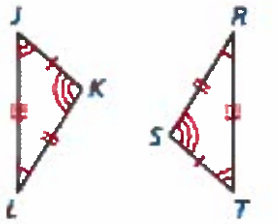
Name: _____ Period _____ Date: _____ ID: A

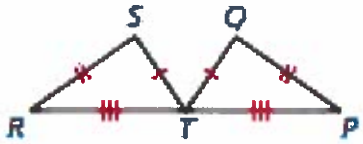
GEOMETRY BENCHMARK 3 STUDY GUIDE 2019 - 2020

1. Write a congruence statement for the triangles.

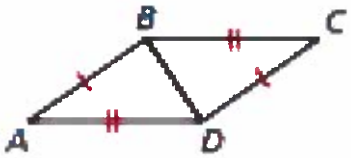
a)



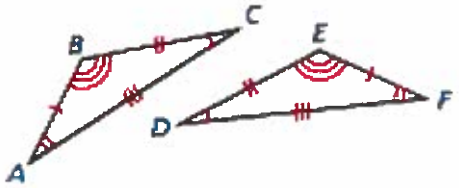
b)



c)



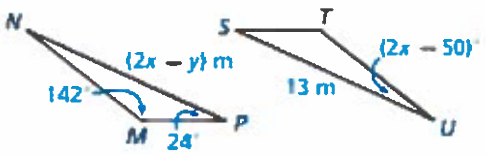
d)



2. Find the value of y.

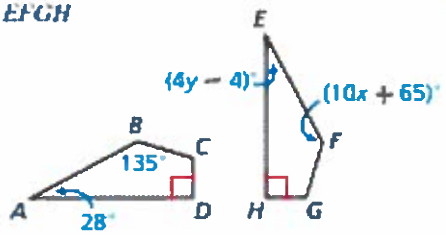
a)

$\triangle MNP = \triangle TUS$



b)

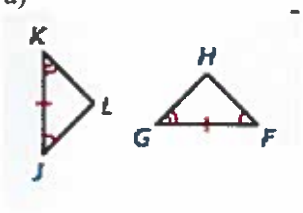
$ABCD = EFGH$



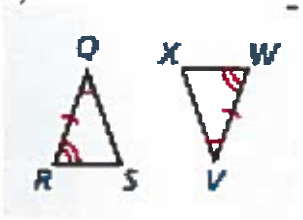
Name: _____ ID: A

3. Write the theorem that explains why the triangles are congruent.

a)

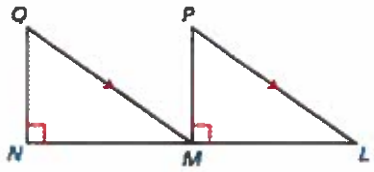


b)

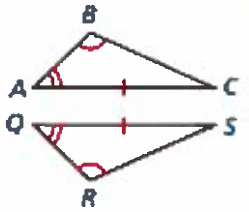


c)

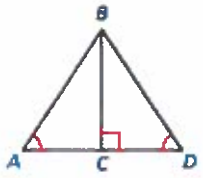
M is the midpoint of $\overline{NL}$. Explain your reasoning.



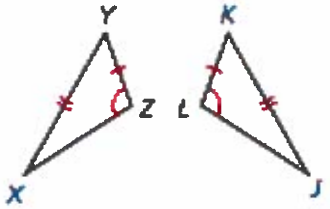
4. Can the triangles be proven congruent with the information given in the diagram? If so, state the theorem. Explain your reasoning.



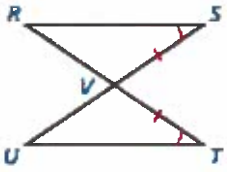
5. Can the triangles be proven congruent with the information given in the diagram? If so, state the theorem. Explain your reasoning.



6. Can the triangles be proven congruent with the information given in the diagram? If so, state the theorem. Explain your reasoning.

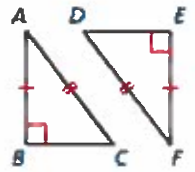


7. Can the triangles be proven congruent with the information given in the diagram? If so, state the theorem. Explain your reasoning.

