Lesson 2 Day 1

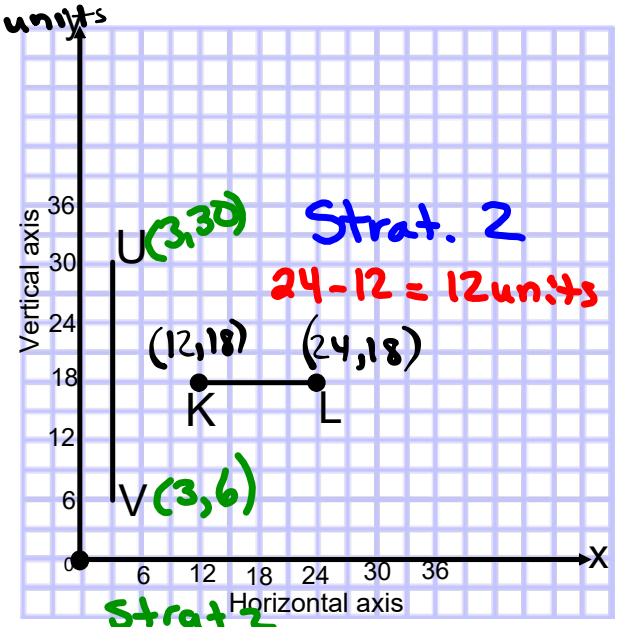
Warm Up Grade 6
Ch. 8 Transformations
Date: May 15

Which strategy would you use to find the length of kL?

Strat 1 KL ⇒ 4 jumps of size 3 units
4 x 3 units
12 units

UV?

Why?

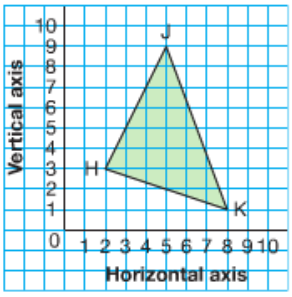


UV
8 jumps of size 3 units
8 x 3 units
UV = 24 units

Practice

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

a)

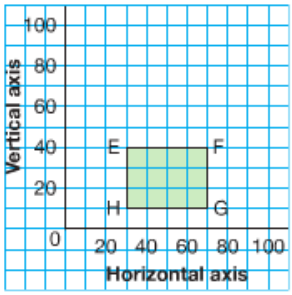


H(2, 3)

J(5,9)

K(8,1)

b)



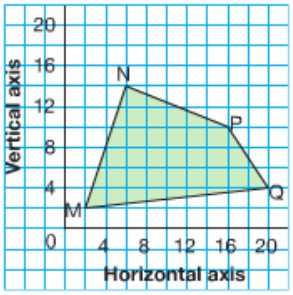
E(30,40)

F(70,40)

G(70,10)

H(30,10)

c)



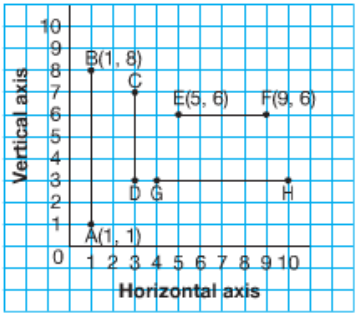
M(2,2)

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)

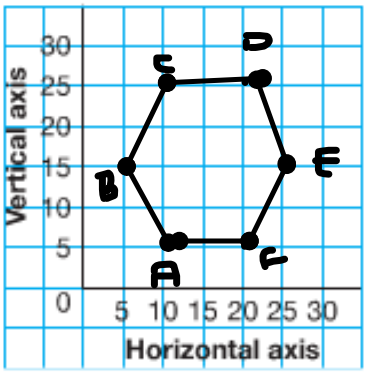
or

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

GH is 6 units (I counted the horizontal blocks)

3. Copy this grid.
   a) Plot each point on the grid.
   A(10, 5) B(5, 15) C(10, 25)
   D(20, 25) E(25, 15) F(20, 5)
   b) Join the points in order. Then join F to A.
   c) Describe the shape you have drawn.

Hexagon



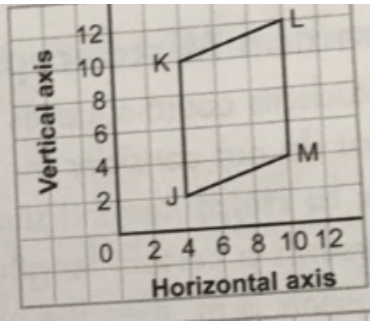
4. Draw and label a coordinate grid.
   a) Plot each point on the grid.
   What scale will you use? Explain your choice.

   J(4, 2) K(4, 10) L(10, 12) M(10, 4)

   b) Join the points in order. Then join M to J.
   Describe the shape you have drawn.

