

Master 8.17

### Extra Practice 1

#### Lesson 1: Translations

Use grid paper.

Draw a trapezoid near the centre of the paper.

1. Translate the trapezoid 5 squares right and 4 squares down.

Draw its translation image.

Describe the position and orientation of the image.

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2. Translate the trapezoid 4 squares right and 3 squares up.

Draw its translation image.

Describe the position and orientation of the image.

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3. Translate the trapezoid 6 squares left and 2 squares down.

Draw its translation image.

Describe the position and orientation of the image.

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4. Translate the trapezoid 7 squares left and 3 squares up.

Draw its translation image.

Describe the position and orientation of the image.

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**Extra Practice 3**

**Lesson 3: Reflections**

1. Use dot paper.

- a) Draw a parallelogram and a vertical line of reflection.  
 Draw the reflection image.  
 Describe the position and orientation of the image.

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- b) Draw a rectangle and a horizontal line of reflection.  
 Draw the reflection image.  
 Describe the position and orientation of the image.

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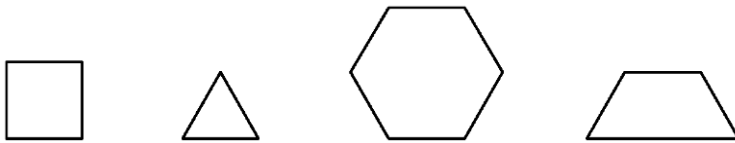
- c) Draw a kite and a slanted line of reflection.  
 Draw the reflection image.  
 Describe the position and orientation of the image.

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2. Here are 4 Pattern Blocks.



A line is drawn below each block.  
 A Mira is placed on the line.  
 Which blocks look the same in the Mira?

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How do you know?

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**Master 8.19**

**Extra Practice 4**

**Lesson 4: Rotations**

1. Use dot paper.

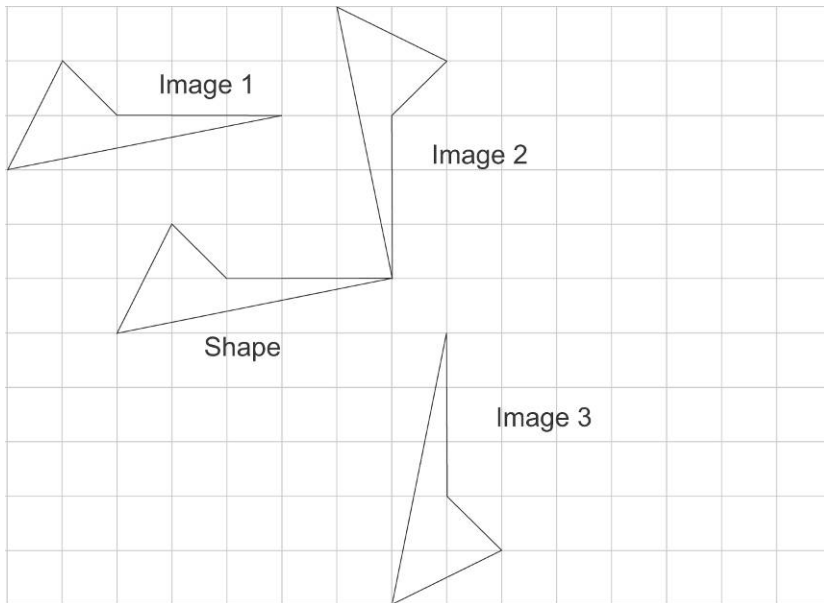
Draw a quadrilateral near the centre of the paper.  
 Rotate the quadrilateral about a point of rotation.  
 Draw the rotation image.  
 Describe the rotation.

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2. Describe the transformation that moves the shape to each image.  
 Draw the line of reflection.  
 Draw the translation arrow.  
 Show the point of rotation.



- a) Image 1: \_\_\_\_\_
- b) Image 2: \_\_\_\_\_
- c) Image 3: \_\_\_\_\_

## Extra Practice 5

**Lesson 5: Exploring Different Points of Rotation**

1. Use grid paper.

Draw a trapezoid.

Choose a point outside the trapezoid. Label it N.

a) Rotate the trapezoid a  $\frac{3}{4}$  turn clockwise about point N.

Draw the rotation image.

Describe the position and orientation of the image.

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b) Rotate the trapezoid a  $\frac{1}{4}$  turn clockwise about point N.

Draw the rotation image.

Describe the position and orientation of the image.

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c) Rotate the trapezoid a  $\frac{1}{2}$  turn about point N.

Draw the rotation image.

Describe the position and orientation of the image.

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Why do we not need to say “clockwise” or “counterclockwise”  
when we describe a  $\frac{1}{2}$  turn?

