

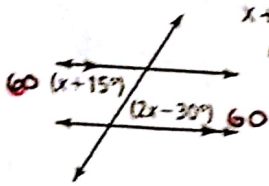
# KEY Unit 5 Study Guide

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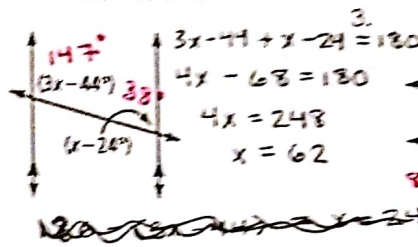
Unit 5

Directions: Find the value of each variable. Then find the measure of each labeled angle.



$$x+15 = 2x-30$$

$$45 = x$$

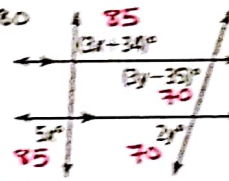


$$3x-44 + x-24 = 180$$

$$4x - 68 = 180$$

$$4x = 248$$

$$x = 62$$



$$3x+34 = 5x$$

$$24 = 2x$$

$$x = 12$$

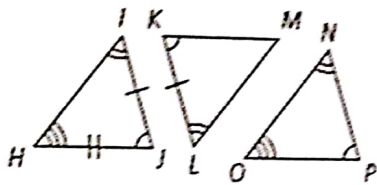
$$3y-35 = 2y$$

$$-35 = -y$$

$$y = 35$$

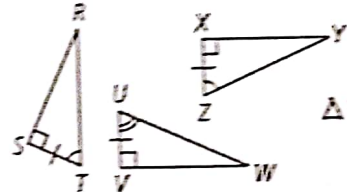
Directions: Name two triangles that are congruent by ASA.

4.



$$\triangle JIH \cong \triangle KLM$$

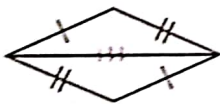
5.



$$\triangle STR \cong \triangle XEY$$

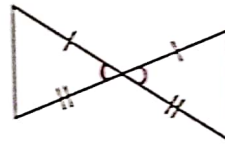
Directions: Would you use SSS or SAS to prove these triangles congruent? If there is not enough information to prove the triangles congruent by SSS or SAS, write not enough information. Explain your answer.

6.



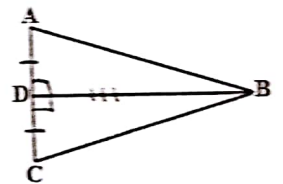
$$SSS \triangle \cong$$

7.



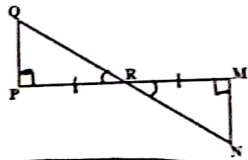
$$SAS \triangle \cong$$

8. Given:  $\overline{BD}$  is the perpendicular bisector of  $\overline{AC}$   
Prove:  $\triangle BAD \cong \triangle BCD$



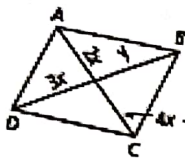
Statements	Reasons
1) $\overline{BD}$ is the perpendicular bisector of $\overline{AC}$ .	1) Given
2) $\overline{AD} \cong \overline{CD}$	2) Definition of segment bisector
3) $\angle ADB$ and $\angle CDB$ are right $\angle$ .	3) Definition of perpendicular
4) $\angle ADB \cong \angle CDB$	4) all right $\angle$ s $\cong$
5) $\overline{DB} \cong \overline{DB}$	5) reflexive Prop.
6) $\triangle BAD \cong \triangle BCD$	6) SAS $\triangle \cong$

9. Given:  $\angle P$  and  $\angle M$  are right angles.  
 $R$  is the midpoint of  $\overline{PM}$ .  
Prove:  $\triangle PQR \cong \triangle MNR$



Statement	Reason
1) $\angle P$ and $\angle M$ are right $\angle$ s	1) Given
$R$ is the midpoint of $\overline{PM}$	2) all right $\angle$ s $\cong$
2) $\angle P \cong \angle M$	3) Def. of midpoint
3) $\overline{PR} \cong \overline{RM}$	4) vertical $\angle$ s $\cong$
4) $\angle QRP \cong \angle NRM$	5) ASA $\triangle \cong$
5) $\triangle PQR \cong \triangle MNR$	

Directions: Find the values of the variables in each parallelogram (14 is a trapezoid)..



$$4x - 6 = 2x$$

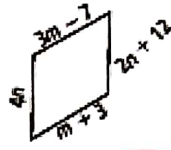
$$-6 = -2x$$

$$X = 3$$

$$3x = 3(3) = 9$$

$$Y = 9$$

11.



$$3m - 7 = m + 3$$

$$2m = 10$$

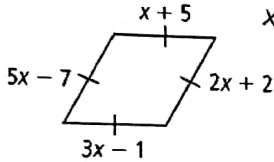
$$m = 5$$

$$2n + 12 = 4n$$

$$12 = 2n$$

$$n = 6$$

12.