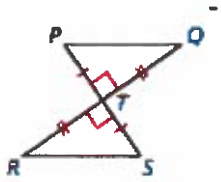


Name: _____ ID: A

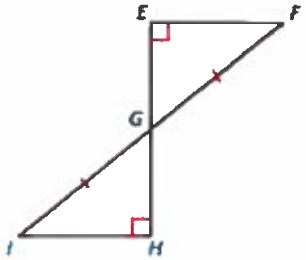
8. Decide whether you have enough information to prove that the two triangles are congruent by $HL \cong$. Explain your reasoning.



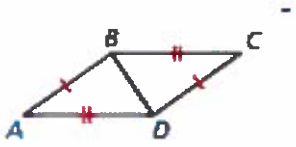
9. Decide whether you have enough information to prove that the two triangles are congruent by $HL \cong$. Explain your reasoning.



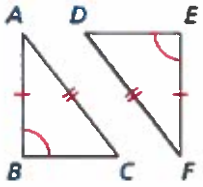
10. Decide whether you have enough information to prove that the two triangles are congruent by $HL \cong$. Explain your reasoning.
Given: G is the midpoint of $\overline{EH}$



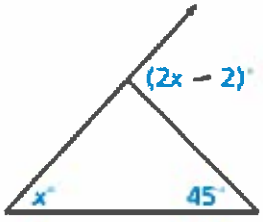
11. Decide whether you have enough information to prove that the two triangles are congruent by $HL \cong$. Explain your reasoning.



12. Decide whether you have enough information to prove that the two triangles are congruent by $HL \cong$. Explain your reasoning.

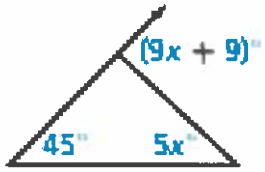


13. Find the measure of the exterior angle.



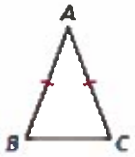
14. Find the measure of the exterior angle.

15. Find the measure of the exterior angle.



16. Name the two congruent angles.

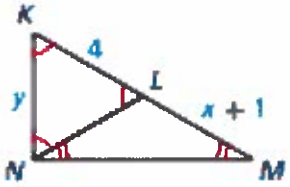
a)



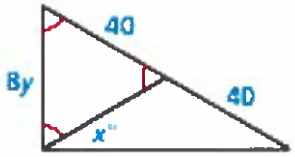
b)

17. Name the two congruent sides.

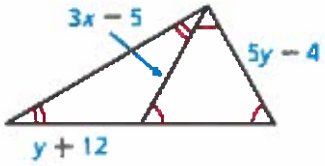
18. Find the value of x and y in the diagram.



19. Find the value of x and y in the diagram.

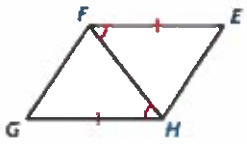


20. Find the value of x and y in the diagram.

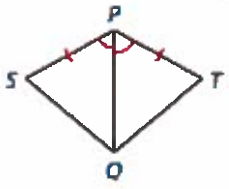


21. Decide whether there is enough information given to prove the triangles are congruent.
Explain your reasoning. Write a congruence statement.

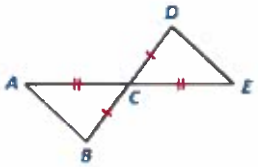
△EFH, △GHF



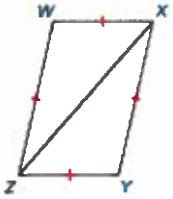
22. Decide whether there is enough information given to prove the triangles are congruent.
Explain your reasoning. Write a congruence statement.



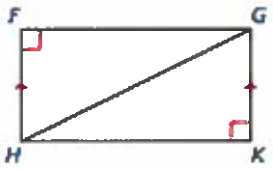
23. Decide whether there is enough information given to prove the triangles are congruent.
Explain your reasoning. Write a congruence statement.



