Name:

Common Core Geometry

Unit 4

Similar Triangles

Mr. Schlansky

2026

Lesson 1: I can identify whether a vertical stretch, a horizontal stretch, or a dilation was performed by identifying whether the shape was changed horizontally, vertically, or both.

If the shape changed vertically, it's a vertical stretch/shrink.
If the shape changed horizontally, it's a horizontal stretch/shrink.
If the shape changed in both directions equally, it's a dilation.

Lesson 2: I can perform vertical and horizontal stretches by following the rule in the given problem.

List the points vertically
Draw arrows pointing to the right
Apply the given rule and write the new points
Plot the new points

Lesson 3: I can dilate shapes by counting the distance from the center to each point the amount of times as the scale factor.

Dilations (enlarge or shrink):

Count the distance from center of dilation to each point. Repeat that distance as many times as the scale factor.
*If center of dilation is origin, multiply each coordinate by the scale factor as a shortcut.

Lesson 4: I can find the scale factor of a dilation using $\frac{image}{original}$. I can identify the center of dilation by extending lines FROM the image through the original and finding where those lines intersect.

Scale factor = $\frac{image}{original}$

*Make sure the sides that you're using correspond (same position).
To find the center of dilation:
Extend a line FROM an image THROUGH its corresponding original point.
Repeat the process for a second point and its image.
The intersection of those lines is the center of dilation.

Lesson 5: I can find the ratio of corresponding sides, perimeters, areas, and angles using their rules.

The ratio of the corresponding sides (ROCS) is the same for all sides.
Ratio of perimeters = ROCS
Ratio of the areas = $(ROCS)^2$
*Ratio of the corresponding angles is always 1:1 because the corresponding angles of similar triangles are congruent!!

Lesson 6: I can find the ratio of the perimeters and the areas using "perimeter times the scale factor" and "area times the $(Scale\ Factor)^2$".

Multiply the original perimeter and scale factor to find the image perimeter.

Multiply the original area and the $(scale\ \ factor)^2$ to find the image area.

Lesson 7: I can find a missing side of similar triangles by creating a proportion, cross multiplying, and solving.

To create a proportion, put the corresponding sides on top of each other.

*Make sure each side of the proportion is $\frac{Triangle\ 1}{Triangle\ 2}$

Lesson 8: I can solve Bow Tie Problems by understanding that the corresponding sides are on the same diagonal. solving.

The corresponding sides are on the same diagonal. The parallel sides correspond as well.

*Make sure each side of the proportion is $\frac{Triangle\ 1}{Triangle\ 2}$

Lesson 9: I can find a missing side of overlapping similar triangles by separating the triangles are creating a proportion.

1) Draw the triangle separately and make them look the same.
2) Put the corresponding angles in the same position using givens and/or reflexive property.
3) Create proportion and solve.

Lesson 10: I can find a missing side of a triangle when midpoints are joined using $2(midsegment) = opposite\ \ side$.

If the midpoints are joined: 2(midsegment) = opposite parallel side

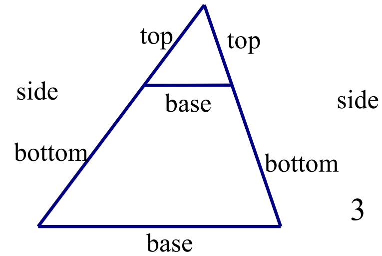
*The midsegment is half of its opposite side.

Lesson 11: I can solve candy corn problems by separating the triangles (bases) or $\frac{top}{top} = \frac{side}{side} = \frac{bottom}{bottom}$ (no bases).

Candy Corn Problems:

If the bases are not involved: $\frac{top}{top} = \frac{bottom}{bottom} = \frac{side}{side}$

If bases are involved: separate your triangles!



Lesson 12: I can reduce radicals by finding the largest perfect square that divides into it.

Reducing Radicals

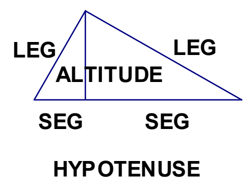
1) Separate into two radicals (perfect squares and non perfect squares). Find the largest perfect square that divides in
2) Take the square root of the perfect square. Bring the non-perfect square down

Lesson 13: I can solve altitude drawn to right triangle problems using HLLS and SAAS.

When an altitude is drawn to a right triangle:

HLLS and SAAS

$\frac{H}{L}=\frac{L}{S}$ $\frac{S}{A}=\frac{A}{S}$



If L is involved, use HLLS

If A is involved, use SAAS

If both are involved, use both!

Lesson 14: I can solve quadratic equations by factoring trinomials

Solving Quadratic Equations

1) Bring everything to one side
2) Factor
    a. First sign comes down
    b. Multiply signs for the second sign
    c. Find two numbers that multiply to the last number and add/subtract to the middle number
3) Set each factor equal to zero

Lesson 15: I can solve similar triangle problems involving quadratics using similar triangle rules and by factoring.

Follow notes from:

Lesson 7

Lesson 11

Lesson 13

Lesson 14

*Reject any value that makes a side negative/zero.

Lesson 16: I can determine if triangles are similar using AA, SAS, and SSS.
To show triangles are similar:
1) AA (2 pairs of corresponding angles are congruent)
2) SAS (2 pairs of corresponding sides are in proportion and the corresponding angles between them are congruent)
3) SSS (3 pairs of corresponding sides are in proportion)
Show the sides are in proportion by creating a proportion

Lesson 17: I can determine if a proportion is true by circling horizontally and vertically and seeing if the parts correspond or are in the same triangle.
To determine if a proportion is correct, circle horizontally and vertically. One direction the sides should correspond, the other should be in the same triangle.
DRAW YOUR OWN TRIANGLES EVEN IF THEY GIVE YOU TRIANGLES

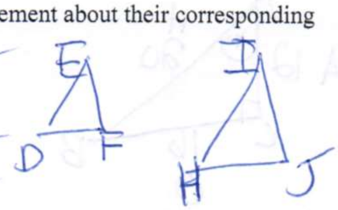
4. Given that $\Delta DEF \sim \Delta HIJ$, which is the correct statement about their corresponding sides?

1) $\frac{\overline{EF}}{\overline{IJ}} = \frac{\overline{DE}}{\overline{HI}} = \frac{\overline{DF}}{\overline{HJ}}$

2) $\frac{\overline{EF}}{\overline{HI}} = \frac{\overline{IJ}}{\overline{DE}} = \frac{\overline{DF}}{\overline{HJ}}$

3) $\frac{\overline{DE}}{\overline{HI}} = \frac{\overline{EF}}{\overline{HJ}} = \frac{\overline{DF}}{\overline{IJ}}$

4) $\frac{\overline{DE}}{\overline{JI}} = \frac{\overline{EF}}{\overline{HJ}} = \frac{\overline{FD}}{\overline{HI}}$



Lesson 18: I can determine if a HLLS SAAS/Candy Corn proportion is true by seeing if the proportion fit into HLLS SAAS, $\frac{top}{top} = \frac{bottom}{bottom} = \frac{side}{side}$, or separating the triangles and circling.

Candy Corn Problems:
Have a picture of the original problem and the triangles separated.
If bases are not involved, see if it satisfies $\frac{top}{top} = \frac{bottom}{bottom} = \frac{side}{side}$
If bases are involved, separate the triangles and follow the same procedure from previous lesson.

HLLS SAAS Problems:
See if each proportion satisfies $\frac{H}{L_1} = \frac{L_1}{S}$ or $\frac{S}{A} = \frac{A}{S}$.
*For HLLS, make sure if you're using the left leg you're using the left segment.

Lesson 19-21: I can prove triangles are similar using AA. I can prove multiplication by working backwards and proving triangles are similar.

To prove triangles are SIMILAR, prove AA

If asked to prove a proportion/multiplication:

1) Prove triangles are similar
2) Corresponding Sides of Similar Triangle are In Proportion (CSSTIP)
3) Cross Products are Equal

(3) $\triangle AED \sim \triangle CEB$

(4) $\frac{AE}{ED} = \frac{CE}{EB}$

(5) $AE \cdot EB = CE \cdot ED$

(3) AA ≅ AA

(4) CSSTIP

(5) cross products are equal

Work Backwards!

To work backwards:

1) Put the segments being multiplied diagonal from each other in a proportion.
2) Look at the letters in the proportion horizontally and vertically. Whichever direction has letters that make a triangle, those are your triangles to prove similar.
3) Prove triangles are similar using

1) Do a mini proof with your givens

Angle bisector creates two congruent angles

Perpendicular lines create two congruent right angles

Parallel lines cut by a transversal create

Congruent corresponding angles (1 in, 1 out) OR congruent alternate interior angles (2 out) OR

congruent alternate exterior angles (2 out)

*Perpendicular bisector is perpendicular and line bisector (1 pair of congruent right angles, 1 pair of congruent segs)

*If segments bisect each other, they are both cut in half (2 pairs of congruent segments)

2) Use additional tools:

Vertical Angles are congruent (Look for an X)

Reflexive Property (A side/angle is in both triangles and is congruent to itself)

Isosceles Triangles (In a triangle, congruent angles are opposite congruent sides)

Lesson 22: I can prepare for my similar triangles test by practicing!

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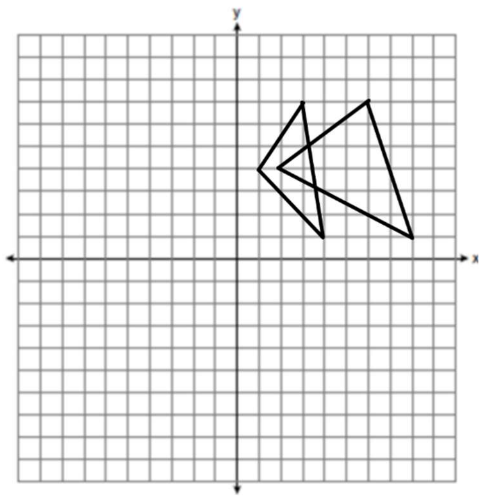
Mr. Schlansky Geometry

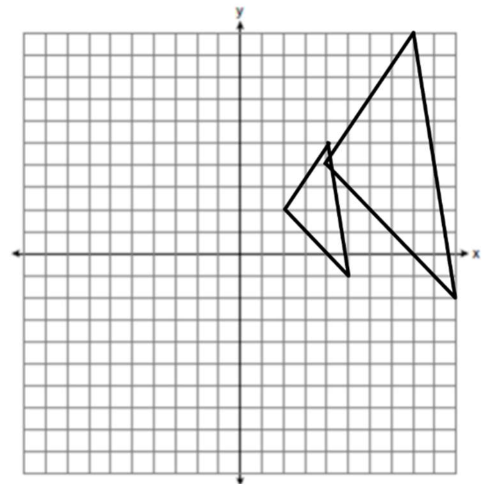
Identifying Vertical/Horizontal Stretches and Dilations

Identify whether each of the following was a dilation, vertical stretch, or horizontal stretch and state the rule.

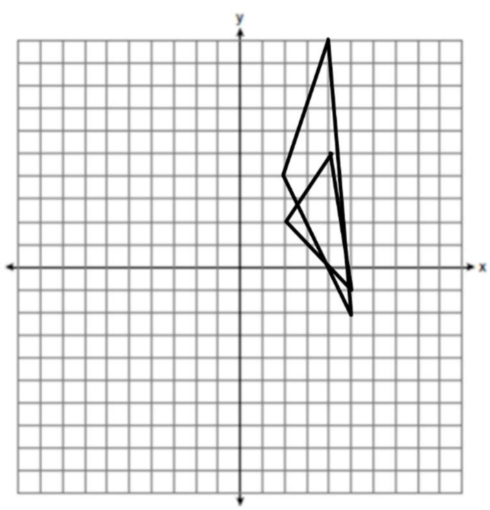
1.



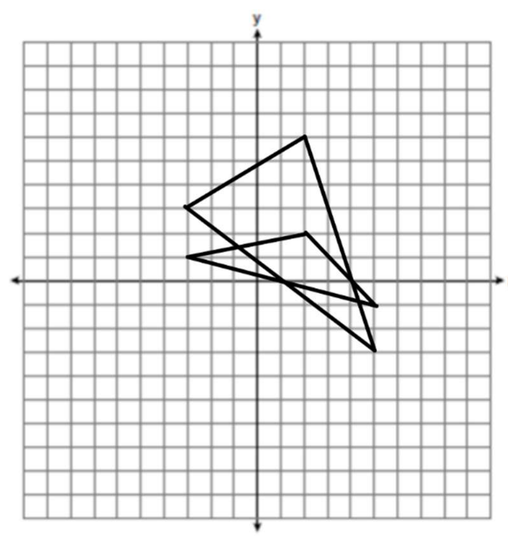
2.



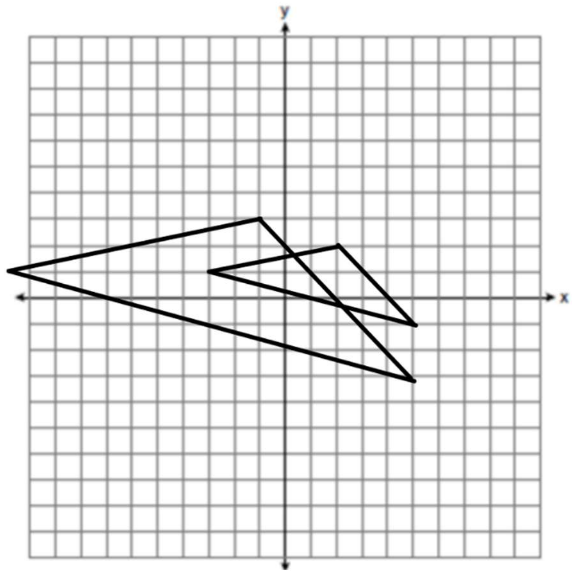
3.



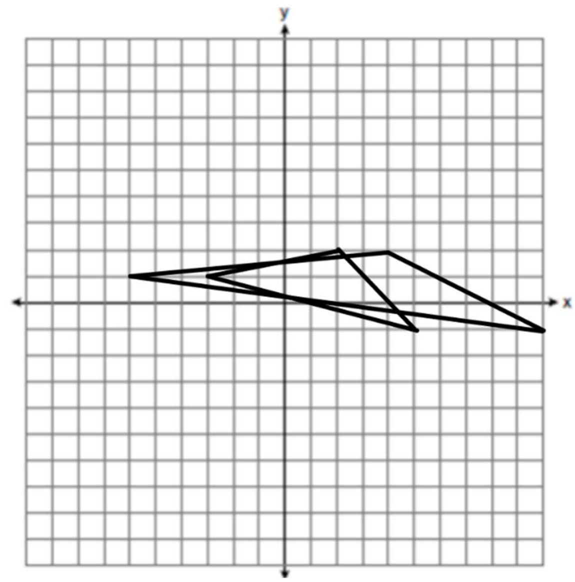
4.



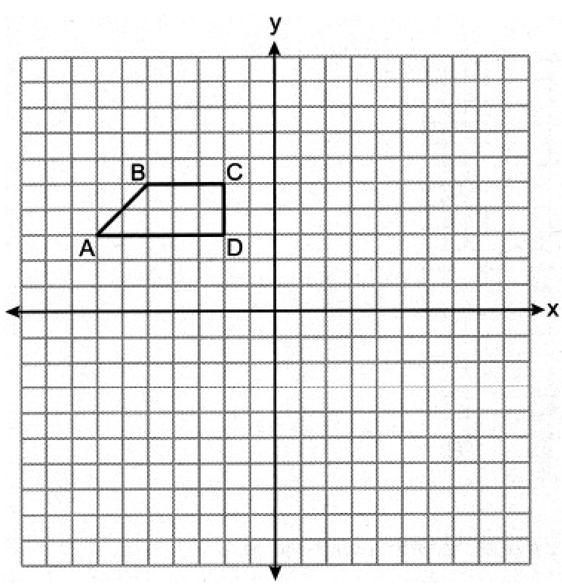
5.



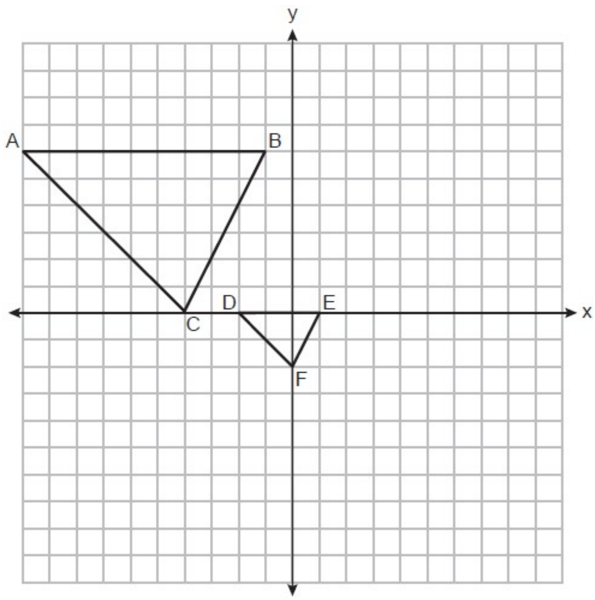
6.



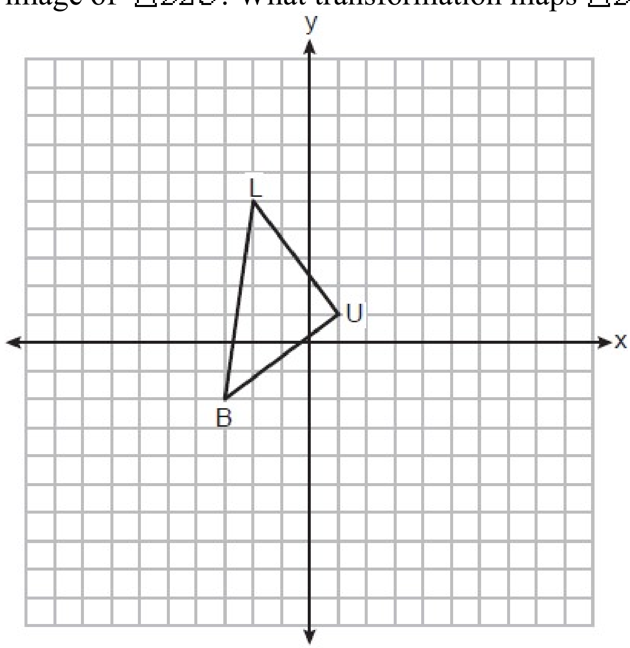
7. Trapezoid $ABCD$ is graphed on the set of axes below. Trapezoid $A'B'C'D'$, whose vertices are $A'(-7,6)$, $B'(-5,10)$, $C'(-2,10)$, and $D'(-2,6)$ is the image of trapezoid $ABCD$. What transformation maps trapezoid $ABCD$ on trapezoid $A'B'C'D'$?



8. On the set of axes below, what transformation maps $\triangle DEF$ onto $\triangle ABC$?



9. On the set of axes below, $\triangle BLU$ has vertices with coordinates $B(-3,-2)$, $L(-2,5)$, and $U(1,1)$. $\Delta B'L'U'$ whose vertices are , $B'(-9,-2)$, $L'(-6,5)$, and $U'(3,1)$ is the image of $\triangle BLU$. What transformation maps $\triangle BLU$ onto $\Delta B'L'U'$?



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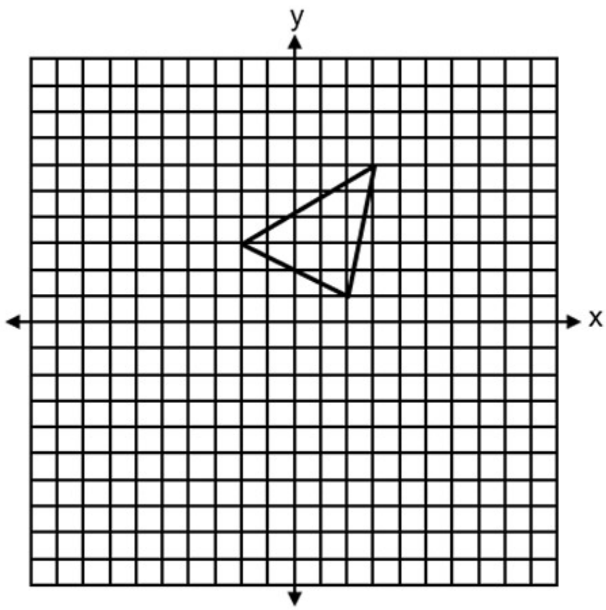
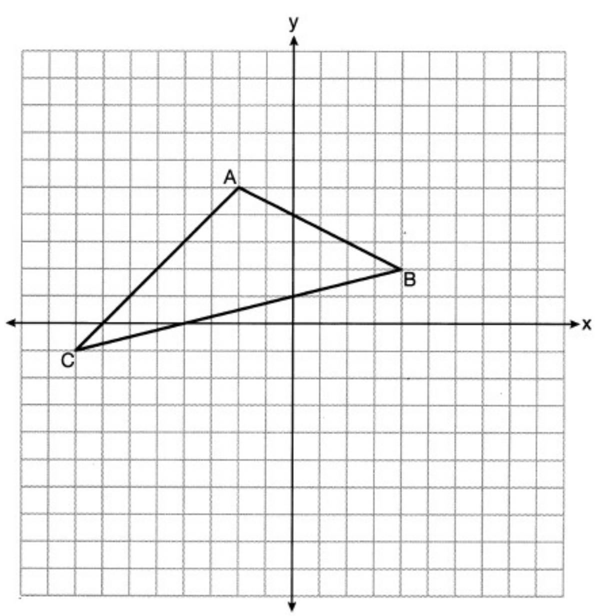
Mr. Schlansky Geometry

Performing Vertical/Horizontal Stretches

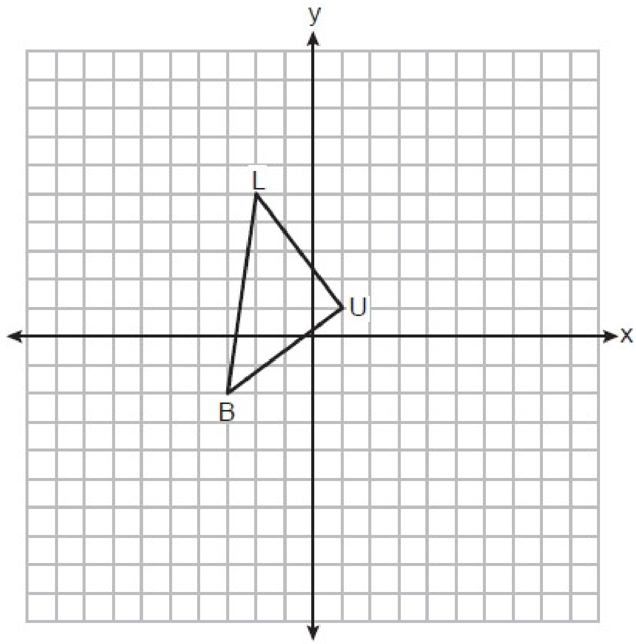
1. A triangle with vertices at (-2,3), (3,6), and (2,1), is graphed on the set of axes below. A horizontal stretch of scale factor 2 with respect to x = 0 is represented by $(x, y) \rightarrow (2x, y)$. Graph the image of this triangle, after the horizontal stretch on the same set of axes.



