Name_____

AC CCGPS Alg/Geo

Unit 7a Review-Similarity, Congruence and Proofs

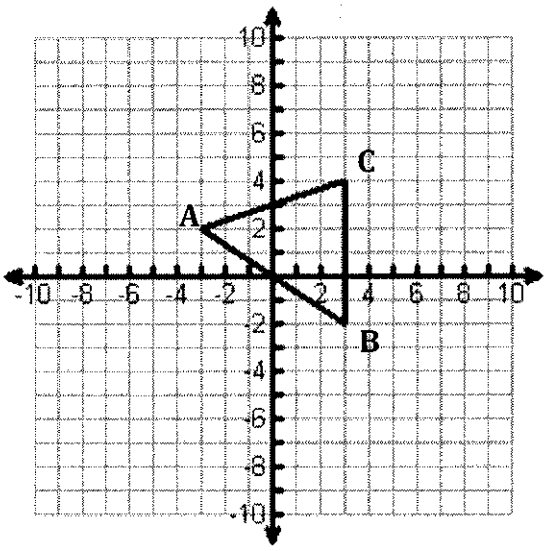
1. A diameter of a circle has endpoints A and B. Graph the circle on your grid paper. Dilate the circle with a scale factor of $\frac{1}{2}$. Label the coordinates of the image A' and B' and complete the table below.

Characteristics	Original circle with diameter $\overline{AB}$	New circle with diameter $\overline{A'B'}$	Observations
Coordinates			
Length of the diameter			
Length of the radius			
Circumference (estimate & exact)			
Area (estimate & exact)			

***estimate: use 3.14 for π and round to the tenths place

***exact: leave π in answer

2.

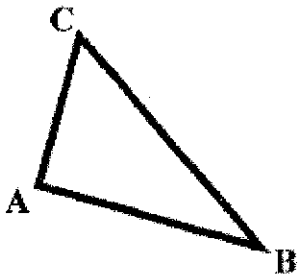


a) Find the coordinates of triangle $A'B'C'$ after a dilation with a scale factor of 3. How would this change the perimeter of the triangle? How would this change the area of the triangle?

b) If the coordinates of A' are $(-\frac{3}{4}, \frac{1}{2})$ after a dilation, find the coordinates of B' and C'? What is the scale factor? How would this change the side lengths of the triangle?

3. Sketch the new triangle with the given scale factor.

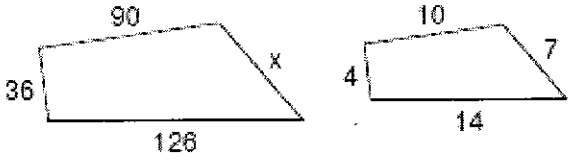
) $S_{\frac{3}{2}}$



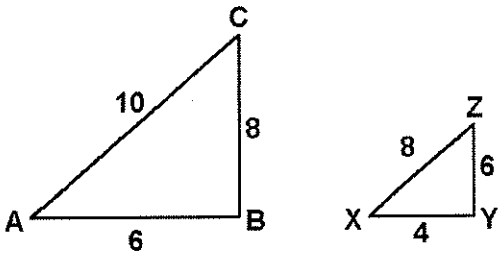
O●

For #4 and #5, determine whether the polygons are similar.

4.



5.



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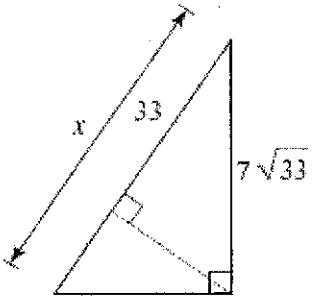
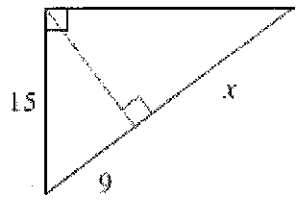
6. Special Right Triangles-find the missing side

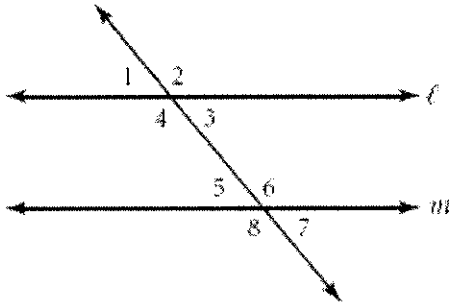
a.



b.



7. Line l is parallel to Line m.



a. List all of the angles that are congruent to <1:

b. List all of the angles that are congruent to <2:

8. Find the measures of the following angles if the measure of <1 is 48 degrees (use figure above):

<2 = _____ <3 = _____ <4 = _____ <5 = _____

<6 = _____ <7 = _____ <8 = _____

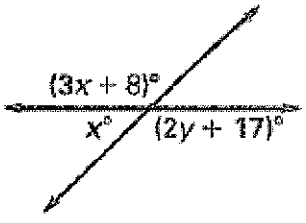
9. <A is complementary to <B and <A is supplementary to <C.

a. What is the m<C if m<A = 3x + 14 and m<B = 2x - 4?

