Josh slides a dot from one position to another. Slides may be described using the words right, left, up and down.

**Example:**

To move the dot from position 1 to position 2, Josh slides the dot 4 units right.

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1. How many units **right** did the dot slide from position 1 to position 2?
   a) ![Grid with dot moving right 4 units](image1)
   b) ![Grid with dot moving right 5 units](image2)
   c) ![Grid with dot moving right 3 units](image3)

   _______ units right

2. How many units **left** did the dot slide from position 1 to position 2?
   a) ![Grid with dot moving left 2 units](image4)
   b) ![Grid with dot moving left 3 units](image5)
   c) ![Grid with dot moving left 4 units](image6)

   _______ units left

3. Slide the dot ...
   a) 3 units right
   b) 6 units left
   c) 5 units right

   ![Grid with dot sliding](image7)

4. How many units **right** and how many units **down** did the dot slide from position 1 to position 2?
   a) ![Grid with dot moving right 1 unit and down 2 units](image8)
   b) ![Grid with dot moving right 1 unit and down 2 units](image9)
   c) ![Grid with dot moving right 1 unit and down 2 units](image10)

   ___ units right ___ units down

5. Slide the dot ...
   a) 5 units right; 2 units down
   b) 6 units left; 3 units up
   c) 3 units left; 4 units down

   ![Grid with dot sliding](image11)
1. Copy the shape into the second grid. (Make sure your shape is in the same position relative to the dot.)
   a) ![Image](image1)
   b) ![Image](image2)
   c) ![Image](image3)
   d) ![Image](image4)
   e) ![Image](image5)
   f) ![Image](image6)
   g) ![Image](image7)
   h) ![Image](image8)

2. Copy the shape into the second grid.
   a) ![Image](image9)
   b) ![Image](image10)
   c) ![Image](image11)

3. Slide the shapes from one end of the box to the other end. Make sure that the dot is at the bottom right hand corner of every shape you shade.
   a) ![Image](image12)
   b) ![Image](image13)
   c) ![Image](image14)

4. Slide the shapes 4 units left. First slide the dot, then copy the shape. Make sure that the dot is in the bottom left hand corner of your new shape.
   a) ![Image](image15)
   b) ![Image](image16)
   c) ![Image](image17)

5. Slide the shapes 3 units in the direction shown. First slide the dot, then copy the shape.
   a) ![Image](image18)
   b) ![Image](image19)
   c) ![Image](image20)

6. Slide the dot three units down, then copy the shape.
   a) ![Image](image21)
   b) ![Image](image22)
   c) ![Image](image23)
   d) ![Image](image24)
In a slide (or translation), the figure moves in a straight line without turning. The image of a slide is congruent to the original figure.

Helen slides (or translates) a shape to a new position by following these steps.

1. Draw a dot in a corner of the figure.
2. Slide the dot (in this case, 4 right and 1 down).
3. Draw the image of the figure.

Join the two dots with a translation arrow to show the direction of the slide.

1. Slide each shape 4 boxes to the right. (Start by putting a dot on one of the corners of the figure. Slide the dot four boxes right, then draw the new figure.)

   a)  
   
   b)  
   
   c)  
   
   d)  

2. Slide each figure 5 boxes to the right and 2 boxes down.

   a)  
   
   b)  
   

3. Describe how figure A moved to position B. Use the word “translation” in your answer.

4. Amy says she used a slide to move figure A to position B. Is she correct? Explain.
1. This is the star map of a constellation. The names of the stars are given in Arabic.

   a) The star named “Bear” is in the square E3.
      What is its name in Arabic? ____________.

   b) The “Goat” lives in C3.
      What is its Arabic Name? ______________.

   c) Alkaid star is in the square _____________.

   d) The Owl Nebula is in square ____________.

   e) How many squares up from the Owl Nebula is Bode’s Galaxy? ____

   f) Which star is 2 squares left and 1 square up from Phad? ______________

2. The map shows part of Treasure Island, where pirates have buried gold and silver.

   a) The Red Rock is ____ paces ___________ from the Tall Fir.

   b) The Large Birch is ____ paces north from the Red Rock.

   c) The Rose Bush is ____ paces ___________ and ____ paces east from the Red Rock.

   d) The Tall Fir is ____ paces ___________ and ____ paces ___________ from the Rose Bush.

   e) The Large Birch is ______________________ and ___________________ from the Tall Fir.

3. On the map, mark the points where these parts of the Treasure are buried.

   a) Gold (G): 5 paces east and 10 paces north from the Tall Fir.
      Weapons (W): 10 paces west and 5 paces south from the Rose Bush.
      Silver in Bars (S): 10 paces south and 5 paces east from the Large Birch.

   b) What two landmarks is the silver buried between? _________________________
This map shows all of the Treasure Island.

Each edge on the map represents 1 kilometre.

The Round Lake is at point (2.5, 4).

4. What is at point …
   a) (3, 2)? ___________________________  c) (3, 5)? ___________________________
   b) (5, 5)? ___________________________  d) (6.5, 3.5)? ___________________________

5. What are the coordinates of … 6. What is …
   a) the Old Lighthouse? ____________ a) 1 km west of Bear Cave? ________________
   b) Lookout Hill? ____________ b) 1.5 km south of the Fort? ________________
   c) the Clear Spring? ____________ c) 1 km north and 1.5 km west of the Treasure?

7. Fill in the blanks.
   a) The Old Lighthouse is 4.5 km east of Round Lake.
   b) The Treasure is ___ km of the Fort.
   c) The Bear Cave is ___ km of the Treasure.
   d) Lookout Hill is ___ km and ___ km south of the Bear Cave.
   e) The Clear Spring is ___ km and ___ km of the Old Lighthouse.
   f) The Bear Cave is ___ km of the Fort.
   g) The Treasure is ___ of Lookout Hill.

8. Make your own question using the map and ask your partner to answer it.
O’Shane reflects the shape by flipping it over the mirror line. Each point on the figure flips to the opposite side of the mirror line, but stays the same distance from the line. O’Shane checks to see that his reflection is drawn correctly by using a mirror.

**1. Draw the reflection of the shapes below.**

a) ![Reflection A](image)

b) ![Reflection B](image)

c) ![Reflection C](image)

**2. Draw the reflection, or flip, of the shapes.**

a) ![Reflection A](image)

b) ![Reflection B](image)

c) ![Reflection C](image)

**3. Draw your own shape in the box below. Now draw the flip of the shape on the other side of the mirror line.**

BONUS: Are the shapes on either side of the mirror congruent? Explain your answer.

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________
When a point is reflected in a mirror line, the point and the image of the point are the same distance from the mirror line.

A figure and its image are congruent but face in opposite directions.

4. Reflect the point P through the mirror line M. Label the image point P’.

a)  

b)  

c)  

d)  

5. Reflect the set of points P, Q and R through the mirror line. Label the image points P’, Q’ and R’.

a)  

b)  

c)  

d)  

6. Reflect the figure by first reflecting the vertices of the figure.

a)  

b)  

c)  

7. Circle the pictures that do not show reflections. Explain how you know the figures you circled aren’t reflections. REMEMBER: The image must be congruent to the figure and face the opposite direction.

a)  

b)  

c)  

8. Draw a mirror line on grid paper. Draw a polygon with 3 or 4 sides and draw a dot at each vertex. Reflect the polygon through the mirror line by first reflecting each of the vertices.