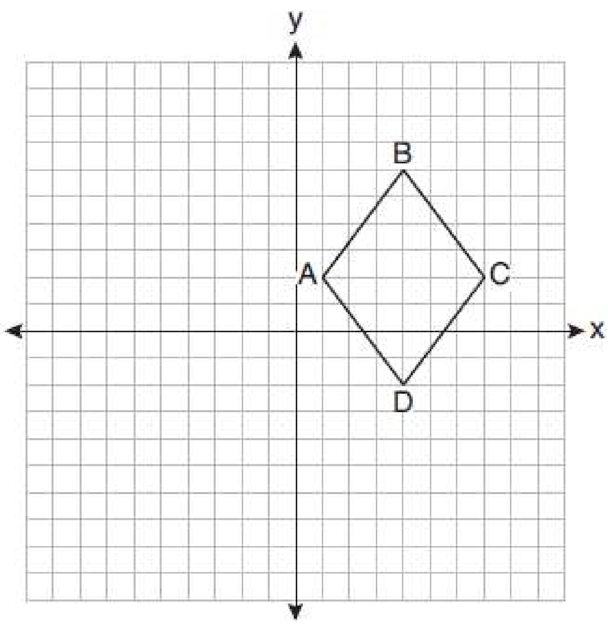
2. The triangle graphed below with vertices at A(-2,5), B(4,2), and C(-8,-1), is graphed on the set of axes below. A vertical stretch of scale factor 2 with respect to y = 0 is represented by $(x, y) \rightarrow (x, 2y)$. Graph the image of this triangle, after the vertical stretch on the same set of axes.



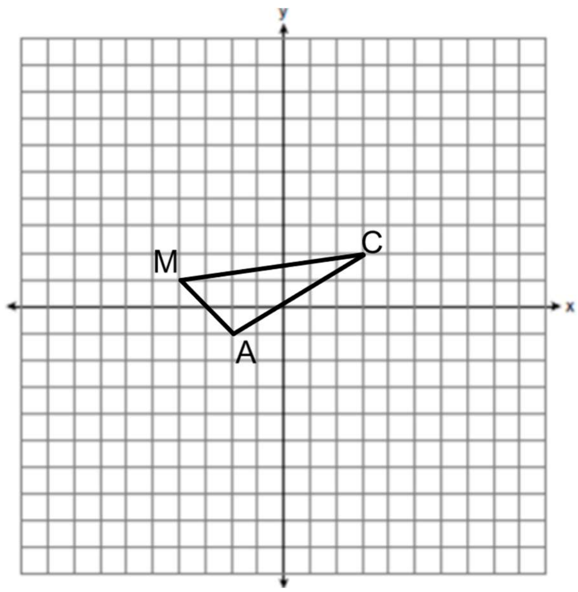
3. The triangle graphed below with vertices at B(-3,-2), U(1,1), and L(-2,5), is graphed on the set of axes below. A horizontal stretch of scale factor 3 with respect to x = 0 is represented by $(x, y) \rightarrow (3x, y)$. Graph the image of this triangle, after the horizontal stretch on the same set of axes.



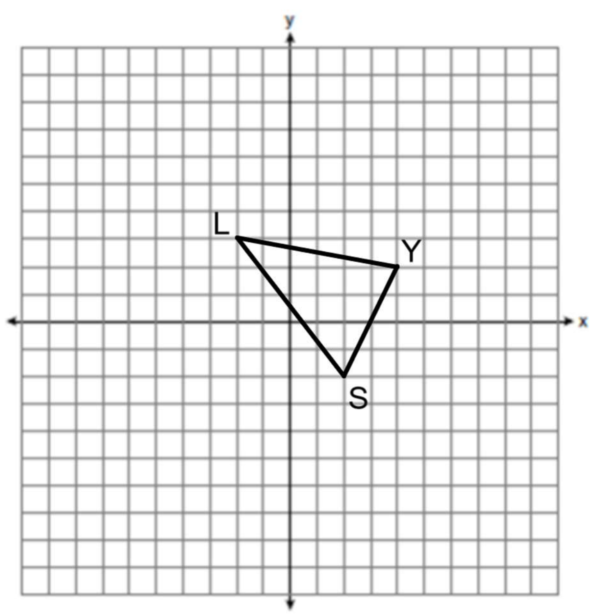
4. The rhombus graphed below with vertices at A(1,2), B(4,6), C(7,2), and D(4,-2), is graphed on the set of axes below. A vertical shrink of scale factor $\frac{1}{2}$ with respect to y = 0 is represented by $(x, y) \rightarrow (x, \frac{1}{2}y)$. Graph the image of this rhombus, after the vertical shrink on the same set of axes.



5. The triangle graphed below with vertices at C(3,2), A(-2,1), and M(-4,1), is graphed on the set of axes below. A stretch of *CAM* is represented by $(x, y) \rightarrow (2x, 3y)$ Graph the image of this triangle, after the stretch on the same set of axes.



6. The triangle graphed below with vertices at *L*(-2,3), *Y*(4,2), and *S*(2,-2), is graphed on the set of axes below. A stretch of *LYS* is represented by $(x, y) \rightarrow \left(\frac{1}{2}x, 3y\right)$. Graph the image of this triangle, after the stretch on the same set of axes.

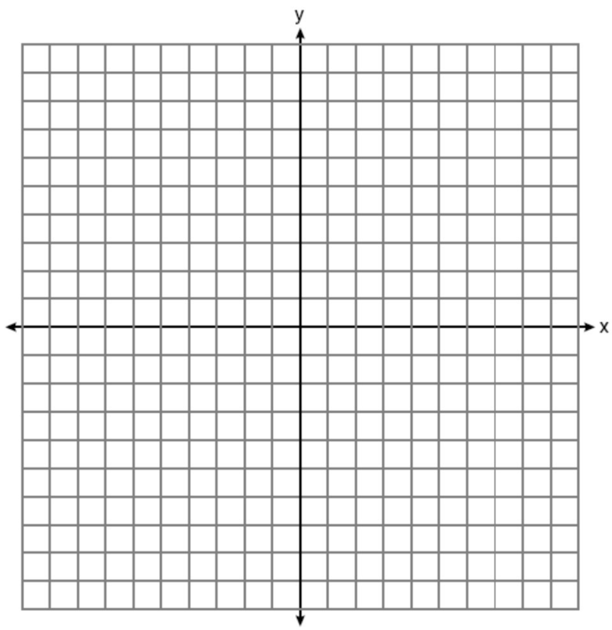


Name ______________
Mr. Schlansky

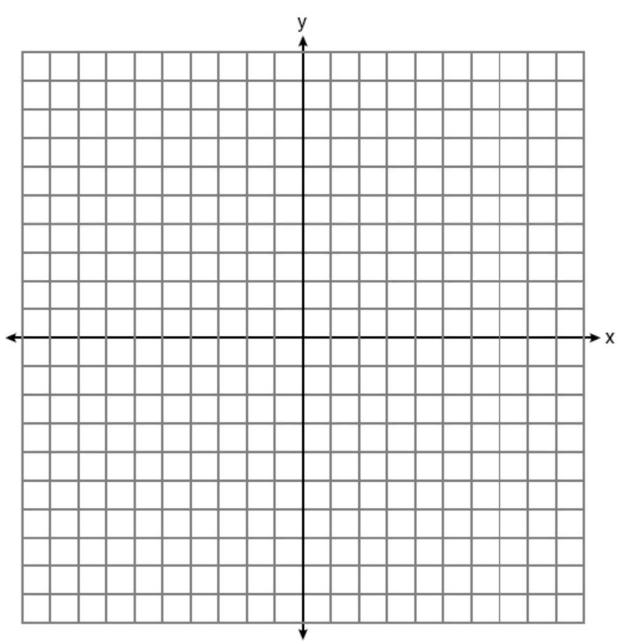
Date __________
Geometry

Dilations

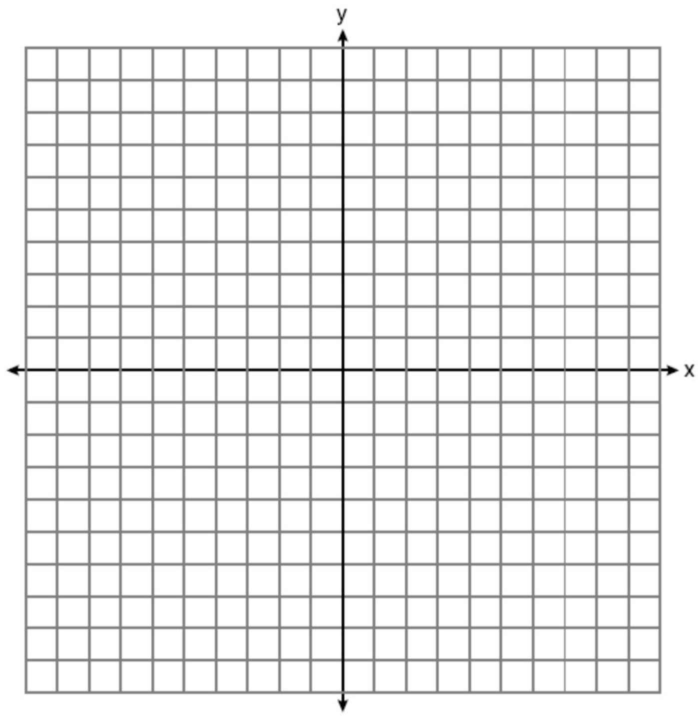
1. Triangle *SUN* has coordinates *S*(0,4), *U*(3,5), and *N*(3,0). On the accompanying grid, draw and label $\triangle SUN$. Then, graph and state the coordinates of $\triangle S'U'N'$, the image of $\triangle SUN$ after a dilation of 2 centered at the origin.



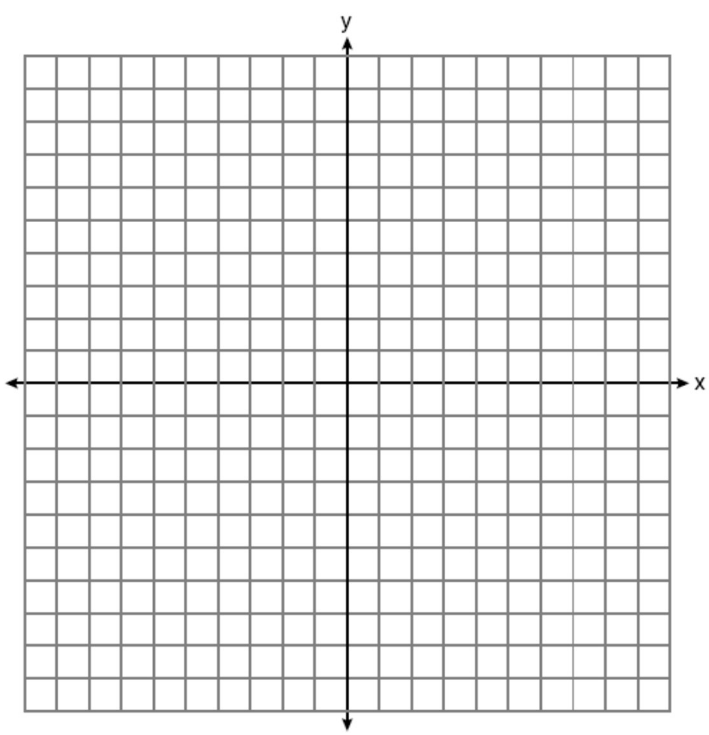
2. Triangle *SUN* has coordinates *S*(0,4), *U*(3,5), and *N*(3,0). On the accompanying grid, draw and label $\triangle SUN$. Then, graph and state the coordinates of $\triangle S'U'N'$, the image of $\triangle SUN$ after a dilation of 2 centered at (-1,4).



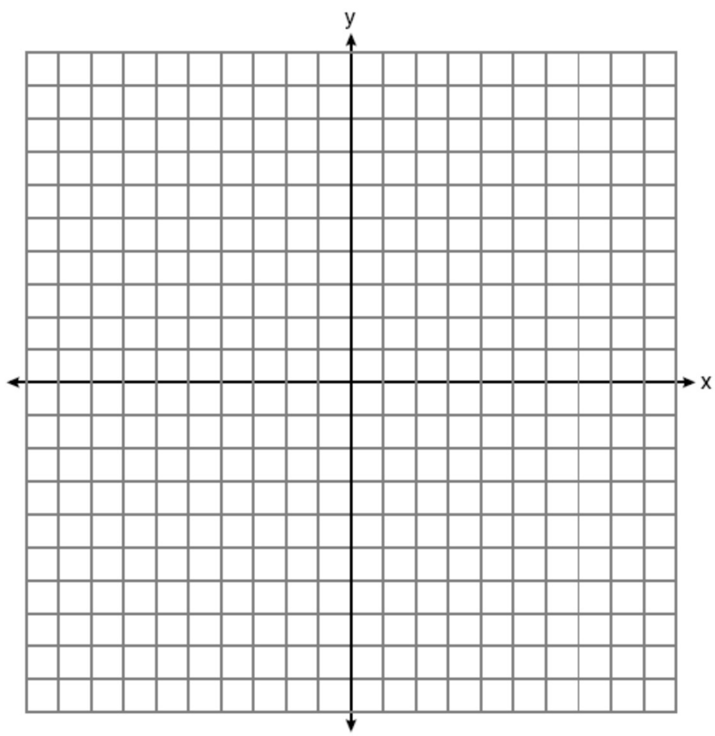
3. Triangle ABC has coordinates $A(2,1)$, $B(6,1)$, $C(5,3)$. What is the image of this triangle after a dilation of 4 centered at (6,4). Graph both the image and the pre image.



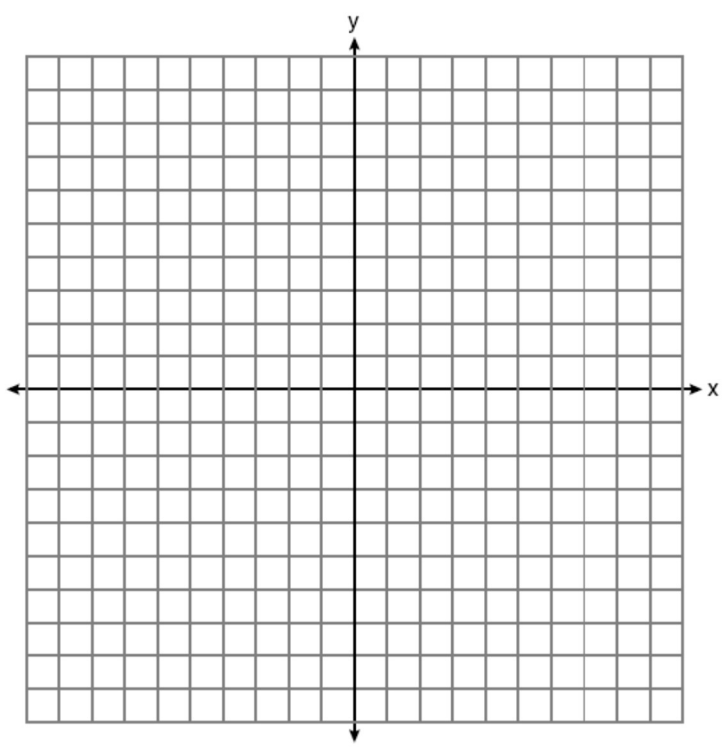
4. The coordinates of the vertices of $\triangle RST$ are $R(-2,3)$, $S(4,4)$, and $T(2,-2)$. Graph $\triangle RST$ and $\triangle R'S'T'$, the image of $\triangle RST$ after a dilation of 3 centered at (1,2).



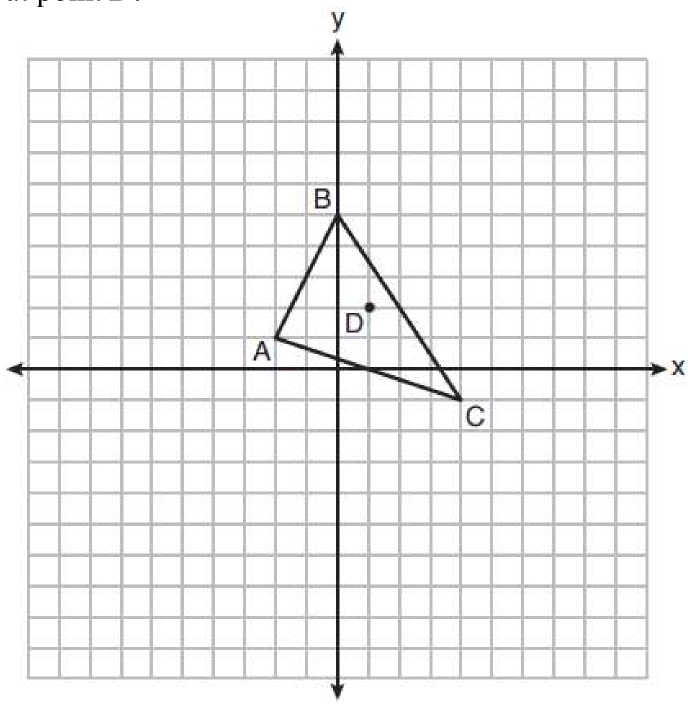
5. Triangle SBR has coordinates $S(-2,3)$, $B(-1,-2)$, and $R(3,-3)$. What is the image of this triangle after a dilation with a scale factor of 3 centered at the origin. Graph both the image and the pre image.



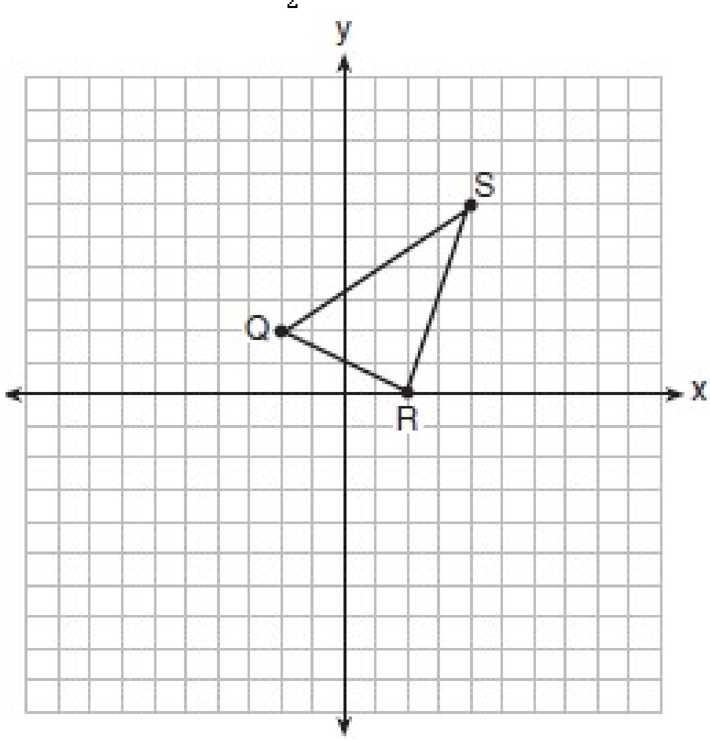
6. The coordinates of the vertices of ΔJKL are $J(5,-2)$, $K(6,1)$, and $L(-1,0)$. Graph ΔJKL. Graph and label $\Delta J'K'L'$, the image of ΔJKL after a dilation of 2 centered at J.



7. Triangle *ABC* and point $D(1, 2)$ are graphed on the set of axes below.
Graph and label $\triangle A'B'C'$, the image of $\triangle ABC$, after a dilation of scale factor 2 centered at point *D*.



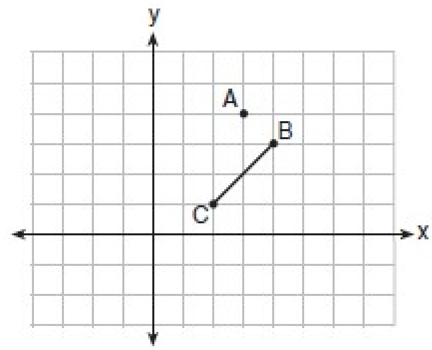
8. Triangle *QRS* is graphed on the set of axes below.
On the same set of axes, graph and label $\triangle Q'R'S'$, the image of $\triangle QRS$ after a dilation with a scale factor of $\frac{3}{2}$ centered at the origin.



