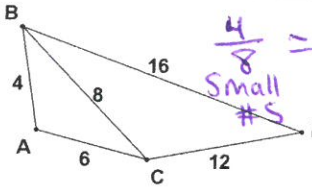
Unit 4A Review – Honors Math 2 **Name:** Key

If the triangles in 1 – 5 can be proved similar, (1) Complete the similarity statement and (2) Tell which theorem or postulate you would use. If they cannot be proved similar then write "None."

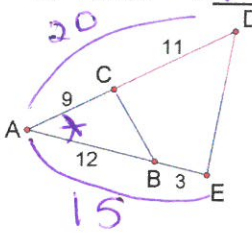
1. $\Delta ABC \sim \Delta$ CBD by SSS~



$\frac{4}{8} = \frac{6}{12} = \frac{8}{16}$ Small #s middle #s biggest #s

$= 1/2$

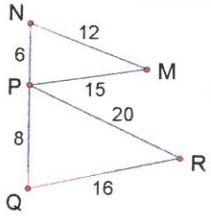
2. $\Delta ABC \sim \Delta$ ADE by SAS~



$\frac{9}{15} = \frac{12}{20}$ ✓ 3/5

* Remember to line up ≅ angles and proportional sides in your similarity statement

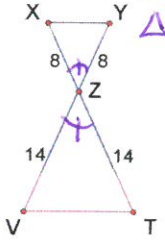
3. $\Delta NMP \sim \Delta$ QRP by SSS~



$\frac{6}{8} = \frac{12}{16} = \frac{15}{20}$

$\frac{3}{4} = \frac{3}{4} = \frac{3}{4}$ ✓

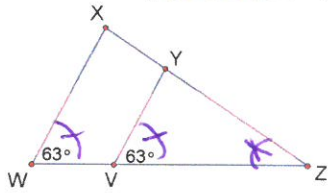
4. $\Delta XYZ \sim \Delta$ VTZ or ΔTVZ by SAS~



$\frac{8}{14} = \frac{8}{14}$

DO NOT assume $\overline{XY} \parallel \overline{VT}$ by appearance

5. $\Delta YVZ \sim \Delta$ XWZ by AA~



6. $\Delta BAC \sim \Delta DEC$

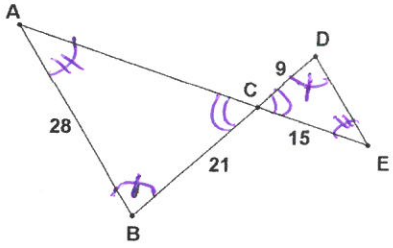
a. What is the scale factor of ΔBAC to ΔDEC? 7/3

b. Find AC. 35

$\frac{7}{3} = \frac{AC}{15}$ $3AC = 105$ 21/9

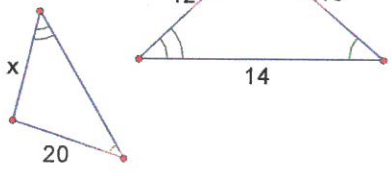
c. Find DE. 12

$\frac{7}{3} = \frac{28}{DE}$ $7DE = 84$



Find the value of x. The triangles are similar.

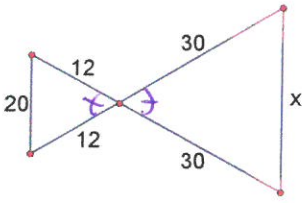
7. x = 15



$\frac{x}{12} = \frac{20}{16}$

$16x = 240$

8. x = 50



$\frac{12}{30} = \frac{20}{x}$

$12x = 600$

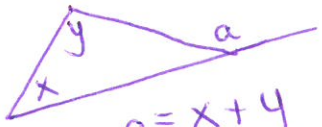
9. Midsegment of a Triangle:

   a. The midsegment of a triangle joins the mid points of two sides of a triangle.

   b. The midsegment is parallel to the third side and is half of the length of the third side.

10. The sum of the measures of the angles of a triangle is 180°.

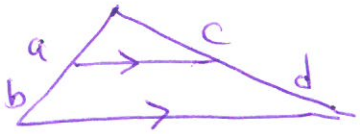
11. The exterior angle of a triangle is equal to the sum of the two remote interior angles of the triangle.



$a = x + y$

12. Triangle Proportionality Theorem and its converse:

   a. A line that is parallel to one side of a triangle divides the other two sides proportionally.



