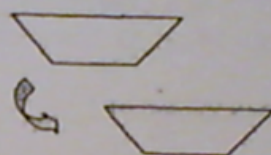


- 1) Bell Ringer: p. 3
- 2) Lesson 1: What is a transformation? What is a slide?
- 3) Homework: pages 7-8

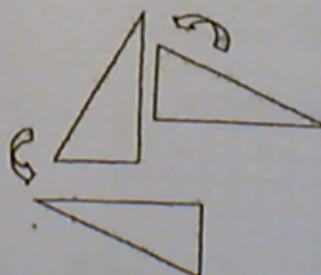
Translation
=

$$T_{2,3}$$
$$(x + 2) (y - 3)$$

**Slide**
=**Rotation**

$$R_{90^\circ}$$
$$(x, y) \rightarrow (-y, x)$$

$$R_{180^\circ}$$
$$(x, y) \rightarrow (-x, -y)$$

**Turn**

Oct 24-11:19 AM

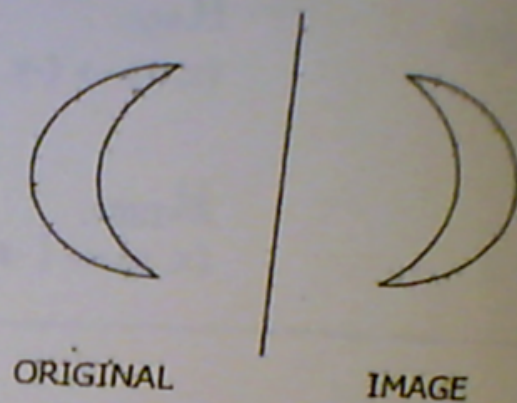
TRANSFORMATIONS

Transformation is a change in location ^{position} or orientation of a figure.
There are four types of transformations:

- 1. Translations (slide)



● Reflections (flip)

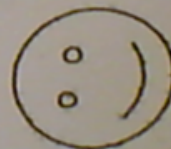


● Rotations ()

Rotations (turn)



ORIGINAL



IMAGE

• Dilations (enlargement
or reduction)

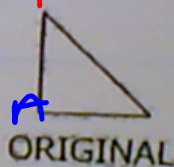


IMAGE - the figure you get after a transformation is completed. The image is called "prime" (and labeled with a superscript ' '), "double prime" (and labeled with two superscripts " ") or even "triple prime" (and labeled with three superscripts " " ").

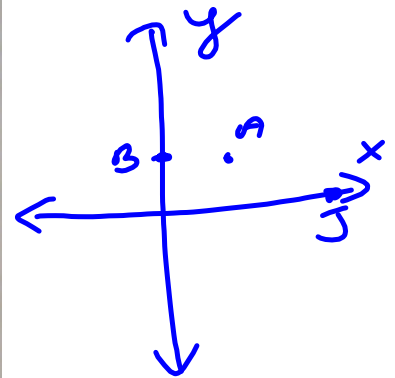
Multiple-Choice Questions

1. Which ordered pair locates a point on the y-axis?

- A. (2, 2)
- B. (0, 3)
- C. (-4, -4)
- D. (6, 0)

