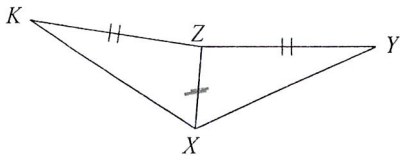
H Geometry - Unit 1C Name Huff

Review Test 3 - Congruent & Similar Triangles Date

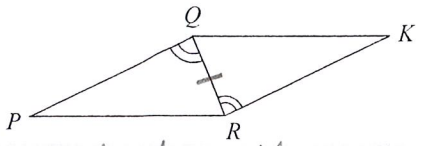
State what additional information is required in order to know that the triangles are congruent for the reason given.

1) SSS



Need $\overline{KX} \cong \overline{XY}$

2) AAS

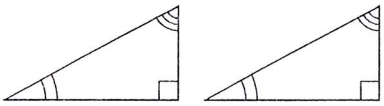


Need another ∠

Specifically ∠P ≅ ∠K

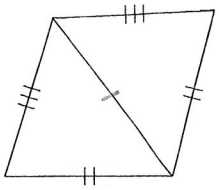
If the triangles can be shown congruent, state the rule that would show them so. If there's not enough information, then state that they're not congruent.

3)



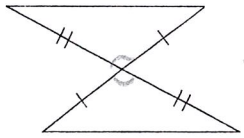
Not ≅

4)



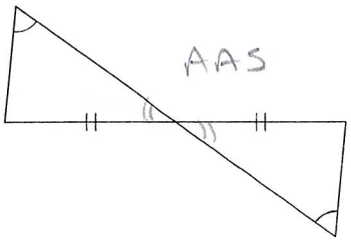
SSS

5)



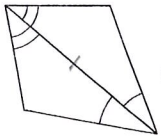
SAS

6)



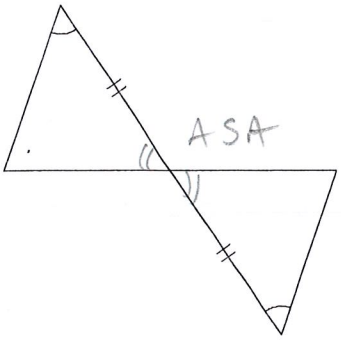
AAS

7)



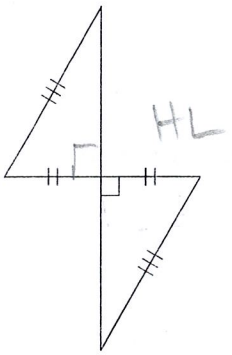
ASA

8)

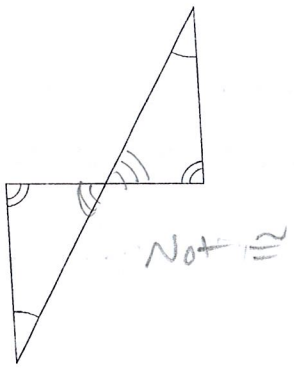


ASA

9)

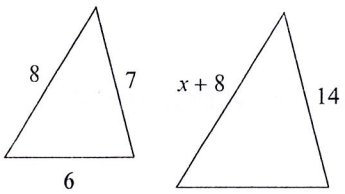


10)



Solve for *x*. The polygons in each pair are similar.

11)



$\frac{8}{x+8} = \frac{7}{14}$

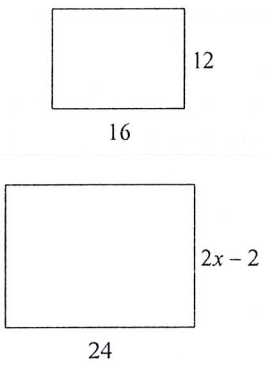
$7(x+8) = 112$

$7x + 56 = 112$

$7x = 56$

$\boxed{x = 8}$

12)



$\frac{12}{2x-2} = \frac{16}{24}$

You can simplify fractions 1st if you want!