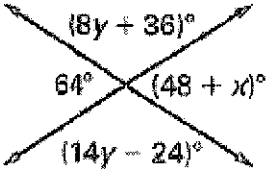
b. What is the m<B if m<A = 2x - 12 and m<C = 6x - 12?

10. Solve for x and y:

a.



b.



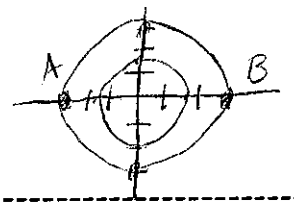
Name Key

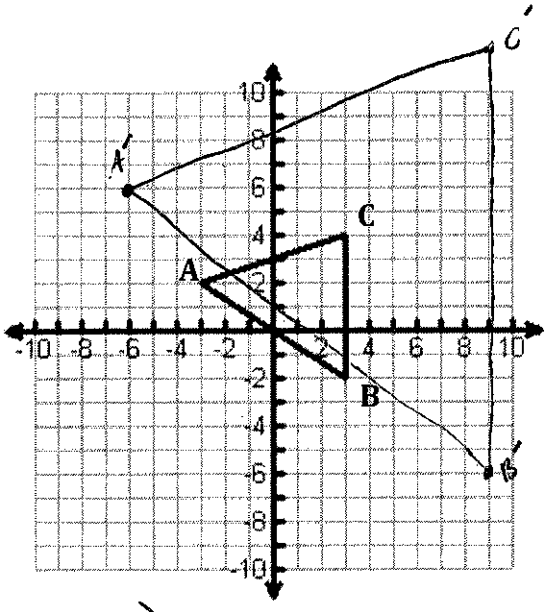
AC CCGPS Alg/Geo
Unit 7a Review-Similarity, Congruence and Proofs

1. A diameter of a circle has endpoints A and B. Graph the circle on your grid paper. Dilate the circle with a scale factor of $\frac{1}{2}$. Label the coordinates of the image A' and B' and complete the table below.

Characteristics	Original circle with diameter $\overline{AB}$	New circle with diameter $\overline{A'B'}$	Observations
Coordinates	(3,0) (-3,0) (0,3) (0,-3)	A'(-1.5,0) B'(1.5,0) A(8,-3) B'(0,3)	
Length of the diameter	6 units	3 units	½
Length of the radius	3 units	1.5 units	½
Circumference (estimate & exact)	$C=2\pi r$ $C=6\pi$ $C=18.85$	$C=2\pi r$ $C=3\pi$ $C=9.4$	Divided by 2
Area (estimate & exact)	$A=\pi r^2$ $A=9\pi$ $A=28.3$	$A=\pi r^2$ $A=2.25\pi$ $A=7.06$	~~Divided by 2~~ Divided by 4

***estimate: use 3.14 for π and round to the tenths place
***exact: leave π in answer





A(-3, 2)
B(3, -2)
C(3, 4)

2.

a) Find the coordinates of triangle $A'B'C'$ after a dilation with a scale factor of 3. How would this change the perimeter of the triangle? How would this change the area of the triangle?

perimeter → triples
Area → original area times 9

b) If the coordinates of A' are $(-\frac{3}{4}, \frac{1}{2})$ after a dilation, find the coordinates of B' and C'? What is the scale factor? How would this change the side lengths of the triangle?

S.F. = $\frac{1}{4}$

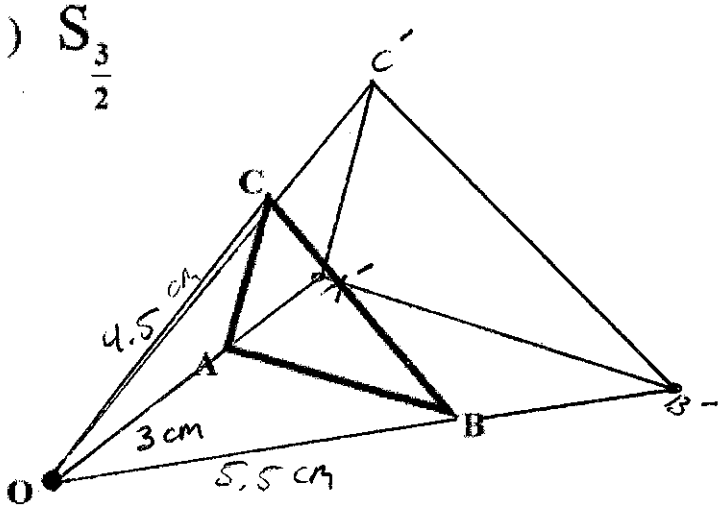
B'$(\frac{3}{4}, -\frac{1}{2})$

C'$(\frac{3}{4}, 1)$

outsides into 4ths

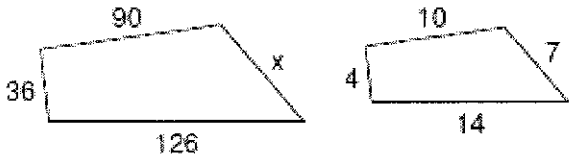
3. Sketch the new triangle with the given scale factor.