2. Which ordered pair locates a point on the x-axis?

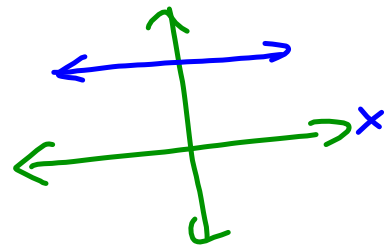
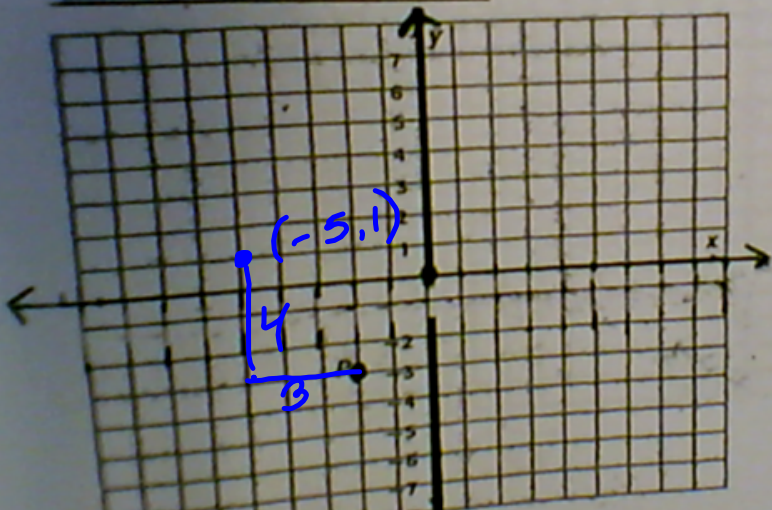
- F. (0, 5) *y axis*
- G. (-6, 3)
- H. (10, 10)
- J. (8, 0)

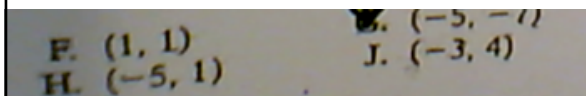


3. Points $K(5, 7)$ and $L(-6, 7)$ lie on a line that

- ☒ A. is parallel to the x -axis
- ☐ B. passes through the origin
- ☐ C. is parallel to the y -axis
- ☐ D. passes through Quadrants III and IV

4. The ordered pair for the point that is 3 units left and 4 units up from point P is



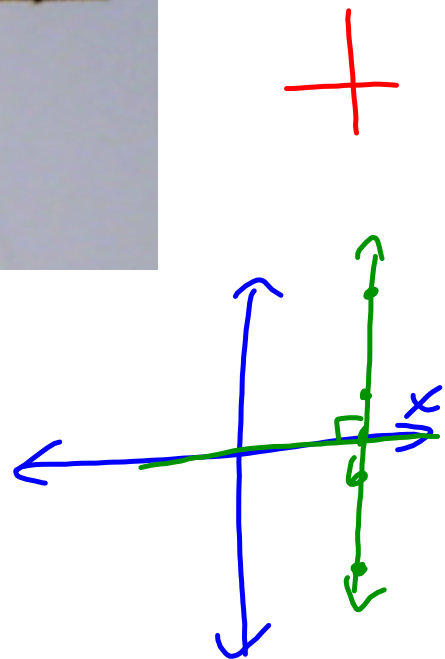


F. $(1, 1)$
H. $(-5, 1)$

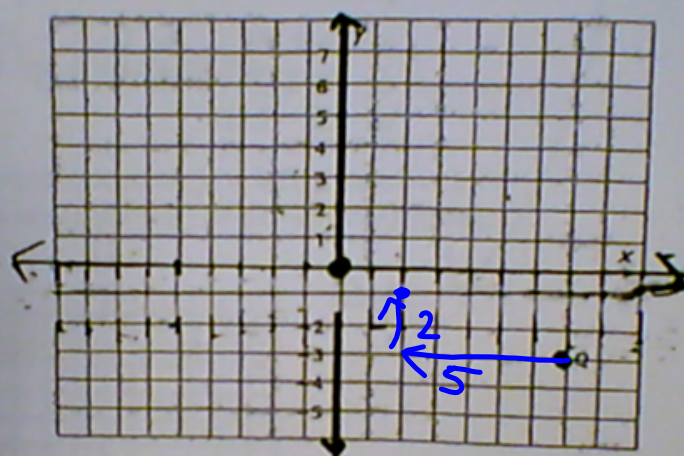
G. $(-5, -1)$
J. $(-3, 4)$

5. Which set of points is on a line perpendicular to the x-axis?

- ~~A.~~ $P(3, 6), Q(-2, -4), R(0, 0)$
- B. $S(6, -9), T(6, 11), U(6, 4)$
- C. $V(4, 8), W(-7, 8), X(0, 8)$
- D. $K(10, 5), L(-4, -2), M(8, 4)$



