

1

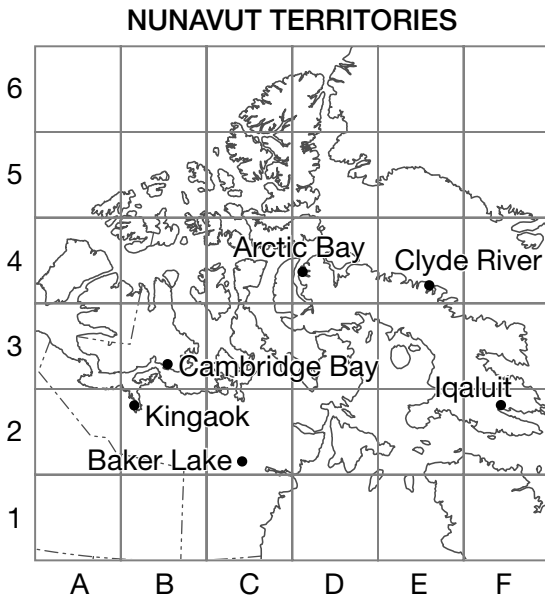
Coordinate Grids



Goal Identify and describe locations on a grid.

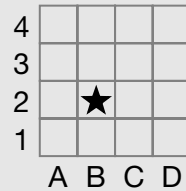
1. Which community has each set of coordinates?

- a) B2 _____ Kingaok
- b) E4 _____ Clyde River



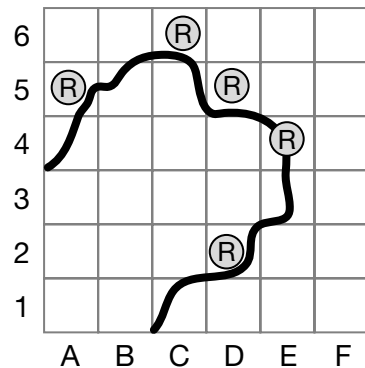
At-Home Help

Coordinate B2 describes the location of the star. It is the space at which column B and row 2 meet.



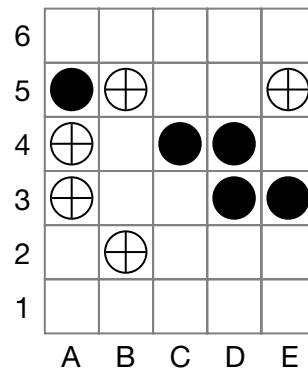
2. This walking trail has rest spots marked ®. Identify their coordinates.

A5, C6, D5, E4, D2



3. Each player takes turns placing a counter on the grid. The first player to place 5 counters in a straight line wins.

- a) Name the coordinates for each ●.
_____ C4, D3, E3
- b) Name the coordinates for each ⊕.
_____ A3, B5, E5

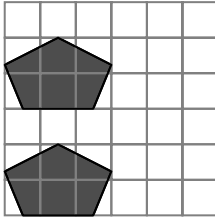


- c) Mark ● at D4 and ⊕ at A4. Mark ● at A5 and ⊕ at B2.
- d) What is the player using ● trying to do? The player is trying to prevent the other player from getting 5 in a row in column A or in row 5.

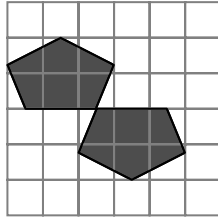
Translating Shapes

Goal Use and describe translations.

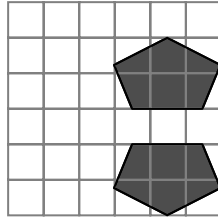
1. Which sets of shapes are **not** translations?



A



B



C

A. A and B

C. C and A

B. B and C

D. A, B, and C

2. Draw the triangle for each translation.

Label each triangle using the letter of its step.

Step a Start at A4.

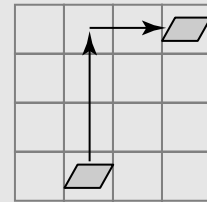
Step b Translate 3 right and 2 down.

Step c Translate 2 left and 4 up.

Step d Translate 5 down and 3 right.

At-Home Help

A **translation** of this shape is 3 units up and 2 units right. The shape slides along a straight line without turning, flipping, changing size, or changing shape.

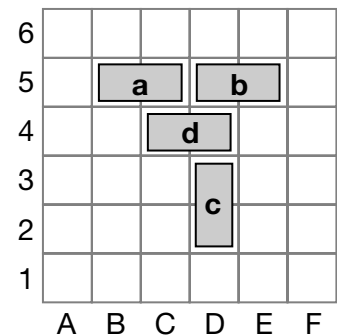
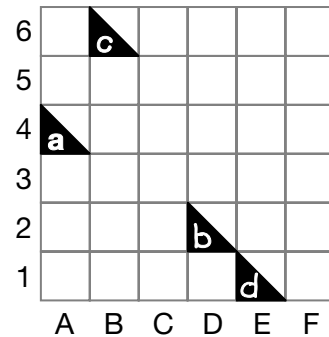


3. a) Which rectangle will be closest to B2 when translated 2 down and 1 left?

