Geometry

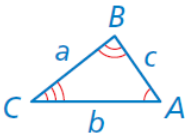
8.1 Use Similar Polygons

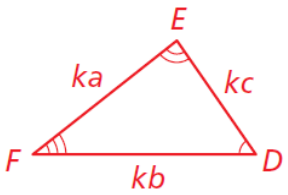
Similar figures

- When two figures are the same _____ but different _____, they are _____.

Similar polygons (~)

- Polygons are similar iff corresponding _____ are _____ and corresponding _____ are _____.
- Ratio of _____ of corresponding _____ is the scale _____.





Angles

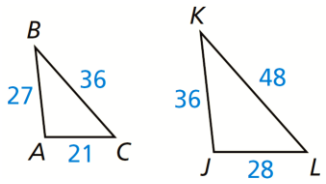
- _____≅_____, _____≅_____, _____≅_____

Ratios of side lengths (_____)

- _____=_____=_____=_____

$\triangle ABC \sim \triangle JKL$

Find the scale factor from △ABC to △JKL.

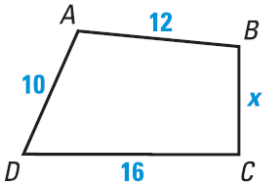


List all pairs of congruent angles.

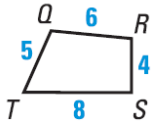
Write the ratios of the corresponding side lengths in a statement of proportionality.

$ABCD \sim QRST$

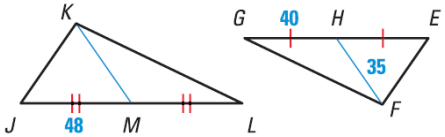
What is the scale factor of $QRST$ to $ABCD$?



Find x.



ΔJKL ~ ΔEFG. Find the length of the median $\overline{KM}$.



Perimeters of Similar Polygons

If two polygons are similar, then the _____ of their _____ is equal to the ratios of their corresponding _____ lengths.

If $\Delta ABC \sim \Delta DEF$, then _____

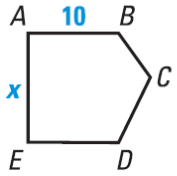
Areas of Similar Polygons

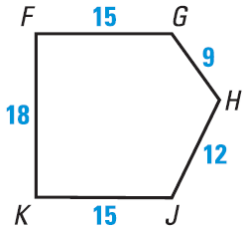
If two polygons are similar, then the _____ of their _____ is equal to the _____ of the ratios of their corresponding _____ lengths.

If $\Delta ABC \sim \Delta DEF$, then _____

ABCDE ~ *FGHJK*, the area of *FGHJK* is 318 in^2

Find the scale factor of FGHJK to ABCDE





Find the perimeter of ABCDE

Find the area of *ABCDE*

Assignment: 409 #2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 38, 40, 46, 49, 55, 56, 58, 60, 71 = 25 total

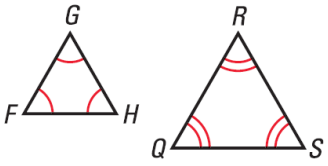
Geometry

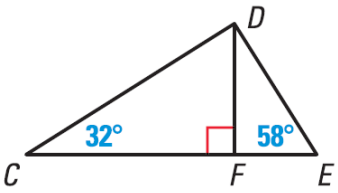
8.2 Prove Triangles Similar by AA

AA Similarity

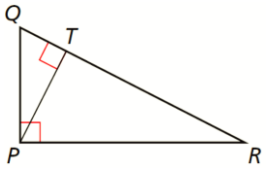
If _____ _____ of one triangle are congruent to _____ _____ of another triangle, then the triangles are _____.

Show that the triangles are similar. Write a similarity statement.

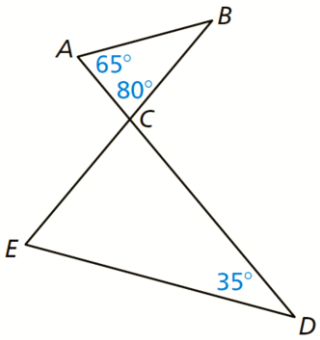




$\triangle QPR$ and $\triangle QTP$



$\triangle ABC$ and $\triangle EDC$



You can use similar triangles to find things like the height of a tree by using shadows. You put a stick perpendicular to the ground. Measure the stick and the shadow. Then measure the shadow of the tree. The triangles formed by the stick and the shadow and the tree and its shadow are similar, so the height of the tree can be found by ratios. Suppose we use a meter stick. The stick's shadow is 3 m. The tree's shadow is 150 m. How high is the tree?

