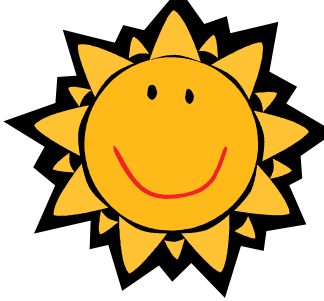
Unit 1 Day 6

Similarity & Quiz

Warm Up



Given the points C(3, 2), A(-5, 4) and T(-1, 6), name the NEW points after the following transformations. Then specifically describe the transformation.

1) $(x, y) \rightarrow (-x, -y)$

2) $(x, y) \rightarrow (y, x)$

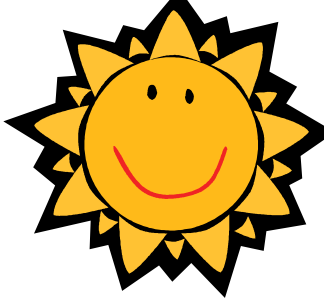
3) $(x, y) \rightarrow (x-3, y+1)$

4) $(x, y) \rightarrow \left(\frac{1}{2}x, \frac{1}{2}y\right)$

Done Early? Start the Similarity Discovery (next in the notes)

During the warm-up please get out or borrow:
1) Ruler &
2) protractor

Warm Up



Given the points C(3, 2), A(-5, 4) and T(-1, 6), name the NEW points after the following transformations. Then describe the transformation.

1) $(x, y) \rightarrow (-x, -y)$

C'(-3, -2), A'(5, -4), T'(1, -6)
Reflection over x and y-axis

2) $(x, y) \rightarrow (y, x)$

C'(2, 3), A'(4, -5), T'(6, -1)
Reflection over y = x

3) $(x, y) \rightarrow (x-3, y+1)$

C'(0, 3), A'(-8, 5), T'(-4, 7)
Translation left 3, up 1

4) $(x, y) \rightarrow \left(\frac{1}{2}x, \frac{1}{2}y\right)$

C'(3/2, 1), A'(-5/2, 2), T'(-1/2, 3)
Dilation – Reduction by 1/2

Up next…today's notes!

- We'll come back and discuss Homework after the notes, if time allows

Tonight's Homework:

*Packet Pg. 21-22 evens and #3, 13
*Packet Pg. 18-20 evens

Similarity Discovery Activity!

For this activity you need: Pencil, Notes Packet, calculator and Protractor

Notes Packet p.23

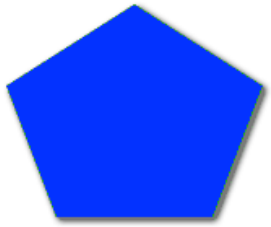


Figure 1

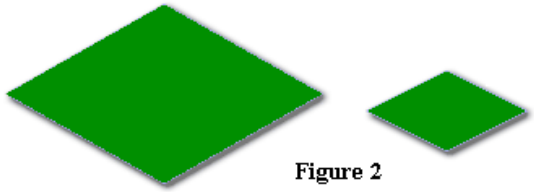


Figure 2

Figure 3

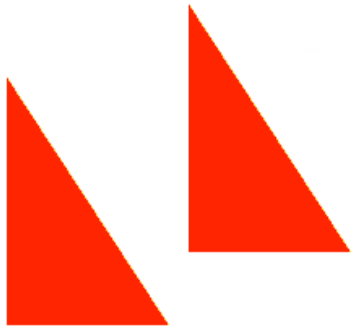


Figure 4

Similarity Discovery Activity Review!

1) What is the $m\angle C$? What is the $m\angle A$?

120° 60°

2) What is the Ratio of CD:C'D'? What is the Ratio of AB:A'B'?

2:5 5:2

3) What is the length of A'D'?

20 in.

4) What is the length of BC?

6 in.

5) Name the segments that are parallel to each other. How can you be sure?

$\overline{BC}$ & $\overline{B'C'}$; $\overline{CD}$ & $\overline{C'D'}$

A dilation takes a line not passing through the center of dilation to a parallel line.

