

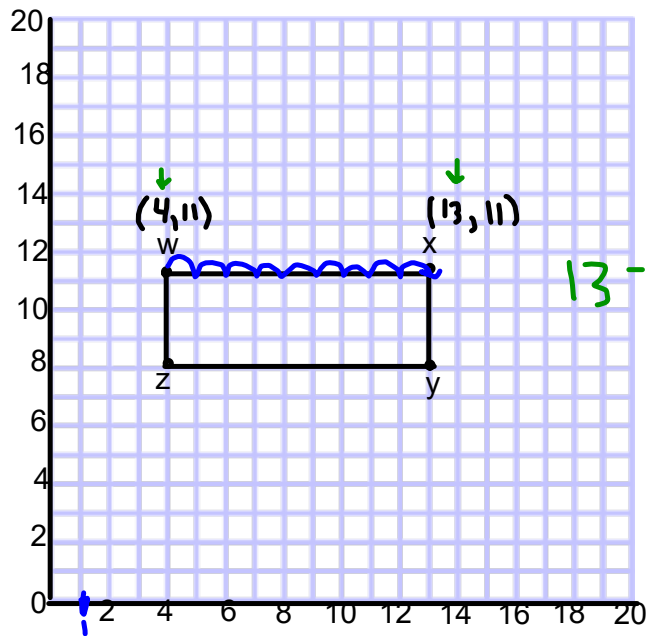
What is the length of the line segment WX



Ch. 8 Transformations

Warm Up Grade 6

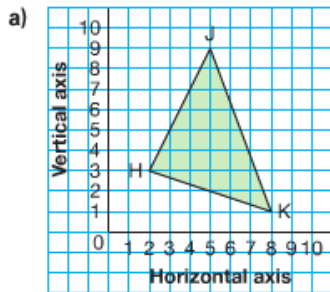
Lesson 2 of e learning



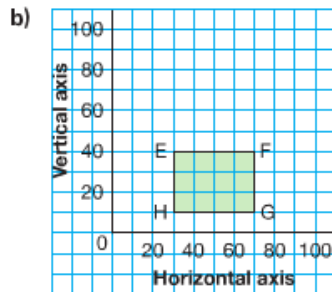
What strategy did you use?

**Practice**

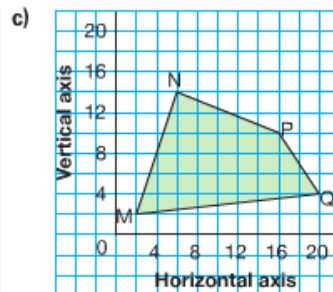
1. Write the coordinates of the vertices of each shape.



H(2, 3)  
J(5, 9)  
K(8, 1)

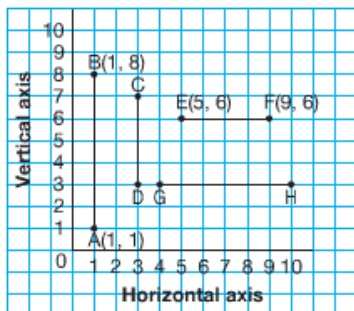


E(30, 40)  
F(70, 40)  
G(70, 10)  
H(30, 10)



M(2, 2)  
N(6, 14)  
P(16, 10)  
Q(20, 4)

2. Find the length of each line segment on this coordinate grid.  
Describe the strategy you used.



AB is 7 units (I counted the vertical blocks)

or

Given the coordinates I took the y value and subtracted  $8 - 1 = 7$  units

CD is 4 units (I counted the vertical blocks)

EF is 4 units (I counted the horizontal blocks)

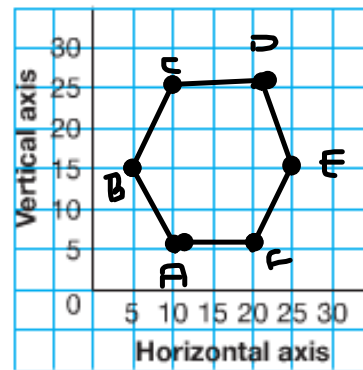
or

Given the coordinates I took the x value and subtracted  $9 - 5 = 4$  units

GH is 6 units (I counted the horizontal blocks)