24. Write a two-column proof to prove that the two triangles are congruent.
Prove: $\triangle WXZ \cong \triangle YZX$

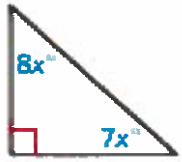


25. Write a two-column proof to show that the two triangles are congruent.
Prove: $\triangle HFG \cong \triangle GKH$

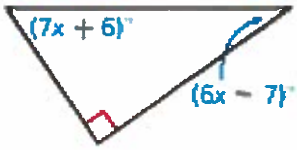


Name: _____ ID: A

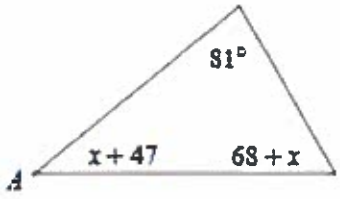
26. Find the measure of each acute angle.



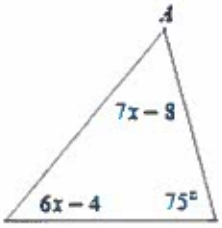
27. Find the measure of each acute angle.



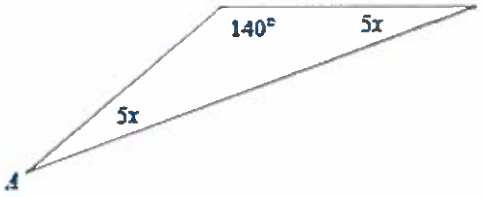
28. Find the $m\angle A$.



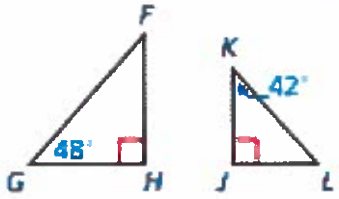
29. Find the $m\angle A$.



30. Find the $m\angle A$.

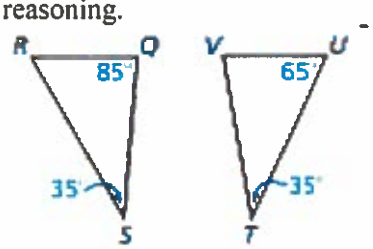


31. Determine whether the two triangles are similar. Write a similarity statement. Explain your reasoning.

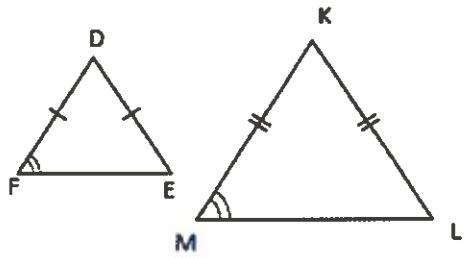


Name: _____ ID: A

32. Determine whether the two triangles are similar. Write a similarity statement. Explain your reasoning.

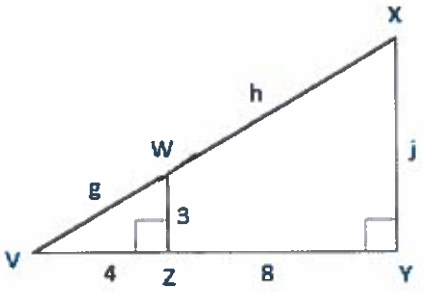


33. Write a two-column proof. Fill in the blanks.
Prove: $\Delta DEF \sim \Delta KLM$



Statements	Reasons
1.	Given
2.	Given
ΔDEF and ΔKLM are isosceles	Definition of isosceles Δs
3.	Base angles of isosceles Δs are $\cong$
$\angle F \cong \angle M$	4.
$\angle E \cong \angle L$	Substitution P. of $\cong$
5.	6.