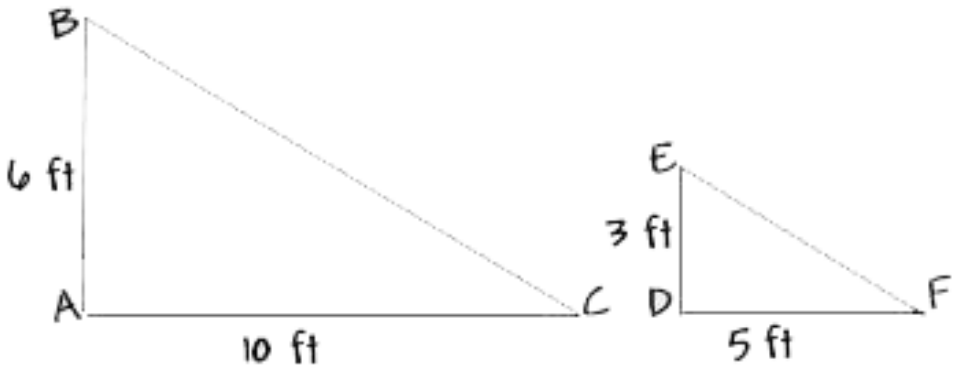
6) What is the slope of segment A'B'? How do you know this?

$\frac{1}{3}$

Segments AB and A'B' have the same slope because they are on the same line since they pass through the center of dilation.

SUMMARY

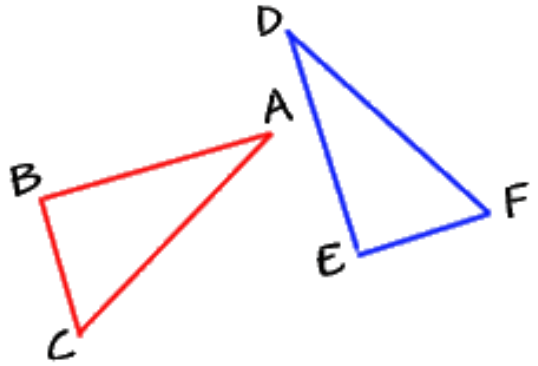
Two figures are **similar** (~) if they have the same **shape** but not necessarily the same **size**.



The **scale factor** is the ratio of the lengths of the corresponding sides.

(a.k.a the **similarity ratio**
= another name for scale factor)

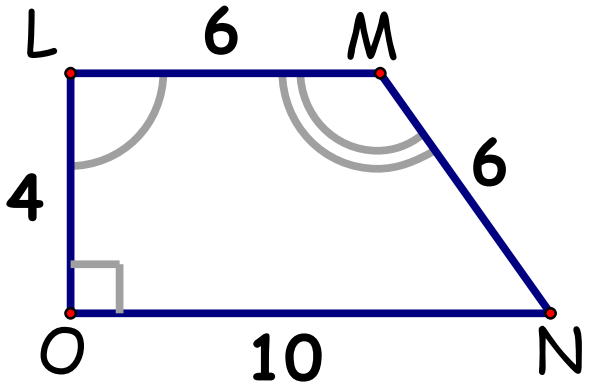
Two figures are **congruent** if they are similar and **the same size**.

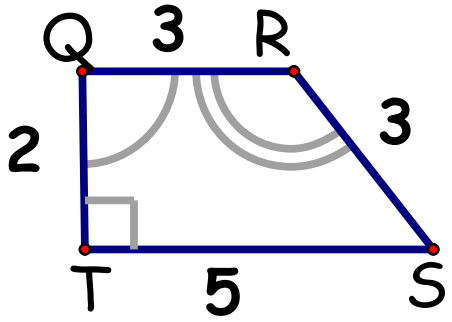


Two **polygons are similar** if:

1.) Corresponding **angles** are **congruent**.

2.) Corresponding **sides** are **proportional**.

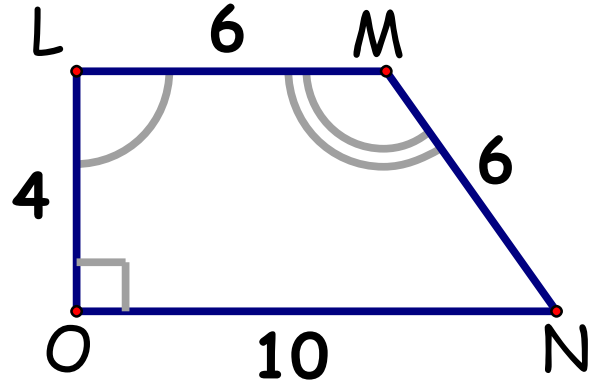


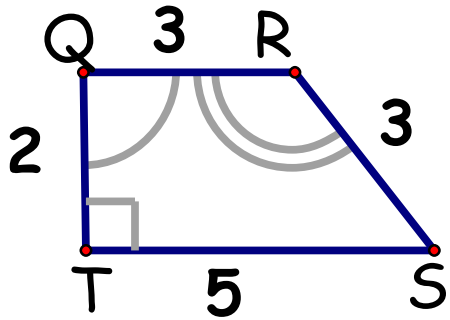


$m\angle N = m\angle S$

Similarity Statement: LMNO ~ QRST

When writing a **similarity statement**, be sure to line up corresponding angles and sides in the statement!!