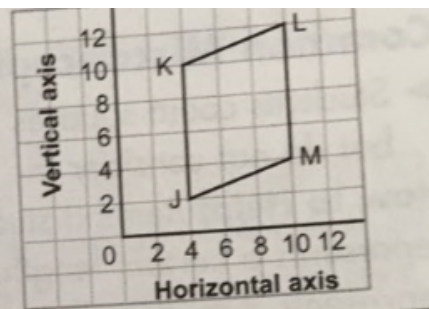
#3) solutions

Hexagon



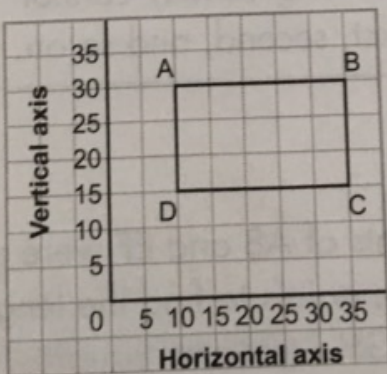
Parallelogram

4. a) I used the scale 1 square represents 2 units because each coordinate is divisible by 2.



5. Draw a shape on a coordinate grid.  
Each vertex should be at a point where grid lines meet.  
List the vertices of the shape, in order.  
Trade lists with a classmate. Use the list to draw your classmate's shape.

6. a), b)



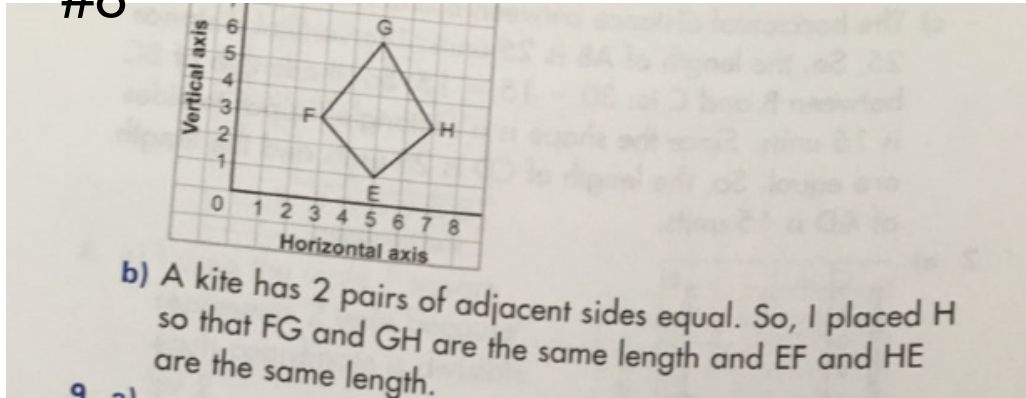
I used the scale 1 square represents 5 units because each coordinate is divisible by 5.

- c) The horizontal distance between B and A is:  $35 - 10 = 25$ . So, the length of AB is 25 units. The vertical distance between B and C is:  $30 - 15 = 15$ . So, the length of BC is 15 units. Since the shape is a rectangle, opposite sides are equal. So, the length of CD is 25 units and the length of AD is 15 units.

solutions

H(7,3)