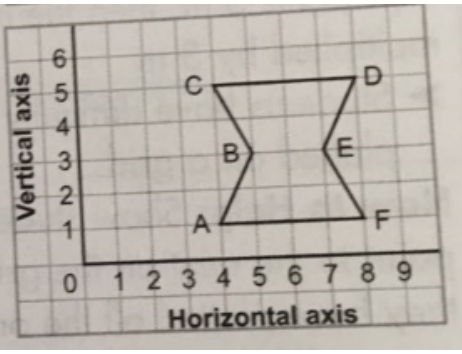
Parallelogram

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



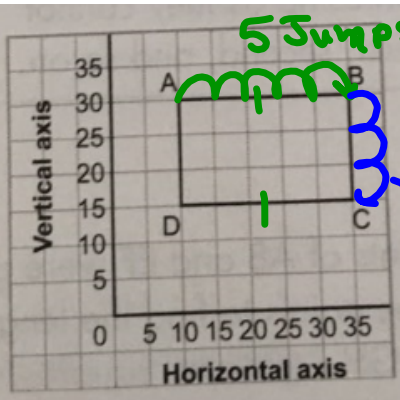
5. Draw a shape on a coordinate grid.
Each vertex should be at a point where grid lines meet.
List the vertices of the shape, in order.
Trade lists with a classmate. Use the list to draw your classmate's shape.

5. For example; A(4, 1), B(5, 3), C(4, 5), D(8, 5), E(7, 3), F(8, 1); the shape is a hexagon made from 2 trapezoids.



6. Draw and label a coordinate grid.
a) Plot each point on the grid.
What scale will you use?
Explain your choice.
A(10, 30) B(35, 30) C(35, 15) D(10, 15)
b) Join the points in order. Then join D to A.
Describe the shape you have drawn. Rectangle
c) Find the length of each side of the shape.
Show your work.

6. a), b)

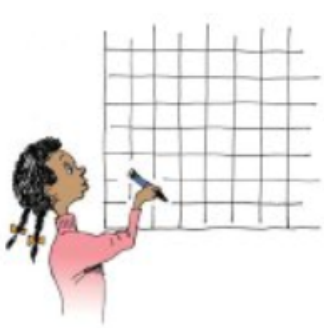


5 Jumps of size 5
5 x 5 units
25 units
3 jumps of size 5
3 x 5 units
15 units

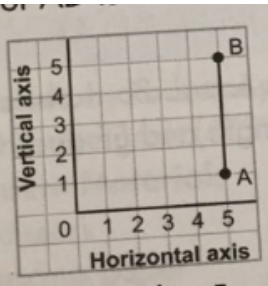
I used the scale 1 square represents 5 units because each coordinate is divisible by 5.

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.

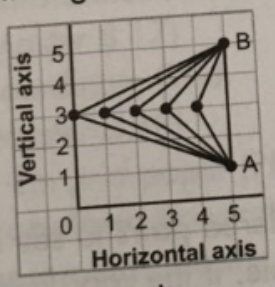
7. Draw and label a coordinate grid.
   a) Plot the points A(5, 1) and B(5, 5).
      Join the points.
   b) Find point C so that △ABC is isosceles.
      How many different ways can you do this?
      Draw each way you find.
      Write the coordinates of C.
      How do you know each triangle is isosceles?
   c) Find point D so that △ABD is scalene.
      Show 3 different scalene triangles.
      Write the coordinates of D.
      How do you know each triangle is scalene?



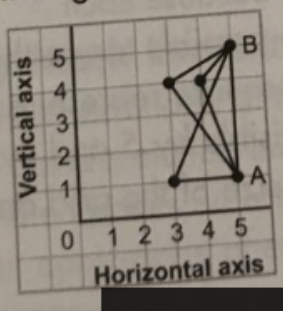
7. a)



b) I can do this 5 ways on my labelled grid. The coordinates of C can be: (4, 3), (3, 3), (2, 3), (1, 3), (0, 3). Each triangle is isosceles because 2 of the sides are equal.

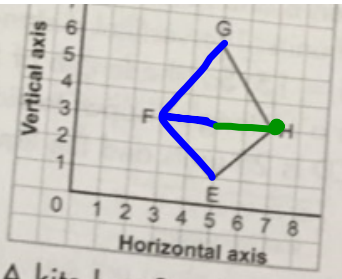


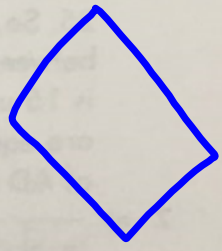
c) The coordinates of D can be: (4, 4), (3, 4), (3, 1). Each triangle is scalene because no sides are equal.



