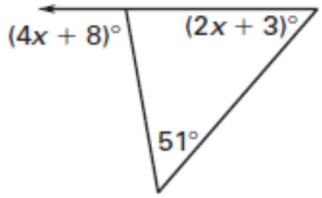
Geometry Chapters 4, 6 Cumulative Review Name Key

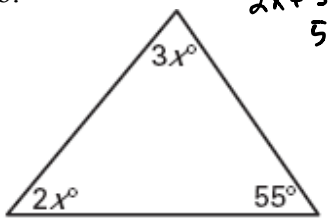
1. Use the figure below to solve for x.

a.



$2x+3+51=4x+8$
$2x+54=4x+8$
$54=2x+8$
$46=2x$
$23=x$

b.



$2x+3x+55=180$
$5x+55=180$
$5x=125$
$x=25$

2. Describe the requirements for a triangle to be classified as acute, right, obtuse, or equiangular.

acute: all angles acute
right: one right angle, two acute angles
obtuse: one obtuse angle, two acute angles
equiangular: all angles $\cong$

3. Describe the requirements for a triangle to be classified as scalene, isosceles, or equilateral.

scalene: no sides $\cong$
isosceles: at least two sides $\cong$
equilateral: all sides $\cong$

4. Given: $\overline{BC} \cong \overline{AB}$

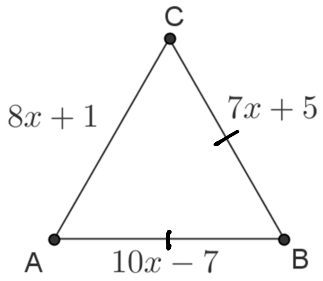
a. Solve for x.

$7x+5=10x-7$
$5=3x-7$
$12=3x$
$4=x$

b. Is ΔABC equilateral? Explain your reasoning.

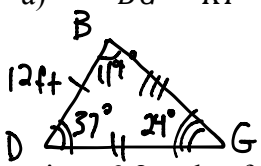
$7(4)+5=33$
$8(4)+1=33$
$10(4)-7=33$

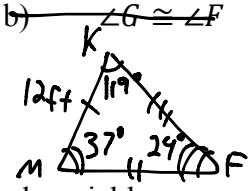
yes, all sides are 33 long



5. If $\Delta BDG \cong \Delta KMF$, $BD = 12\ feet$, $m\angle D = 37°$, and $m\angle F = 24°$, which of the following statements is **false**?

a) ~~$BG = KF$~~ b) ~~$\angle G \cong \angle F$~~ c) ~~$m\angle B = 119°$~~ d) $DB = FK$

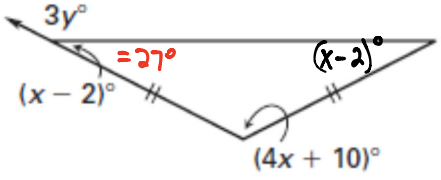




$37+24=61$
$180-61=119$

For questions 6-8, solve for each variable.

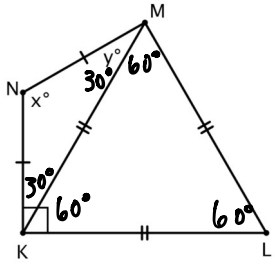
6.



$x-2+x-2+4x+10=180$
$6x+6=180$
$6x=174$
$x=29$

$3y+27=180$
$3y=153$
$y=51$

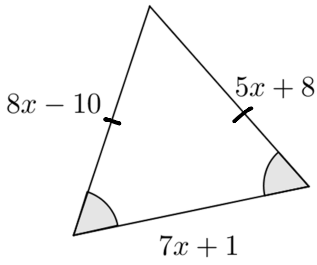
7.