$m\angle N = m\angle S$

In a similarity statement, be sure to:

1.) Line up corresponding angles that are congruent.

$\angle L \cong \angle$ Q , $\angle M \cong \angle$ R ,

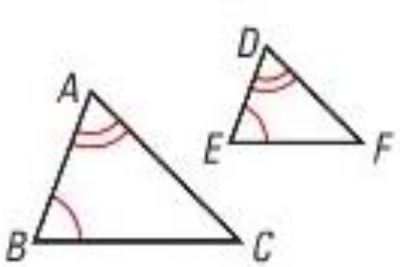
$\angle$ N $\cong \angle S$, $\angle$ T $\cong \angle O$,

2.) Line up corresponding sides that are proportional.

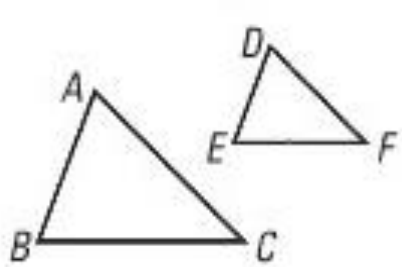
$$\frac{LM}{QR} = \frac{MN}{RS} = \frac{NO}{ST} = \frac{LO}{QT}$$

Two TRIANGLES are similar if ~

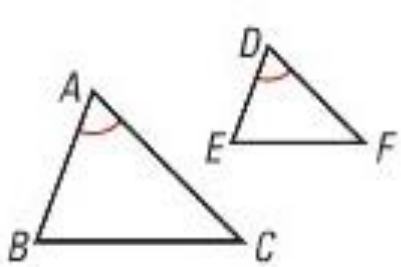
1. AA~ 2. SSS~ 3. SAS~



If $\angle A \cong \angle D$ and $\angle B \cong \angle E$, then $\triangle ABC \sim \triangle DEF$.



If $\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$, then $\triangle ABC \sim \triangle DEF$.



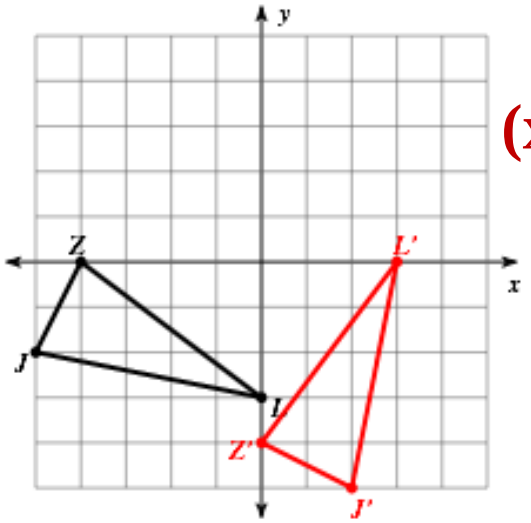
If $\angle A \cong \angle D$ and $\frac{AB}{DE} = \frac{AC}{DF}$, then $\triangle ABC \sim \triangle DEF$.

Up next – HW answers!