_____ rectangle d

b) Where will rectangle b end up if it is translated 4 down and 3 left? Name the coordinates.

_____ A1 and B1



4. Describe translations of rectangle a to C1 and D1.

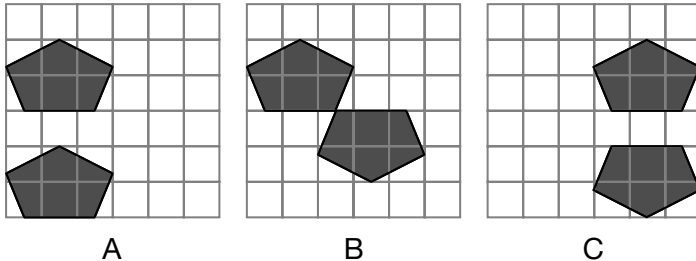
Do not move it to grid squares with other rectangles.

_____ 1 left, 4 down, 2 right

Rotating Shapes

Goal Use and describe rotations.

1. Which sets of shapes are **not** rotations?

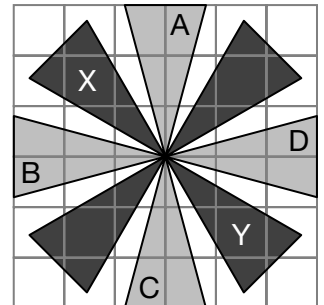


- A. A and B **C. C and A**
 B. B and C D. A, B, and C

2. a) Describe the rotations of triangle A to triangle B. Rotate 90° CCW about the point where the triangles meet.

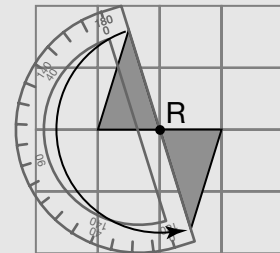
b) Can the same rotation apply from triangle A to triangle D? Explain. No, it has the same amount of turn, but in the opposite direction, so it is rotated 90° CW about the point where the triangles meet.

c) Describe 2 rotations of triangle X to triangle Y. Rotate 180° CCW about the point where the triangles meet or rotate 180° CW about the point where the triangles meet.



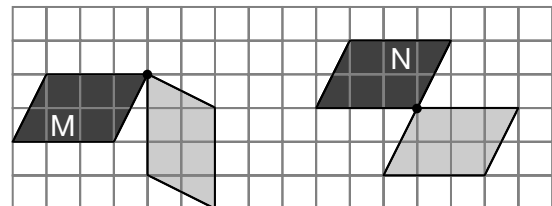
At-Home Help

A **rotation** of this triangle is 180° CCW (counterclockwise). The triangle turns around the centre of rotation without changing its size or shape.



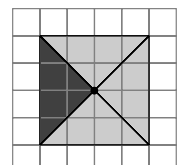
Point R is the centre of rotation.

3. a) Rotate parallelogram M 90° CCW.
 b) Rotate parallelogram N 180° CW.
 c) Which rotation, a) or b), looks like a translation? rotation b)



d) Describe the translation. 2 right, 2 down

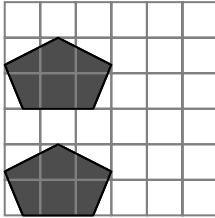
4. a) Rotate the triangle 90° CCW 3 times.
 b) What shape is created? a square



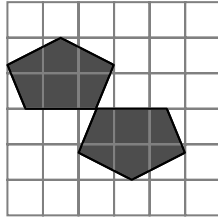
Reflecting Shapes

Goal Use and describe reflections.

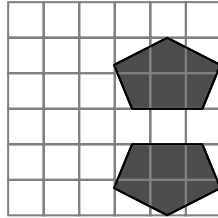
1. Which sets of shapes are **not** reflections?



