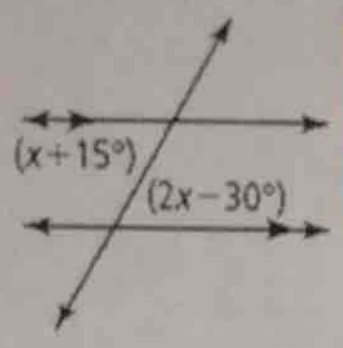
Unit 6 Study Guide

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

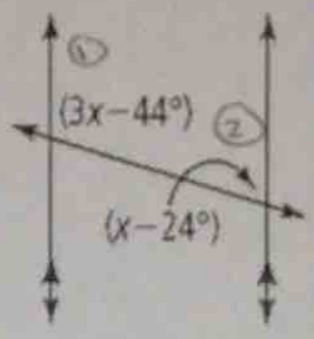
1.



x = 45°

∡s = 60°

2.

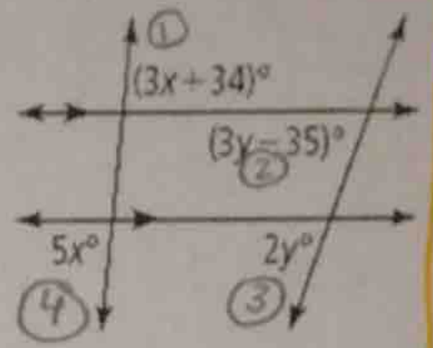


x = 10

∡1 = 142°

∡2 = 38°

3.



x = 17

y = 35

∡1 = 95°

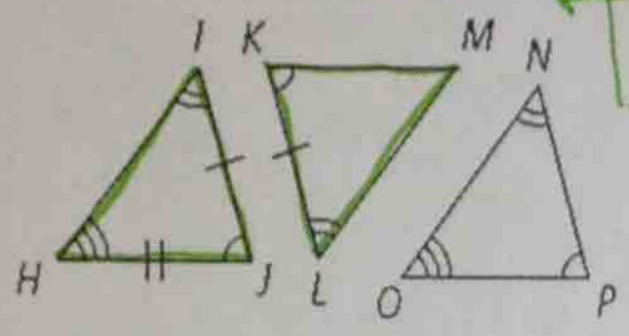
∡2 = 70°

∡3 = 85°

∡4 = 70°

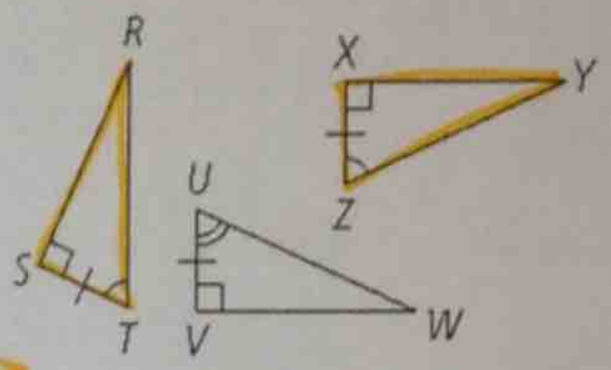
Directions: Name two triangles that are congruent by ASA.

4.



△KLM ≅ △JIH

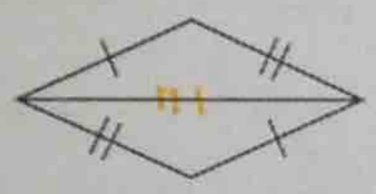
5.



△STR ≅ △XZY

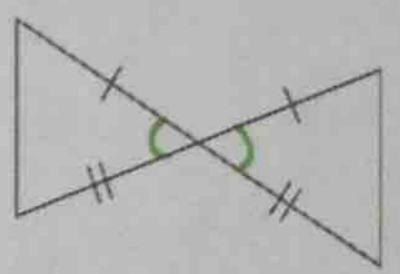
Directions: Would you use SSS or SAS to prove these triangles congruent? If there is not enough information to prove the triangles congruent by SSS or SAS, write *not enough information*. Explain your answer.

6.