- We'll discuss Homework answers, if time allows, to help review for the quiz

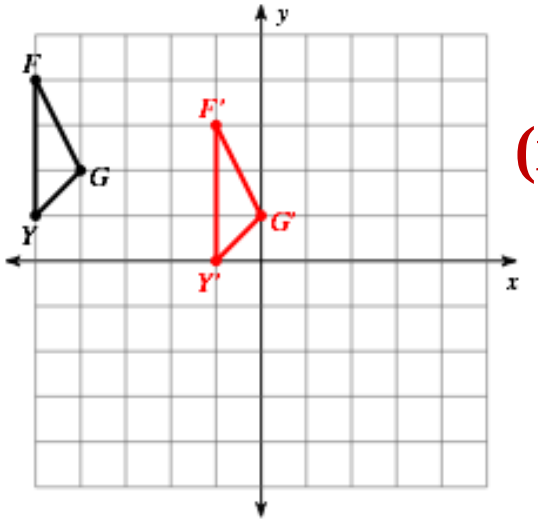
p.16-17 Homework Answers

1) rotation 90° counterclockwise about the origin



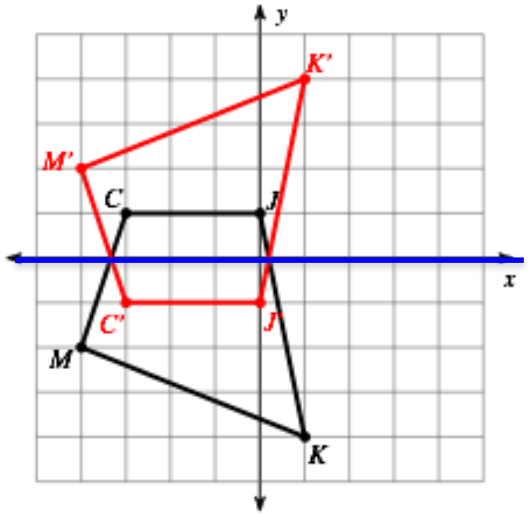
(x,y)→(-y, x)

2) translation: 4 units right and 1 unit down



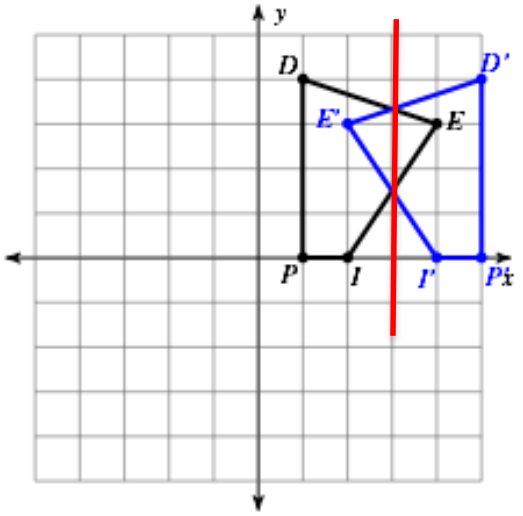
(x,y)→(x+4, y-1)

4) reflection across the x-axis



(x,y)→(x, -y)

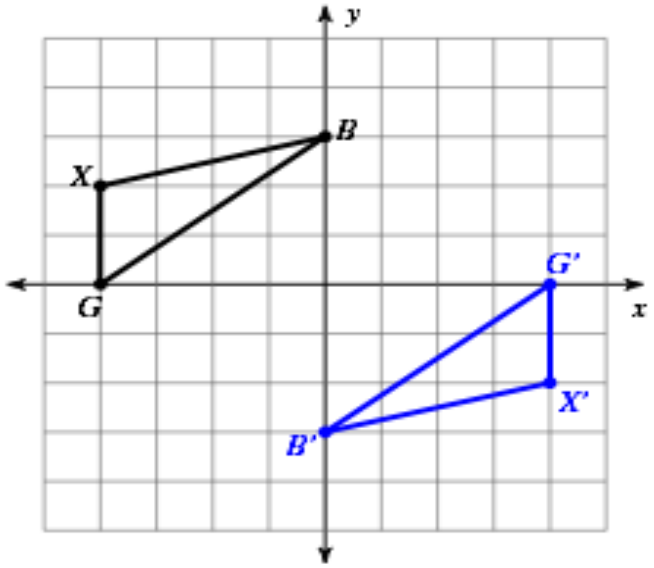
6)



reflection across $x = 3$

p.16-17 Homework Answers

8)