34. Look at the two triangles shown below. Which statement is true?



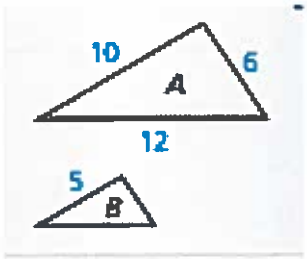
a. $\Delta VXY \sim \Delta VWZ$ by $SAS \sim \frac{g}{3} = \frac{g+h}{j}$

b. $\Delta VXY \sim \Delta VWZ$ by $AA \sim \frac{8}{g+h} = \frac{4}{g}$

c. $\Delta VXY \sim \Delta VWZ$ by $SAS \sim \frac{g}{3} = \frac{g+h}{8}$

d. $\Delta VXY \sim \Delta VWZ$ by $AA \sim$ because $\frac{12}{g+h} = \frac{4}{g}$

35. The two triangles are similar. What is the perimeter of triangle B?



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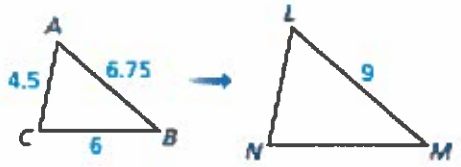
36. The two triangles are similar. Find the perimeter of $\triangle LMN$.



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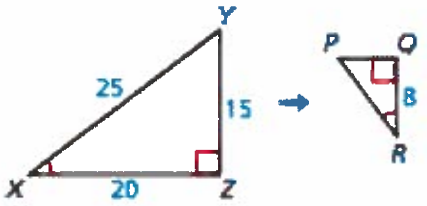
37. The two triangles are similar. Find the perimeter of $\triangle RPQ$.

$\triangle XYZ \sim \triangle RPQ$



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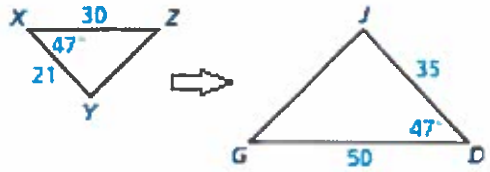
38. Determine whether the two triangles are similar. If they are similar, write a similarity statement and find the scale factor.



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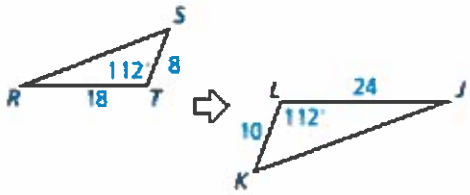
39. Determine whether the two triangles are similar. If they are similar, write a similarity statement and find the scale factor. Explain your reasoning.



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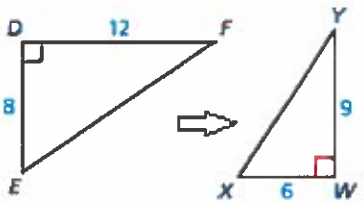
40. Determine whether the two triangles are similar. If they are similar, write a similarity statement and find the scale factor. Explain your reasoning.



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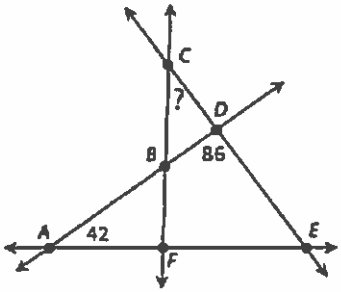
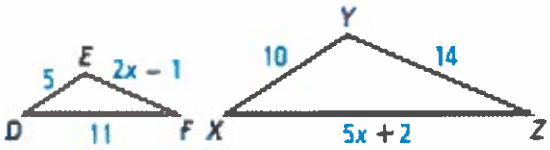
Name: _____ ID: A

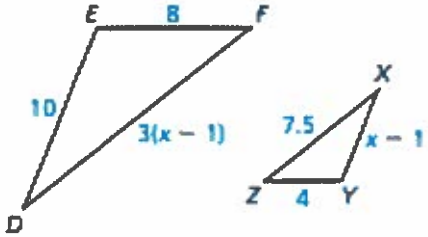
41. In the diagram show below, $\triangle ABF \sim \triangle AED$. What is the measure of $\angle BCD$?



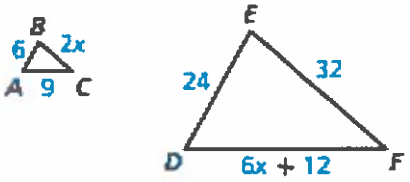
42. Find the value of x that makes $\triangle DEF \sim \triangle XYZ$.