A



B



C

A. A and B

B. B and C

C. C and A

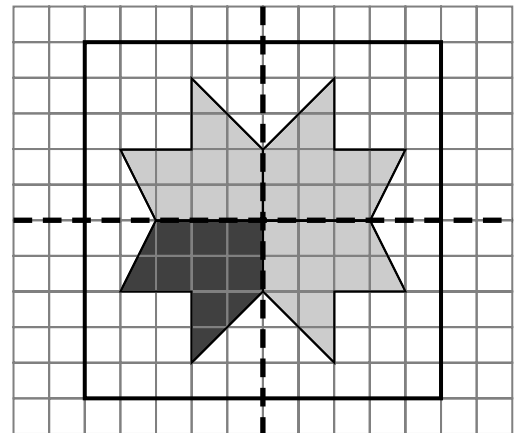
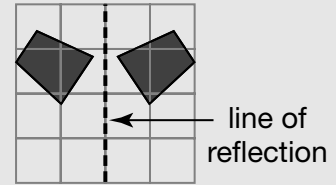
D. A, B, and C

2. Draw 3 reflections to show the whole tile design.

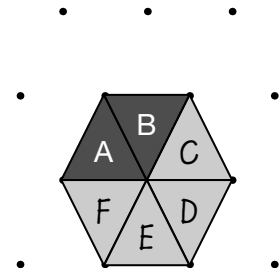
3. How are translations, rotations, and reflections the same? For all of these,
the shapes and sizes don't change
when transformed.

At-Home Help

A **reflection** of a shape is flipped to the opposite side of the line of reflection, staying the same distance from the line, not changing size or shape.



4. You can reflect a triangle several times to make a hexagon. The reflections are started here. Triangle A is reflected in a line through its right side to triangle B. Continue the reflections on the grid. Label each triangle with a different letter.



Describe each reflection. Triangle B is reflected in its
right side to triangle C. Triangle C is reflected in its bottom side to triangle D.

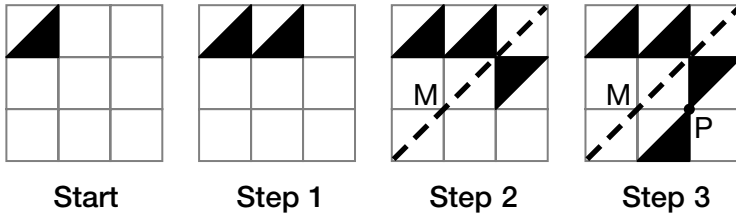
Triangle D is reflected in its left side to triangle E. Triangle E is reflected in its left
side to triangle F.

Communicate About Transformations



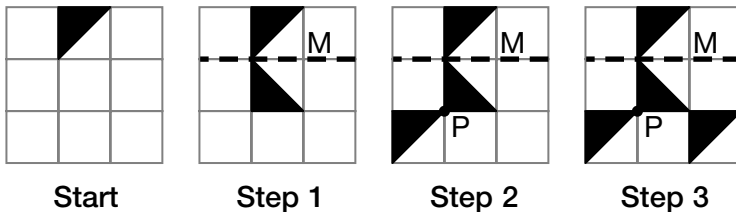
Describe translations, rotations, and reflections.

1. Which description is most accurate?



- A. translate, reflect, rotate
- B. translate right, reflect, rotate CCW
- C. translate 1 space right, reflect in line M, rotate about point P 180° CCW**
- D. translate 1 space right, reflect in line M, rotate about point P 90° CW

2. Karina described this transformation as “reflect in line M, rotate 180°, translate right.”



a) Describe the strengths of Karina’s description.

The steps are in order, and she used math language.

b) Describe the parts of her description that need improvement.

There is not enough detail about the rotation or the translation.

c) Rewrite her description using your suggestions for improvement.

Reflect in line M, rotate 180° CW or CCW about point P, translate 2 spaces right.

At-Home Help

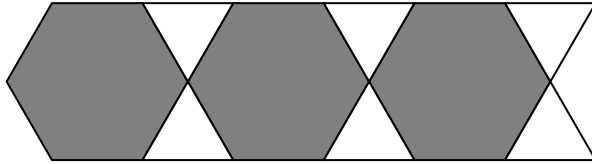
Communication Checklist

- Are your steps in order?
- Did you show enough detail?
- Did you include a diagram?
- Did you use math language?

Transformation Patterns

Goal Make patterns using transformations.

1.



a) What shapes are in this pattern?

hexagons and triangles

b) Describe the pattern in 2 different ways.

Answers will vary. For example, start with a

hexagon and a triangle to the right and at

top beside it; translate the hexagon to the

right 1 space (the size of a hexagon); reflect

the triangle in a horizontal line through its bottom vertex, and reflect both

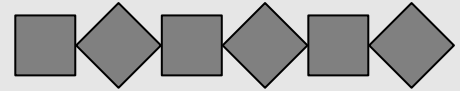
triangles in a vertical line through the centre of the hexagon to the right;

repeat. Or start with a hexagon and 2 triangles to its right at top and bottom,

rotate the hexagon 180° CW or CCW about its right vertex, translate both

triangles to the right 2 spaces (the size of a triangle), repeat.