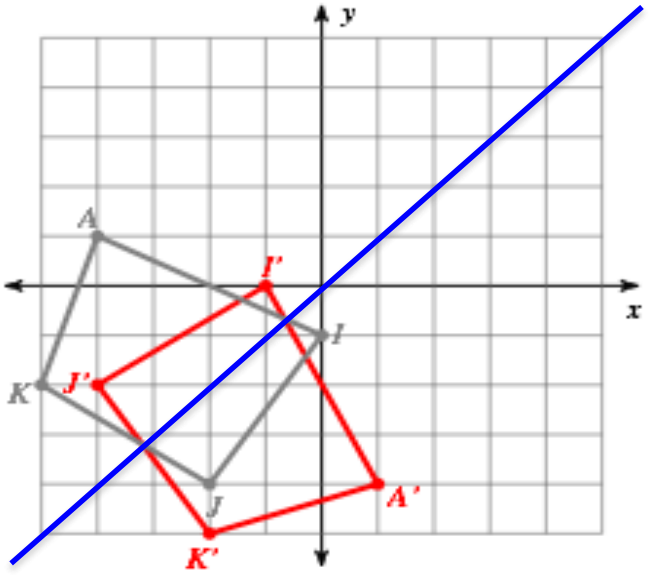


rotation 180° about the origin

(x, y) → (-x, -y)

10) reflection across $y = x$

$K(-5, -2)$, $A(-4, 1)$, $I(0, -1)$, $J(-2, -4)$



(x, y) → (y, x)

12) reflection across $y = 2$

$J(1, 3)$, $U(0, 5)$, $R(1, 5)$, $C(3, 2)$

$U'(0, -1)$, $R'(1, -1)$, $C'(3, 2)$, $J'(1, 1)$

14) translation: 6 units right and 3 units down

$S(-3, 3)$, $C(-1, 4)$, $W(-2, -1)$

$S'(3, 0)$, $C'(5, 1)$, $W'(4, -4)$

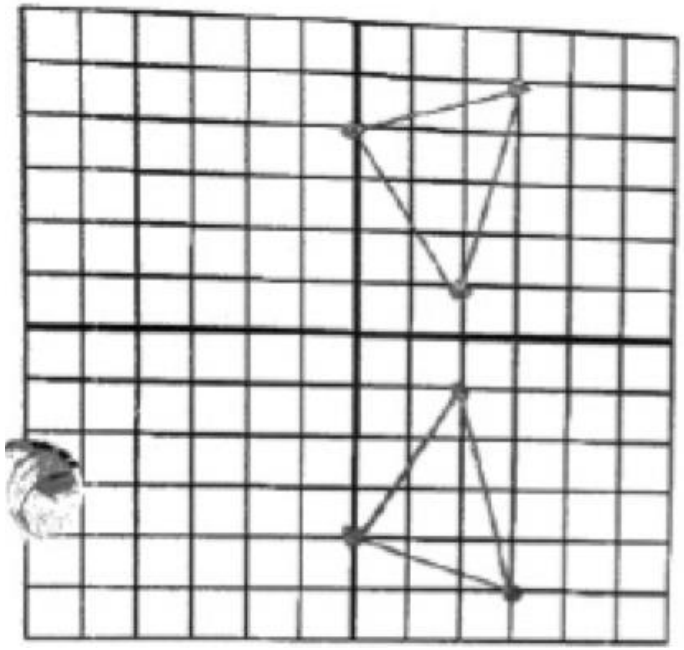
(x, y) → (x + 6 , y - 3)

P.18-20 odds

1. The coordinates of $\triangle ABC$ are A(2, 1), B(3, 5), C(0, 4). The coordinates of $\triangle A'B'C'$ are A'(2, -1), B'(3, -5), C'(0, -4).

Description: Reflection Over X-axis

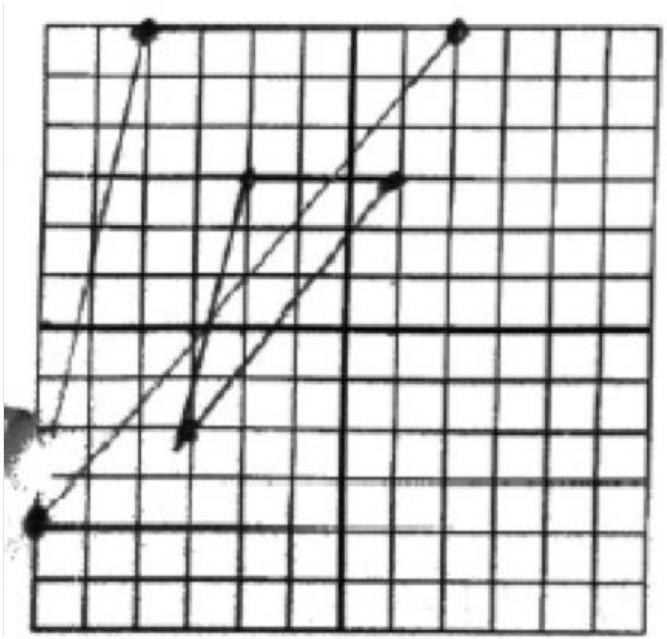
Algebraic Rule: $(x, y) \rightarrow (x, -y)$



3. The coordinates of $\triangle ABC$ are A(-3, -2), B(-2, 3), C(1, 3). The coordinates of $\triangle A'B'C'$ are A'(-6, -4), B'(-4, 6), C'(2, 6).