9. On the graph below, point $A(3,4)$ and $\overline{BC}$ with coordinates $B(4,3)$ and $C(2,1)$ are graphed.

What are the coordinates of *B'* and *C'* after $\overline{BC}$ undergoes a dilation centered at point *A* with a scale factor of 2?

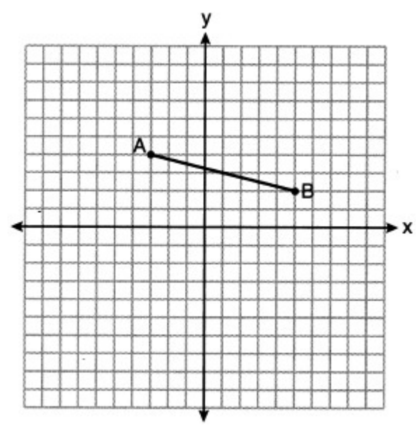
1) $B'(5,2)$ and $C'(1,-2)$
2) $B'(6,1)$ and $C'(0,-1)$
3) $B'(5,0)$ and $C'(1,-2)$
4) $B'(5,2)$ and $C'(3,0)$



10. On the set of axes below, the endpoints of $\overline{AB}$ have coordinates $A(-3,4)$ and $B(5,2)$.

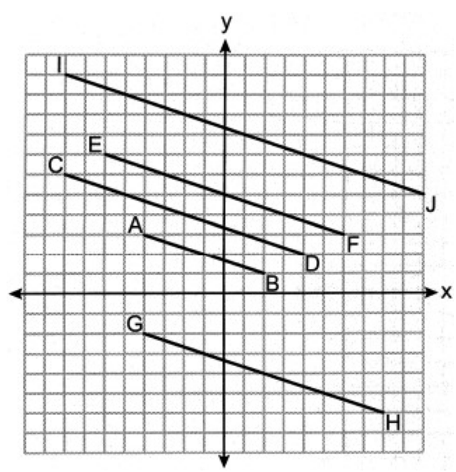
If $\overline{AB}$ is dilated by a scale factor of 2 centered at $(3,5)$, what are the coordinates of the endpoints of its image, $\overline{A'B'}$?

1) $A'(-7,5)$ and $B'(9,1)$
2) $A'(-1,6)$ and $B'(7,4)$
3) $A'(-6,8)$ and $B'(10,4)$
4) $A'(-9,3)$ and $B'(7,-1)$



11. On the set of axes below, $\overline{AB}$, $\overline{CD}$, $\overline{EF}$, $\overline{GH}$, and $\overline{IJ}$ are drawn.
Which segment is the image of $\overline{AB}$ after a dilation with a scale factor of 2 centered at $(-2,-1)$
?

1) $\overline{CD}$
2) $\overline{EF}$
3) $\overline{GH}$
4) $\overline{IJ}$



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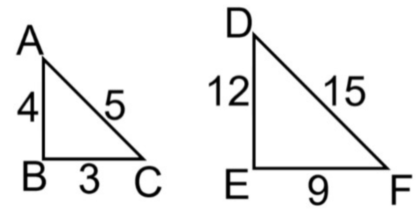
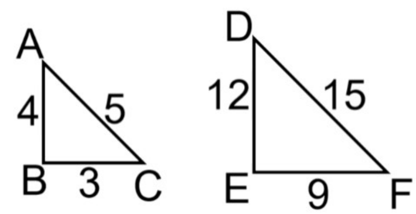
Mr. Schlansky Geometry

Finding Scale Factor and Center of Dilation

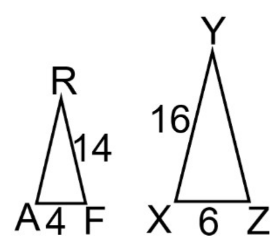
1. In the diagram below, ΔDEF is the image of ΔABC after a dilation. What is the scale factor of the dilation?



2. In the diagram below, ΔABC is the image of ΔDEF after a dilation. What is the scale factor of the dilation?

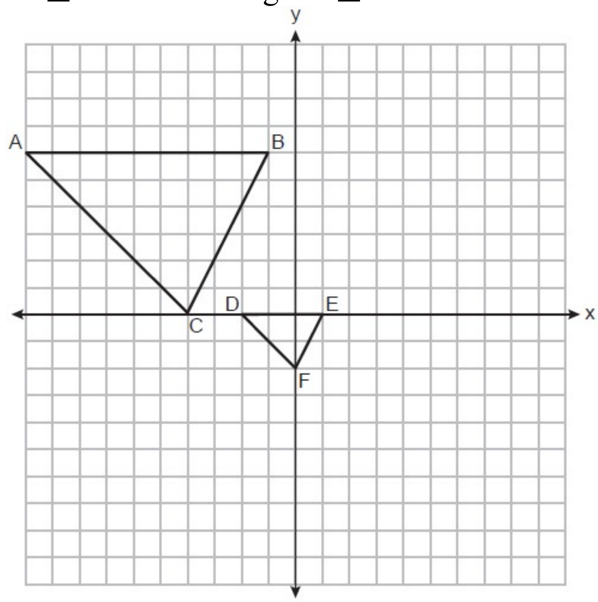


3. In the diagram below, ΔXYZ is the image of ΔARF after a dilation. What is the scale factor of the dilation?

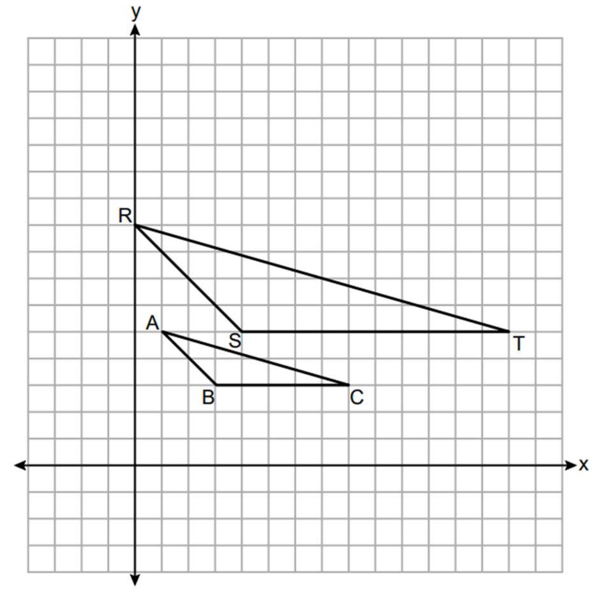


Find the center of dilation AND the scale factor if

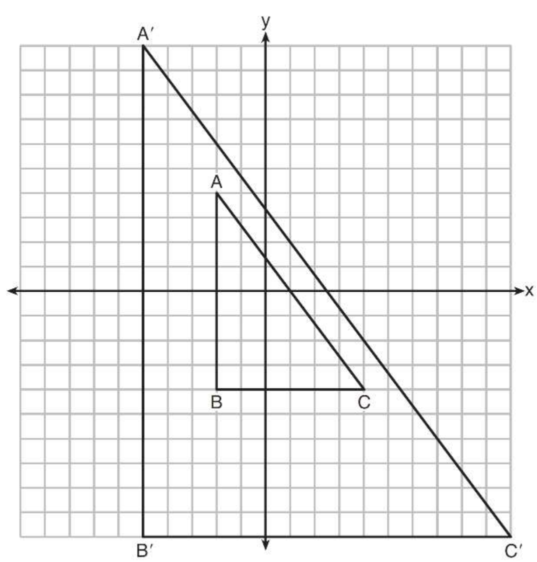
4. $\triangle ABC$ is the image of $\triangle DEF$



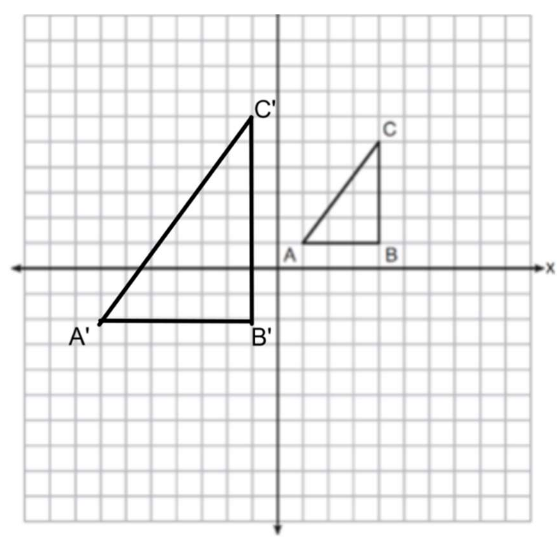
5. $\triangle RST$ is the image of $\triangle ABC$



6. $\triangle A'B'C'$ is the image of $\triangle ABC$



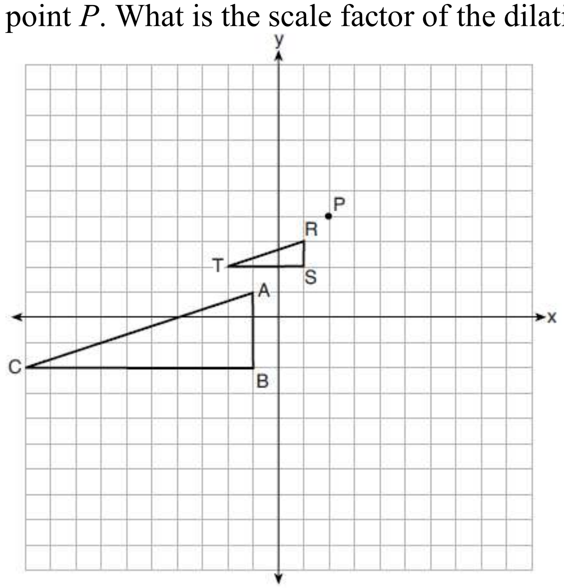
7. $\triangle A'B'C'$ is the image of $\triangle ABC$



8. After a dilation with center $(0,0)$, the image of $\overline{DB}$ is $\overline{D'B'}$. If $DB = 4.5$ and $D'B' = 18$, what is the scale factor of this dilation?

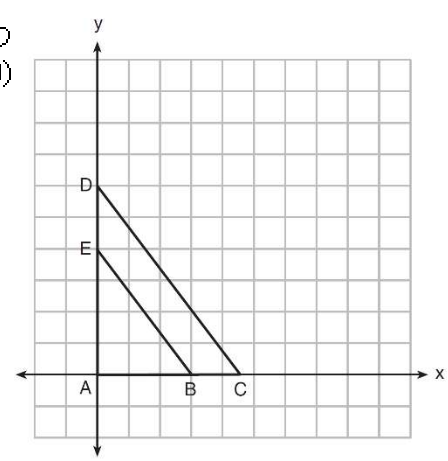
9. $\overline{DR}$ is dilated centered at point D such that $\overline{DR} = 8$ and $\overline{D'R'} = 12$. What is the scale factor of the dilation?

10. On the set of axes below, $\triangle RST$ is the image of $\triangle ABC$ after a dilation centered at point *P*. What is the scale factor of the dilation that maps $\triangle ABC$ onto $\triangle RST$?

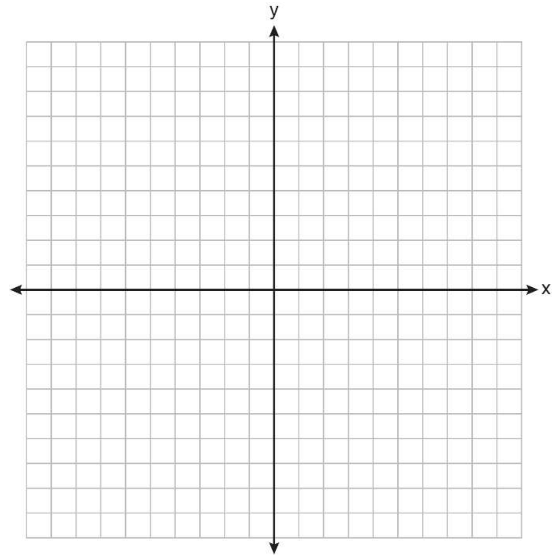


11. In the diagram below, $\triangle ABE$ is the image of $\triangle ACD$
origin. The coordinates of the vertices are $A(0,0)$, $B(3,0)$
The scale factor of dilation is

1) $\frac{2}{3}$
2) $\frac{3}{2}$
3) $\frac{3}{4}$
4) $\frac{4}{3}$

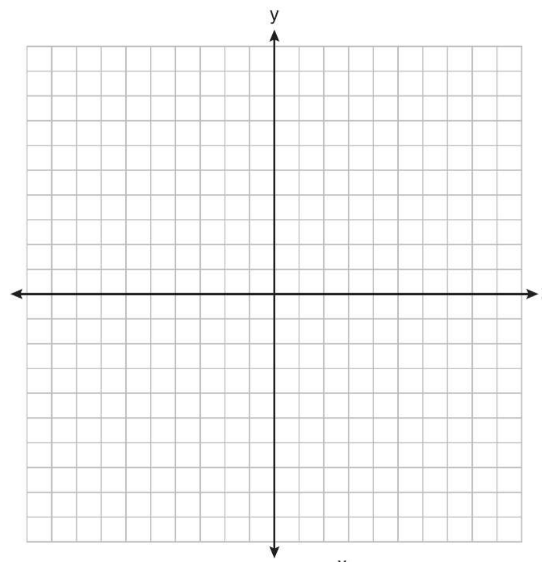


12. $\triangle ABC$ has coordinates $A(-2,8), B(6,8),$ *and* $C(8,5)$. The coordinates of ΔXYZ, the image of ΔABC after a sequence of transformations is $X(1,2), Y(7,2),$ *and* $Z(8,0)$. What is the scale factor?



13. After a dilation centered at the origin, the image of $\overline{CD}$ is $\overline{C'D'}$. If the coordinates of the endpoints of these segments are $C(2,-8)$, $D(-7,-8)$, $C'(3,4)$, and $D'(-3,4)$. The scale factor of the dilation is

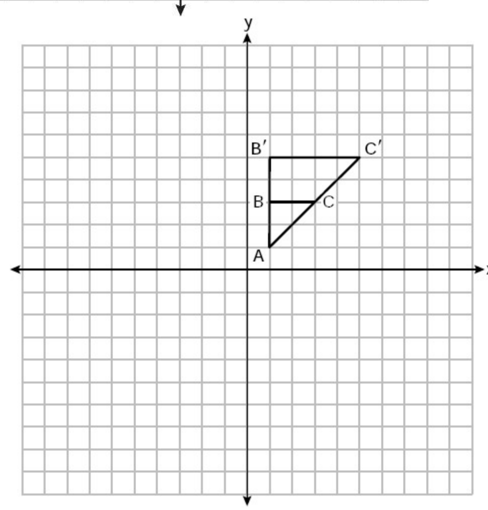
1) $\frac{3}{2}$
2) $\frac{2}{3}$
3) 3
4) $\frac{1}{3}$



14. On the set of axes below, $\triangle AB'C'$ is the image of $\triangle ABC$.

What is the scale factor and center of dilation that maps $\triangle ABC$ onto $\triangle AB'C'$?

1) $\frac{1}{2}$ and the origin
2) 2 and the origin
3) $\frac{1}{2}$ and vertex *A*
4) 2 and vertex *A*



Name ______________ Date _______
Mr. Schlansky Geometry

Ratios with Perimeter and Area

1. The scale factor of a triangle dilation is 3. What is the scale factor of their:
   a) perimeters
   b) areas
   c) angles

2. The ratio of the sides of similar triangles is 5:1. What is the ratio of their:
   a) perimeters
   b) areas
   c) angles

3. The scale factor of a triangle dilation is $\frac{1}{2}$. What is the scale factor of their:
   a) perimeters
   b) areas
   c) angles

4. The ratio of the sides of similar triangles is 4:3. What is the ratio of their:
   a) perimeters
   b) areas
   c) angles

5. Two triangles are similar, and the ratio of each pair of corresponding sides is 2 : 1. Which statement regarding the two triangles is *not* true?
1) Their areas have a ratio of 4 : 1.
2) Their altitudes have a ratio of 2 : 1.
3) Their perimeters have a ratio of 2 : 1.
4) Their corresponding angles have a ratio of 2 : 1.

6. Given $\triangle ABC \sim \triangle DEF$ such that $\frac{AB}{DE} = \frac{3}{2}$. Which statement is *not* true?

1) $\frac{BC}{EF} = \frac{3}{2}$
3) $\frac{\text{area of } \triangle ABC}{\text{area of } \triangle DEF} = \frac{9}{4}$
2) $\frac{m\angle A}{m\angle D} = \frac{3}{2}$
4) $\frac{\text{perimeter of } \triangle ABC}{\text{perimeter of } \triangle DEF} = \frac{3}{2}$

7. $\triangle ABC$ is similar to $\triangle DEF$. The ratio of the length of $\overline{AB}$ to the length of $\overline{DE}$ is $3:1$. Which ratio is also equal to $3:1$?

(1) $\frac{m\angle A}{m\angle D}$ (2) $\frac{m\angle B}{m\angle F}$ (3) $\frac{\text{area of } \triangle ABC}{\text{area of } \triangle DEF}$ (4) $\frac{\text{perimeter of } \triangle ABC}{\text{perimeter of } \triangle DEF}$

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Mr. Schlansky Geometry

Scale Factor with Perimeter and Area

1. A line segment with a length of 5 is dilated by a scale factor of 4. What is the length of its image?

2. A line segment has a length of 12 and is dilated by $\frac{1}{2}$. What is the length of its image?

3. A three-inch line segment is dilated by a scale factor of 6 and centered at its midpoint. What is the length of its image?
1) 9 inches
2) 2 inches
3) 15 inches
4) 18 inches

4. Triangle JOY has a perimeter of 10 and an area of 12. What is the perimeter and area of triangle JOY after a dilation by a scale factor of 2?

5. Quadrilateral CAMI has a perimeter of 20 and an area of 15. What is the perimeter and area of quadrilateral CAMI after a dilation by a scale factor of 4?

6. Given square *RSTV*, where $RS = 9$ cm. If square *RSTV* is dilated by a scale factor of 3 about a given center, what is the perimeter, in centimeters, of the image of *RSTV* after the dilation?

1) 12
2) 27
3) 36
4) 108

7. Triangle *RJM* has an area of 6 and a perimeter of 12. If the triangle is dilated by a scale factor of 3 centered at the origin, what are the area and perimeter of its image, triangle *R'J'M'*?

1) area of 9 and perimeter of 15
2) area of 18 and perimeter of 36
3) area of 54 and perimeter of 36
4) area of 54 and perimeter of 108

8. Rectangle *A'B'C'D'* is the image of rectangle *ABCD* after a dilation centered at point *A* by a scale factor of $\frac{2}{3}$. Which statement is correct?

1) Rectangle *A'B'C'D'* has a perimeter that is $\frac{2}{3}$ the perimeter of rectangle *ABCD*.
2) Rectangle *A'B'C'D'* has a perimeter that is $\frac{3}{2}$ the perimeter of rectangle *ABCD*.
3) Rectangle *A'B'C'D'* has an area that is $\frac{2}{3}$ the area of rectangle *ABCD*.
4) Rectangle *A'B'C'D'* has an area that is $\frac{3}{2}$ the area of rectangle *ABCD*.

9. A triangle is dilated by a scale factor of 3 with the center of dilation at the origin. Which statement is true?

1) The area of the image is nine times the area of the original triangle.
2) The perimeter of the image is nine times the perimeter of the original triangle.
3) The slope of any side of the image is three times the slope of the corresponding side of the original triangle.
4) The measure of each angle in the image is three times the measure of the corresponding angle of the original triangle.

10. Triangle *KLM* is dilated by a scale factor of 3 to map onto triangle *DRS*. Which statement is *not* always true?

1) $\angle K \cong \angle D$
2) $KM = \frac{1}{3} DS$
3) The area of $\triangle DRS$ is 3 times the area of $\triangle KLM$.
4) The perimeter of $\triangle DRS$ is 3 times the perimeter of $\triangle KLM$.

11. The perimeter of a triangle is 18. What is the perimeter of a similar triangle after a dilation with scale factor of 3?

1) 6
2) 18
3) 54
4) 162

12. Square *ABCD* has an area of 36. If the square is dilated by a scale factor of $\frac{1}{2}$ centered at *A*, what is the area of its image?

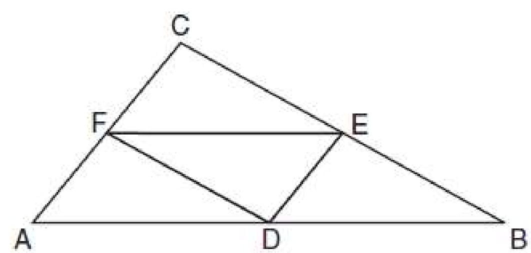
1) 9
2) 18
3) 72
4) 144

13. A rectangle has a width of 3 and a length of 4. The rectangle is dilated by a scale factor of 1.8. What is the area of its image, to the *nearest tenth*?

1) 3.7
2) 6.7
3) 21.6
4) 38.9

14. In the diagram below of $\triangle ABC$, *D*, *E*, and *F* are the midpoints of $\overline{AB}$, $\overline{BC}$, and $\overline{CA}$, respectively.
What is the ratio of the area of $\triangle CFE$ to the area of $\triangle CAB$?

1) 1:1
2) 1:2
3) 1:3
4) 1:4



15. The area of $\triangle TAP$ is 36 cm^2. A second triangle, *JOE*, is formed by connecting the midpoints of each side of $\triangle TAP$. What is the area of *JOE*, in square centimeters?