$y=30$

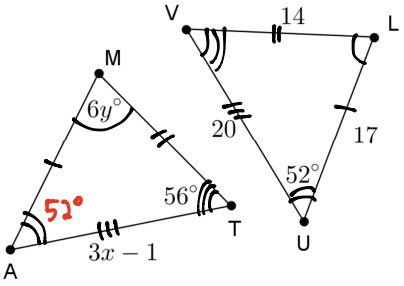
$30+30+x=180$
$x=120$

8.



$8x-10=5x+8$
$3x-10=8$
$3x=18$
$x=6$

9. Given $\Delta LUV \cong \Delta MAT$, find the value of x and y.

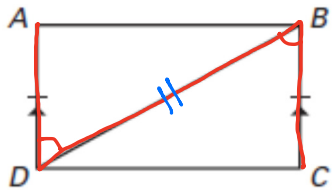


$3x-1=20$
$3x=21$
$x=7$

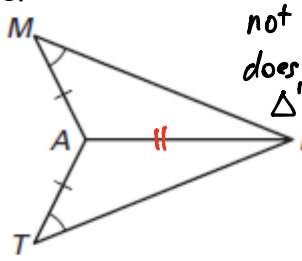
$52+56+6y=180$
$108+6y=180$
$6y=72$
$y=12$

For questions 10-13, decide whether it is possible to prove the triangles are congruent.
If yes, **mark any additional information required on the diagram**, state the congruence relationship and a postulate or theorem as a reason the triangles are congruent.
If not, write "Not ≅ " and provide a reason why the triangles cannot be congruent.

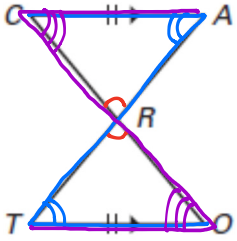
10. $\Delta ADB \cong \Delta CBD$ by SAS



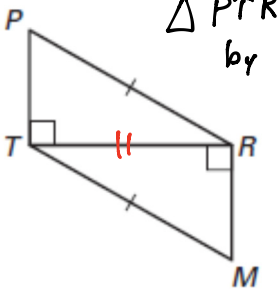
11. not ≅, SSA does not prove Δ's ≅



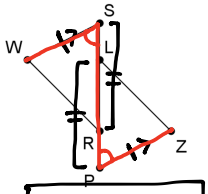
12. $\Delta ACR \cong \Delta TOR$ by ASA or AAS



13. $\Delta PTR \cong \Delta MRT$ by HL



14. Given: $\overline{ZP} \cong \overline{WS}$
$\overline{LP} \cong \overline{RS}$
$\overline{ZP} \parallel \overline{WS}$
Prove: $\Delta ZPL \cong \Delta WSR$



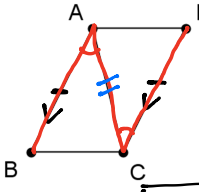
S $\overline{ZP} \cong \overline{WS}$ — Given

$\overline{ZP} \parallel \overline{WS}$ — Given → A $\angle WSR \cong \angle ZPL$ — Alt. Int. $\angle$'s

S $\overline{LP} \cong \overline{RS}$ — Given

→ $\Delta ZPL \cong \Delta WSR$ — SAS

15. Given: $\overline{AB} \cong \overline{CD}$
$\overline{AB} \parallel \overline{CD}$
Prove: $\angle B \cong \angle D$



S $\overline{AB} \cong \overline{CD}$ — Given

$\overline{AB} \parallel \overline{CD}$ — Given → A $\angle BAC \cong \angle DCA$ — Alt. Int. $\angle$'s

S $\overline{AC} \cong \overline{AC}$ — Reflexive

→ $\Delta BAC \cong \Delta DCA$ — SAS → $\angle B \cong \angle D$ — Corresponding Parts of ≅ Δ's are ≅