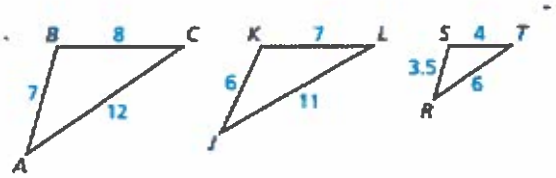
43. Find the value of x that makes $\triangle DEF \sim \triangle XYZ$.



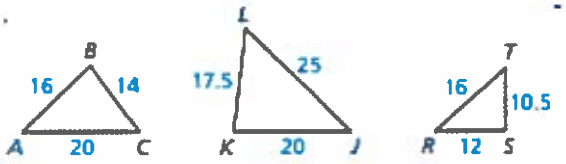
44. Find the value of x that makes $\triangle ABC \sim \triangle DEF$.



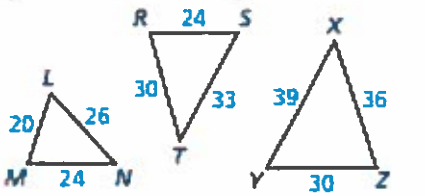
45. Determine whether $\triangle JKL$ or $\triangle RST$ is similar to $\triangle ABC$.



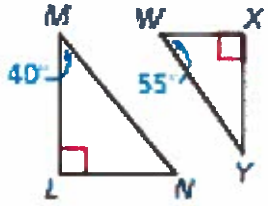
46. Determine whether $\triangle JKL$ or $\triangle RST$ is similar to $\triangle ABC$.



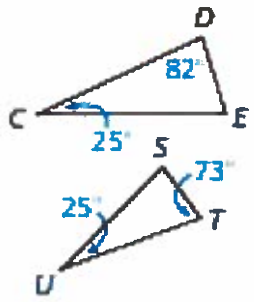
47. Determine whether $\triangle SRT$ or $\triangle YZX$ is similar to $\triangle LMN$.



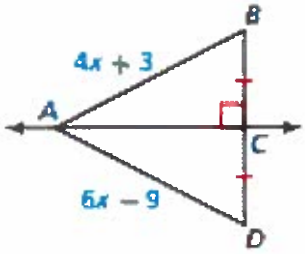
48. Determine whether the triangles are similar. If they are, write a similarity statement. Explain your reasoning.



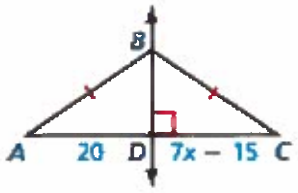
49. Determine whether the triangles are similar. If they are, write a similarity statement. Explain your reasoning.



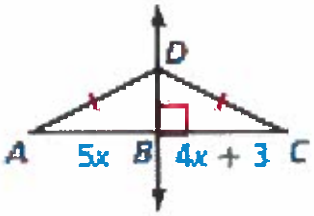
50. Find AD.



51. Find AC.

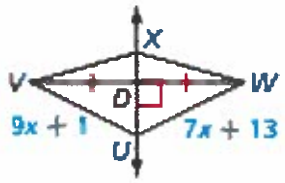


52. Find AB.

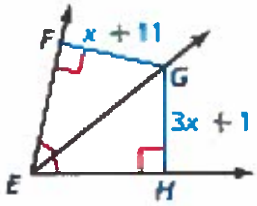


Name: _____ ID: A

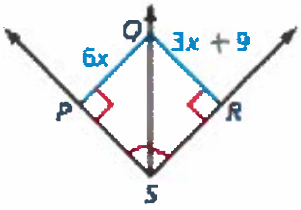
53. Find *UW*.



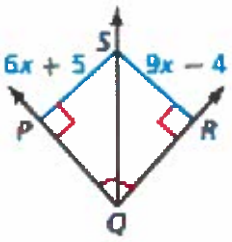
54. Find *FG*.



55. Find *QP*.

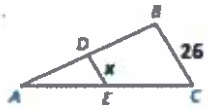


56. Find *RS*.

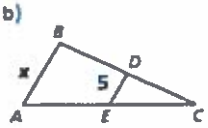


57. $\overline{DE}$ is the midsegment of $\triangle ABC$. Find the value of x.