6. Point Q is 5 units right and 2 units down from which point?



F. $W(1, -2)$

G. $X(12, -5)$

H. $Y(5, 2)$

J. $Z(2, -1)$

7. Which point does NOT lie on either the x -axis or the y -axis?

A. $L(0, 13)$

B. $M(-17, 0)$

C. $N(-15, 15)$

D. $O(0, 0)$

8. Which ordered pair comes next in the pattern?

$(2, -1), (3, 1), (4, 3), (5, 5), (?, ?)$

F. $(6, 6)$

G. $(6, 7)$

H. $(7, 6)$

J. $(7, 8)$

6, 7

$x+1, y+2$

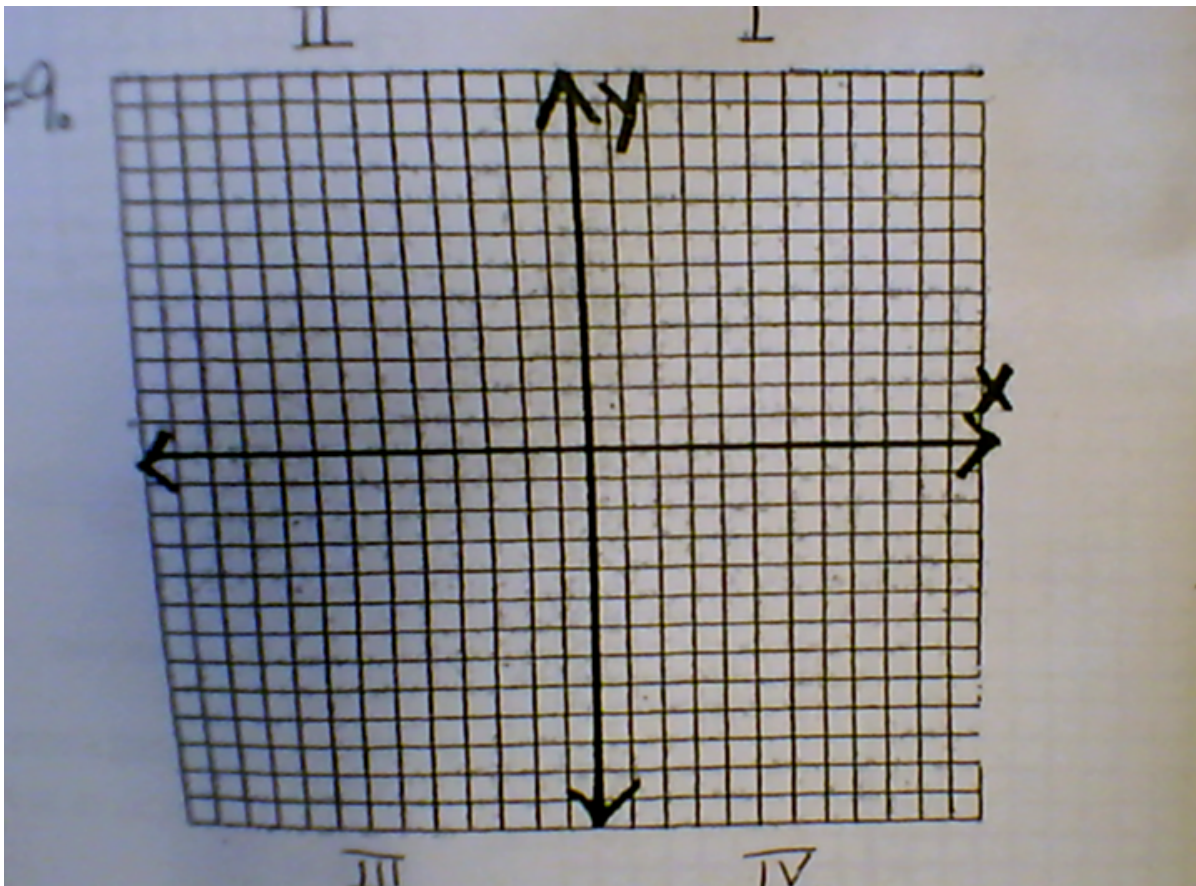
Short-Response Questions

9. Draw and label a pair of coordinate axes. Graph the point that corresponds to each ordered pair. Label each point with its coordinates.