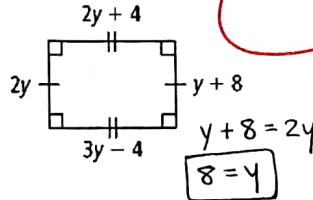


$$x + 5 = 3x - 1$$

$$6 = 2x$$

$$X = 3$$

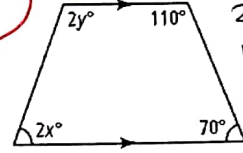
13.



$$y + 8 = 2y$$

$$8 = y$$

14.



$$2y = 70$$

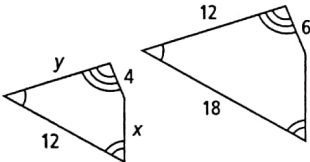
$$y = 35$$

$$2x = 110$$

$$x = 55$$

Directions: The polygons are similar. Find the value of each variable.

15.



$$\frac{2}{3} = \frac{y}{12}$$

$$3y = 24$$

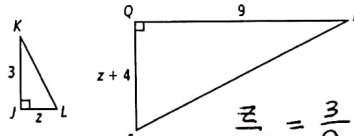
$$y = 8$$

$$\frac{2}{3} = \frac{y}{12}$$

$$3y = 24$$

$$y = 8$$

16.

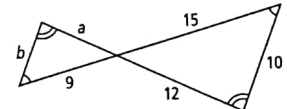


$$\frac{3}{z+4} = \frac{9}{12}$$

$$6z = 12$$

$$z = 2$$

17.



$$\frac{9}{15} = \frac{a}{12}$$

$$15a = 108$$

$$a = 7.2$$

$$\frac{9}{15} = \frac{b}{10}$$

$$15b = 90$$

$$b = 6$$

18. Population Density: A triangular field has a base that is 4 meters long and a height of 3 meters. One evening, 96 fireflies fly above the field, blinking their bioluminescent lights on and off sporadically. What is the population density of fireflies in the field?



$$\frac{1}{2}(4)(3) = 6$$

$$PD = \frac{96}{6}$$

$$= 16$$

$$16 \text{ fireflies/m}^2$$

$$PD = \frac{\text{amount}}{\text{land area}}$$

ALGEBRA In  $\triangle PRS$ ,  $\overline{PT}$  is an altitude and  $\overline{PX}$  is a median.

19. Find  $RS$  if  $RX = x + 7$  and  $SX = 3x - 11$ .

$$x + 7 = 3x - 11$$

$$18 = 2x$$

$$x = 9$$

$$RS = 32$$

20. Find  $RT$  if  $RT = x - 6$  and  $m\angle PTR = 8x - 6$ .

$$RT = 6$$

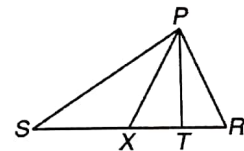
$$8x - 6 = 90$$

$$+6 \quad +6$$

$$8x = 96$$

$$x = 12$$

$$SX = XR$$



ALGEBRA In  $\triangle DEF$ ,  $\overline{GI}$  is a perpendicular bisector.

21. Find  $x$  if  $EH = 16$  and  $FH = 6x - 5$ .

$$6x - 5 = 16$$

$$6x = 21$$

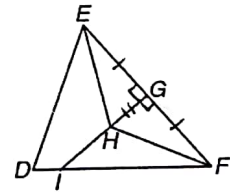
$$x = 3.5$$

22. Find  $y$  if  $EG = 3.2y - 1$  and  $FG = 2y + 5$ .

$$3.2y - 1 = 2y + 5$$

$$1.2y = 6$$

$$y = 5$$



Find  $z$  if  $m\angle EGH = 12z$ .

$$12z = 90$$

$$z = 7.5$$