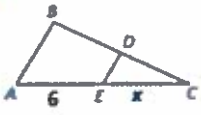
a)



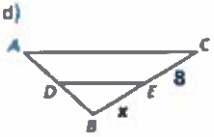
b)



c)



d)



GEOMETRY BENCHMARK 3 STUDY GUIDE 2019 - 2020

Answer Section

1. a) $\triangle JKL \cong \triangle TSR$
   b) $\triangle RST \cong \triangle PQT$
   c) $\triangle ADB \cong \triangle CBD$
   d) $\triangle ABC \cong \triangle FED$
2. a) y = 51
   b) y = 8
3. a) $ASA \cong$
   b) $ASA \cong$
   c) $ASA \cong$
4. yes by $AAS \cong$
5. yes, $AAS \cong$
6. no because the angle is not the included angle
7. yes, $ASA \cong$
8. yes, you have a right angle, a pair of congruent legs, and a pair of congruent hypotenuses
9. no, the hypotenuses are not marked as congruent
10. yes, $\overline{EG} \cong \overline{HG}$ definition of Midpoint
11. no, there are no right angles
12. no, there are no right angles
13. 92°
14. 132°
15. 90°
16. a) $\angle B \cong \angle C$
    b) $\angle E \cong \angle F$
17. $\overline{BC} \cong \overline{AC}$
18. x = 3; y = 4
19. x = 30; y = 5
20. x = 7; y = 4
21. $\overline{FH} \cong \overline{HF}$ by the Reflexive P. of Congruence
    $\triangle EFH \cong \triangle GHF$ by $SAS \cong$
22. $\overline{PQ} \cong \overline{PQ}$ by the Reflexive P. of Congruence
    $\triangle SPQ \cong \triangle TPQ$ by $SAS \cong$
23. $\angle ACB \cong \angle ECD$ because Vertical Angles are congruent; $\triangle ACB \cong \triangle ECD$ by $SAS \cong$
24. $\overline{WX} \cong \overline{YZ}$ Given
    $\angle WXZ \cong \angle YZX$ Alternate Interior Angles
    $\overline{XZ} \cong \overline{ZX}$ Reflexive Prop. of $\cong$
    $\triangle WXZ \cong \triangle YZX$ $SAS \cong$
25.

STATEMENTS	REASONS
1. $\overline{HF} \parallel \overline{GK}$	1. Given
A 2. $\angle GHF = \angle HGK$	2. Alternate Interior Angles Theorem (Theorem 3.2)
3. $\angle F$ and $\angle K$ are right angles	3. Given
A 4. $\angle F = \angle K$	4. Right Angles Congruence Theorem (Theorem 2.3)
S 5. $\overline{HG} = \overline{GH}$	5. Reflexive Property of Congruence (Theorem 2.1)
6. $\triangle HFG = \triangle GKH$	6. AAS Congruence Theorem

26. 42°, 48°
27. 35°, 55°
28. 39°
29. 55°
30. 20°
31. yes, $\triangle FGH \sim \triangle KLJ$ by $AA \sim$
32. NO
33. .
34. D
35. P = 14 units
36. P = 23 units
37. P = 24 units
38. $\triangle XYZ \sim \triangle DJG$; scale factor = $\frac{5}{3}$
39. not similar because the ratios are different
40. $\triangle DEF \sim \triangle WXY$; scale factor = $\frac{3}{4}$
41. 34°
42. x = 4
43. x = 6
44. x = 4
45. $\triangle RST$
46. $\triangle JKL$
47. $\triangle YZX$
48. not similar because no two corresponding angles are congruent
49. yes, $\angle C \cong \angle U; \angle E \cong \angle Y$; $\triangle CDE \sim \triangle UST$ by AA~
50. $AD = 27$
51. $AC = 40$
52. $AB = 15$
53. $UW = 55$
54. $FG = 16$
55. $QP = 18$
56. $RS = 23$

12

57. a) 13
    b) 10
    c) 6
    d) 8