1) 9
2) 12
3) 18
4) 27

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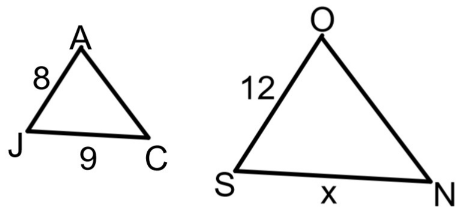
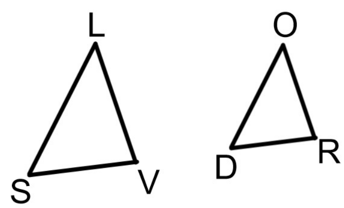
Finding Missing Sides of Similar Triangles

1. In the diagram, ΔJAC is similar to ΔSON. Find the measure of *SN*.

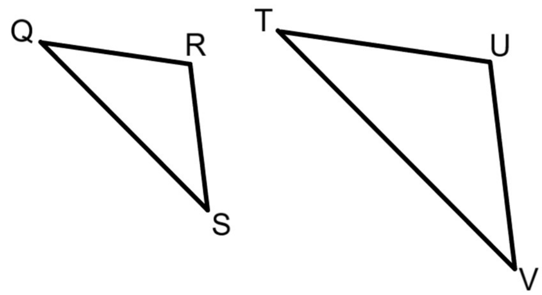


2. In the diagram, ΔSLV is similar to ΔDOR. If *SV=24*, *DR=16*, *LV=21,* find *OR*.

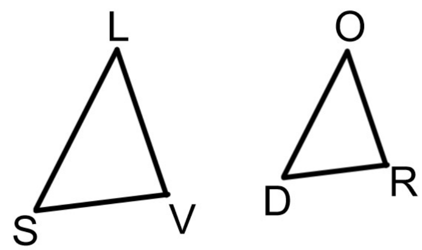


3. Triangle *HON* is similar to triangle *DUR*. If *HO=12, DU=24, UR=18*, find *ON.*

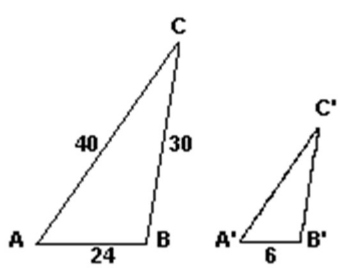
4. In the diagram below, triangle QRS is similar to triangle TUV. If $QR = 8$, $RS = 10$, $QS = 15$, and $TU = 12$, find UV.



5. In the diagram, ΔSLV is similar to ΔDOR. If SV=8, SL=11, LV=10, DR = 5, find OD.



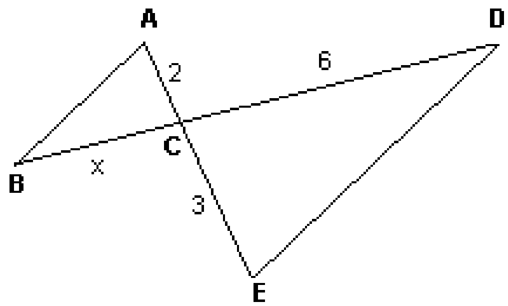
6. In the diagram, ΔABC is similar to $\Delta A'B'C'$, $AB = 24$, $BC = 30$, and $CA = 40$. If the shortest side of $\Delta A'B'C'$ is 6, find the length of the longest side of $\Delta A'B'C'$.



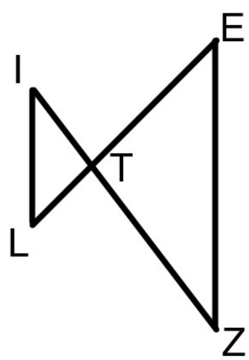
Name ______________ Date ___________
Mr. Schlansky Geometry

Bow Tie Problems

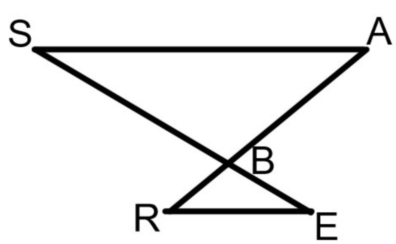
1. In the diagram below, $\overline{AB} \parallel \overline{DE}$. If $AC = 2$, $CD = 6$, and $CE = 3$, what is BC ?



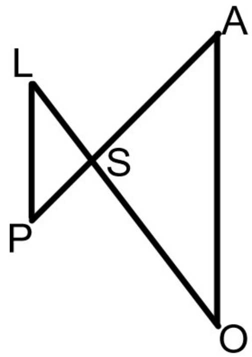
2. In the diagram below, $\overline{LI} \parallel \overline{ZE}$. If $LT = 12$, $TE = 18$, and $IT = 8$, find TZ.



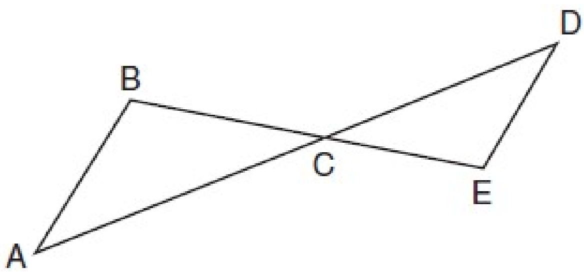
3. In the diagram below, $\overline{SA} \parallel \overline{RE}$. If $SB = 20$, $BE = 4$, and $BA = 12$, find RB.



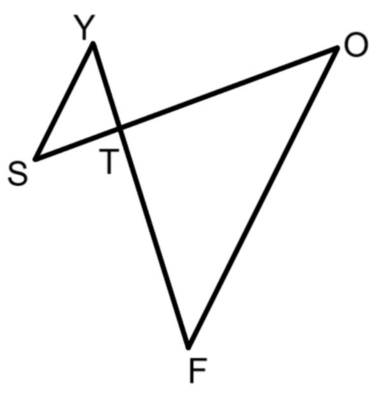
4. In the diagram below, $\overline{LP} \parallel \overline{AO}$. If $LS = 8$, $SO = 12$, $AO = 11$, and $PS = 6$, find SA.



5. In the diagram below, $\overline{AD}$ intersects $\overline{BE}$ at C, and $\overline{AB} \parallel \overline{DE}$. If $CD = 6.6$ cm, $DE = 3.4$ cm, $CE = 4.2$ cm, and $BC = 5.25$ cm, what is the length of $\overline{AC}$, to the *nearest hundredth of a centimeter*?



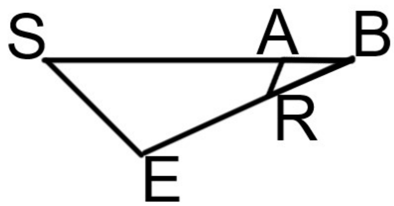
6. In the diagram below, $\overline{SO}$ intersects $\overline{YF}$ at T, and $\overline{SY} \parallel \overline{FO}$. If $\overline{ST} = 4.4$, $\overline{TO} = 10.7$, $\overline{TY} = 4.8$, and $\overline{SY} = 7.1$, what is the length of $\overline{TF}$, to the *nearest tenth*?



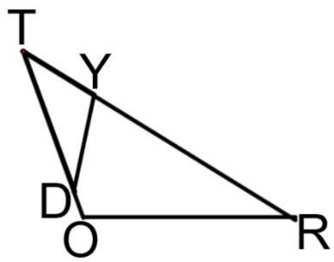
Name ______________ Date ________
Mr. Schlansky Geometry

Overlapping Similar Triangles

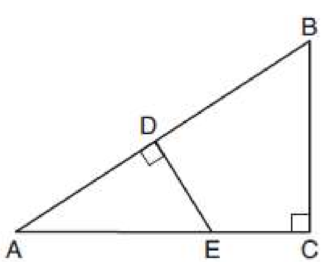
1. In triangle *SEB*, *A* is on $\overline{SB}$, and *E* is on $\overline{EB}$ so that $\angle E \cong \angle BAR$.
If $\overline{SB} = 6$, $\overline{RB} = 2$, and $\overline{SE} = 3$, find $\overline{RA}$.



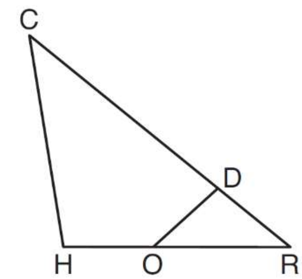
2. In triangle *TOR*, *Y* is on $\overline{TR}$, and *D* is on $\overline{TO}$ so that $\angle TYD \cong \angle ROT$.
If $\overline{TY} = 2$, $\overline{YR} = 6$, and $\overline{TD} = 4$, find $\overline{TO}$.



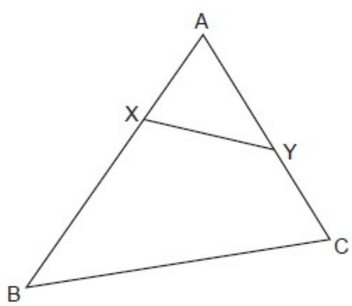
3. In $\triangle ABC$ shown below, $\angle ACB$ is a right angle, *E* is a point on $\overline{AC}$, and $\overline{ED}$ is drawn perpendicular to hypotenuse $\overline{AB}$. If $AB = 9$, $BC = 6$, and $DE = 4$, what is the length of $\overline{AE}$?



4. In triangle *CHR*, *O* is on $\overline{HR}$, and *D* is on $\overline{CR}$ so that $\angle H \cong RDO$. If $RD = 4$, $RO = 6$, and $OH = 4$, what is the length of $\overline{CD}$?

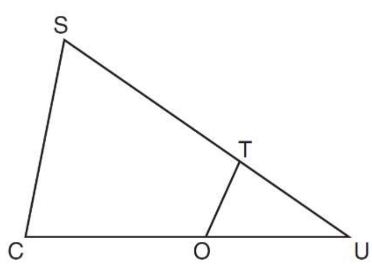


5. In the diagram below of $\triangle ABC$, *X* and *Y* are points on $\overline{AB}$ and $\overline{AC}$, respectively, such that $m\angle AYX = m\angle B$. If $\overline{AX} = 2$, $\overline{AY} = 5$, and $\overline{YC} = 4$, find $\overline{BX}$.



6. In $\triangle SCU$ shown below, points *T* and *O* are on $\overline{SU}$ and $\overline{CU}$, respectively. Segment *OT* is drawn so that $\angle C \cong \angle OTU$.

If $TU = 4$, $OU = 5$, and $OC = 7$, what is the length of $\overline{ST}$?



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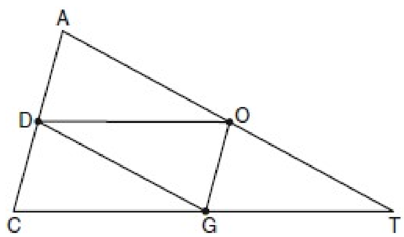
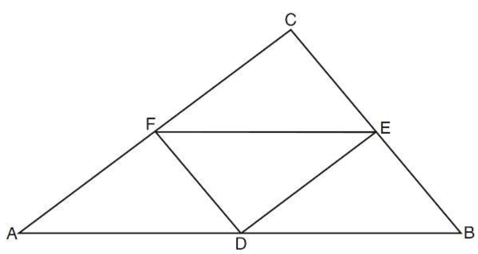
Joining Midpoints of a Triangle

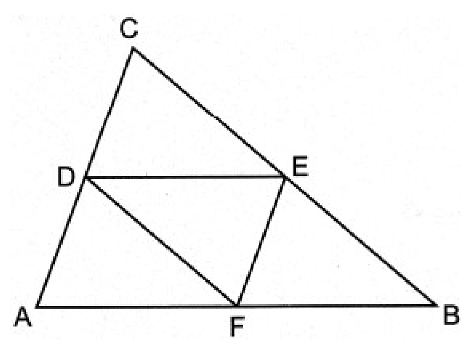
1. In the diagram below of $\triangle ACT$, *D* is the midpoint of $\overline{AC}$, *O* is the midpoint of $\overline{AT}$, and *G* is the midpoint of $\overline{CT}$. If $AC = 10$, $AT = 18$, and $CT = 22$, what is the perimeter of parallelogram *CDOG*?



2. In the diagram of $\triangle ABC$ shown below, *D* is the midpoint of $\overline{AB}$, *E* is the midpoint of $\overline{BC}$, and *F* is the midpoint of $\overline{AC}$. If $AB = 20$, $BC = 12$, and $AC = 16$, what is the perimeter of trapezoid *ABEF*?



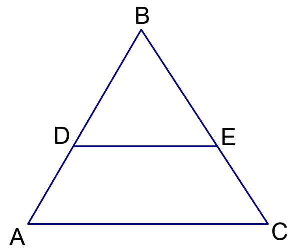
3. In $\triangle CAB$ below, midsegments $\overline{DE}$, $\overline{EF}$, and $\overline{FD}$ are drawn.



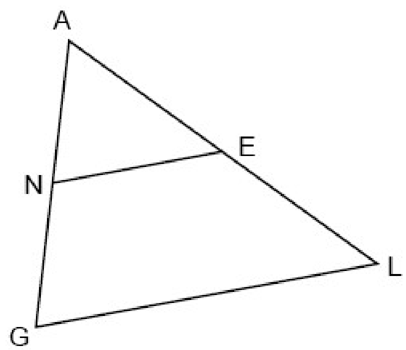
If $CA = 14$, $CB = 20$, and $FB = 9$, what is the perimeter of quadrilateral *DEFA*?

1) 26
2) 32
3) 44
4) 52

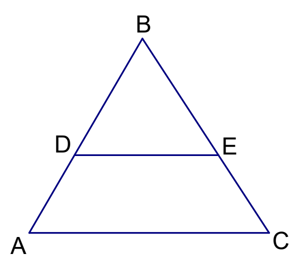
4. D and E are midpoints of $\overline{AB}$ and $\overline{BC}$ respectively. If $\overline{AC} = x + 15$ and $\overline{DE} = x - 3$, find the measure of $\overline{DE}$.



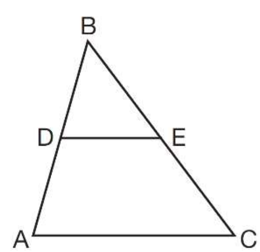
5. In $\triangle AGL$ below, N and E are the midpoints of $\overline{AG}$ and $\overline{AL}$, respectively, $\overline{NE}$ is drawn. If $NE = 15$ and $GL = 3x - 12$, determine and state the value of x.



6. D and E are midpoints of $\overline{AB}$ and $\overline{BC}$ respectively. If $\overline{DE} = 2x + 5$ and $\overline{AC} = 7x + 1$, find the measure of $\overline{AC}$.



7. In $\triangle ABC$, D is the midpoint of $\overline{AB}$ and E is the midpoint of $\overline{BC}$. If $AC = 3x - 15$ and $DE = 6$, what is the value of x?

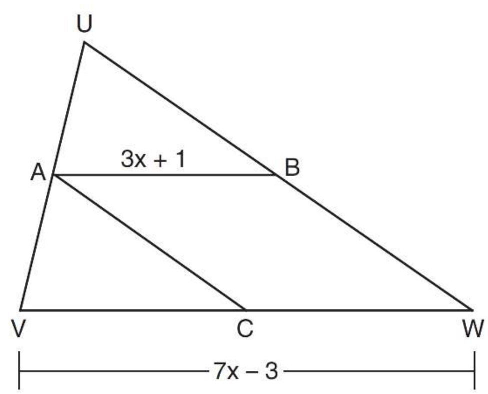


8. In $\triangle ABC$, M is the midpoint of $\overline{AB}$ and N is the midpoint of $\overline{AC}$. If $MN = x + 13$ and $BC = 5x - 1$, what is the length of $\overline{MN}$?

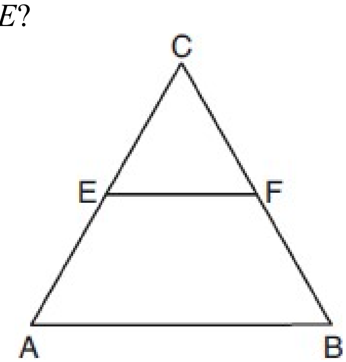
9. In ΔXYZ, A is the midpoint of XY and B is the midpoint of YZ. If $AB = 4x + 10$ and $XZ = 13x - 5$, find AB.

10. In the diagram of ΔUVW below, A is the midpoint of $\overline{UV}$, B is the midpoint of $\overline{UW}$, C is the midpoint of $\overline{VW}$, and $\overline{AB}$ and $\overline{AC}$ are drawn.

If $VW = 7x - 3$ and $AB = 3x + 1$, what is the length of $\overline{VC}$?



11. In the diagram of equilateral triangle ABC shown below, E and F are the midpoints of $\overline{AC}$ and $\overline{BC}$, respectively.
If $EF = 2x + 8$ and $AB = 7x - 2$, what is the perimeter of trapezoid $ABFE$?

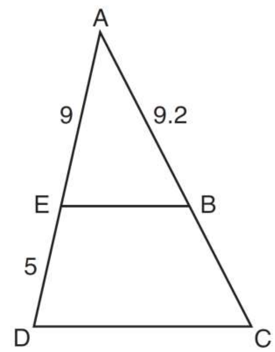


Name ______________ Date _________
Mr. Schlansky Geometry

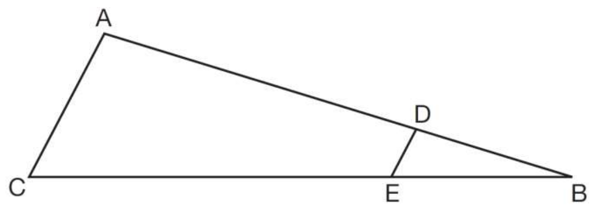
Candy Corn Problems

1. In the diagram of $\triangle ADC$ below, $\overline{EB} \parallel \overline{DC}$, $AE = 9$, $ED = 5$, and $AB = 9.2$.

What is the length of $\overline{AC}$, to the *nearest tenth*?
1) 5.1
2) 5.2
3) 14.3
4) 14.4

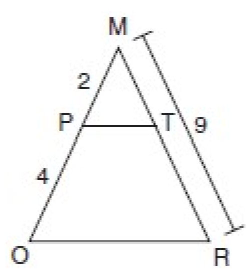


2. In the diagram of $\triangle ABC$, points D and E are on $\overline{AB}$ and $\overline{CB}$, respectively, such that $\overline{AC} \parallel \overline{DE}$.



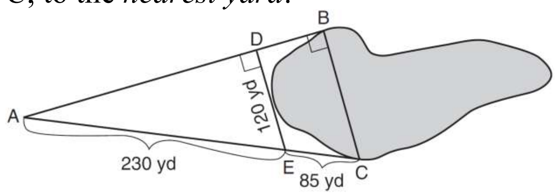
If $AD = 24$, $DB = 12$, and $DE = 4$, what is the length of $\overline{AC}$?
1) 8
2) 12
3) 16
4) 72

3. Given $\triangle MRO$ shown below, with trapezoid $PTRO$, $MR = 9$, $MP = 2$, and $PO = 4$.

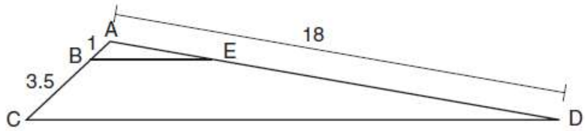


What is the length of $\overline{TR}$?
1) 4.5
2) 5
3) 3
4) 6

4. To find the distance across a pond from point *B* to point *C*, a surveyor drew the diagram below. The measurements he made are indicated on his diagram.
Use the surveyor's information to determine and state the distance from point *B* to point *C*, to the *nearest yard*.

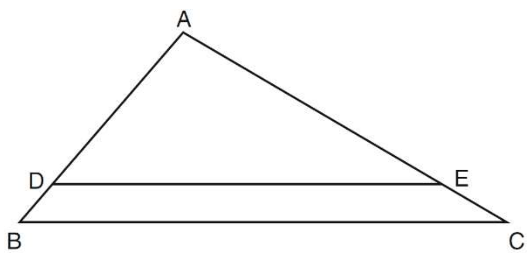


5. In the diagram below, triangle *ACD* has points *B* and *E* on sides $\overline{AC}$ and $\overline{AD}$, respectively, such that $\overline{BE} \parallel \overline{CD}$, $AB = 1$, $BC = 3.5$, and $AD = 18$.

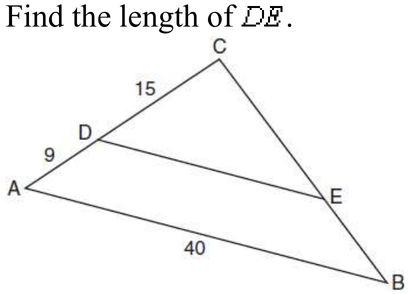


What is the length of $\overline{AE}$, to the *nearest tenth*?

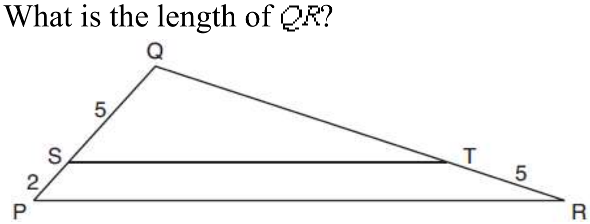
6. In the diagram of $\triangle ABC$ shown below, $\overline{DE} \parallel \overline{BC}$.
If $\overline{AE} = 6$, $\overline{DE} = 10$, and $\overline{AC} = 9$, find $\overline{BC}$



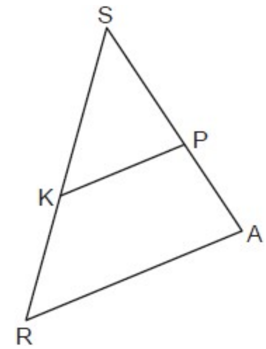
7. In the diagram of $\triangle ABC$ below, $\overline{DE}$ is parallel to $\overline{AB}$, $CD = 15$, $AD = 9$, and $AB = 40$.
Find the length of $\overline{DE}$.



8. In the diagram below of $\triangle PQR$, $\overline{ST}$ is drawn parallel to $\overline{PR}$, $PS = 2$, $SQ = 5$, and $TR = 5$
What is the length of $\overline{QR}$?