- | | |
|---------------|-----------------|
| a. $(3, -5)$ | b. $(8, 0)$ |
| c. $(-6, 2)$ | d. $(0, 4)$ |
| e. $(-3, -7)$ | f. $(2.5, 2.5)$ |

10. Name the quadrant for each ordered pair.

- | | |
|---------------|---------------|
| a. $(-9, 6)$ | b. $(-7, -2)$ |
| c. $(3, 11)$ | d. $(0, 12)$ |
| e. $(5, -14)$ | |



TRANSLATIONS are defined as a slide in the coordinate plane. The entire figure is moved (slid) in the same direction the same amount of spaces.

- The shape can move in one direction -- up, down, left, or right.
- The shape can move in a combination of two directions -- up and left, up and right, down and left, or down and right.
- Preserves distance, size, and shape of the figure.

In the coordinate plane the algebraic formula is shown by

$$(x, y) \longrightarrow (x + a, y + b)$$

(x, y) is the original point and $(x + a, y + b)$ is the image point.

The x-value is change by a which moves the shape right (positive) or left (negative).
The y-value is changed by b which moves the shape up (positive) or down (negative).



EX: Use the following rule: $(x, y) \rightarrow (x - 3, y + 2)$ to translate the following points: The point moves 3 left up 2

1) A (5, -3)

$$\begin{aligned} \bar{A} (5, -3) &\rightarrow A' (5 - 3, -3 + 2) \\ A (5, -3) &\rightarrow A' (2, -1) \end{aligned}$$

2) B (-4, 7)

$$\begin{aligned} B (-4, 7) &\rightarrow B' (-4 - 3, 7 + 2) \\ B (-4, 7) &\rightarrow B' (-7, 9) \end{aligned}$$

3) C (2, 5)

$$C' (-1, 7)$$

4) D (3, -2)

$$D' (0, 0)$$

5) E (1, -6)

$$\begin{aligned} E (1, -6) &\rightarrow E' (1 - 3, -6 + 2) \\ E' &(-2, -4) \end{aligned}$$

6) F (-3, 8)

$$\begin{aligned} &\quad \quad \quad -3, +2 \\ &\quad \quad \quad \hline F' &(-6, 10) \end{aligned}$$

Ex: Translate $\triangle ABC$ using the rule $(x, y) \rightarrow (x + 2, y + 4)$.
Show work algebraically and graphically.

right 2, up 4

$A(-3, 2)$	$A'(-1, 6)$
$+2, +4$	
$B(-3, -1)$	$B'(-1, 3)$
$+2, +4$	
$C(1, -1)$	$C'(3, 3)$
$+2, +4$	

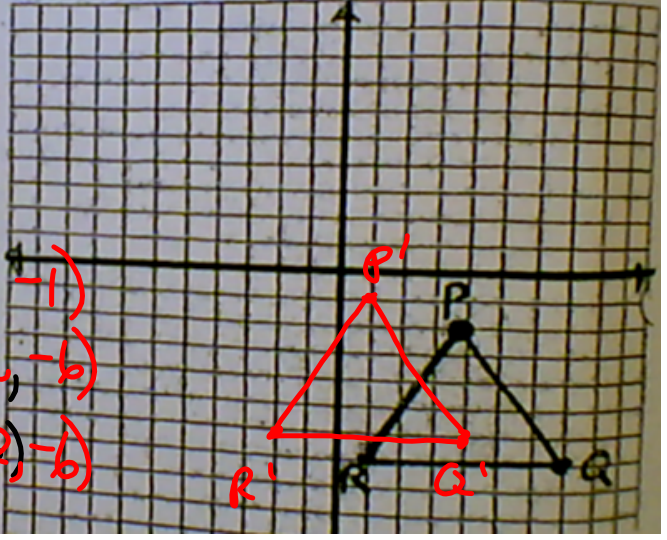
EX: Translate $\triangle PQR$ using the rule:
 $(x, y) \longrightarrow (x - 3, y + 1)$.
3 left, up 1

