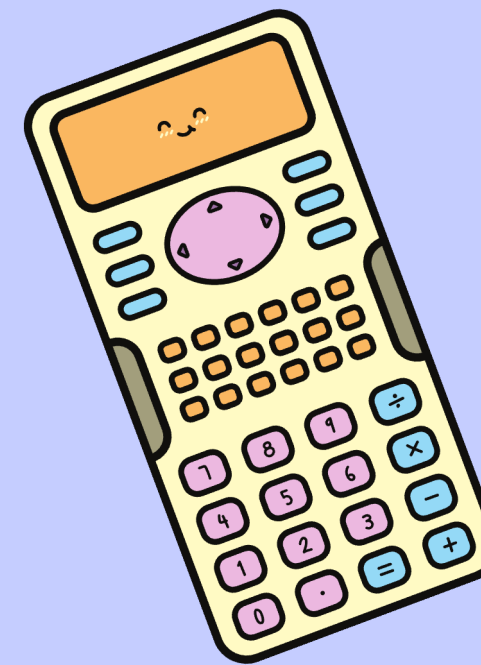
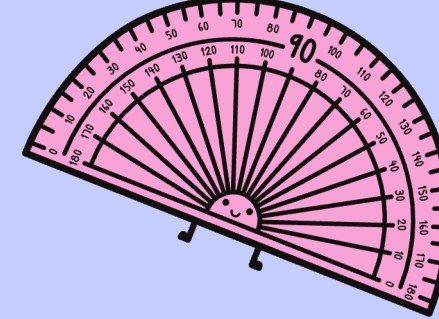
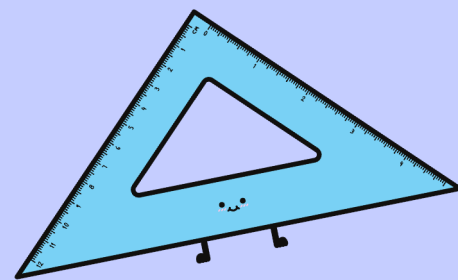
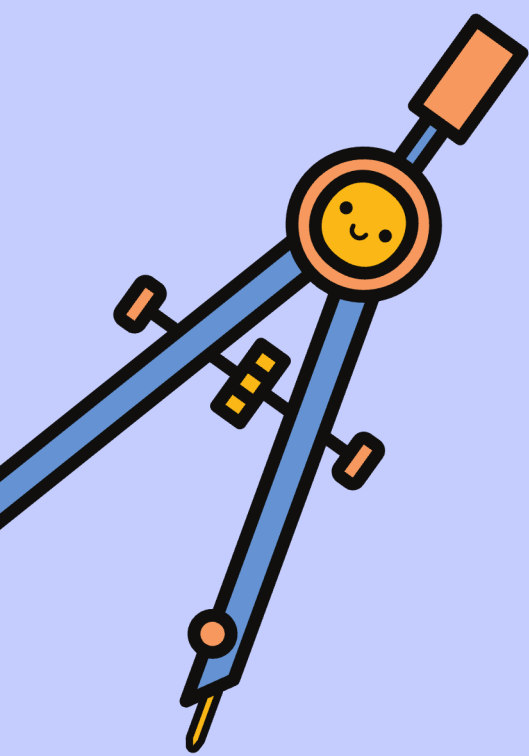


Answer 10

Answer 10

It matches itself twice in one full turn.





Well Done!