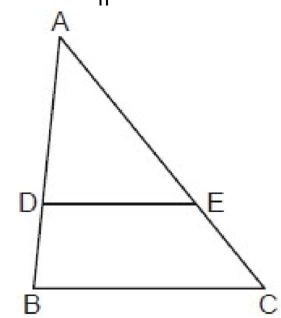
9. In the diagram of $\triangle SRA$ below, $\overline{KP}$ is drawn such that $\angle SKP \cong \angle SRA$.



If $SK = 10$, $SP = 8$, and $PA = 6$, what is the length of $\overline{KR}$, to the *nearest tenth*?

1) 4.8
2) 7.5
3) 8.0
4) 13.3

10. In triangle *ABC* below, *D* is a point on $\overline{AB}$ and *E* is a point on $\overline{AC}$, such that $\overline{DE} \parallel \overline{BC}$.



If $AD = 12$, $DB = 8$, and $EC = 10$, what is the length of $\overline{AC}$?

1) 15
2) 22
3) 24
4) 25

11. In $\triangle ABC$, point *D* is on $\overline{AB}$, and point *E* is on $\overline{BC}$ such that $\overline{DE} \parallel \overline{AC}$. If $DB = 2$, $DA = 7$, and $DE = 3$, what is the length of $\overline{AC}$?

12. In triangle ABC, M is a point on $\overline{AC}$ and N is a point on $\overline{CB}$ such that $\overline{MN} \parallel \overline{AB}$ If $\overline{AC} = 8$, $\overline{AB} = 12$, and $\overline{CM} = 6$. Find the length of $\overline{MN}$

Name _______________ Date _________

Mr. Schlansky Geometry

Reducing Radicals

Reducing Radicals

-Separate into two radicals (perfect squares and non perfect squares). Find the largest perfect square that divides in

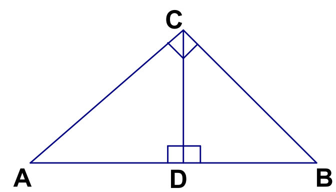
-Take the square root of the perfect square. Bring the non-perfect square down

1. $\sqrt{45}$
2. $\sqrt{50}$
3. $\sqrt{162}$
4. $\sqrt{32}$
5. $\sqrt{48}$
6. $\sqrt{75}$
7. $\sqrt{48}$
8. $\sqrt{200}$
9. $\sqrt{98}$
10. $\sqrt{125}$
11. $\sqrt{147}$
12. $\sqrt{192}$

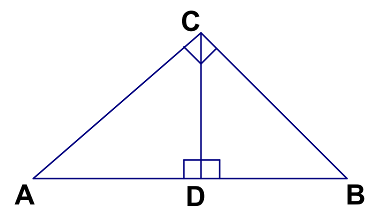
Name ______________ Date __________
Mr. Schlansky Geometry

Altitude Drawn to a Right Triangle

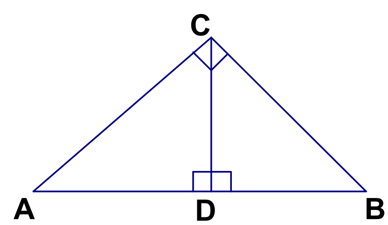
1. If $\overline{AD} = 3$ and $\overline{CD} = 6$, find $\overline{DB}$



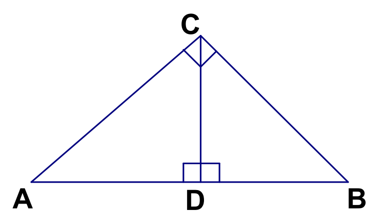
2. If $\overline{AC} = 10$ and $\overline{AD} = 5$, find $\overline{AB}$



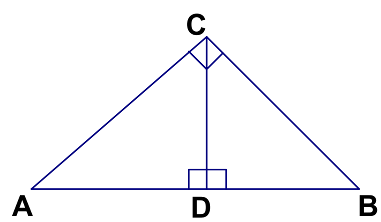
3. If $\overline{AC} = 6$ and $\overline{AB} = 9$, find $\overline{AD}$



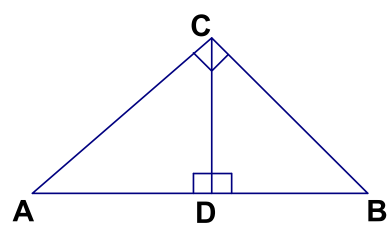
4. If $\overline{DB} = 4$ and $\overline{BC} = 10$, find $\overline{AB}$



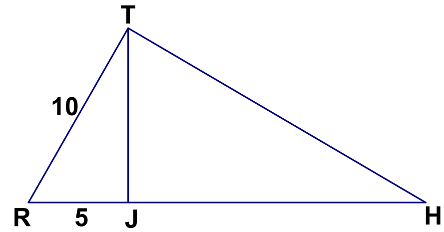
5. If $\overline{AD} = 3$ and $\overline{DB} = 27$, find $\overline{CD}$



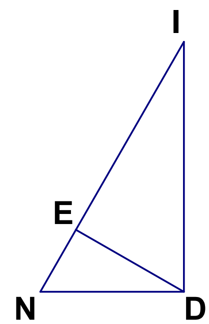
6. If $\overline{AD} = 2$ and $\overline{AB} = 18$, find $\overline{BC}$ to the nearest tenth



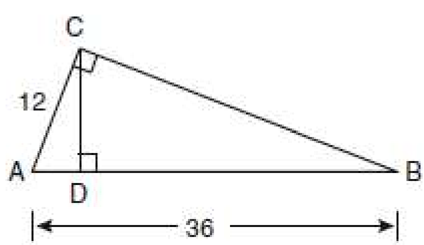
7. Altitude $\overline{TJ}$ is drawn to right triangle RTH. What is the measure of $\overline{RH}$?



8. In the diagram below, $\overline{DE}$ is an altitude drawn to right triangle NDI. If $\overline{IN} = 10$, and $\overline{DN} = 5$, find $\overline{EN}$.



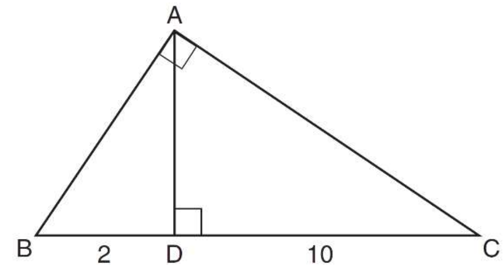
9. In the diagram below of right triangle ACB, altitude $\overline{CD}$ is drawn to hypotenuse $\overline{AB}$. If $AB = 36$ and $AC = 12$, what is the length of $\overline{AD}$?



10. In right triangle ABC, altitude $\overline{CD}$ is drawn to hypotenuse $\overline{AB}$.
If $AD = 3$ and $DB = 12$, what is the length of altitude $\overline{CD}$?
1) 6
2) $6\sqrt{5}$
3) 3
4) $3\sqrt{5}$

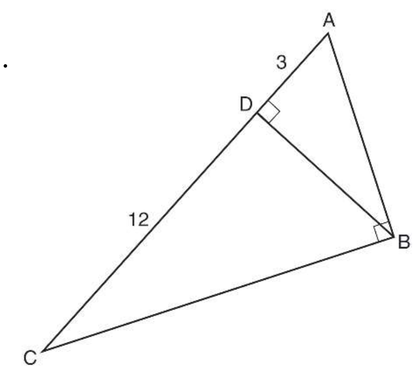
11. Line segment CD is the altitude drawn to hypotenuse $\overline{EF}$ in right triangle ECF. If $EC = 10$ and $EF = 24$, then, to the *nearest tenth*, ED is
1) 4.2
2) 5.4
3) 15.5
4) 21.8

12. Triangle *ABC* shown below is a right triangle with altitude $\overline{AD}$ drawn to the hypotenuse $\overline{BC}$.



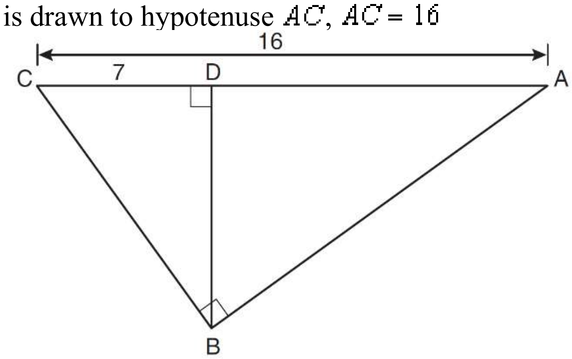
If $BD = 2$ and $DC = 10$, what is the length of $\overline{AB}$?
1) $2\sqrt{2}$
2) $2\sqrt{5}$
3) $2\sqrt{6}$
4) $2\sqrt{30}$

13. In right triangle *ABC* shown in the diagram below, altitude $\overline{BD}$ is drawn to hypotenuse $\overline{AC}$, $CD = 12$, and $AD = 3$.



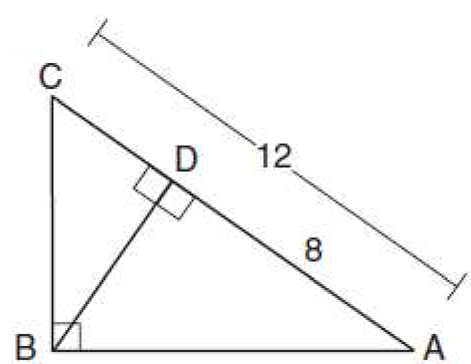
What is the length of $\overline{AB}$?
1) $5\sqrt{3}$
2) 6
3) $3\sqrt{5}$
4) 9

14. In the diagram below of right triangle *ABC*, altitude $\overline{BD}$ is drawn to hypotenuse $\overline{AC}$, $AC = 16$, and $CD = 7$.



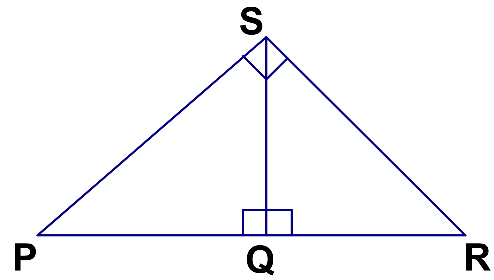
What is the length of $\overline{BD}$?
1) $3\sqrt{7}$
2) $4\sqrt{7}$
3) $7\sqrt{3}$
4) 12

15. In the diagram below of $\triangle ABC$, $\angle ABC$ is a right angle, $AC = 12$, $AD = 8$, and altitude $\overline{BD}$ is drawn.

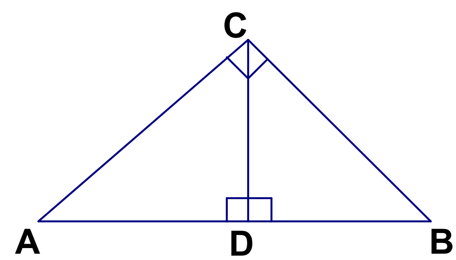


What is the length of $\overline{BC}$?
1) $4\sqrt{2}$
2) $4\sqrt{3}$
3) $4\sqrt{5}$
4) $4\sqrt{6}$

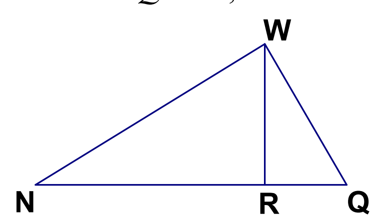
16. Altitude $\overline{SQ}$ is drawn to right triangle PSR. If $\overline{PQ}$ = 12 and $\overline{QR}$ is 3 less than $\overline{SQ}$, find the length of $\overline{QR}$.



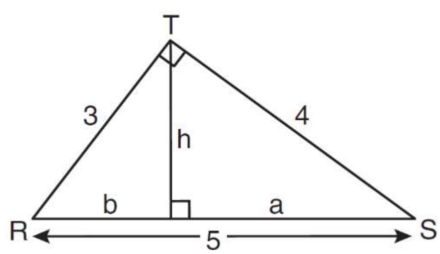
17. Altitude $\overline{CD}$ is drawn to right triangle ABC. The measure of $\overline{DB}$ is 9 less than $\overline{DA}$. If the altitude is 6, find the measure of $\overline{AD}$.



18. Altitude $\overline{WR}$ is drawn to right triangle NWQ. If $\overline{QW}$ = 8 and $\overline{NQ}$ = 16, find $\overline{WR}$ to the nearest tenth.



19. In the diagram below, $\triangle RST$ is a $3-4-5$ right triangle. The altitude, *h*, to the hypotenuse has been drawn. Determine the length of *h*.



Name ______________ Date ________
Mr. Schlansky Geometry

Factoring Trinomials and Solving Quadratic Equations

Factor the following trinomials

1. $x^2 + 4x - 12$

2. $x^2 + 3x + 2$

3. $x^2 - 8x + 15$

4. $x^2 - 8x - 20$

5. $x^2 + 5x - 14$

6. $x^2 + x - 12$

7. $x^2 - 3x - 10$

8. $x^2 - 7x + 12$

9. $x^2 - 9x + 20$

10. $x^2 - 9x - 36$

Solve the following equations for x:

11. $x^2 - 5x = 6$

12. $x^2 + 4x = 45$

13. $x^2 = 3x + 18$

14. $x^2 = 8x + 33$

15. $x^2 - 7x = 3x - 16$

16. $x^2 + 5x = 8x + 10$

17. $x(x-2) = 3(x+8)$

18. $x(x+7) = 3(x+7)$

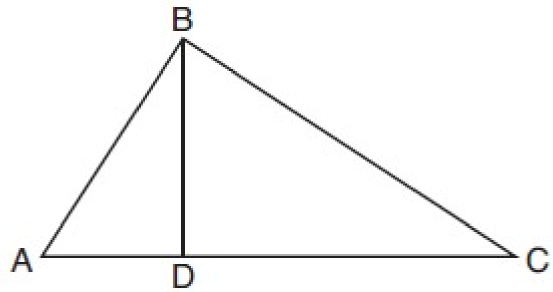
19. $(x-2)(x+3) = 3x + 2$

20. $(x+3)(x+3) = 36$

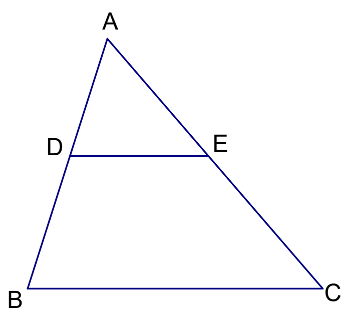
Name ________________ Date _________
Mr. Schlansky Geometry

Similar Triangles with Quadratics

1. In the diagram below of right triangle ABC, altitude $\overline{BD}$ is drawn to hypotenuse $\overline{AC}$. If $BD = 4$, $AD = x - 6$, and $CD = x$, what is the length of $\overline{CD}$?

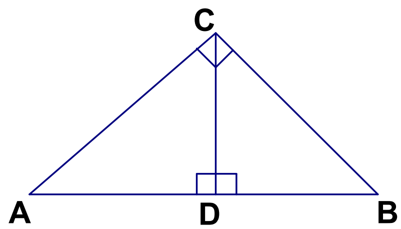


2. In triangle ABC, $\overline{DE} \parallel \overline{BC}$. If $\overline{AD} = 2$, $\overline{DB} = x + 1$, $\overline{AE} = x$, and $\overline{EC} = x + 6$, find $\overline{AE}$

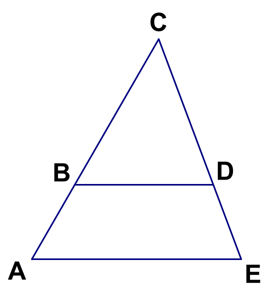


3. $\Delta HAI \sim \Delta CRE$. If $\overline{HA} = x$, $\overline{CR} = 6$, $\overline{HI} = 8$, and $\overline{CE} = x + 8$, determine and state the length of $\overline{CE}$.

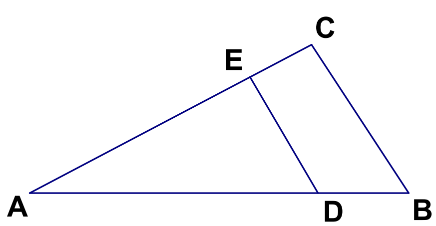
4. Altitude $\overline{CD}$ is drawn to right triangle ABC. If $\overline{AC} = 8$, $\overline{AB} = x$, and $\overline{AD} = x - 12$. Find the measure of $\overline{AD}$.



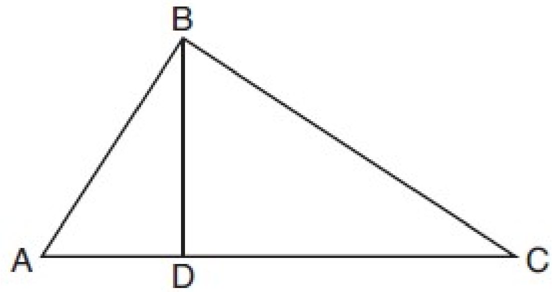
5. In the diagram, $\overline{BD} \parallel \overline{AE}$, $\overline{CB} = x + 3$, $\overline{BA} = 2$, $\overline{CD} = 2$, and $\overline{DE} = x$. Find $\overline{DE}$.



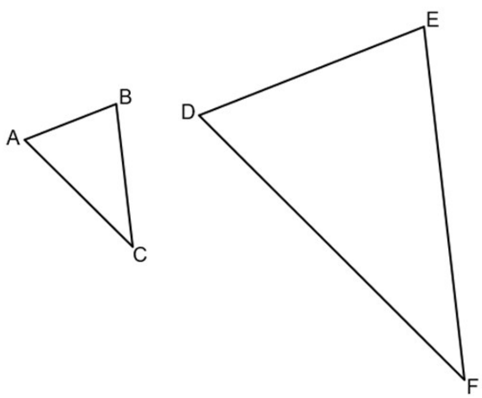
6. In the diagram, $\overline{ED} \parallel \overline{BC}$, $\overline{AE} = x + 2$, $\overline{DB} = x - 1$, $\overline{AD} = 9$ and $\overline{EC} = 2$, find the measure of $\overline{AE}$.



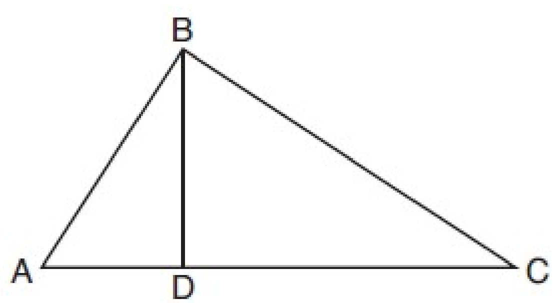
7. In the diagram, altitude $\overline{BD}$ is drawn to hypotenuse $\overline{AC}$. If $\overline{AB} = x - 1$, $\overline{DC} = 5$ and $\overline{AD} = 4$, find $\overline{AB}$.



8. In the diagram below, $\Delta ABC \sim DEF$. If $\overline{AB} = 4$, $\overline{BC} = x - 1$, $\overline{DE} = x + 3$, and $\overline{EF} = 15$, determine and state the length of $\overline{DE}$.



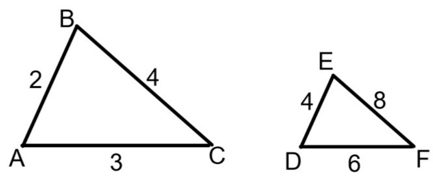
9. In the diagram, altitude $\overline{BD}$ is drawn to hypotenuse $\overline{AC}$. If $\overline{BD} = x + 2$, $\overline{DC} = 8$ and $\overline{AD} = 2$, find $\overline{BD}$.



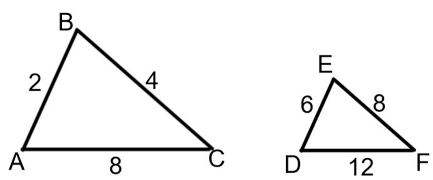
Name _____________ Date ________
Mr. Schlansky Geometry

Determining Whether Triangles are Similar

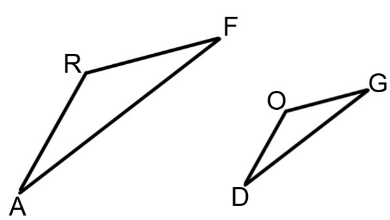
1. Determine whether the following triangles are similar. Explain your answer.



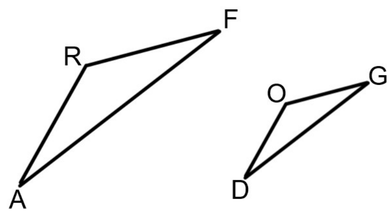
2. Determine whether the following triangles are similar. Explain your answer.



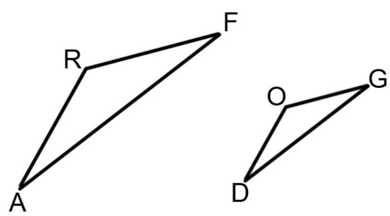
3. In the diagram below, $\overline{AR} = 15$, $\overline{RF} = 12$, $\overline{DO} = 10$, $\overline{OG} = 8$, and $\angle ARF \cong \angle DOG$.
Must $\Delta ARF \sim \Delta DOG$? Explain your answer.



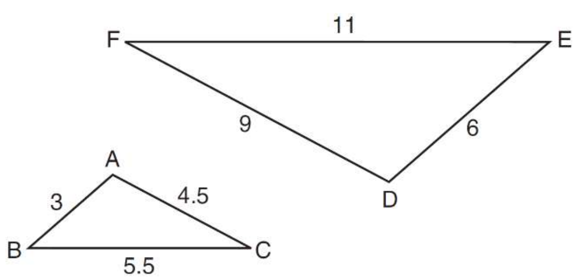
4. In the diagram below, $\overline{AR} = 18$, $\overline{RF} = 15$, $\overline{DO} = 12$, $\overline{OG} = 10$, and $\angle RAF \cong \angle ODG$. Must $\Delta ARF \sim \Delta DOG$? Explain your answer.