How do you find the point to "SHOW" the algebraic work.

Look at the graph and name the points and do the algebraic work.

$P(4, -2) \rightarrow P'(4-3, -2+1) = P'(1, -1)$
 $Q(7, -7) \rightarrow Q'(7-3, -7+1) = Q'(4, -6)$
 $R(1, -7) \rightarrow R'(1-3, -7+1) = R'(-2, -6)$

EX: Translate the rectangle using the rule:
 $(x, y) \longrightarrow (x + 4, y - 2)$



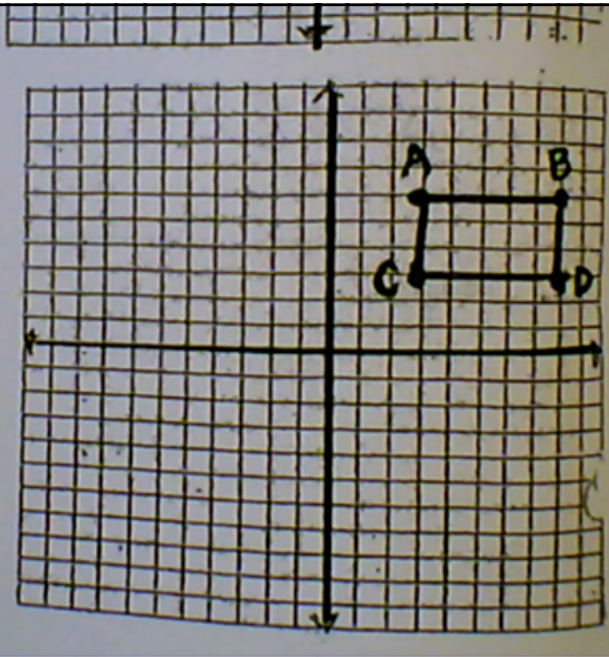
Ex. Translate the rectangle using the rule:
 $(x, y) \rightarrow (x - 4, y - 2)$.

$$A(3, 6) \rightarrow A'(-1, 4)$$

$$B(8, 6) \rightarrow B'(4, 4)$$

$$C(3, 3) \rightarrow C'(3-4, 3-2) \\ C'(-1, 1)$$

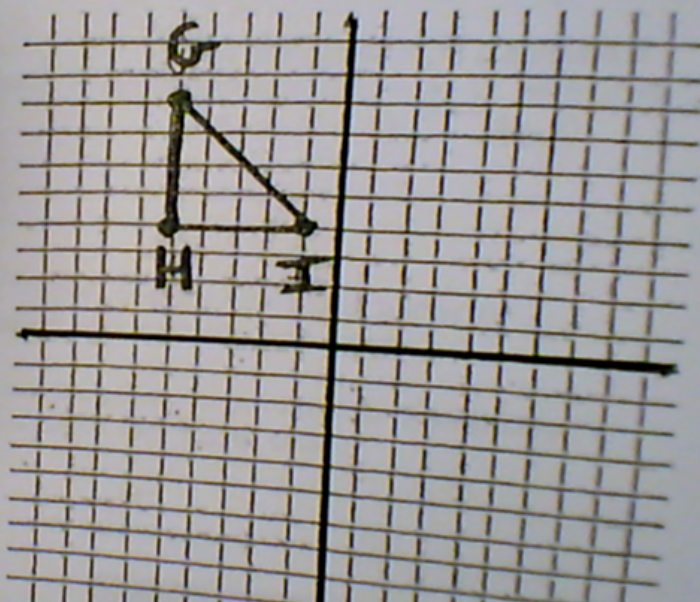
$$D(8, 3) \rightarrow$$



Algebraically show the points of the image. Then draw and label the image.