$\frac{a}{b} = \frac{c}{d}$

   b. If a line intersects 2 sides of a triangle so that it divides those 2 sides proportionally, then it is parallel to the third side.

Use the diagram to answer 13.

13. Name the type of each given angle pair.

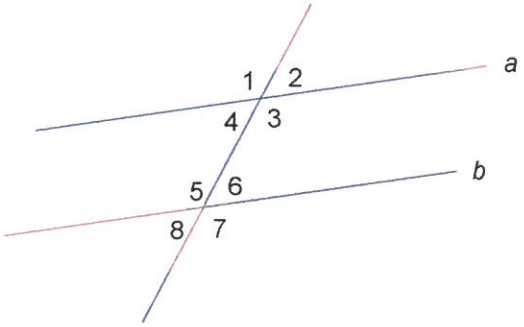
   a. ∠3 *and* ∠5 alternate interior ∠s

   b. ∠1 *and* ∠7 alternate exterior ∠s

   c. ∠4 *and* ∠8 corresponding ∠s

   d. ∠8 *and* ∠6 vertical angles

   e. ∠4 *and* ∠3 linear pair angles



14. Complete the following proof. Prove that if $8 = 2(x - 3)$, then $x = 7$.

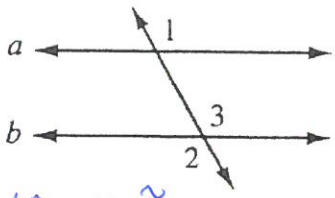
Given: $8 = 2(x - 3)$
Prove: $x = 7$

Statements	Reasons
1) $8 = 2(x - 3)$	1) Given
2) $2(x - 3) = 8$	2) Symmetric Property of =
3) $2x - 6 = 8$	3) Distributive Property of =
4) $2x = 14$	4) Addition Property of =
5) $x = 7$	5) Division Property of =

15.

Given: $\angle 1 \cong \angle 2$

Prove: $a \parallel b$

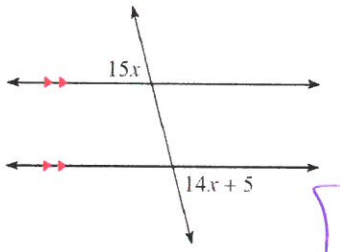


Proof

Statements	Reasons
1. $\angle 1 \cong \angle 2$	1. Given
2. $\angle 2 \cong \angle 3$	2. Vertical $\angle$s are $\cong$
3. $\angle 1 \cong \angle 3$	3. Transitive Property of $\cong$
4. $a \parallel b$	4. If corresponding angles are $\cong$, then lines are $\parallel$.

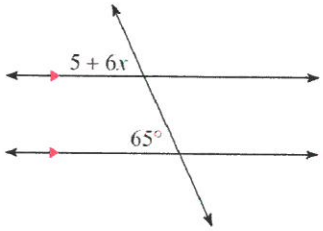
Solve for *x*.

16)



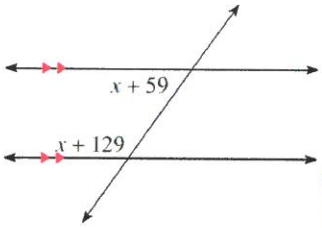
$x = 5$

17)



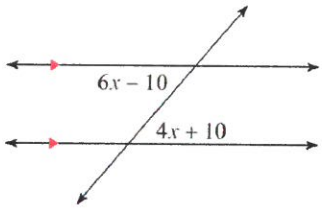
$x = 10$

18)



$x = -4$

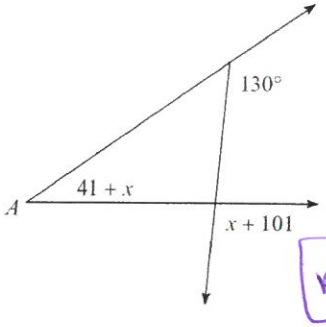
19)



$x = 10$

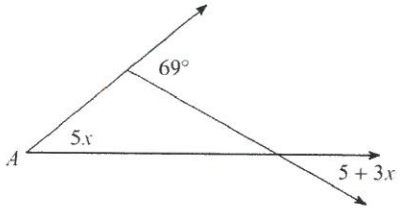
Find the measure of angle A.