) $S_{\frac{3}{2}}$



For #4 and #5, determine whether the polygons are similar.

4.

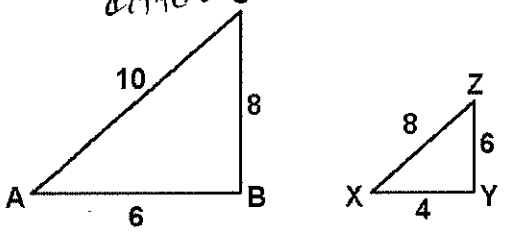


$\frac{x}{7} = \frac{90}{10}$

$10x = 630$

$x = 63$

5. NO, b/c proportions are all different



$\frac{10}{8} = 1.25$, $\frac{6}{4} = 1.5$, $\frac{8}{6} = 1.33$

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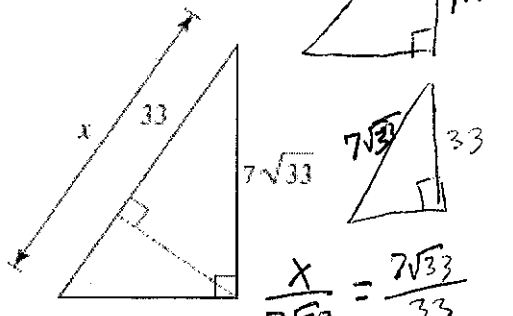
6. Special Right Triangles-find the missing side

a.

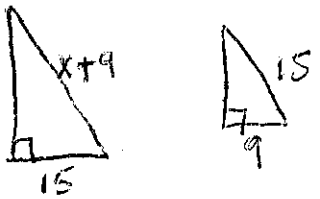


$\frac{x}{7\sqrt{33}} = \frac{7\sqrt{33}}{33}$

$33x = 49 \cdot 33$

$x = 49$

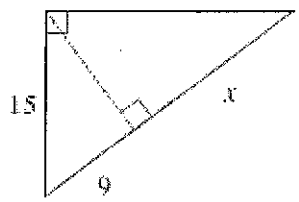
b.



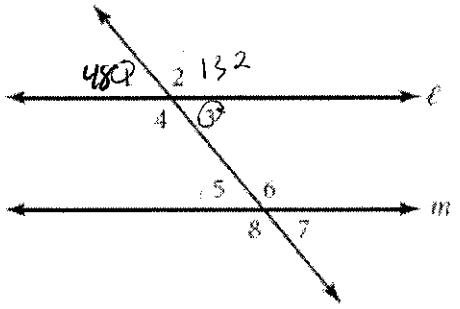
$\frac{x+9}{15} = \frac{15}{9}$

$9x + 81 = 225$

$x = 16$



7. Line l is parallel to Line m.



a. List all of the angles that are congruent to <1:
∠3, ∠5, ∠7

b. List all of the angles that are congruent to <2:
∠2, ∠4, ∠6, ∠8

8. Find the measures of the following angles if the measure of <1 is 48 degrees (use figure above):

<2 = 132 <3 = 48 <4 = 132 <5 = 48

<6 = 132 <7 = 48 <8 = 132

9. <A is complementary to <B and <A is supplementary to <C.

a. What is the m<C if m<A = 3x + 14 and m<B = 2x - 4?

$3x + 14 + 2x - 4 = 180$
$5x + 10 = 180$ 90 90
$x = 16$

$A = 3(16) + 14$
$A = 62$

$C = 180 - 62$
$C = 118$

b. What is the m<B if m<A = 2x - 12 and m<C = 6x - 12?

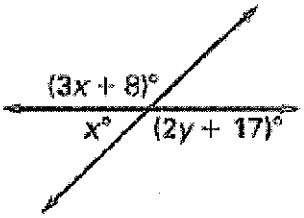
$2x - 12 + 6x - 12 = 180$
$8x - 24 = 180$
$x = 25.5$

$A = 2(25.5) - 12$
$A = 39$

$B = 90 - 39 = 51$

10. Solve for x and y:

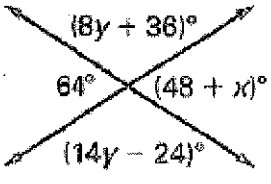
a.



$4x + 8 = 180$
$x = 43$

$43 + 2y + 17 = 180$
$2y + 60 = 180$
$2y = 120$
$y = 60$

b.



$64 = 48 + x$
$-48 \quad -48$
$x = 16$

$8y + 36 = 14y - 24$
$-8y \quad -8y$
$36 = 6y - 24$
$+24 \quad +24$
$6y = 60$
$y = 10$