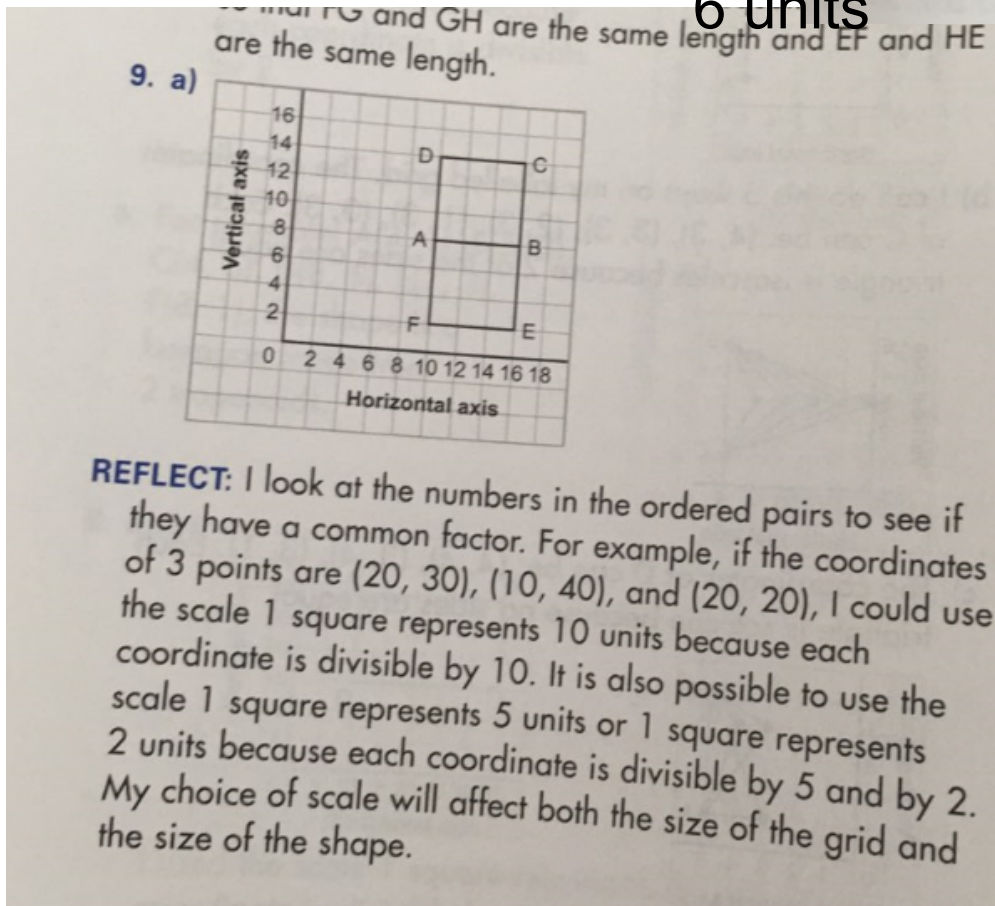
#8



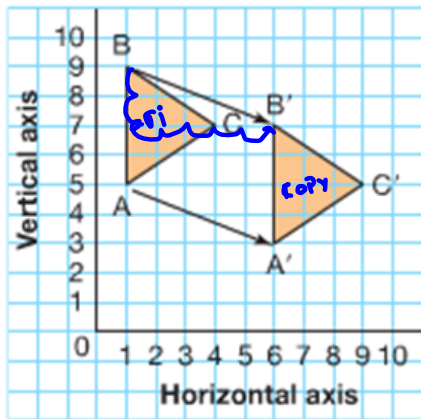
solutions

6 units

? C(16, 14) and D(10, 14)  
E(16, 2) and F(10, 2)



**Translation (slide)** – slides a shape from one location to another. A translation arrow joins matching points on the shape and its image.



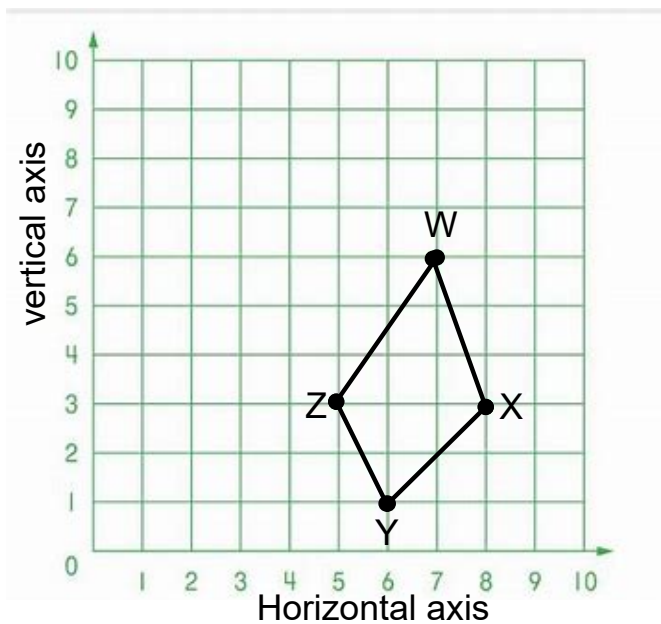
Given by direction and amount of blocks

This image ABC is translated

Down 2, Right 5

That means every vertex in original is moved the same direction

New image has prime symbol on vertices '