20)



$m\angle A = 35°$

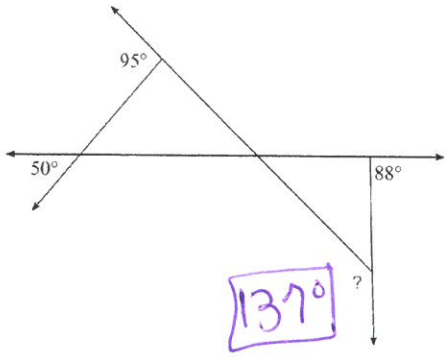
21)



$m\angle A = 40°$

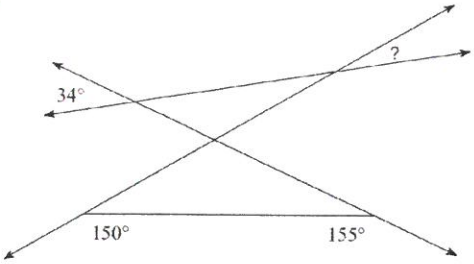
Find the measure of each angle indicated.

22)



137°

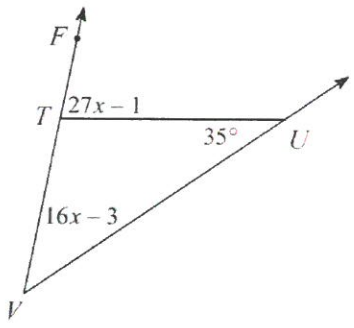
23)



21°

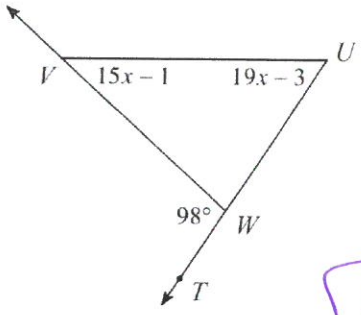
Solve for x.

24)



x=3

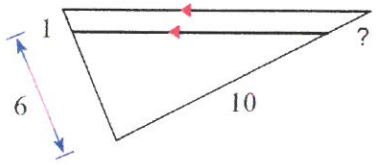
25)



x=3

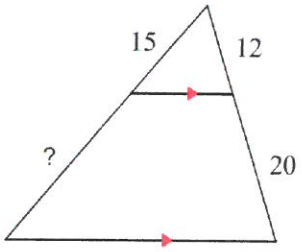
Find the missing length indicated.

26)



x=2

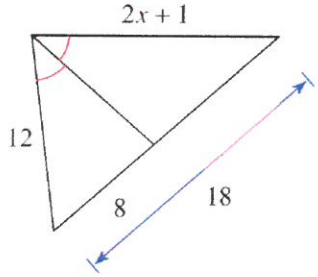
27)



x=25

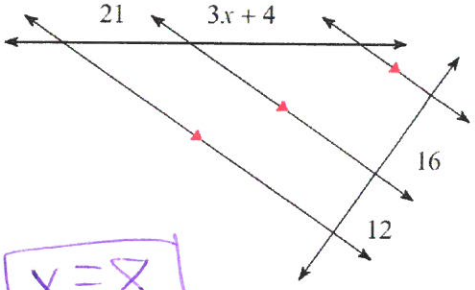
Solve for x.

28)



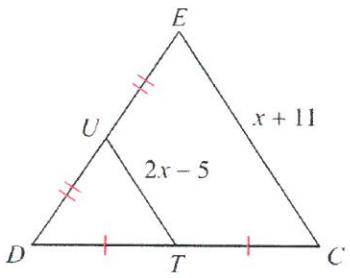
x=7

29)



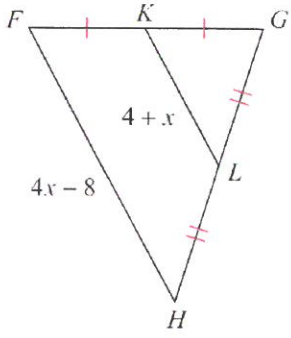
x=8

30)



x=7

31)



x=8

Find the missing length indicated.