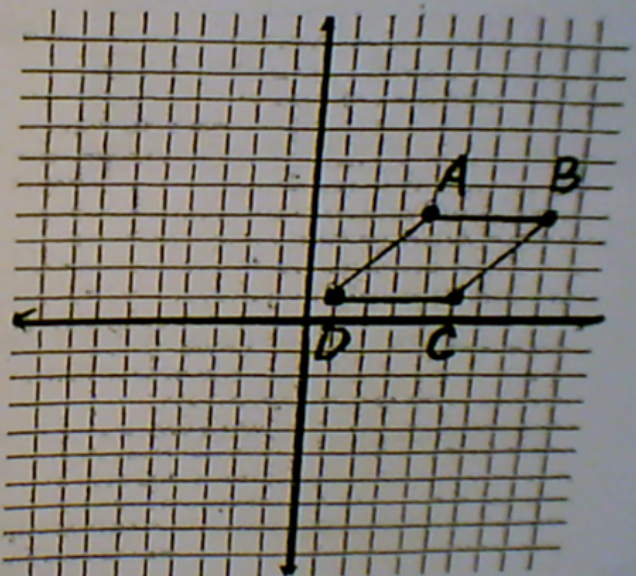
- Translate $\triangle GHJ$ using the rule:

$$(x, y) \rightarrow (x + 5, y - 4)$$



• Translate ABCD using the rule:

$$(x, y) \longrightarrow (x - 3, y + 3)$$



- Draw $\triangle PQR$ with the following vertices:

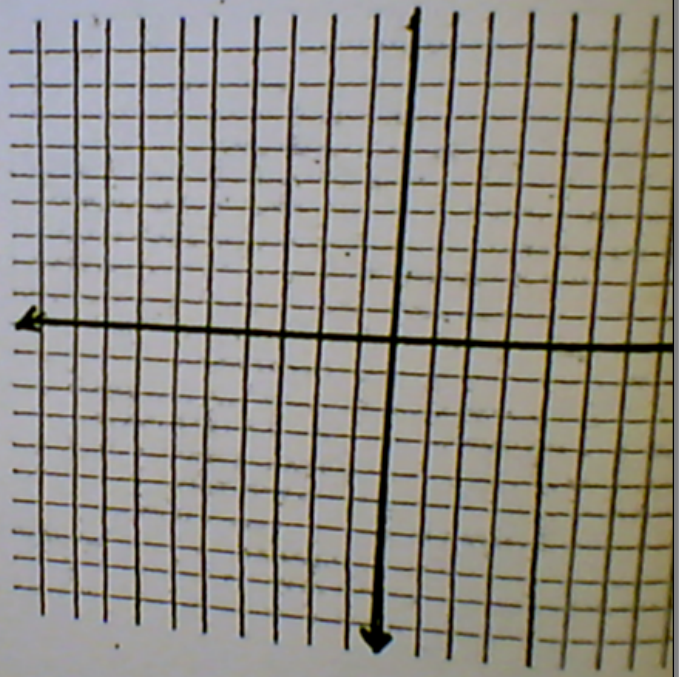
P (-5, 1)

Q (-4, 6)

R (-1, 5)

Translate $\triangle PQR$ using the rule:

$$(x, y) \rightarrow (x + 7, y - 5)$$



● Draw the hexagon LMNPQR with the following vertices:

L (-1, -2)

M (1, -2)

N (3, -4)

P (1, -6)

Q (-1, -6)

R (-3, -4)

Translate the hexagon using the rule:
 $(x, y) \rightarrow (x - 4, y + 6)$