Translate shape WXYZ  
Up 3, left 4 and name new shape W'X'Y'Z'

Write the coordinates for WXYZ and the translated shape

W( \_\_, \_\_ )

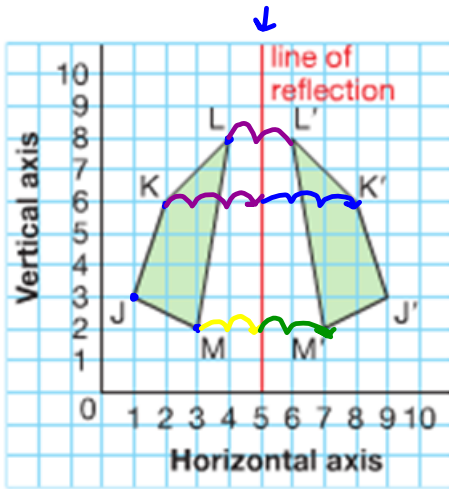
X( \_\_, \_\_ )

Y( \_\_, \_\_ )

Z( \_\_, \_\_ )

**Reflection (Flip)** – Reflects a shape in a line of reflection to create a reflection image.

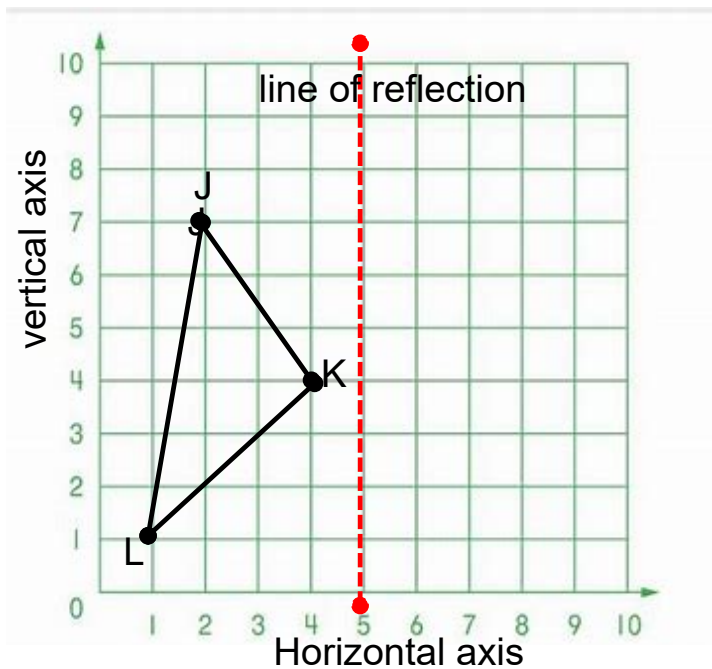
-face opposite ways



- keep the vertices the same distance from the mirror

(when vertical or horizontal mirror)

- Flip coordinates when mirror is diagonal



Reflect the shape JKL across red line of reflection name new shape J'K'L'

Write the coordinates for JKL and the translated shape

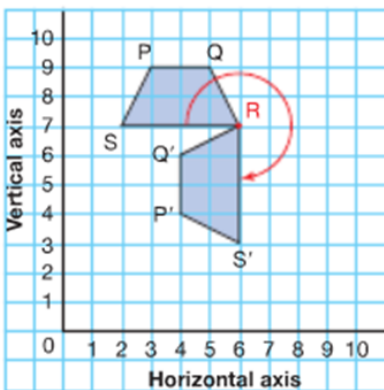
J( \_\_, \_\_ )

K( \_\_, \_\_ )

L( \_\_, \_\_ )

## Won't do until I can model in class

**Rotation (turn)** – turns a shape about a point of rotation in a given direction.



-We trace the original shape and rotate then paper. Poke holes at the vertices and redraw.

-will be given point of rotation in grade 6



So, we can name fractions of turns in degrees.

A rotation can be clockwise or counterclockwise.



A  $\frac{1}{4}$  turn is a  $90^\circ$  rotation.