$\frac{12}{2x-2} = \frac{2}{3}$

$36 = 2(2x-2)$

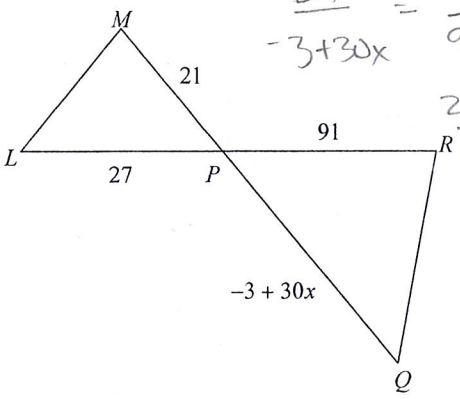
$36 = 4x - 4$

$40 = 4x$

$\boxed{10 = x}$

Solve for *x*. The triangles in each pair are similar.

13) $\triangle PQR \sim \triangle PLM$



$\frac{27}{-3+30x} = \frac{21}{91}$

$\frac{2457}{21} = \frac{21(-3+30x)}{21}$

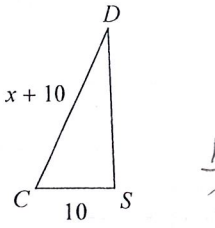
$117 = -3 + 30x$

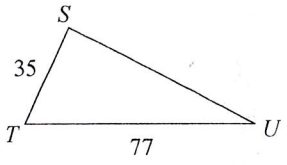
$+3 \quad +3$

$120 = 30x$

$\boxed{4 = x}$

14) $\triangle STU \sim \triangle SCD$





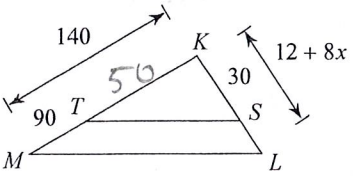
$\frac{10}{35} = \frac{x+10}{77}$

$\frac{770}{35} = \frac{35(x+10)}{35}$

$22 = x + 10$

$\boxed{12 = x}$

15)



$\frac{50}{140} = \frac{30}{12+8x}$

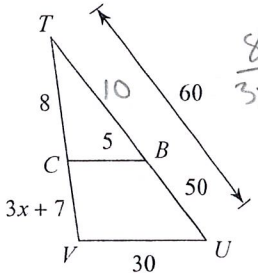
$\frac{50(12+8x)}{50} = \frac{4200}{50}$

$12 + 8x = 84$

$8x = 72$

$\boxed{x = 9}$

16)



$\frac{8}{3x+7} = \frac{10}{50}$

$\frac{400}{10} = \frac{10(3x+7)}{10}$

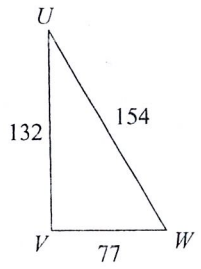
$40 = 3x + 7$

$33 = 3x$

$\boxed{11 = x}$

State if the triangles in each pair are similar. If so, complete the similarity statement and state how you know they are similar (AA, SAS, or SSS)

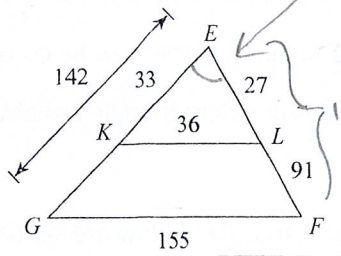
17)



$\frac{132}{60} = 2.2$ $\frac{154}{70} = 2.2$ $\frac{77}{35} = 2.2$ ✓

$\triangle WVU \sim \underline{\triangle RST}$ by SSS

18)



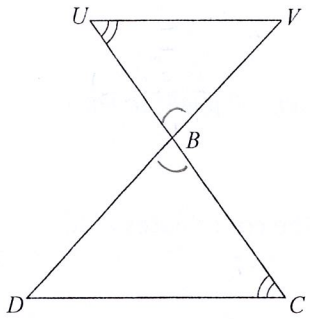
Reflx prop

$33 \stackrel{?}{=} 27 \rightarrow 3834$

$142 \quad 118 \rightarrow 3894$

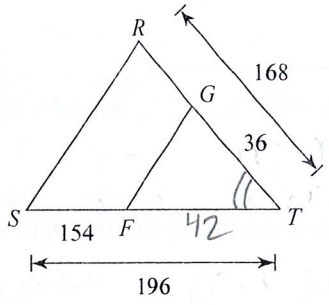
$\triangle EFG \sim$ ____ Not ~

19)