SSS △ ≅

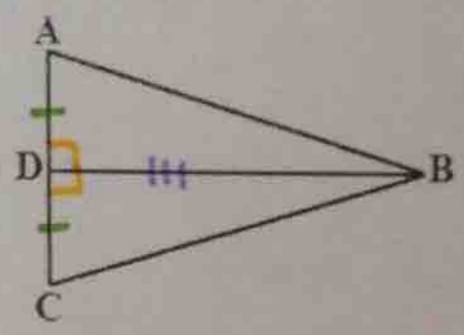
7.



SAS △ ≅

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

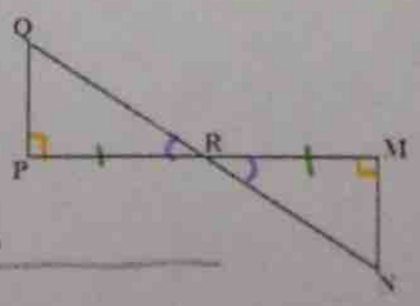
Statements	Reasons
1) $\overline{BD}$ is the perpendicular bisector of $\overline{AC}$.	1) Given
2) $\overline{AD} \cong \overline{CD}$	2) Definition of segment bisector
3) $\angle ADB$ and $\angle CDB$ are right ∡s.	3) Definition of perpendicular
4) ∡ADB ≅ ∡CDB	4) all right ∡s ≅
5) $\overline{DB} \cong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



All right ∡s ≅

reflexive

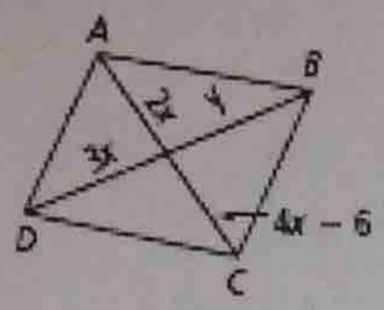
9 Given: $\angle P$ and $\angle M$ are right angles.
R is the midpoint of $\overline{PM}$.
Prove: $\triangle PQR \cong \triangle MNR$



statement	reason
1. ∡P and ∡M are right	1. Given
2. R is the midpoint of $\overline{PM}$	2. Given
3. ∡P ≅ ∡M	3. all right ∡s ≅
4. $\overline{PR} \cong \overline{RM}$	4. Def. of midpoint
5. ∡QRP ≅ ∡NRM	5. vert. ∡s ≅
6. △PQR ≅ △MNR	6. ASA △ ≅

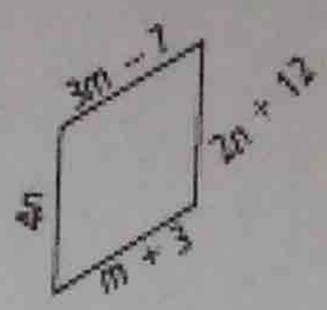
Directions: Find the values of the variables in each parallelogram (14 is a trapezoid)..

10.



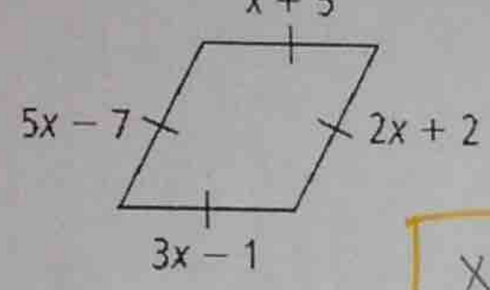
x = 3
y = 18

11.



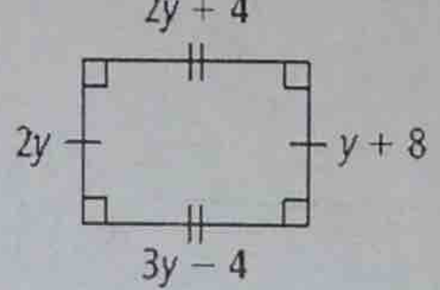
m = 5
n = 6

12.