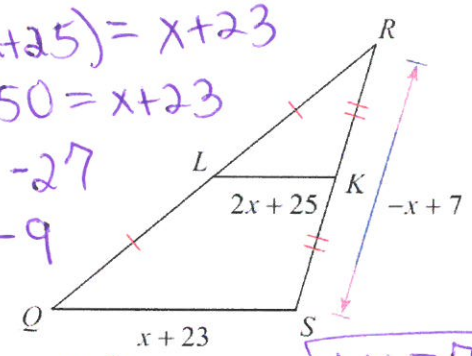
32) Find LK

$2(2x+25) = x+23$

$4x+50 = x+23$

$3x = -27$

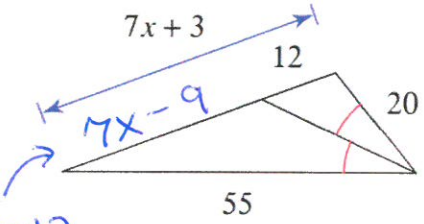
$x = -9$



$LK = 2(-9)+25$

$LK = 7$

33) The length of the final side of the largest triangle.



$\frac{7x-9}{55} = \frac{12}{20}$

$\frac{7x-9}{55} = \frac{3}{5}$

$165 = 35x - 45$

$210 = 35x$

$6 = x$

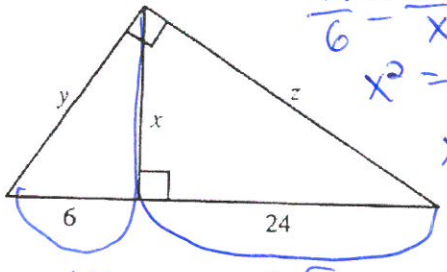
$7x+3-12$

last side of large △ $= 7(6)+3$

45

Find the indicated length.

34)



$\frac{x}{6} = \frac{24}{x}$

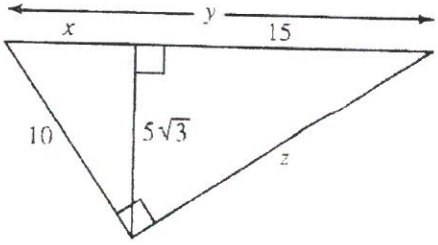
$x^2 = 144$

$x = 12$

$x =$ 12 $y =$ $6\sqrt{5}$ $z =$ $12\sqrt{5}$

$\frac{y}{6} = \frac{30}{y}$ $y^2 = 180$ $\frac{z}{24} = \frac{30}{z}$ $z^2 = 720$

35)



$x =$ 5 $y =$ 20 $z =$ $10\sqrt{3}$

$x^2 + (5\sqrt{3})^2 = 10^2$ OR $\frac{10}{x} = \frac{x+15}{10}$

$\frac{z}{15} = \frac{15+5}{z}$ $z^2 = 300$

Use the given information to state which lines are parallel. Give the theorem or postulate that justifies your answer.

35) $\angle 1 \cong \angle 9$

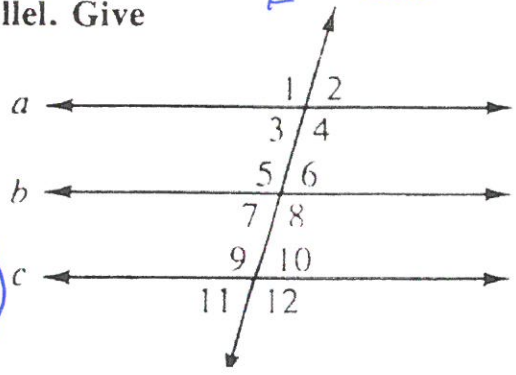
a // c

by Converse of Corr ∠s Post (If corr ∠s ≅, then lines are //.)

36) $\angle 3 \cong \angle 6$

a // b

by Conv. of Alt. Int ∠ Thm (If alt. int. ∠s ≅, then lines are //.)



37) $m\angle 8 + m\angle 10 = 180$

b // c

by Converse of Same Side Int ∠ Thm (If same side int. ∠s are supplementary, then lines are //.)

38) $\angle 4 \cong \angle 9$

a // c

by Converse of Alternate Interior ∠ Thm (If Alternate Interior ∠s are ≅, then lines are //.)

39) $\angle 8 \cong \angle 12$

b // c

by Converse of Corr. ∠s Post (If corr ∠s are ≅, then lines are //.)

40) $\angle 1 \cong \angle 8$

a // b

by Converse of Alt. Exterior ∠ Thm (If Alternate Exterior ∠s are ≅ then lines are //.)

OR by Converse of Corr ∠s Postulate after vertical ∠s thm