Description: Dilation By Scale Factor of 2

Algebraic Rule: $(x, y) \rightarrow (2x, 2y)$

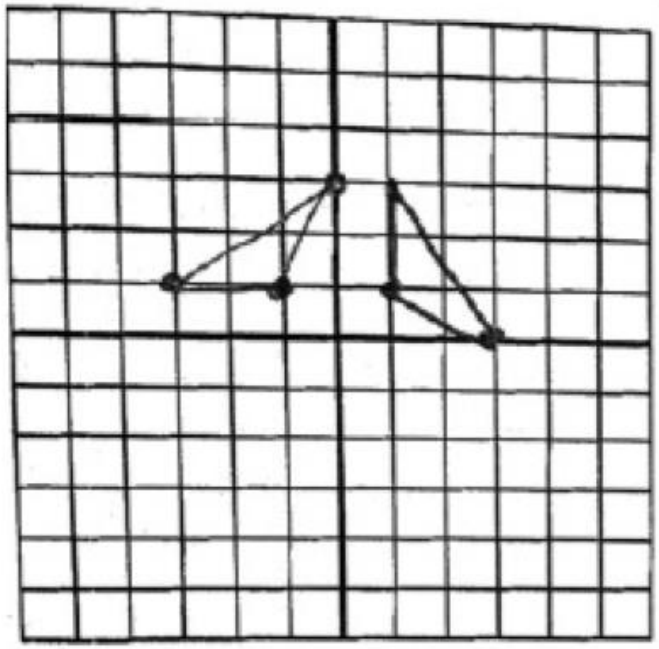


P.18-20 odds

5. The coordinates of $\triangle ABC$ are A(-1, 1), B(0, 3), C(-3, 1).
The coordinates of $\triangle A'B'C'$ are A'(1, 1), B'(3, 0), C'(1, 3).

Description: Rotation 90 degrees Clockwise

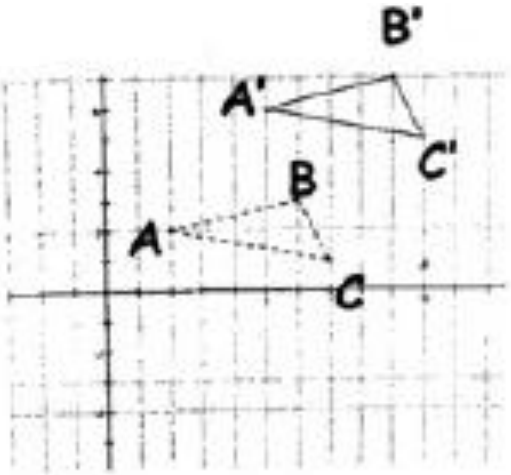
Algebraic Rule: $(x, y) \rightarrow (y, -x)$



P.18-20 odds

Part 2: Describe the transformations on the graph verbally and by writing an algebraic rule. Hint: The triangle with dotted lines is the preimage.

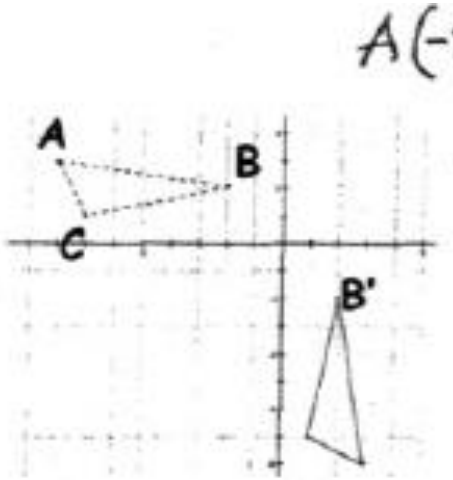
7.



Description: trans. 3 right and 4 up

Algebraic Rule: $(x,y) \rightarrow (x+3, y+4)$

9.



