Chapter 10: Transformations **Name:**

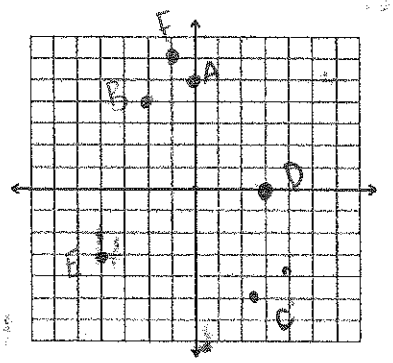
Translations and Reflections

A transformation is the result of moving or changing a shape according to a rule.
There are four common types of transformations which may be applied to a shape individually or combined to create a complex rule for producing an image.

The position of a shape is often described using coordinates (x,y) on a graph.

Practice plotting these points:

A(0, 5)
B(-2, 4)
C(2.5, -5)
D(3, 0)
E(-4, -3)
F(-1, 6)



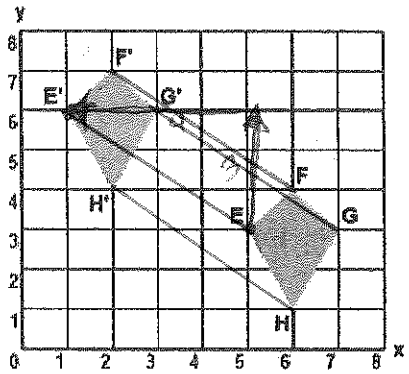
horizontal
x

vertical
y

Translations

A translation is a SLIDE of a shape along a straight line.

The shape is moved horizontally (left and right) and vertically (up and down) to produce an image.
How the shape moves is called a translation rule.



What is the translation rule of this image?

(x) Left 4 units, (y) Up 3 units.

(L4, U3)

How does each coordinate change as you translate the points?

E (5, 3) → E' (1, 6)

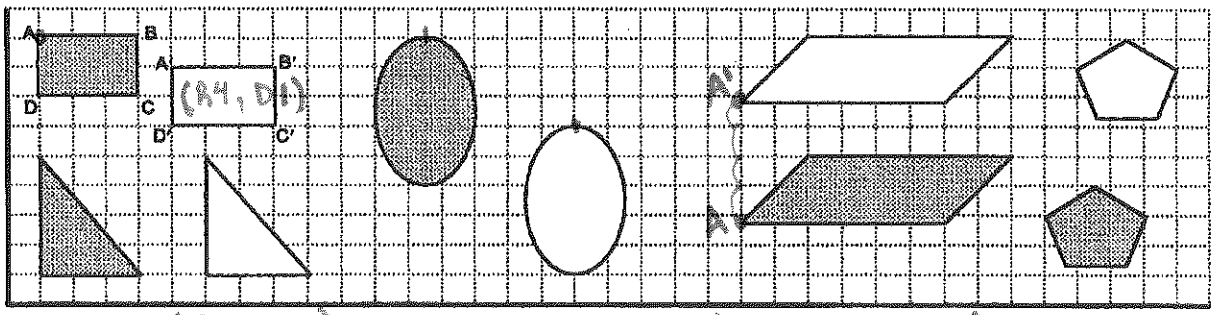
x − 4, y + 3

Connect corresponding points with a ruler. What do you notice about these lines?

Parallel

Naming Convention
Original point: E
First Transformation: E' *("E prime")*
Second Transformation: E" *("E double prime")*

Write a translation rule for each transformation (grey is the original, white is the image)



(R4, D3)

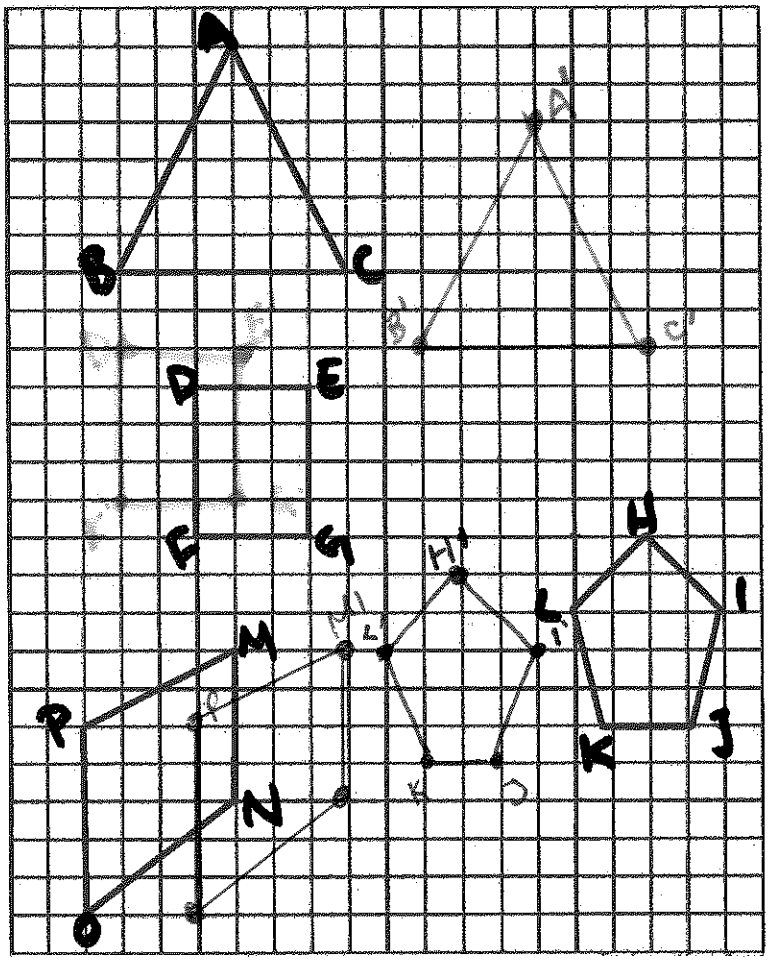
(R1, U5)