5. In the diagram below, $\overline{AF} = 20$, $\overline{RF} = 12$, $\overline{DG} = 12$, $\overline{OG} = 4$, and $\angle F \cong \angle G$. Must $\Delta ARF \sim \Delta DOG$? Explain your answer.



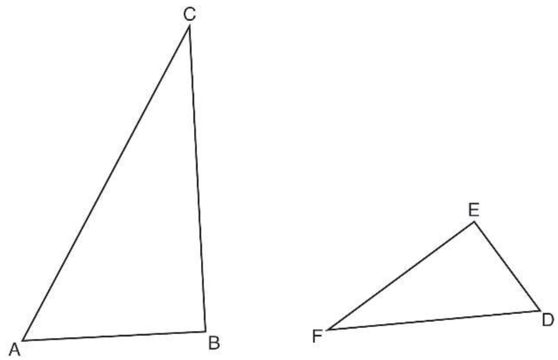
6. In the diagram below, $\triangle DEF$ is the image of $\triangle ABC$ after a clockwise rotation of 180° and a dilation where $AB = 3$, $BC = 5.5$, $AC = 4.5$, $DE = 6$, $FD = 9$, and $EF = 11$.



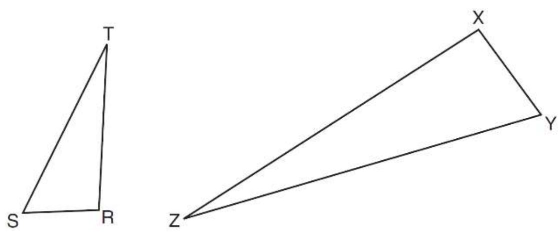
Show that $\Delta ABC \sim \Delta DEF$

7. Triangles *ABC* and *DEF* are drawn below.

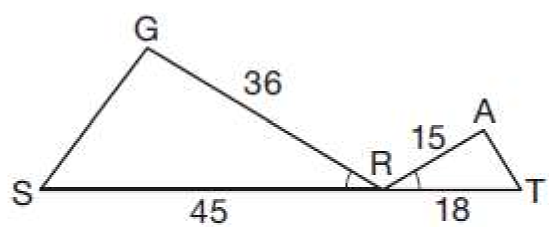
If $AB = 9$, $BC = 15$, $DE = 6$, $EF = 10$, and $\angle B \cong \angle E$, are the triangles similar? Explain your answer.



8. Triangles *RST* and *XYZ* are drawn below. If $RS = 6$, $ST = 14$, $XY = 9$, $YZ = 21$, and $\angle S \cong \angle Y$, is $\triangle RST$ similar to $\triangle XYZ$? Justify your answer.



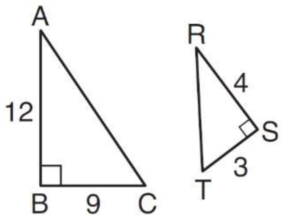
9. In the diagram below, $\angle GRS \cong \angle ART$, $GR = 36$, $SR = 45$, $AR = 15$, and $RT = 18$.

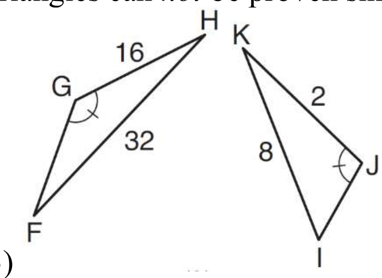


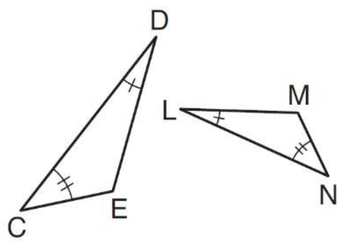
Which triangle similarity statement is correct?

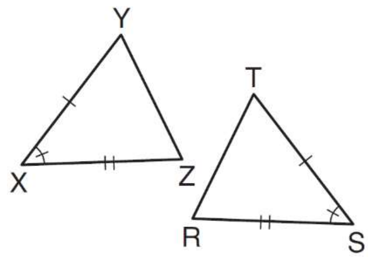
1) $\triangle GRS \sim \triangle ART$ by AA.
2) $\triangle GRS \sim \triangle ART$ by SAS.
3) $\triangle GRS \sim \triangle ART$ by SSS.
4) $\triangle GRS$ is not similar to $\triangle ART$.

10. Using the information given below, which set of triangles can *not* be proven similar?

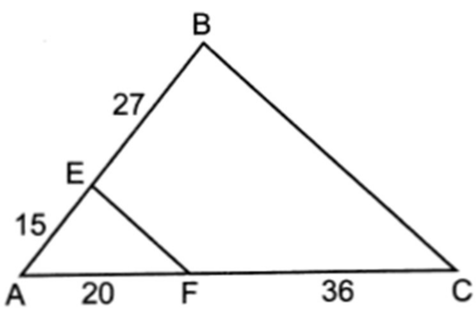
1) 

3) 

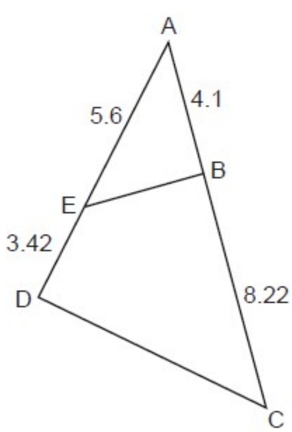
2) 

4) 

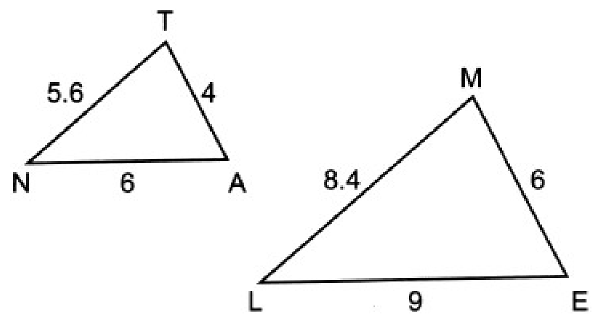
11. In the diagram below, $AE = 15$, $EB = 27$, $AF = 20$, and $FC = 36$. Is $\Delta ABC \sim \Delta AEF$. Explain your answer.



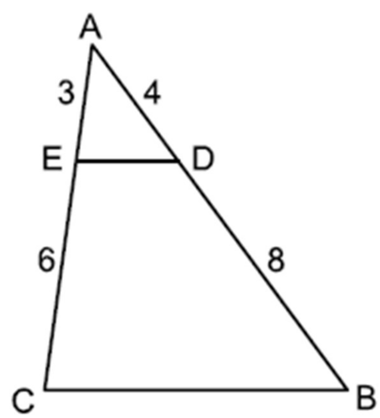
12. In $\triangle ADC$ below, $\overline{EB}$ is drawn such that $AB = 4.1$, $AE = 5.6$, $BC = 8.22$, and $ED = 3.42$. Is $\triangle ABE$ similar to $\triangle ADC$? Explain why.



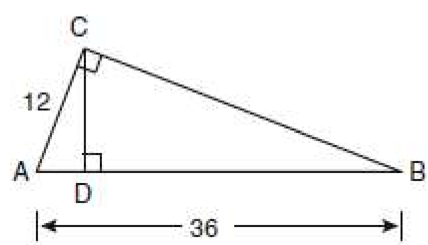
13. In triangles *ANT* and *ELM* below, $AN = 6$, $NT = 5.6$, $TA = 4$, $EL = 9$, $LM = 8.4$, and $ME = 6$. Explain why $\triangle ANT \sim \triangle ELM$.



14. In $\triangle ABC$ below, $\overline{DE}$ is drawn such that $AD = 4$, $DB = 8$, $AE = 3$, and $EC = 6$. Explain why $\triangle ADE \sim \triangle ABC$.



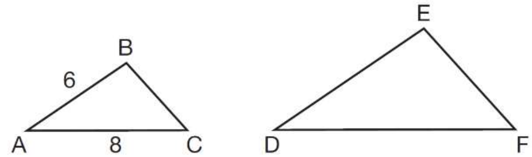
15. In the diagram below of right triangle *ACB*, altitude $\overline{CD}$ is drawn to hypotenuse $\overline{AB}$. If *AD* = 4, explain why $\Delta ABC \sim \Delta ACD$.



16. In the diagram below, $\triangle ABC \sim \triangle DEF$.

If $AB = 6$ and $AC = 8$, which statement will justify similarity by SAS?

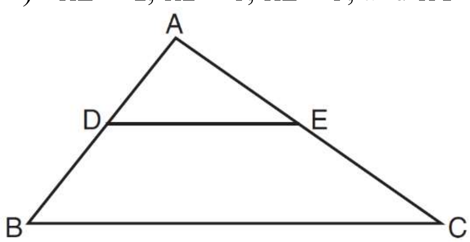
1) $DE = 9$, $DF = 12$, and $\angle A \cong \angle D$
2) $DE = 8$, $DF = 10$, and $\angle A \cong \angle D$
3) $DE = 36$, $DF = 64$, and $\angle C \cong \angle F$
4) $DE = 15$, $DF = 20$, and $\angle C \cong \angle F$



17. In the diagram below, $\triangle ABC \sim \triangle ADE$.

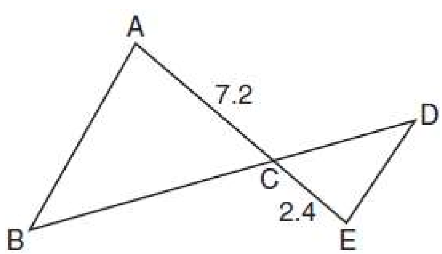
Which measurements are justified by this similarity?

1) $AD = 3$, $AB = 6$, $AE = 4$, and $AC = 12$
2) $AD = 5$, $AB = 8$, $AE = 7$, and $AC = 10$
3) $AD = 3$, $AB = 9$, $AE = 5$, and $AC = 10$
4) $AD = 2$, $AB = 6$, $AE = 5$, and $AC = 15$



18. In the diagram below, $AC = 7.2$ and $CE = 2.4$.
Which statement is *not* sufficient to prove $\triangle ABC \sim \triangle EDC$?

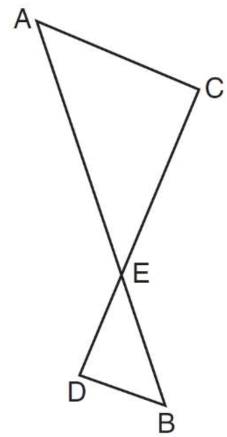
1) $\overline{AB} \parallel \overline{ED}$
2) $DE = 2.7$ and $AB = 8.1$
3) $CD = 3.6$ and $BC = 10.8$
4) $DE = 3.0$, $AB = 9.0$, $CD = 2.9$, and $BC = 8.7$



Name _______________ Date __________
Mr. Schlansky Geometry

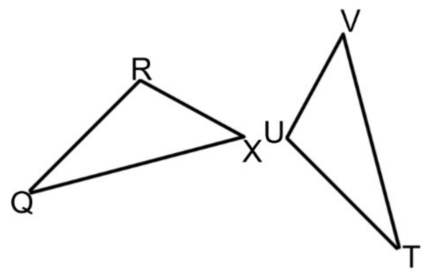
Determining If a Proportion Is Correct

1. As shown in the diagram below, $\overline{AB}$ and $\overline{CD}$ intersect at E, and $\overline{AC} \parallel \overline{BD}$. Given $\triangle AEC \sim \triangle BED$, which equation is true?



1) $\frac{CE}{DE} = \frac{EB}{EA}$
2) $\frac{AE}{BE} = \frac{AC}{BD}$
3) $\frac{EC}{AE} = \frac{BE}{ED}$
4) $\frac{ED}{EC} = \frac{AC}{BD}$

2. In the diagram below, $\Delta QRX \sim \Delta TUV$. Which of the following statements is *not* true?

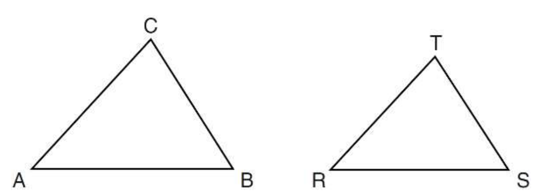


1) $\frac{\overline{QR}}{\overline{TU}} = \frac{\overline{QX}}{\overline{TV}}$ 2) $\frac{\angle X}{\angle V} = \frac{\angle Q}{\angle T}$
3) $\frac{\overline{RX}}{\overline{UV}} = \frac{\overline{VT}}{\overline{XQ}}$ 4) $\frac{\overline{QX}}{\overline{QR}} = \frac{\overline{TV}}{\overline{TU}}$

3. Given that $\Delta DEF \sim \Delta HIJ$, which is the correct statement about their corresponding sides?

1) $\frac{\overline{EF}}{\overline{IJ}} = \frac{\overline{DE}}{\overline{HI}}$ 3) $\frac{\overline{DE}}{\overline{HJ}} = \frac{\overline{EF}}{\overline{HI}}$
2) $\frac{\overline{EF}}{\overline{HI}} = \frac{\overline{IJ}}{\overline{DE}}$ 4) $\frac{\overline{DE}}{\overline{JI}} = \frac{\overline{EF}}{\overline{HJ}}$

4. In the diagram below, $\triangle ABC \sim \triangle RST$.



Which statement is *not* true?
1) $\angle A \cong \angle R$
2) $\frac{AB}{RS} = \frac{BC}{ST}$
3) $\frac{AB}{BC} = \frac{ST}{RS}$
4) $\angle B \cong \angle S$

5. Scalene triangle *ABC* is similar to triangle *DEF*. Which statement is *false*?

1) $\dfrac{\overline{AB}}{\overline{BC}} = \dfrac{\overline{DE}}{\overline{EF}}$

2) $\dfrac{\overline{AC}}{\overline{DF}} = \dfrac{\overline{BC}}{\overline{EF}}$

3) $\angle ACB \cong \angle DFE$

4) $\angle ABC \cong \angle EDF$

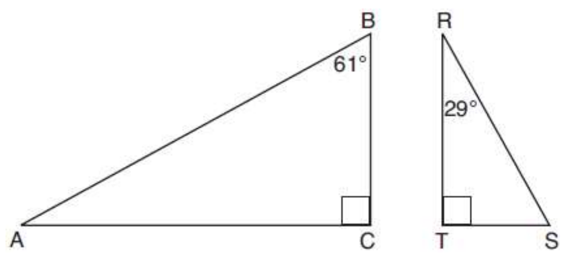
6. Given right triangle *ABC* with a right angle at *C*, $m\angle B = 61°$. Given right triangle *RST* with a right angle at *T*, $m\angle R = 29°$.
Which proportion in relation to $\triangle ABC$ and $\triangle RST$ is *not* correct?

1) $\dfrac{AB}{RS} = \dfrac{RT}{AC}$

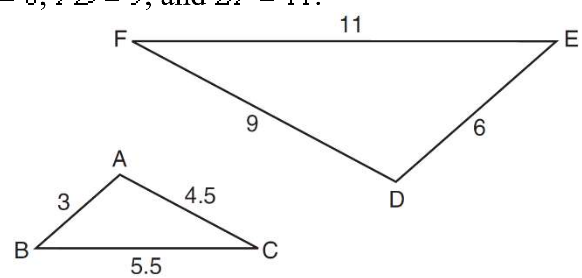
2) $\dfrac{BC}{ST} = \dfrac{AB}{RS}$

3) $\dfrac{BC}{ST} = \dfrac{AC}{RT}$

4) $\dfrac{AB}{AC} = \dfrac{RS}{RT}$



7. In the diagram below, $\triangle DEF$ is the image of $\triangle ABC$ after a clockwise rotation of 180° and a dilation where $AB = 3$, $BC = 5.5$, $AC = 4.5$, $DE = 6$, $FD = 9$, and $EF = 11$.



Which relationship must always be true?

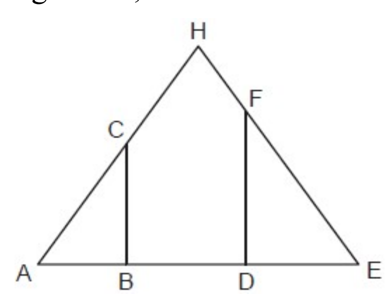
1) $\dfrac{m\angle A}{m\angle D} = \dfrac{1}{2}$

2) $\dfrac{m\angle C}{m\angle F} = \dfrac{2}{1}$

3) $\dfrac{m\angle A}{m\angle C} = \dfrac{m\angle F}{m\angle D}$

4) $\dfrac{m\angle B}{m\angle E} = \dfrac{m\angle C}{m\angle F}$

8. In the diagram below of isosceles triangle *AHE* with the vertex angle at *H*, $\overline{CB} \perp \overline{AE}$ and $\overline{FD} \perp \overline{AE}$.



Which statement is always true?

1) $\dfrac{AH}{AC} = \dfrac{EH}{EF}$

2) $\dfrac{AC}{EF} = \dfrac{AB}{ED}$

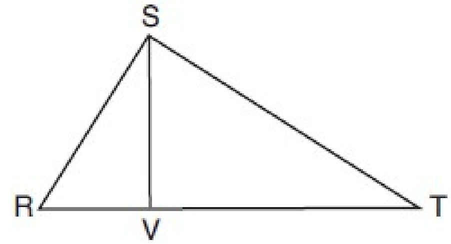
3) $\dfrac{AB}{ED} = \dfrac{CB}{FE}$

4) $\dfrac{AD}{AB} = \dfrac{BE}{DE}$

Name _______________ Date _________
Mr. Schlansky Geometry

Determining If a Proportion Is Correct (Candy Corn and HLLS SAAS)

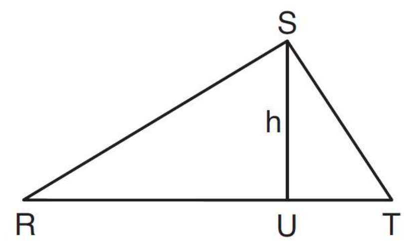
1. In right triangle *RST* below, altitude $\overline{SV}$ is drawn to hypotenuse $\overline{RT}$. Which of the following proportions is true?



1) $\frac{\overline{RV}}{\overline{VS}} = \frac{\overline{VT}}{\overline{VS}}$ 2) $\frac{\overline{RT}}{\overline{RS}} = \frac{\overline{RS}}{\overline{VT}}$

3) $\frac{\overline{RT}}{\overline{SV}} = \frac{\overline{SV}}{\overline{VT}}$ 4) $\frac{\overline{RT}}{\overline{ST}} = \frac{\overline{ST}}{\overline{VT}}$

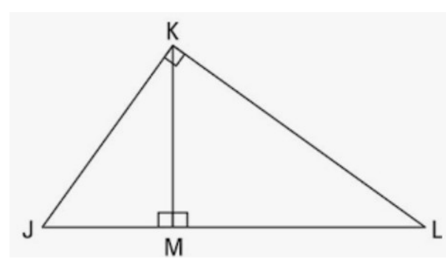
2. In right triangle *RST* below, altitude $\overline{SU}$ is drawn to hypotenuse $\overline{RT}$. Which of the following proportions is *not* true?



1) $\frac{\overline{RU}}{\overline{SU}} = \frac{\overline{SU}}{\overline{UT}}$ 2) $\frac{\overline{SU}}{\overline{RU}} = \frac{\overline{RU}}{\overline{UT}}$

3) $\frac{\overline{RT}}{\overline{RS}} = \frac{\overline{RS}}{\overline{RU}}$ 4) $\frac{\overline{TR}}{\overline{ST}} = \frac{\overline{ST}}{\overline{UT}}$

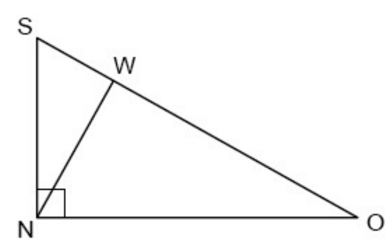
3. In right triangle *JKL* below, altitude $\overline{KM}$ is drawn to hypotenuse $\overline{JL}$. Which of the following proportions is *not* true?



1) $\frac{\overline{JL}}{\overline{JK}} = \frac{\overline{JK}}{\overline{JM}}$ 2) $\frac{\overline{JM}}{\overline{KM}} = \frac{\overline{KM}}{\overline{ML}}$

3) $\frac{\overline{JL}}{\overline{KL}} = \frac{\overline{KL}}{\overline{JM}}$ 4) $\frac{\overline{ML}}{\overline{MK}} = \frac{\overline{MK}}{\overline{MJ}}$

4. In right triangle *SNO* below, altitude $\overline{NW}$ is drawn to hypotenuse $\overline{SO}$.



Which statement is *not* always true?

1) $\frac{SO}{SN} = \frac{SN}{SW}$ 3) $\frac{SO}{ON} = \frac{ON}{OW}$

2) $\frac{SW}{NS} = \frac{NS}{OW}$ 4) $\frac{OW}{NW} = \frac{NW}{SW}$

5. In the diagram below of $\triangle ACT$, $\overleftrightarrow{ES}$ is drawn parallel to $\overline{AT}$ such that E is on $\overline{CA}$ and S is on $\overline{CT}$.

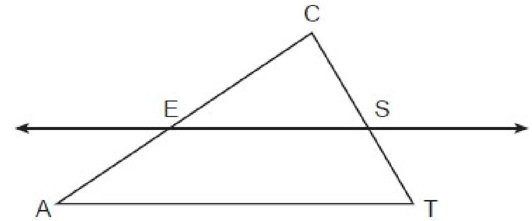
Which statement is always true?