16. Given $FRANK \sim VOTED$, find the value of:

a. DV

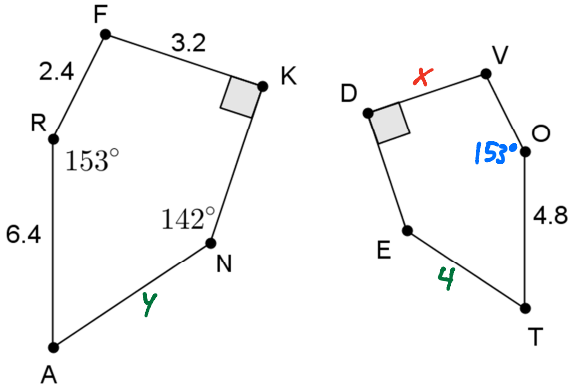
$\frac{6.4}{4.8} = \frac{3.2}{x}$ $\quad 6.4x = 15.36$ $\quad x = 2.4$

b. $m\angle O$

$153°$

c. If $TE = 4$ then $NA =$

$\frac{6.4}{4.8} = \frac{y}{4}$ $\quad 25.6 = 4.8y$ $\quad 5.3 = y$

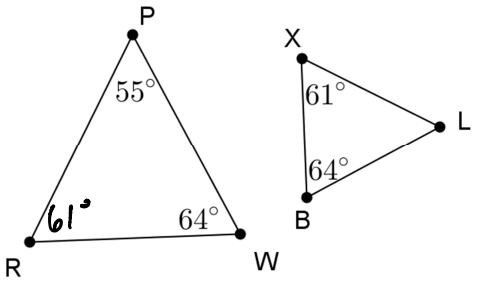


17. The two triangles shown below are similar. Complete the similarity statement and explain why the triangles are similar.

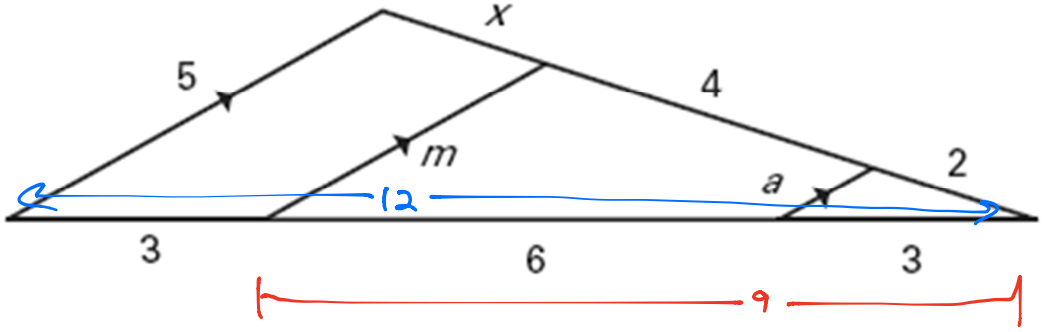
$\Delta RPW \sim \Delta XLB$

you can use the Δ sum theorem to determine that $m\angle R = 61°$, so you know $\angle R \cong \angle X$ and $\angle W \cong \angle B$, so the Δ's are similar by AA

$55 + 64 = 119$ $\quad 180 - 119 = 61$



18. Solve for a, m, and x in the figure.



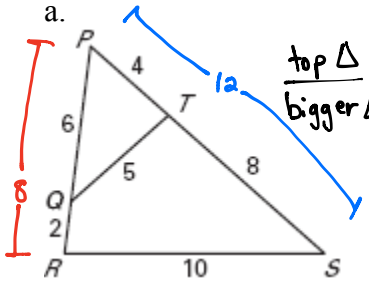
$\frac{3}{x} = \frac{6}{4}$ $\quad \frac{3}{a} = \frac{12}{5}$ $\quad \frac{9}{m} = \frac{12}{5}$

$12 = 6x$ $\quad 15 = 12a$ $\quad 45 = 12m$

$2 = x$ $\quad 1.25 = a$ $\quad 3.75 = m$

19. Determine if it is possible to prove the triangles are similar. If yes, state the postulate or theorem that can be used to prove the two triangles similar and explain how you know that postulate or theorem works. If the triangles cannot be shown to be similar, explain your reasoning.

a.