A(-8,3)

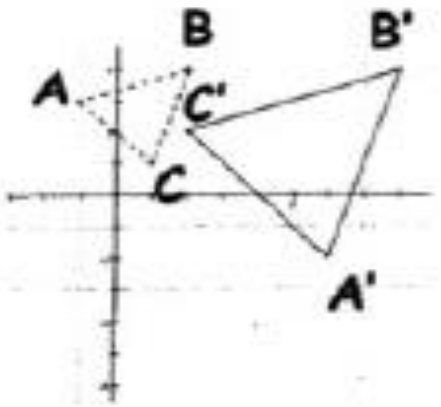
A'(3,-8)

Description: reflect over $y=x$

Algebraic Rule: $(x,y) \rightarrow (y,x)$

P.18-20 odds

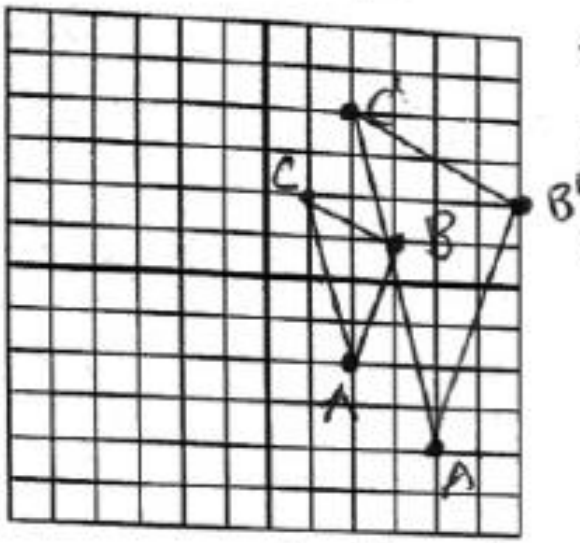
11)



Description: reflection over $y=x$ dilation by 2

Algebraic Rule: $(x,y) \rightarrow (2y, 2x)$

13) ΔABC is dilated by 2

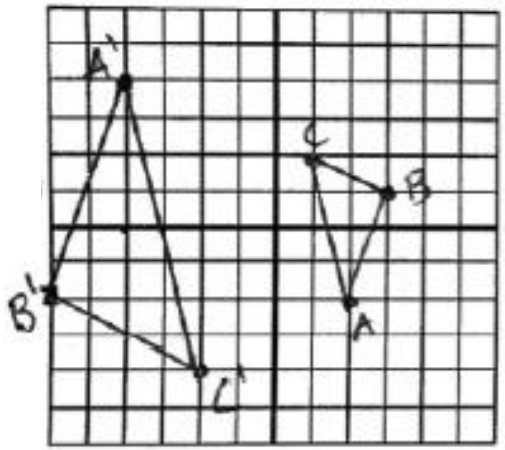


$A'(4,-4)$
$B'(6,2)$
$C'(2,4)$

Algebraic Rule: $(x,y) \rightarrow (2x, 2y)$

P.18-20 odds

15) ΔABC is rotated 180° then dilated by a factor of two.



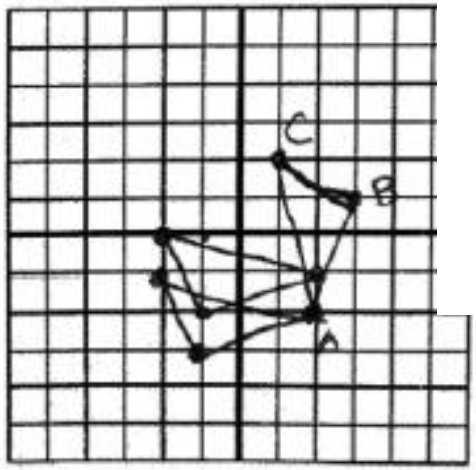
A' (-4, 4)

B' (-6, -2)

C' (-2, -4)

Algebraic Rule: $(x, y) \rightarrow (-2x, -2y)$

17) ΔABC is reflected over $y = -x$ and moved up 2



Algebraic Rule: $(x, y) \rightarrow (-y, -x + 2)$

Quick Question

If the problem does not specifically state the direction of the rotation, which way is it rotating????

COUNTER-CLOCKWISE!

If you finish early begin on tonight's homework.

*Packet Pg. 21-22 evens and #3, 13
AND Packet Pg. 18-20 evens