$\triangle BCD \sim \underline{\triangle BUV}$ by AA

20)

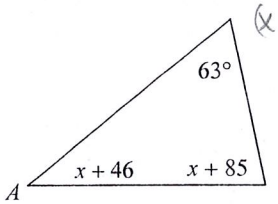


$\frac{42}{196} \stackrel{?}{=} \frac{36}{168}$ $7056 = 7056$

$\triangle TSR \sim \underline{\triangle TFG}$ by SAS

Find the measure of angle A.

21)



$(x+46)+(x+85)+63 = 180$

$2x + 194 = 180$

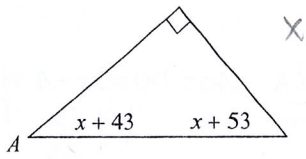
$2x = -14$

$x = -7$

$\measuredangle A = (-7) + 46$

$= 39°$

22)



$x + 43 + x + 53 = 90$

$2x + 96 = 90$

$2x = -6$

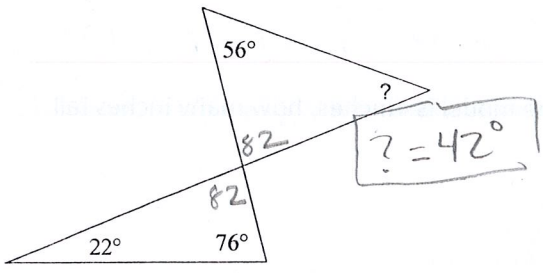
$x = -3$

$\measuredangle A = (-3) + 43$

$= 40°$

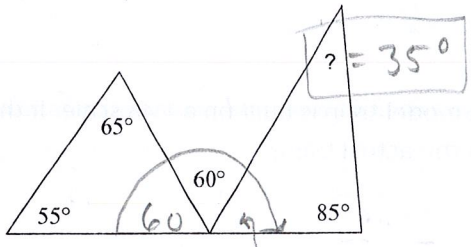
Find the measure of each angle indicated.

23)



$? = 42°$

24)



$? = 35°$

-they aren't vertical ∡s!

$180 - 60 - 60 = 60°$

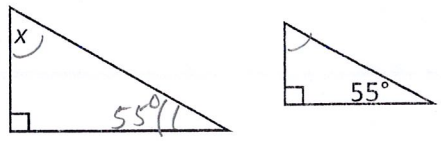
25. An obtuse Δ can be (congruent/similar/neither of these) to an acute Δ.

26. True/False? 2 similar triangles can be congruent to each other.

27. The acute angles in a right triangle are always C complementary.

28. Given that the 2 triangles below are similar, what's the measure of x?

90 − 55 = 35°



29. An 80m long pole is divided into sections in a 13:3 ratio. How long is the longer section?

$13x + 3x = 80$ $\quad 16x = 80$ $\quad x = 5$ Longer section $= 13(5) =$ 65m

30. Find the slope of $\overline{BG}$ if B(-2, 3) and G(4, 5). *Don't memorize the slope formula, I'll give it to you!*

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{5-3}{4-2} = \frac{2}{6} =$ 1/3

31. If segment $\overline{BG}$ is dilated from the origin with a scale factor of 4, what are the coordinates of B' and G'?

4x(-2, 3) $\quad$ 4x(4, 5)

B'(-8, 12) $\quad$ G'(16, 20)

32. The perimeter of a triangle is 48cm. The sides of the triangle are in a 4:8:3 ratio. What are the lengths of the sides?