Assignment: 417 #2, 4, 6, 8, 9, 10, 11, 12, 14, 16, 17, 18, 19, 20, 22, 31, 33, 34, 35, 36 = 20 total

Geometry

8.3 Proving Triangle Similarity by SSS and SAS

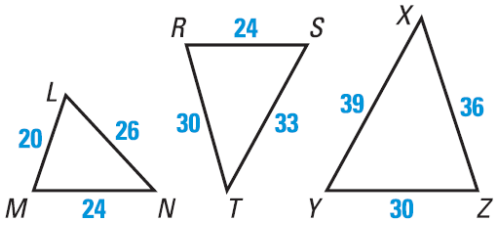
SSS Similarity

If the _____ of the corresponding _____ of two triangles are _____, then the triangles are _____.

SAS Similarity

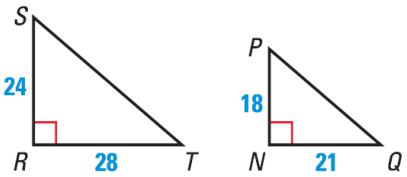
If the _____ of two _____ of a triangle are _____ to the measures of two corresponding _____ of another triangle and the _____ angles are _____, then the triangles are _____.

Which of the three triangles are similar?

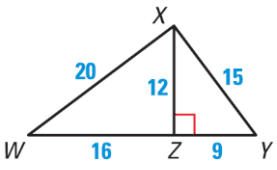


Explain how to show that the indicated triangles are similar.

$\Delta SRT \sim \Delta PNQ$



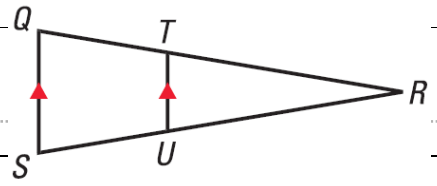
$\Delta XZW \sim \Delta YZX$



Assignment: 425 #2, 4, 6, 8, 9, 10, 11, 12, 14, 16, 17, 20, 24, 25, 32, 33, 35, 38, 41, 42 = 20 total

Geometry

8.4 Proportionality Theorems

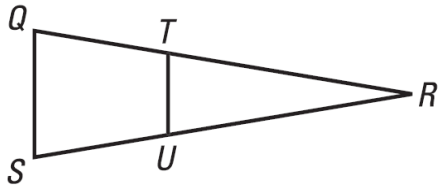


Triangle Proportionality Theorem

If a line is _____ to a _____ of a _____, then it separates the other two _____ into _____ segments.

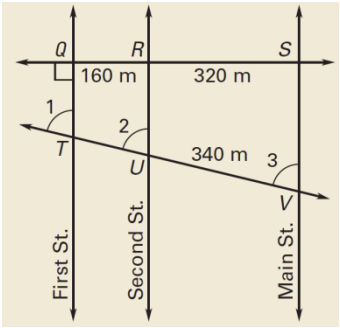
- And the _____ is also true. _____ segments → line _____ to the third side.

In ΔRSQ with chord TU, $QR = 10$, $QT = 2$, $UR = 6$, and $SR = 12$. Determine if $\overline{QS} \parallel \overline{TU}$.



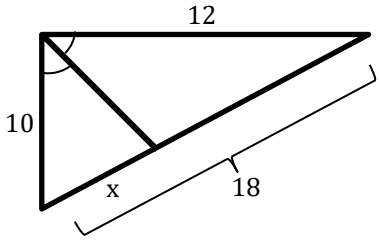
If three or more _____ lines intersect two _____, then they cut off the transversals _____.

Using the information in the diagram, find the distance TV.



An _____ _____ in a triangle separates the _____ side into segments that have the same _____ as the other two sides.

Find x



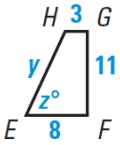
Assignment: 434 #2, 4, 6, 12, 14, 16, 18, 20, 21, 22, 23, 24, 27, 28, 36, 40, 41, 44, 45, 46 = 20 total

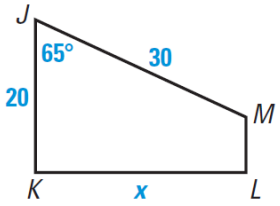
Name: _____

Geometry Chapter 8 Review

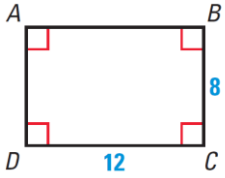
In the diagram, *JKLM ~ EFGH*.