8. Draw and label a coordinate grid.
   a) Plot these points: E(5, 1), F(3, 3), G(5, 6)
   b) Find the coordinates of Point H that forms Kite EFGH.
   Explain the strategy you used.

H(7,3)





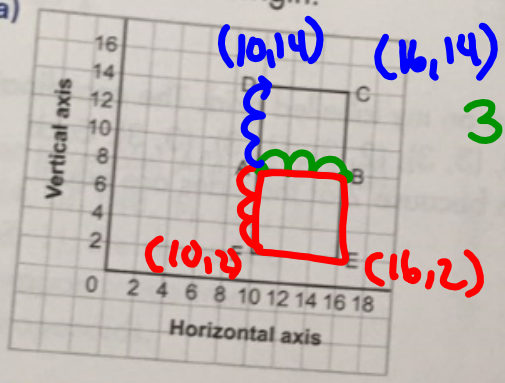
b) A kite has 2 pairs of adjacent sides equal. So, I placed H so that FG and GH are the same length and EF and HE are the same length.

9. The points A(10, 8) and B(16, 8) are two vertices of a square.
   Plot these points on a coordinate grid.
   a) What are the coordinates of the other two vertices?
   Find as many different answers as you can.
   b) What is the side length of each square you drew?

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

6 units

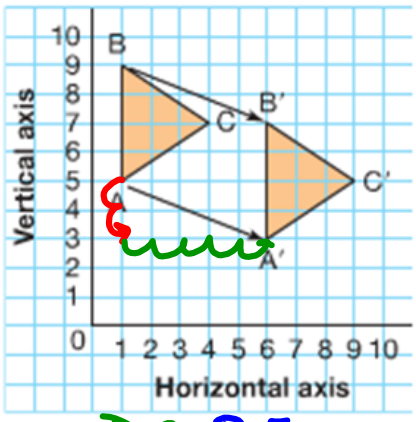
9. a)



3 Jumps of size 2
3 x 2 units
6 units

REFLECT: I look at the numbers in the ordered pairs to see if they have a common factor. For example, if the coordinates of 3 points are (20, 30), (10, 40), and (20, 20), I could use the scale 1 square represents 10 units because each coordinate is divisible by 10. It is also possible to use the scale 1 square represents 5 units or 1 square represents 2 units because each coordinate is divisible by 5 and by 2. My choice of scale will affect both the size of the grid and the size of the shape.

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



OR D2 R5

↓2 →5

Given by direction and amount of blocks

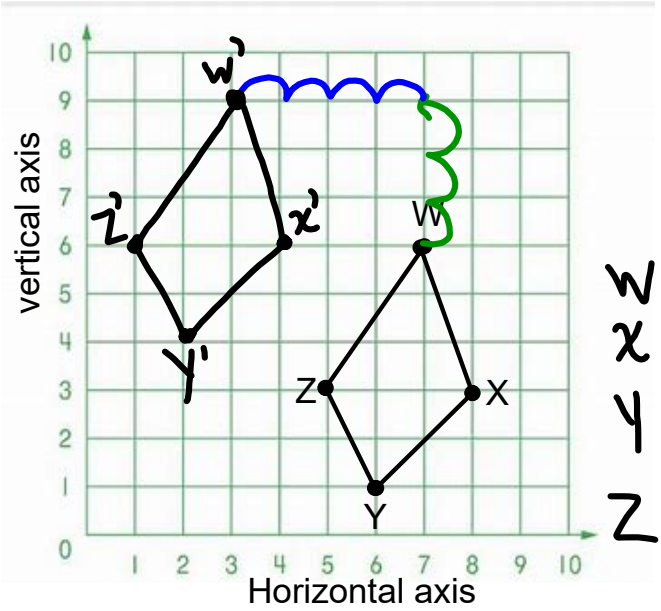
Image has ' prime symbol

This image ABC is translated

Down 2, Right 5

That means every vertex is 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'

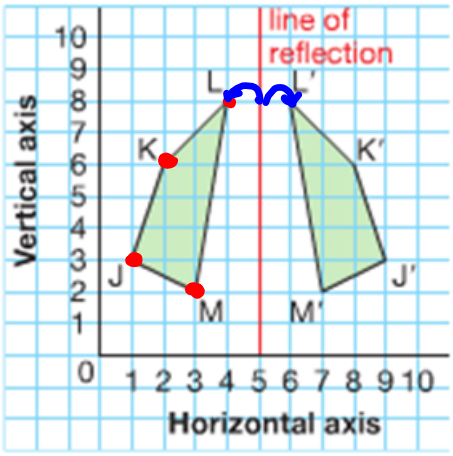
W(7,6)
X( )
Y( )
Z( )