1) $\frac{CE}{CA} = \frac{CS}{ST}$

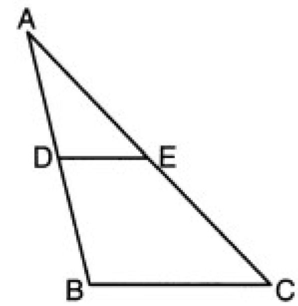
2) $\frac{CE}{ES} = \frac{EA}{AT}$

3) $\frac{CE}{EA} = \frac{CS}{ST}$

4) $\frac{CE}{ST} = \frac{EA}{CS}$



6. In $\triangle ABC$ below, $\overline{DE}$ is drawn such that D and E are on $\overline{AB}$ and $\overline{AC}$, respectively.



If $\overline{DE} \parallel \overline{BC}$, which equation will always be true?

1) $\frac{AD}{DE} = \frac{DB}{BC}$

2) $\frac{AD}{DE} = \frac{AB}{BC}$

3) $\frac{AD}{BC} = \frac{DE}{DB}$

4) $\frac{AD}{BC} = \frac{DE}{AB}$

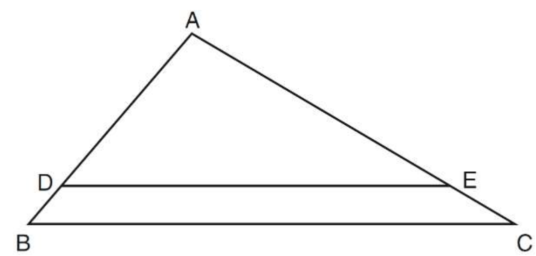
7. In the diagram of $\triangle ABC$ shown below, $\overline{DE} \parallel \overline{BC}$. Which of the following statements is *not* true?

1) $\frac{\overline{AD}}{\overline{DE}} = \frac{\overline{AB}}{\overline{BC}}$

2) $\frac{\overline{BC}}{\overline{DE}} = \frac{\overline{CA}}{\overline{EA}}$

3) $\frac{\overline{AD}}{\overline{AE}} = \frac{\overline{DB}}{\overline{AC}}$

4) $\frac{\overline{DB}}{\overline{EC}} = \frac{\overline{AB}}{\overline{AC}}$



8. In the diagram below of right triangle AED, $\overline{BC} \parallel \overline{DE}$.

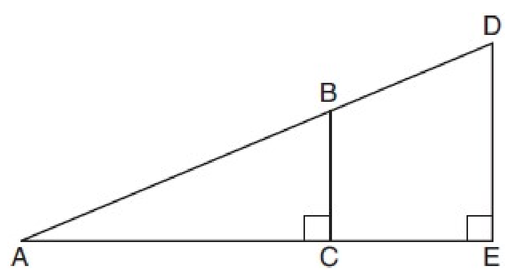
Which statement is always true?

1) $\frac{AC}{BC} = \frac{DE}{AE}$

2) $\frac{AB}{AD} = \frac{BC}{DE}$

3) $\frac{AC}{CE} = \frac{BC}{DE}$

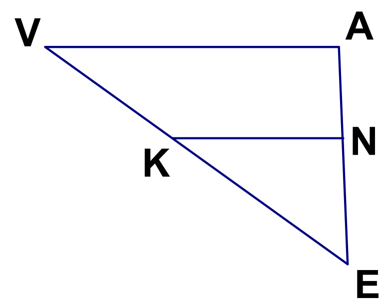
4) $\frac{DE}{BC} = \frac{DB}{AB}$



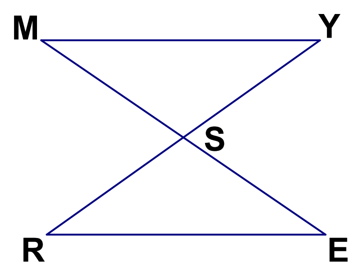
Name _______________   Date ______________
Mr. Schlansky   Geometry

Parallel Mini Proofs

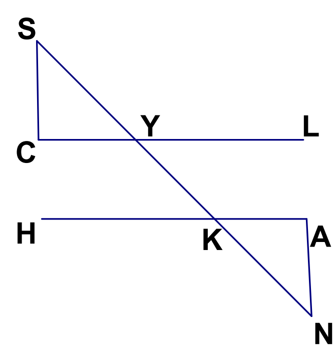
1. Given: $\overline{VA} \parallel \overline{KN}$



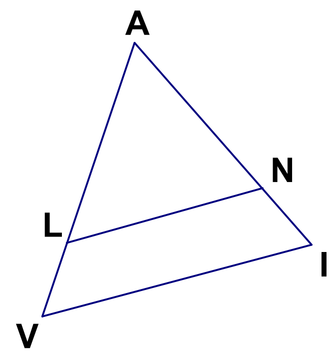
2. Given: $\overline{MY} \parallel \overline{RE}$



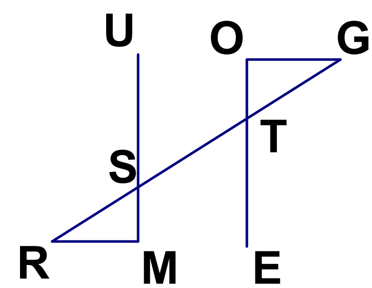
3. Given: $\overline{CL} \parallel \overline{HA}$



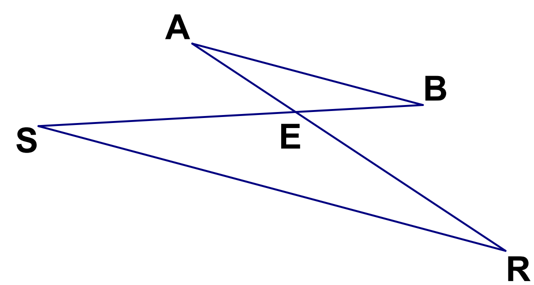
4. Given: $\overline{LN} \parallel \overline{VI}$



5. Given: $\overline{UM} \parallel \overline{OE}$



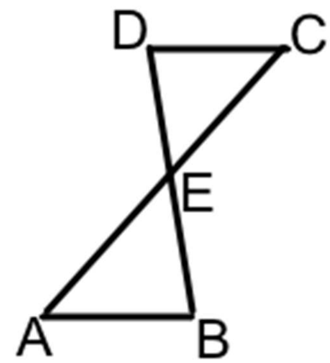
6. Given: $\overline{SR} \parallel \overline{AB}$



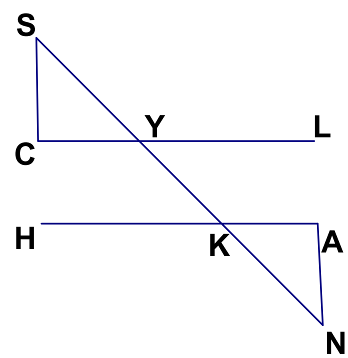
Name _______________ Date __________
Mr. Schlansky Geometry

Similar Triangles Proofs

1. Given $\angle A \cong \angle C$
Prove: $\Delta ABE \sim \Delta CDE$



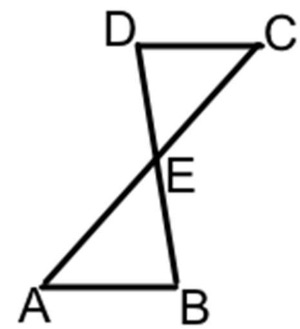
2. Given: $\overline{CL} \parallel \overline{HA}$, $\angle CSY \cong \angle ANK$
Prove: $\Delta SCY \sim \Delta NAK$



3. Given: $\overline{BC} \perp \overline{AC}$
$\overline{DE} \perp \overline{AB}$
Prove: $\Delta ABC \sim \Delta ADE$

4. Given $\overline{AB} \parallel \overline{DC}$

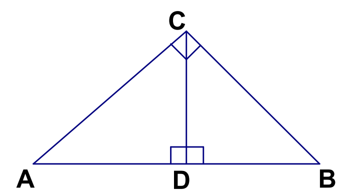
Prove: $\Delta ABE \sim \Delta CDE$



5. Given: $\overline{CD}$ is an altitude

$\overline{BC} \perp \overline{AC}$

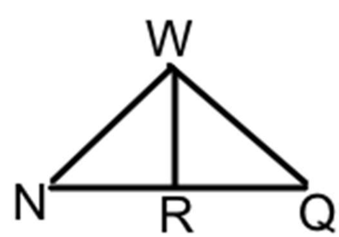
Prove: $\Delta ADC \sim \Delta ACB$



6. Given: $\overline{WR}$ bisects $\angle NWQ$

$\overline{WN} \cong \overline{WQ}$

Prove: $\Delta RWN \sim \Delta RWQ$

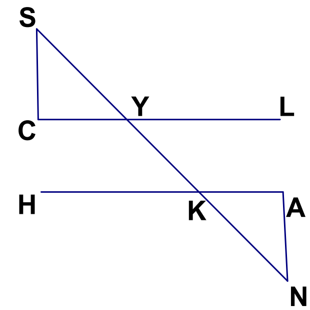


Name ______________
Mr. Schlansky

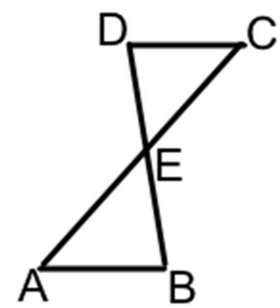
Date __________
Geometry

Proving Multiplication Mini Proofs

1. Given: None
   Prove: $\overline{SC} \bullet \overline{NK} = \overline{NA} \bullet \overline{SY}$

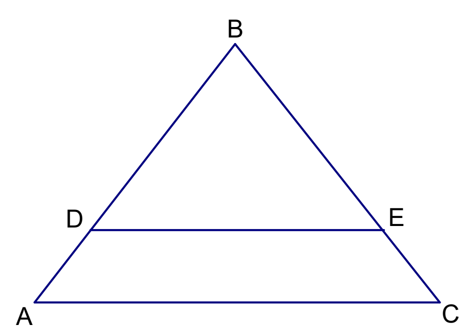


2. Given: None
   Prove: $\overline{CD} \bullet \overline{AE} = \overline{AB} \bullet \overline{CE}$

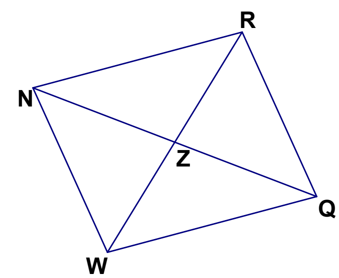


3. Given: None
   Prove: $\overline{AC} \bullet \overline{DE} = \overline{AE} \bullet \overline{BC}$

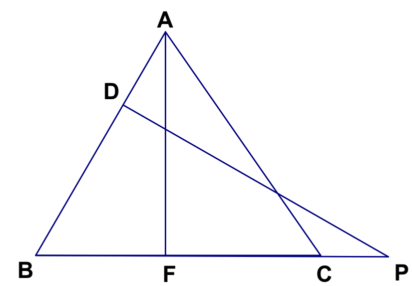
4. Given: None
   Prove: $\overline{BE} \bullet \overline{AB} = \overline{DB} \bullet \overline{BC}$



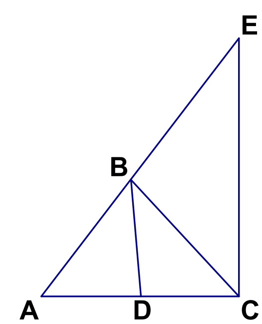
5. Given: None
Prove: $\overline{RZ} \bullet \overline{QW} = \overline{RQ} \bullet \overline{ZW}$



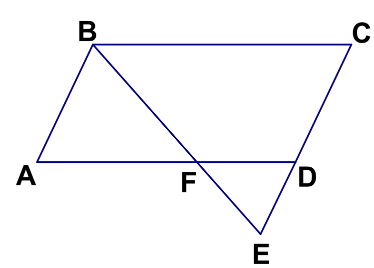
6. Given: None
Prove: $\overline{FC} \bullet \overline{PB} = \overline{DB} \bullet \overline{AC}$



7. Given: None
Prove: $\overline{AD} \bullet \overline{EA} = \overline{BA} \bullet \overline{AC}$



8. Given: None
Prove: $\overline{AB} \bullet \overline{DF} = \overline{AF} \bullet \overline{FE}$

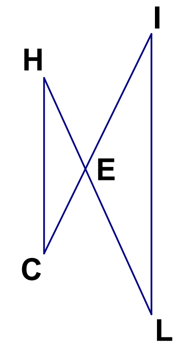


Name ______________ Date _________
Mr. Schlansky Geometry

Proving Proportions and Multiplication

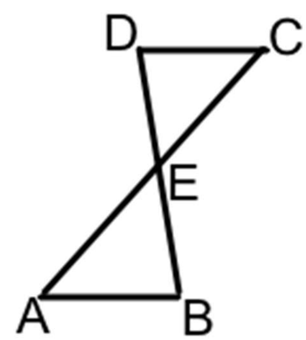
1. Given: $\angle HCE \cong \angle LIE$

Prove: $\overline{CE} \bullet \overline{IL} = \overline{CH} \bullet \overline{EI}$



2. Given $\overline{AB} \parallel \overline{DC}$

Prove: $\overline{DC} \bullet \overline{EB} = \overline{AB} \bullet \overline{DE}$



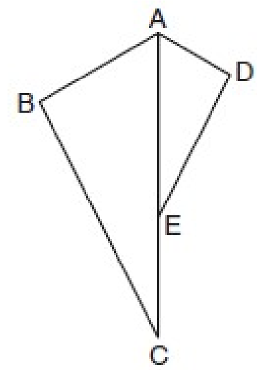
3. Given: $\overline{BC} \perp \overline{AC}$

$\overline{DE} \perp \overline{AB}$

Prove: $\overline{AC} \bullet \overline{AD} = \overline{AE} \bullet \overline{AB}$

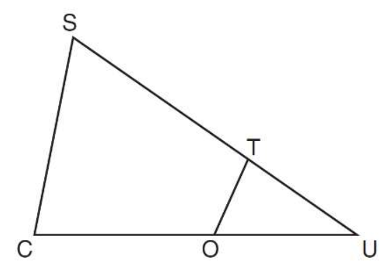
4. Given: $\overline{CA}$ bisects $\angle BAD$, $\angle ABC \cong \angle ADE$

   Prove: $\overline{BC} \bullet \overline{AE} = \overline{DE} \bullet \overline{AC}$



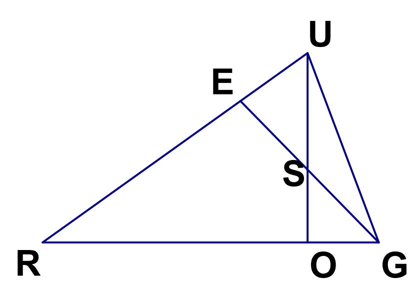
5. Given: $\angle C \cong \angle OTU$.

Prove: $\overline{SC} \bullet \overline{OU} = \overline{OT} \bullet \overline{SU}$



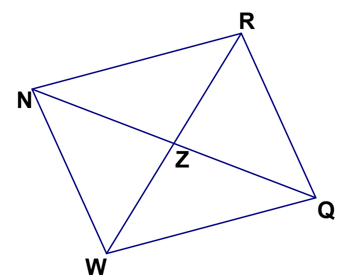
6. Given: $\overline{UO} \perp \overline{RG}$, $\overline{UR} \perp \overline{EG}$

   Prove: $\dfrac{\overline{US}}{\overline{SO}} = \dfrac{\overline{EU}}{\overline{OG}}$



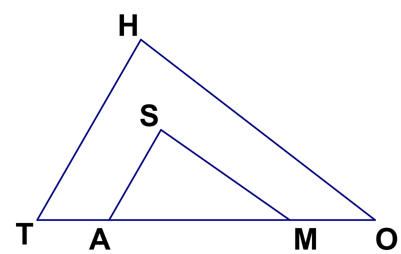
7. Given: $\overline{NQ} \perp \overline{RW}$, $\overline{NQ}$ bisects $\angle$ RQW

Prove: $\overline{RZ} \bullet \overline{QW} = \overline{RQ} \bullet \overline{ZW}$



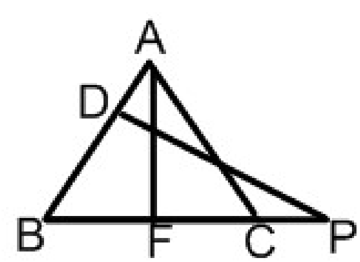
8. Given: $\overline{TH} \parallel \overline{AS}$, $\overline{SM} \parallel \overline{HO}$

Prove: $\overline{TH} \bullet \overline{SM} = \overline{AS} \bullet \overline{HO}$



9. Given: $\overline{AB} \cong \overline{AC}$, $\overline{AF} \perp \overline{BC}$, $\overline{PD} \perp \overline{AB}$

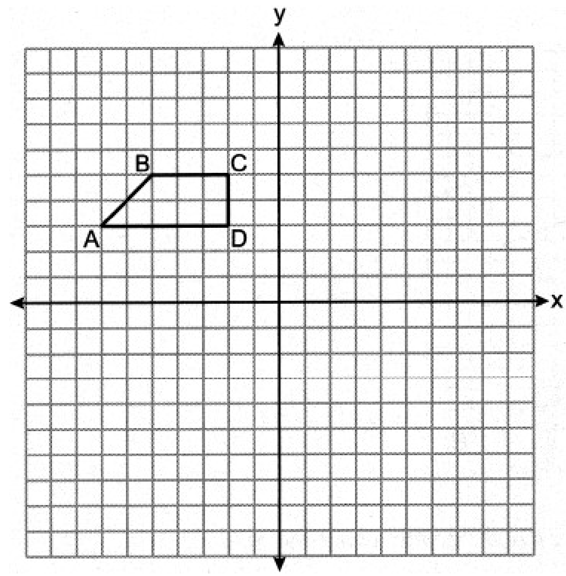
Prove: $\overline{FC} \bullet \overline{PB} = \overline{DB} \bullet \overline{AC}$



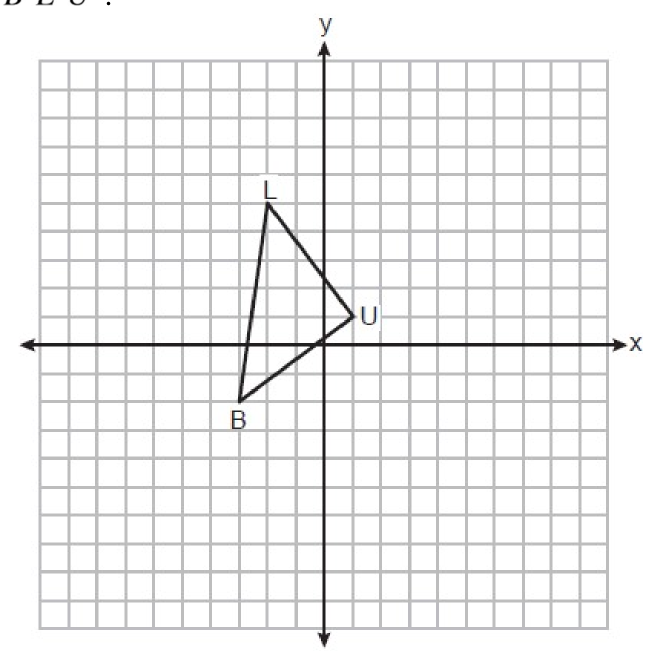
Name ____________ Date ________
Mr. Schlansky Geometry

Similar Triangles Review Sheet

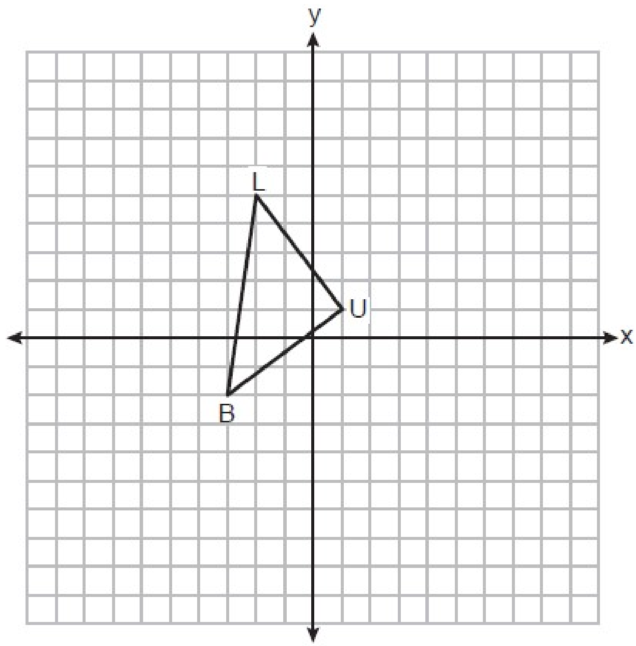
1. Trapezoid $ABCD$ is graphed on the set of axes below. Trapezoid $A'B'C'D'$, whose vertices are $A'(-7, 6)$, $B'(-5, 10)$, $C'(-2, 10)$, and $D'(-2, 6)$ is the image of trapezoid $ABCD$. What maps trapezoid $ABCD$ on trapezoid $A'B'C'D'$?
1) Vertical Stretch
2) Horizontal Stretch
3) Dilation
4) Translation



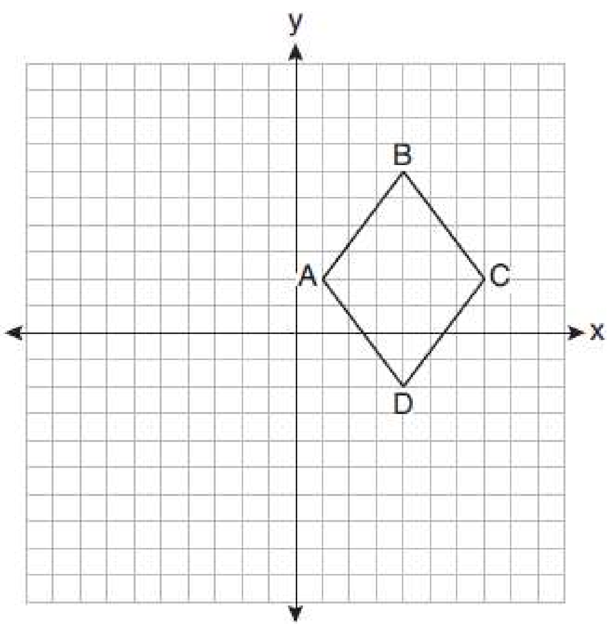
2. On the set of axes below, $\triangle BLU$ has vertices with coordinates $B(-3,-2)$, $L(-2,5)$, and $U(1,1)$. $\Delta B'L'U'$ whose vertices are , $B'(-9,-2)$, $L'(-6,5)$, and $U'(3,1)$ is the image of $\triangle BLU$. What maps $\triangle BLU$ onto $\Delta B'L'U'$?
1) Vertical Stretch
2) Horizontal Stretch
3) Dilation
4) Translation



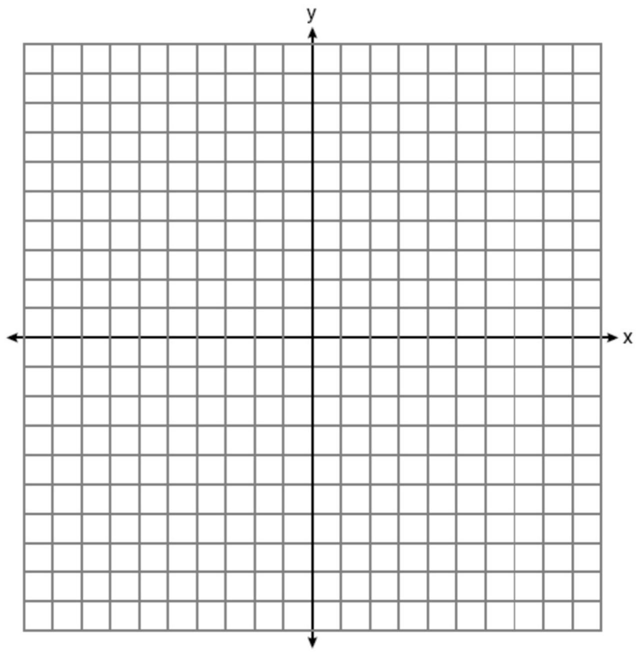
3. The triangle graphed below with vertices at B(-3,-2), U(1,1), and L(-2,5), is graphed on the set of axes below. A horizontal stretch of scale factor 3 with respect to x = 0 is represented by $(x, y) \rightarrow (3x, y)$. Graph the image of this triangle, after the horizontal stretch on the same set of axes.