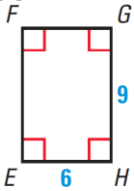
1. $x =$ _____
2. $y =$ _____
3. $z =$ _____
4. If the area of *EFGH* is 60.5, find the area of *JKLM*.





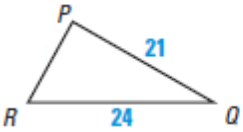
5. Decide whether the polygons are similar.

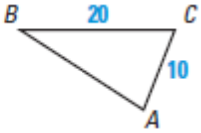




In the diagram, $\Delta PQR \sim \Delta ABC$.

6. $\angle R \cong \angle$_____
7. $\angle Q \cong \angle$_____
8. $PR =$ _____
9. $AB =$ _____

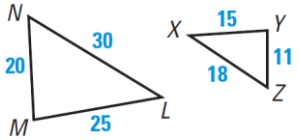




10. Find the perimeter of ΔABC.

Determine whether the triangles are similar. If so, write a similarity statement and the postulate or theorem that justifies your answer.

11.



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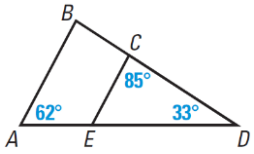
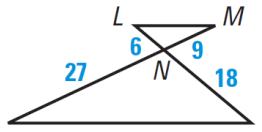


13.



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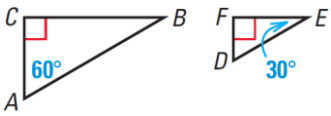
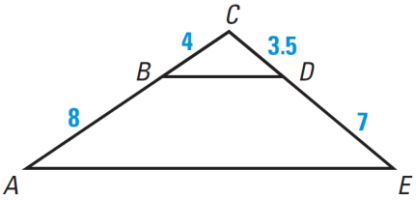
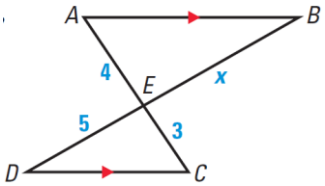


15.

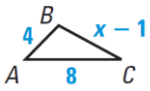


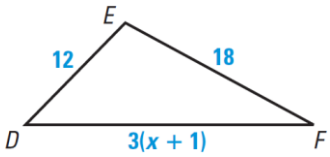
Find the value of x that makes the two triangles similar.

16.

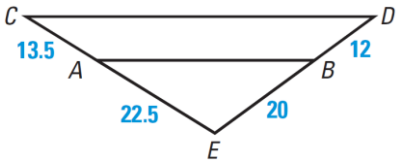


17.



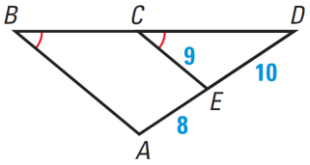


18. Determine whether $\overline{AB} \parallel \overline{CD}$.

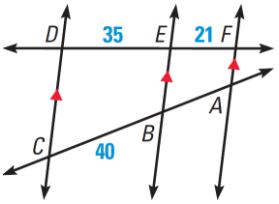


Find the length of $\overline{AB}$.

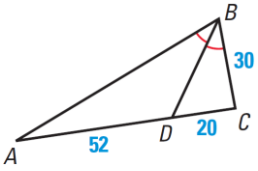
19.



20.



21.



22. **SCALE MODEL** You are making a scale model of your school's baseball diamond as part of an art project. The distance between two consecutive bases is 90 feet. If you use a scale factor of $\frac{1}{180}$ to build your model, what will be the distance around the bases on your model?

Name: _____

Answers

1. 27.5
2. 12
3. 65
4. 378.125
5. Similar because the corresponding sides are proportional and the corresponding angles are ≅
6. $\angle C$
7. $\angle B$
8. 12
9. 17.5
10. 47.5
11. Not similar
12. Similar; $\Delta CDE \sim \Delta BDA$; AA Similarity Postulate
13. Similar; $\Delta KJN \sim \Delta MLN$; SAS Similarity Postulate
14. Similar; $\Delta ABC \sim \Delta DEF$; AA Similarity Postulate
15. Similar; $\Delta BCD \sim \Delta ACE$; SAS Similarity Postulate
16. $\frac{20}{3}$
17. 7
18. Parallel
19. 16.2
20. 24
21. 78
22. 2 ft (1/2 ft between consecutive bases)