Write the coordinates for WXYZ and the translated shape

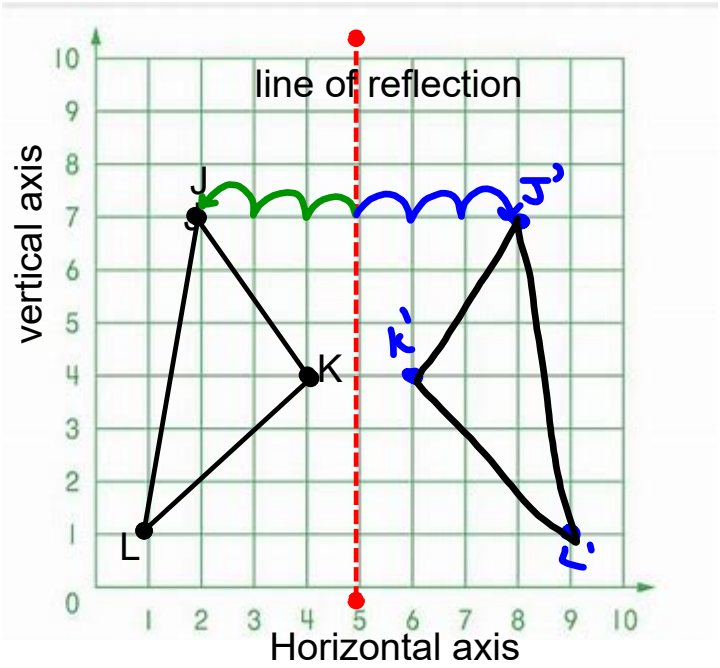
W(7, 6) W' (3, 9)
X(8, 3) X' (4, 6)
Y(6, 1) Y' (2, 4)
Z(5, 3) Z' (1, 6)

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



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

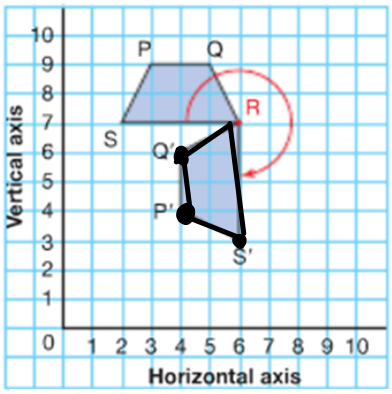
Write the coordinates for JKL and the translated shape

J(2, 7) J' (8, 7)

K(4, 4) K' (6, 4)

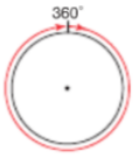
L(1, 1) L' (9, 1)

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.

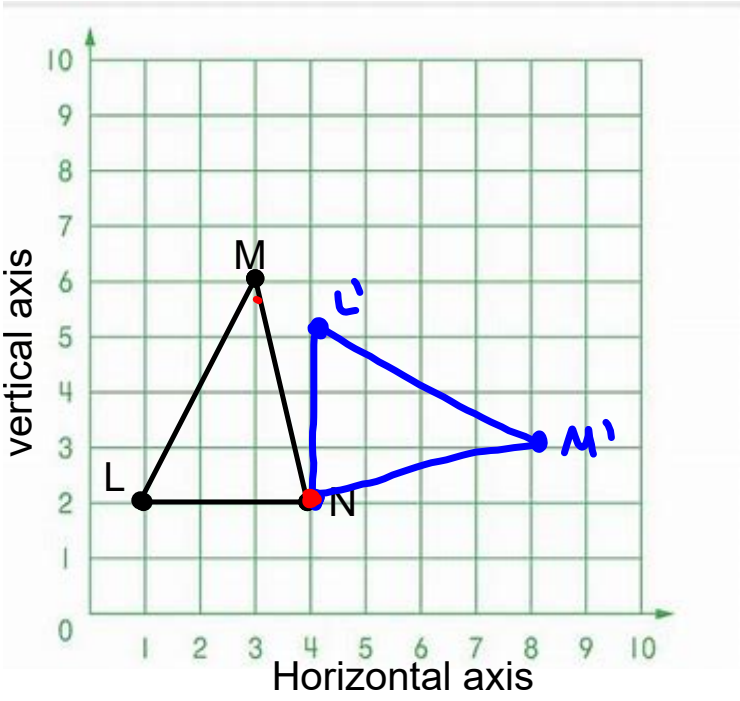
A $\frac{1}{4}$ turn is a 90° rotation.

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

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

Above trapezoid PQRS is rotated about vertex R, 270°. or 3/4 turn

To give image P'Q'RS' (Notice R is the same)



Rotate triangle LMN about vertex N, 1/4 turn (90°) clockwise. Label new vertex