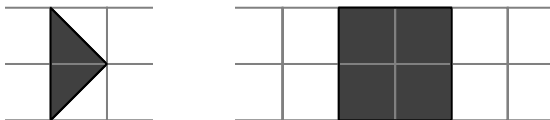
At-Home Help



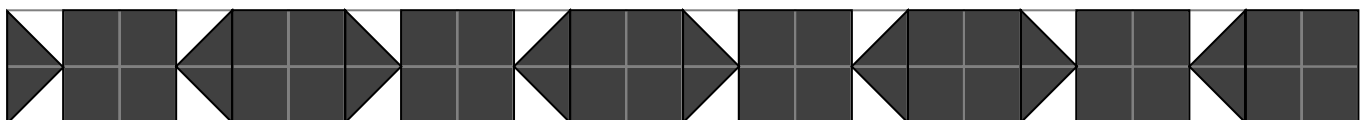
This pattern can be described in many ways. Here are 2 ways.

- Start with a square, rotate it 45° about its centre, and translate it 1 space to the right. Repeat 4 more times.
- Start with a square on the left and a square that's sitting like a diamond on the right. Translate the 2 shapes you started with 2 spaces to the right. Repeat.

2. Create your own pattern on the grid below using these shapes.



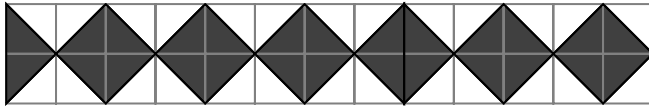
For example:



Extending Transformation Patterns

Goal Extend geometric patterns.

1. a) Extend this pattern to complete the grid.



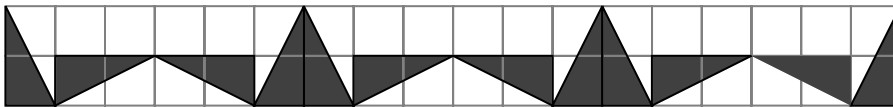
At-Home Help

Extend a pattern by continuing the pattern according to all its attributes, such as size, shape, colour, and transformations.

- b) Describe the pattern using

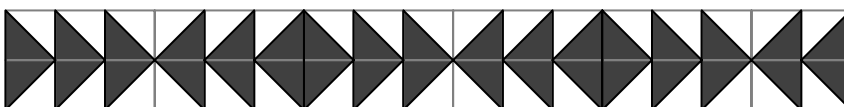
transformations. Answers will vary. For example, reflect the triangle in a vertical line through its right most point (or side), repeat.

2. a) Extend this pattern to complete the grid.



- b) Describe the pattern using transformations. Answers will vary. For example, rotate the triangle 90° CW about its right point (and lower point if there are 2 right points), reflect that triangle in a vertical line through its right most point (or side), repeat.
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-

3. a) Extend this pattern to complete the grid.



- b) Describe the pattern using transformations. Answers will vary. For example, translate the triangle 1 space right, translate that triangle 1 space right, reflect that triangle in a vertical line through its right most point (or side), repeat.
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Test Yourself

Circle the correct answer.

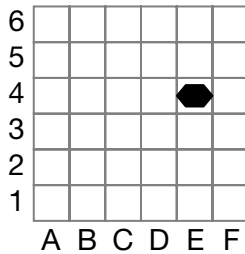
1. Which coordinates are marked on the BINGO card?

- A. B8, I16, G40, O53
- B. B8, I10, G43, O58
- C. B8, I18, G48, O51
- D. B8, I18, G40, O53**

B	I	N	G	O
8	13	23	48	58
2	18	29	42	54
5	16	FREE	43	51
1	10	22	40	50
4	14	21	47	53

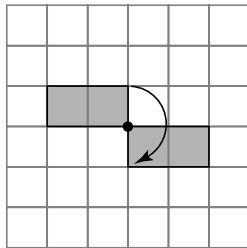
2. Where is the shape when it is translated 3 left and 2 down?

- E. A1
- F. A2
- G. B2**
- H. B1



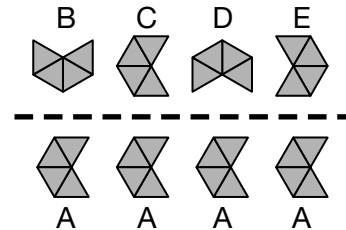
3. What are the angle and direction of the rotation shown?

- A. 90° CCW
- B. 90° CW
- C. 180° CW**
- D. 180° CCW

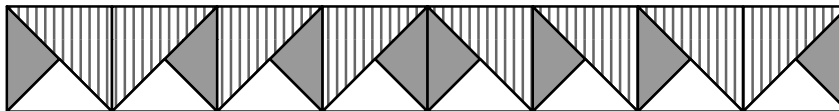


4. Which shape is a reflection of shape A?

- E. shape B
- F. shape C**
- G. shape D
- H. shape E



5. Which is the next shape in this pattern?



- A.**
- B.
- C.
- D.