(R5, 0)

(R4.5, D3)

(0, U4)

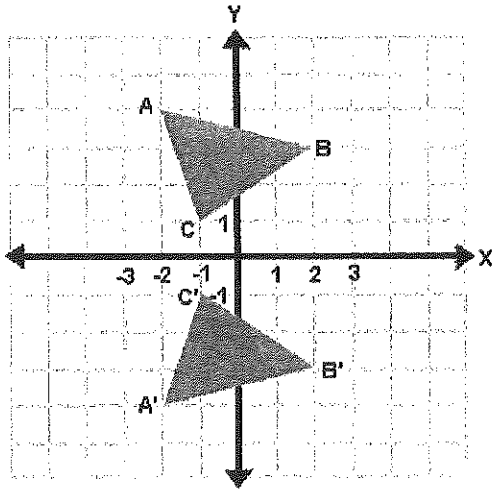
Practice: Draw a translation of each shape according to the rule given



Shape	Rule
ABC	(R8, D2)
DEFG	(L2, U1)
HIJKL	(L5, D1)
MNOP	(R3, U0)

Reflections

A reflection is a FLIP across a line. The line of reflection may be the x or y axis or another line on a graph.



What is the line of reflection for this image?

X-axis

What are the coordinates of the original and reflected image?

A (-2, 4) A' (-2, -4)

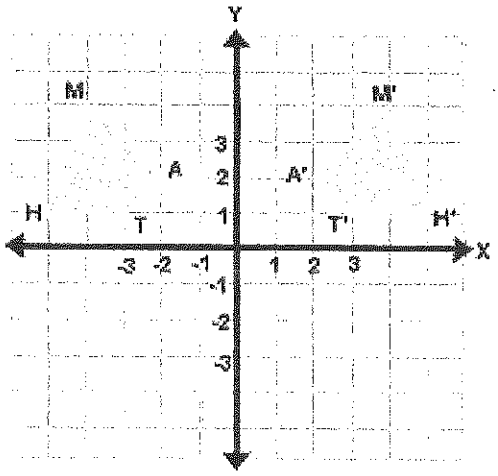
B (2, 3) B' (2, -3)

C (-1, 1) C' (-1, -1)

What do you notice about the coordinates?

x coordinates did not change

y coordinates opposite



What is the line of reflection for this image?

y-axis

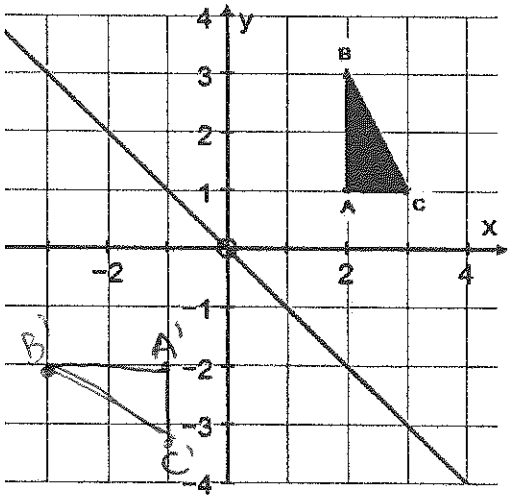
What are the coordinates of the original and reflected image?

M (-4, 4)	M' (4, 4)
A (-2, 2)	A' (2, 2)
T (-3, 1)	T' (3, 1)
H (-5, 1)	H' (5, 1)

What do you notice about the coordinates?

y stays same
x changes to opposite

y = -x



Reflect triangle ABC across the line.

"fold over trick"

What are the coordinates of the original and reflected image?

A (2, 1)	A' (-1, -2)
B (2, 3)	B' (-3, -2)
C (3, 1)	C' (-1, -3)

What do you notice about the coordinates?

Coordinates switched x↔y and became opposite sign (+/−)

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1-4, 7

pg 273-275
* 1-5