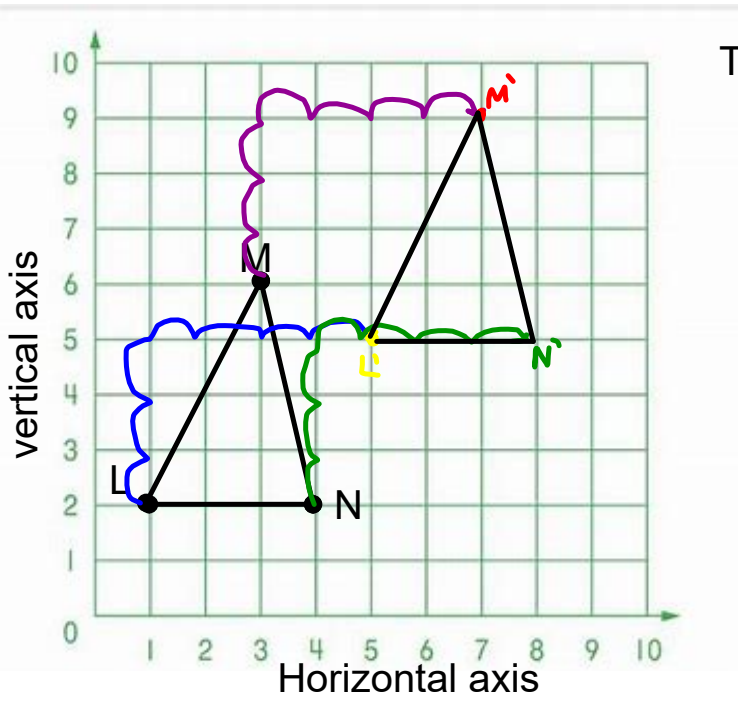
A  $\frac{1}{2}$  turn is a  $180^\circ$  rotation.



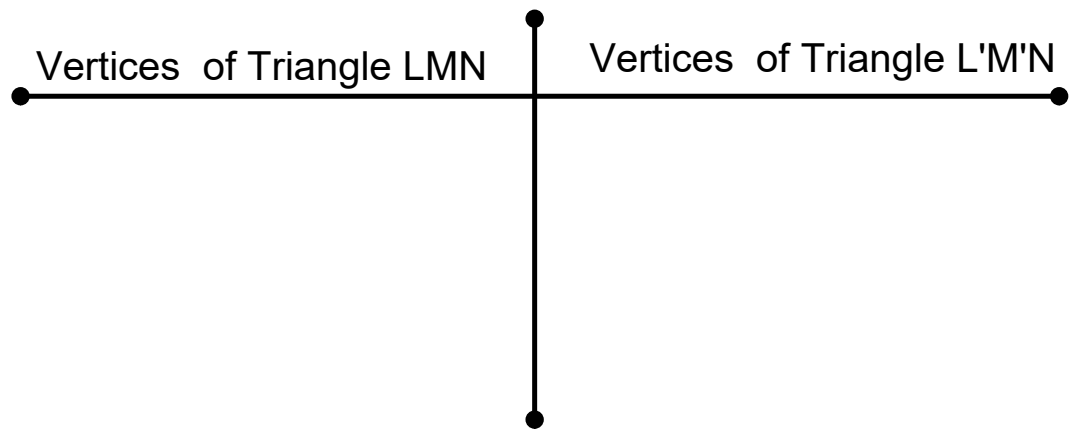
A  $\frac{3}{4}$  turn is a  $270^\circ$  rotation.

Above trapezoid PQRS is rotated about vertex R,  $270^\circ$ . or  $\frac{3}{4}$  turn  
To give image P'Q'RS' (Notice R is the same)