$4x + 8x + 3x = 48$

$15x = 48$

$x = 3.2$

So sides are 12.8, 25.6, 9.6

33. If ΔIPH ≅ ΔONE, then ∠P ≅ ∠N, and $\overline{NE} \cong$ $\overline{PH}$.

34. ΔCAT ≅ ΔDOG. CA = 14cm. DO = 2x − 4. Find x!

$\overline{CA} \cong \overline{DO}$ so $14 = 2x - 4$

$18 = 2x$

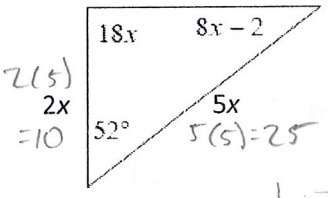
$x = 9$

$2(5) + 4 = 14$

35. Find the perimeter of the Δ.

3 Δs add to 180°

Use this to find x, then plug x into the sides.



$18x + 8x - 2 + 52 = 180$

$26x + 50 = 180$

$26x = 130$

$x = 5$

So P = 10 + 14 + 25 = 49

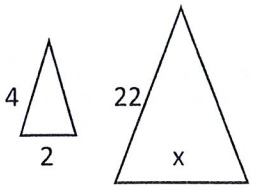
36. A model train is built on a 1:48 scale. If the height of the model is 4inches, how many inches tall is the actual train?

$\frac{\text{model}}{\text{actual}} \quad \frac{1}{48} = \frac{4}{x}$

$x = 4(48)$

$= 192$ inches

37. Given the image below, find the scale factor of the dilation and find *x*.



Scale factor
Small to big
$= \frac{22}{4} = 5.5$

Scale Factor 5.5

x = 11

$\frac{4}{22} = \frac{2}{x}$ ← use proportion to find x

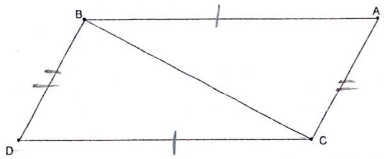
OR $2(5.5) = 11$

Proofs!

38.

Given: $\overline{AB} \cong \overline{DC}$, $\overline{DB} \cong \overline{AC}$

Prove: $\Delta ABC \cong \Delta DCB$

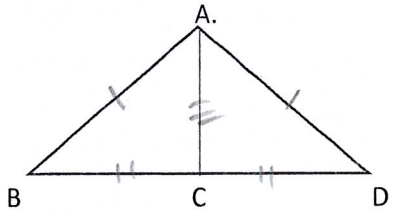


(1) $\overline{AB} \cong \overline{DC}$, $\overline{DB} \cong \overline{AC}$	(1) given
(2) $\overline{BC} \cong \overline{BC}$	(2) Reflx Prop.
(3) $\Delta ABC \cong \Delta DCB$	(3) SSS (1,2)

39.

Given: C is the midpt of $\overline{BD}$, $\overline{AB} \cong \overline{AD}$

Prove: $\angle B \cong \angle D$

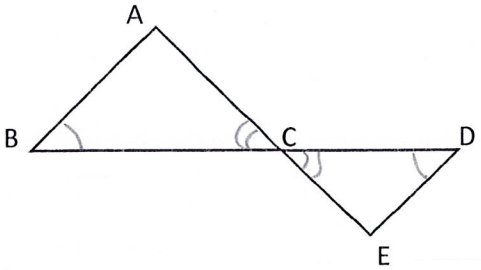


(1) C midpt $\overline{BD}$, $\overline{AB} \cong \overline{AD}$	(1) given
(2) $\overline{BC} \cong \overline{CD}$	(2) Def midpt
(3) $\overline{AC} \cong \overline{AC}$	(3) Reflx Prop
(4) $\Delta BCA \cong \Delta DCA$	(4) SSS (1, 2, 3)
(5) $\angle B \cong \angle D$	(5) CPCTC

40.

Given: $\angle B \cong \angle D$

Prove: $\Delta CBA \sim \Delta CDE$



(1) $\angle B \cong \angle D$	(1) given
(2) $\angle ACB \cong \angle ECD$	(2) vert. $\angle$s
(3) $\Delta CBA \sim \Delta CDE$	(3) AA (1,2)