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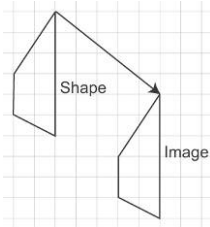
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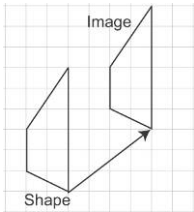
**Extra Practice Sample Solutions**

**Extra Practice 1 – Master 8.17**

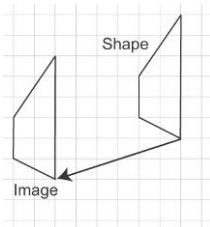
- The shape and orientation of the trapezoid may vary.
  - The image faces the same way as the shape. The image is to the right of and below the shape.



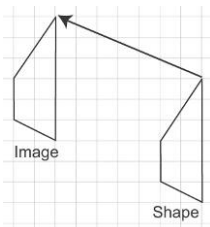
- The image faces the same way as the shape. The image is to the right of and above the shape.



- The image faces the same way as the shape. The image is to the left of and below the shape.



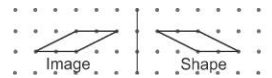
- The image faces the same way as the shape. The image is to the left of and above the shape.



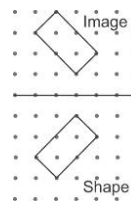
**Extra Practice 3 – Master 8.18**

- The shape and orientation of each shape may vary.

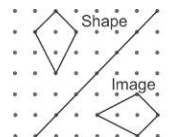
- The image faces the opposite way to the shape; the image points right, the shape points left. The image is to the left of the shape.



- The image faces the opposite way to the shape; the image points up, the shape points down. The image is above the shape.



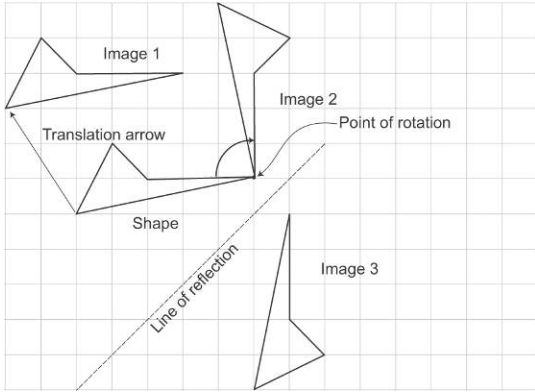
- The image faces a different way to the shape; the image points left, the shape points down. The image is to the right of and below the shape.



- Both the square and the hexagon look the same in the Mira. Both these shapes have a line of symmetry parallel to the line of reflection, so the image has the same orientation as the shape.

**Extra Practice 4 – Master 8.19**

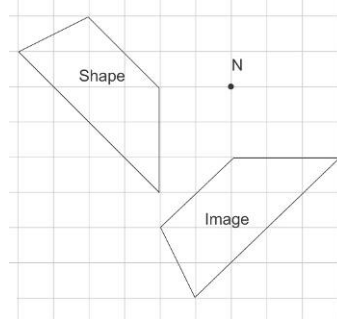
1. The shape and position of the quadrilateral may vary. For example:  
The shape has been rotated a quarter-turn clockwise about the indicated point of rotation.



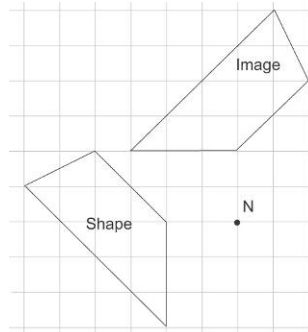
2. a) Image 1: a translation of 2 squares left and 3 squares up  
 b) Image 2: a rotation of a quarter-turn clockwise about the point of rotation shown, or a three-quarter turn counterclockwise about the point of rotation shown  
 c) Image 3: a reflection in the slanted line of reflection shown

**Extra Practice 5 – Master 8.20**

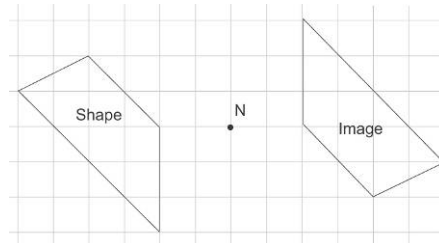
1. The position and orientation of the trapezoid may vary.  
 a) The image points right and the shape points down. The image is below and to the right of the shape.



- b) The image points left and the shape points down. The image is above and to the right of the shape.



- c) The image points up and the shape points down. The image is to the right of the shape.



After a half turn clockwise or counterclockwise, the image is in the same position, so we do not need to say the direction for a half turn.