Translate U3 R4  
↓ U3   ↓ R4



# Class/Homework

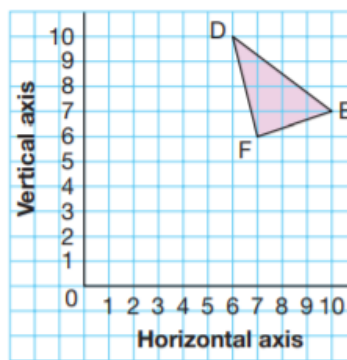
page 298-299

#3,

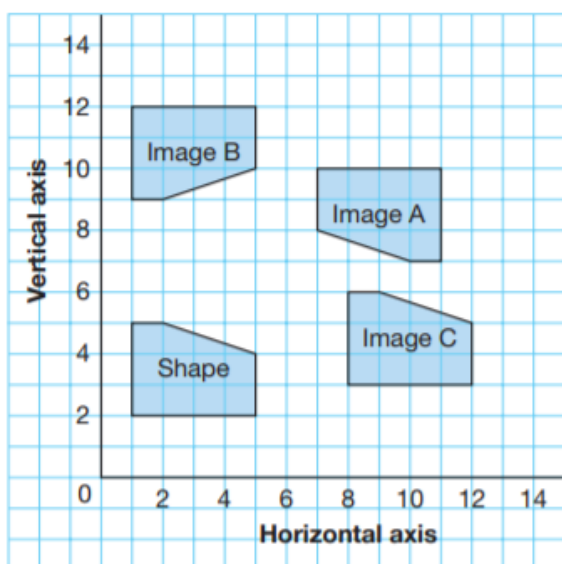
If you have grid paper you can try  
#1 BUT you don't need to

Use tracing paper or a Mira when it helps.

1. Copy this triangle on a grid.
  - a) Draw the image of  $\triangle DEF$  after the translation 6 squares left and 1 square down.
  - b) Write the coordinates of the vertices of the triangle and its image.  
How are the coordinates related?
  - c) Another point on this grid is  $G(10, 2)$ .  
Use your answer to part b to predict the coordinates of point  $G'$  after the same translation.



3. This diagram shows a shape and its image after 3 different transformations.



Identify each transformation.

Explain how you know.

- a) the shape to Image A
- b) the shape to Image B
- c) the shape to Image C

## Solutions

Use tracing paper or a Mira when it helps.

1. Copy this triangle on a grid.

a) Draw the image of  $\triangle DEF$  after the translation  
6 squares left and 1 square down.

$$D'(0,9)$$

b) Write the coordinates of the vertices  
of the triangle and its image.

$$E'(4,6)$$

How are the coordinates related?

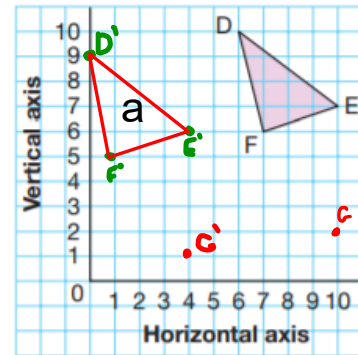
$$f(1,5)$$

c) Another point on this grid is  $G(10, 2)$ .

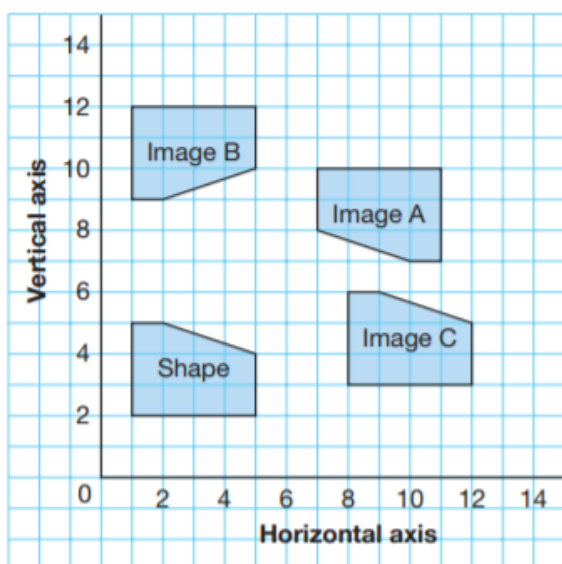
Use your answer to part b to predict the  
coordinates of point  $G'$  after the same  
translation.

$$G'(4,1)$$

$$\begin{array}{l} x-6, y-1 \\ 10-6 \quad 2-1 \\ (4, 1) \end{array}$$



3. This diagram shows a shape and its image after 3 different transformations.



Identify each transformation.

Explain how you know.

a) the shape to Image A

*Rotation*

b) the shape to Image B

*Reflection*

c) the shape to Image C

*Translation*