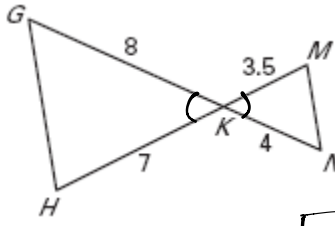
big side med side small side

top Δ / bigger Δ: $\frac{6}{12} \stackrel{?}{=} \frac{5}{10} \stackrel{?}{=} \frac{4}{8}$

$\frac{1}{2} = \frac{1}{2} = \frac{1}{2}$ ✓

yes, SSS

b.



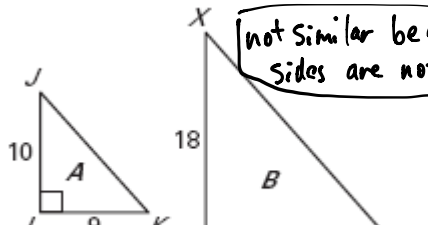
big side small side

left Δ / right Δ: $\frac{8}{4} \stackrel{?}{=} \frac{7}{3.5}$

$\frac{2}{1} = \frac{2}{1}$ ✓

yes, SAS

c.



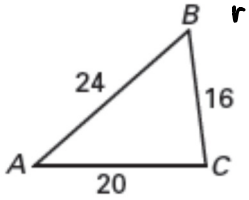
not similar because sides are not proportional

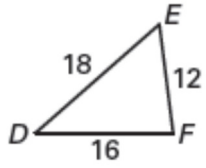
big side small side

$\frac{A}{B}$ $\frac{10}{18} \stackrel{?}{=} \frac{9}{16}$

$\frac{5}{9} \neq \frac{9}{16}$

d.





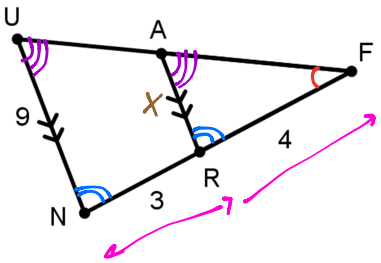
big side med side small side

left Δ / right Δ: $\frac{24}{18} \stackrel{?}{=} \frac{20}{16} \stackrel{?}{=} \frac{16}{12}$

$\frac{4}{3} \neq \frac{5}{4} \neq \frac{4}{3}$

not similar because sides not proportional

20. Use the image at the right for the following:



a. Write a similarity statement

$\Delta FAR \sim \Delta FUN$

b. Explain why the triangles are similar

$\angle F \cong \angle F$ by reflexive

$\angle FRA \cong \angle FNU$ by corresponding $\angle$'s

$\Rightarrow \Delta$'s similar by AA

c. Determine the scale factor

Either $\frac{4}{7}$ or $\frac{7}{4}$ depending on which way you go

d. Solve for AR

$\frac{4}{7} = \frac{x}{9}$ $36 = 7x$ $5.14 = x$

21. Construct the polygon $A = (-2,-3), B = (-1,2), C = (3,5),$ *and* $D = (3,-2)$. Perform the dilation of $ABCD \rightarrow EFGH$ from the origin with the scale factor of $5/3$.

$A \rightarrow (-2,-3) \cdot \frac{5}{3} = \left(\frac{-10}{3}, -5\right) = E$

$B \rightarrow (-1,2) \cdot \frac{5}{3} = \left(-\frac{5}{3}, \frac{10}{3}\right) = F$

$C \rightarrow (3,5) \cdot \frac{5}{3} = \left(5, \frac{25}{3}\right) = G$

$D \rightarrow (3,-2) \cdot \frac{5}{3} = \left(5, \frac{-10}{3}\right) = H$