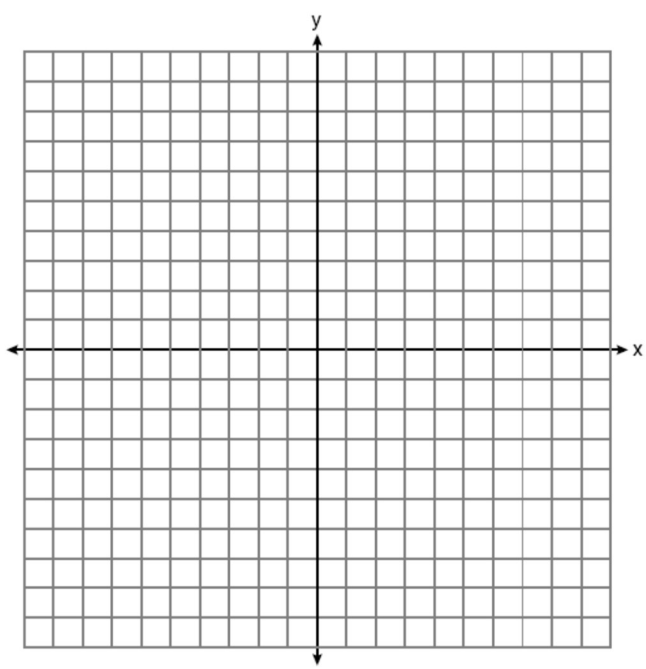
4. The rhombus graphed below with vertices at A(1,2), B(4,6), C(7,2), and D(4,-2), is graphed on the set of axes below. A vertical shrink of scale factor $\frac{1}{2}$ with respect to y = 0 is represented by $(x, y) \rightarrow (x, \frac{1}{2}y)$. Graph the image of this rhombus, after the vertical shrink on the same set of axes.



5. Triangle SUN has coordinates $S(0,6)$, $U(3,5)$, and $N(3,0)$. On the accompanying grid, draw and label $\triangle SUN$. Then, graph and state the coordinates of $\triangle S'U'N'$, the image of $\triangle SUN$ after a dilation of 2 centered at (-1,4).

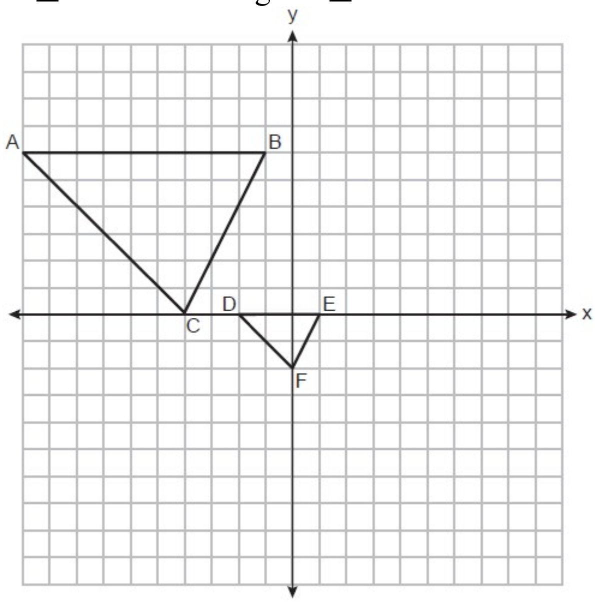


6. Triangle ABC has coordinates $A(2,1)$, $B(6,1)$, $C(5,3)$. What is the image of this triangle after a dilation of 4 centered at (6,4). Graph both the image and the pre image.

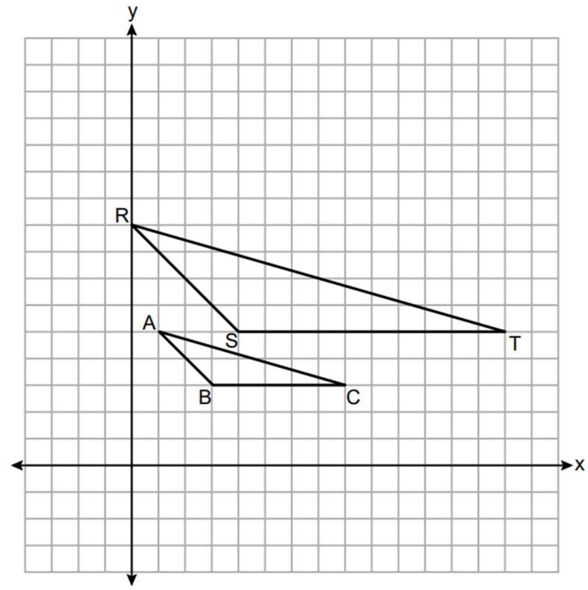


Find the center of dilation AND the scale factor if

7. $\triangle DEF$ is the image of $\triangle ABC$



8. $\triangle RST$ is the image of $\triangle ABC$

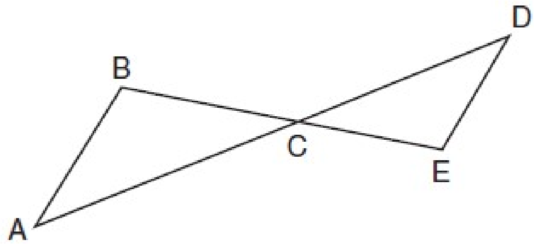


9. Triangle JOY has a perimeter of 10 and an area of 12. What is the perimeter and area of triangle JOY after a dilation by a scale factor of 2?

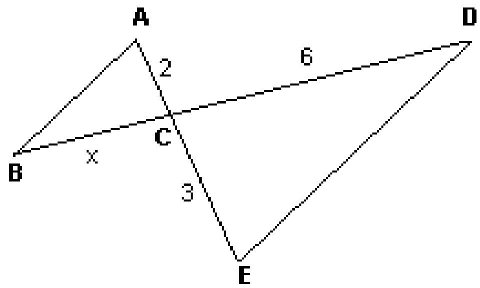
10. Quadrilateral CAMI has a perimeter of 20 and an area of 15. What is the perimeter and area of quadrilateral CAMI after a dilation by a scale factor of 4?

11. In the diagram below, $\overline{AD}$ intersects $\overline{BE}$ at C, and $\overline{AB} \parallel \overline{DE}$.

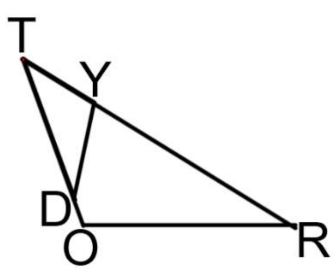
If $CD = 6.6$ cm, $DE = 3.4$ cm, $CE = 4.2$ cm, and $BC = 5.25$ cm, what is the length of $\overline{AC}$, to the *nearest hundredth of a centimeter*?



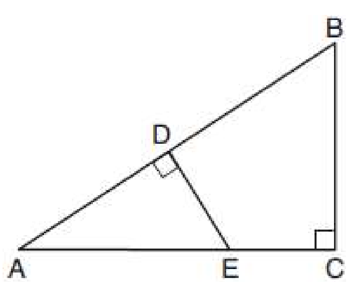
12. In the diagram below, $\overline{AB} \parallel \overline{DE}$. If $AC = 2$, $CD = 6$, and $CE = 3$, what is BC ?



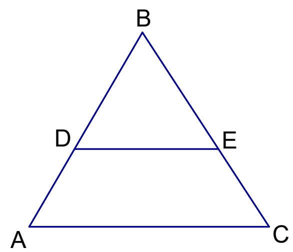
13. In triangle TOR, Y is on $\overline{TR}$, and D is on $\overline{TO}$ so that $\angle TYD \cong \angle ROT$.
If $\overline{TY} = 2$, $\overline{YR} = 6$, and $\overline{TD} = 4$, find $\overline{TO}$.



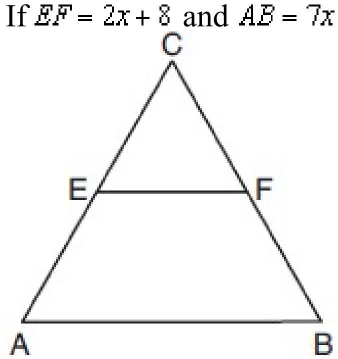
14. In $\triangle ABC$ shown below, $\angle ACB$ is a right angle, E is a point on $\overline{AC}$, and $\overline{ED}$ is drawn perpendicular to hypotenuse $\overline{AB}$. If $AB = 9$, $BC = 6$, and $DE = 4$, what is the length of $\overline{AE}$?



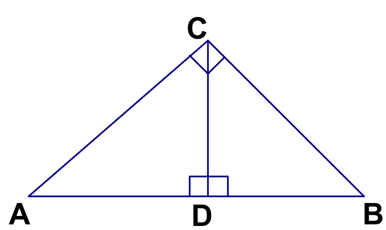
15. D and E are midpoints of $\overline{AB}$ and $\overline{BC}$ respectively. If $\overline{DE} = 2x + 5$ and $\overline{AC} = 7x + 1$, find the measure of $\overline{AC}$.



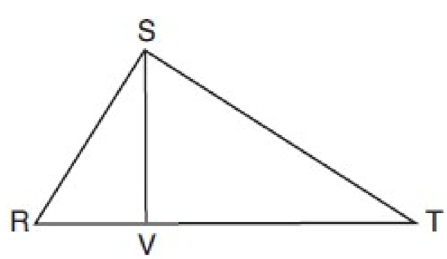
16. In the diagram of *ABC* shown below, *E* and *F* are the midpoints of $\overline{AC}$ and $\overline{BC}$, respectively.
If $EF = 2x + 8$ and $AB = 7x - 2$, what is *AB*?



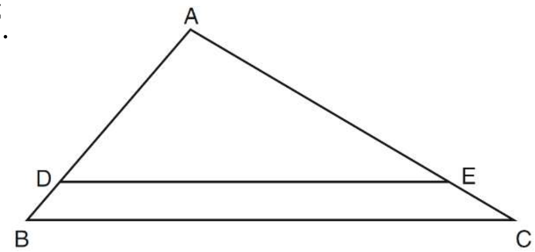
17. If $\overline{AD} = 3$ and $\overline{AB} = 27$, find $\overline{CD}$ to the *nearest tenth*.



18. In right triangle *RST* below, altitude $\overline{SV}$ is drawn to hypotenuse $\overline{RT}$. If $RV = 4.1$ and $TV = 10.2$, what is the length of $\overline{ST}$, to the *nearest tenth*?



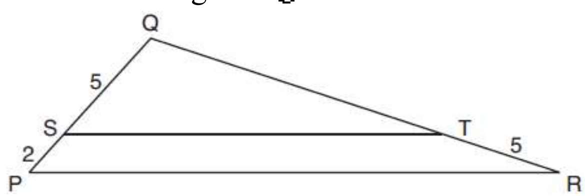
19. In the diagram of $\triangle ABC$ shown below, $\overline{DE} \parallel \overline{BC}$.



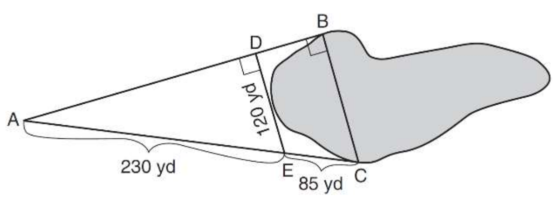
If $AB = 10$, $AD = 8$, and $AE = 12$, what is the length of $\overline{EC}$?

1) 6
2) 2
3) 3
4) 15

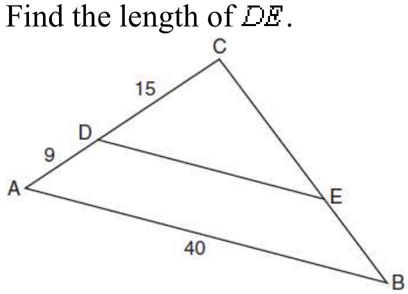
20. In the diagram below of $\triangle PQR$, $\overline{ST}$ is drawn parallel to $\overline{PR}$, $PS = 2$, $SQ = 5$, and $TR = 5$
What is the length of $\overline{QR}$?



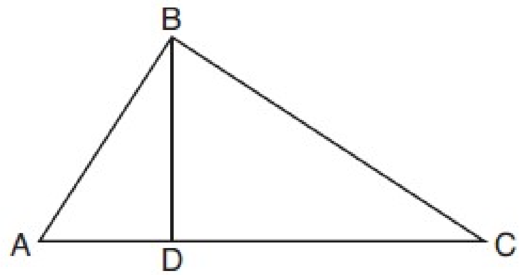
21. To find the distance across a pond from point *B* to point *C*, a surveyor drew the diagram below. The measurements he made are indicated on his diagram.
Use the surveyor's information to determine and state the distance from point *B* to point *C*, to the *nearest yard*.



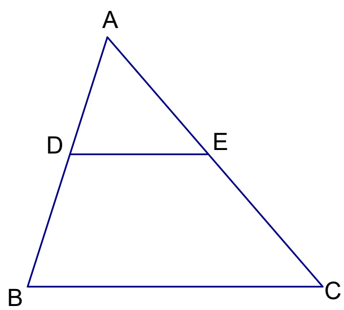
22. In the diagram of $\triangle ABC$ below, $\overline{DE}$ is parallel to $\overline{AB}$, $CD = 15$, $AD = 9$, and $AB = 40$.
Find the length of $\overline{DE}$.



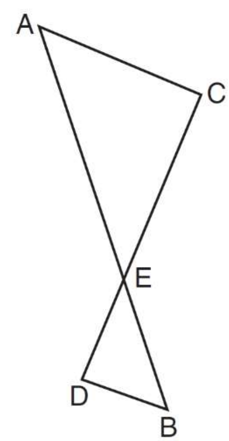
23. In the diagram below of right triangle *ABC*, altitude $\overline{BD}$ is drawn to hypotenuse $\overline{AC}$. If $BD = 4$, $AD = x - 6$, and $CD = x$, what is the length of $\overline{CD}$?



24. In triangle ABC, $\overline{DE} \parallel \overline{BC}$. If $\overline{AD} = 2$, $\overline{DB} = x + 1$, $\overline{AE} = x$, and $\overline{EC} = x + 6$, find $\overline{AE}$



25. As shown in the diagram below, $\overline{AB}$ and $\overline{CD}$ intersect at *E*, and $\overline{AC} \parallel \overline{BD}$.



Given $\triangle AEC \sim \triangle BED$, which equation is true?

1) $\dfrac{CE}{DE} = \dfrac{EB}{EA}$

2) $\dfrac{EC}{AE} = \dfrac{BE}{ED}$

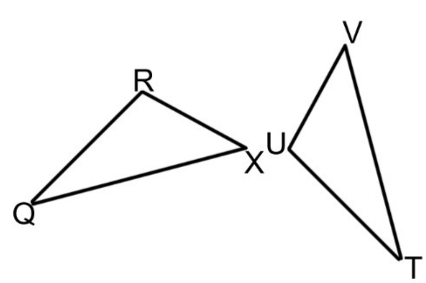
3) $\dfrac{AE}{BE} = \dfrac{AC}{BD}$

4) $\dfrac{ED}{EC} = \dfrac{AC}{BD}$

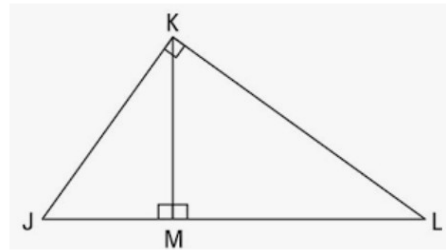
26. In the diagram below, $\Delta QRX \sim \Delta TUV$. Which of the following statements is *not* true?

1) $\dfrac{\overline{QR}}{\overline{TU}} = \dfrac{\overline{QX}}{\overline{TV}}$ 2) $\dfrac{\angle X}{\angle V} = \dfrac{\angle Q}{\angle T}$

3) $\dfrac{\overline{RX}}{\overline{UV}} = \dfrac{\overline{VT}}{\overline{XQ}}$ 4) $\dfrac{\overline{QX}}{\overline{QR}} = \dfrac{\overline{TV}}{\overline{TU}}$



27. In right triangle *JKL* below, altitude $\overline{KM}$ is drawn to hypotenuse $\overline{JL}$. Which of the following proportions is *not* true?



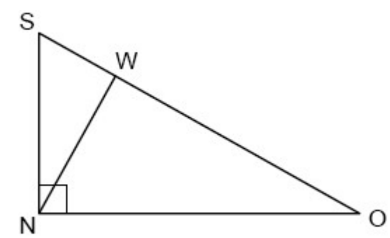
1) $\frac{\overline{JL}}{\overline{JK}} = \frac{\overline{JK}}{\overline{JM}}$

2) $\frac{\overline{JM}}{\overline{KM}} = \frac{\overline{KM}}{\overline{ML}}$

3) $\frac{\overline{JL}}{\overline{KL}} = \frac{\overline{KL}}{\overline{JM}}$

4) $\frac{\overline{ML}}{\overline{MK}} = \frac{\overline{MK}}{\overline{MJ}}$

28. In right triangle *SNO* below, altitude $\overline{NW}$ is drawn to hypotenuse $\overline{SO}$.



Which statement is *not* always true?

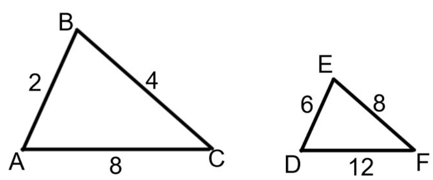
1) $\frac{SO}{SN} = \frac{SN}{SW}$

3) $\frac{SO}{ON} = \frac{ON}{OW}$

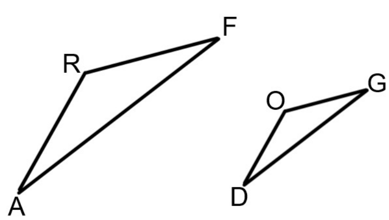
2) $\frac{SW}{NS} = \frac{NS}{OW}$

4) $\frac{OW}{NW} = \frac{NW}{SW}$

29. Determine whether the following triangles are similar. Explain your answer.

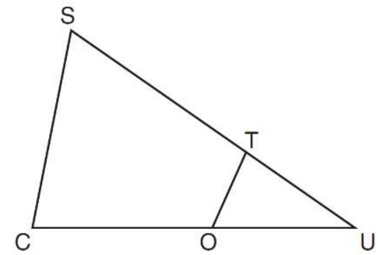


30. In the diagram below, $\overline{AR} = 15$, $\overline{RF} = 12$, $\overline{DO} = 10$, $\overline{OG} = 8$, and $\angle ARF \cong \angle DOG$. Must $\Delta ARF \sim \Delta DOG$? Explain your answer.



31. Given: $\angle C \cong \angle OTU$.

Prove: $\overline{SC} \bullet \overline{OU} = \overline{OT} \bullet \overline{SU}$



32. Given: $\overline{GI}$ is parallel to $\overline{NT}$.

Prove: $\overline{IA} \bullet \overline{TN} = \overline{IG} \bullet \overline{AN}$