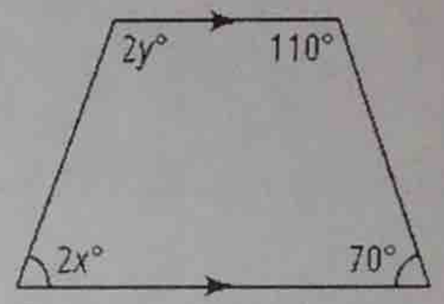
x = 3

13.



y = 8

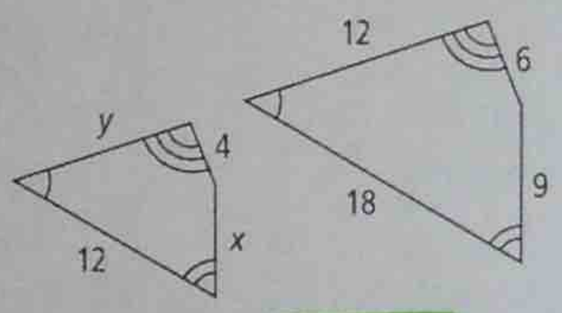
14.



x = 35 y = 55

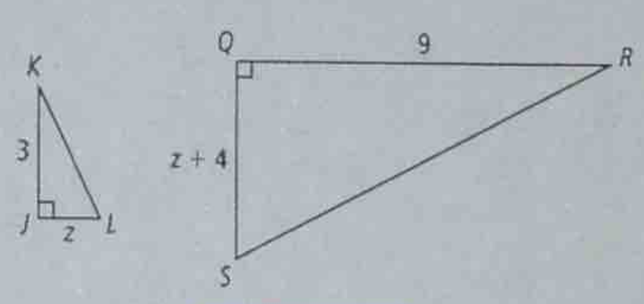
Directions: The polygons are similar. Find the value of each variable.

15.



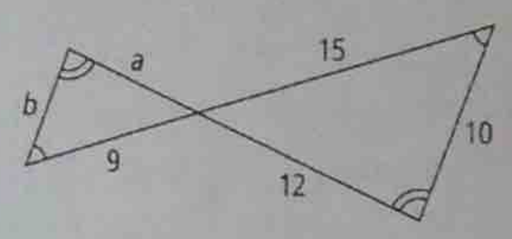
x = 6 y = 8

16.



z = 2

17.



a = 7.2 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 biolumiscent lights on and off sporadically. What is the population density of fireflies in the field?

16 fireflies / m^2

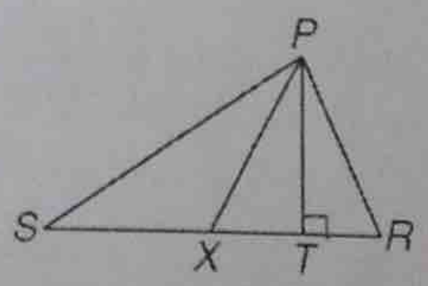
ALGEBRA In $\triangle PRS$, $\overline{PT}$ is an altitude and $\overline{PX}$ is a median.

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

x = 9 $\overline{RS}$ = 32

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

x = 12 $\overline{RT}$ = 6



SX = XR

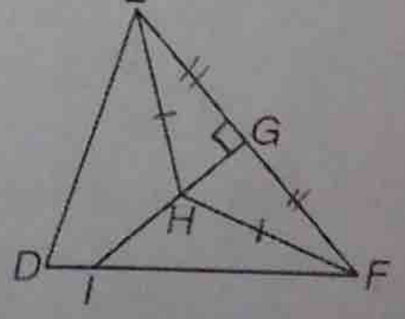
ALGEBRA In $\triangle DEF$, $\overline{GI}$ is a perpendicular bisector.

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

x = 3.5

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

y = 5



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

12z = 90

z = 7.5

3.2y − 1 = 2y + 5

1.2y = 6

y = 5

Unit 6 Study Guide

1. $2x - 30 = x + 15$

$x = 45$

2. $3x - 44 + x - 24 = 180$

$4x - 68 = 180$

$4x = 248$

$x = 62$

3. $5x = 3x + 34$

$2x = 34$

$x = 17$

$3y - 35 = 2y$

$y - 35 = 0$

$y = 35$

10. $4x - 6 = 2x$

$2x = 6$

$x = 3$

$3(6) = y$

$y = 18$

11. $3m - 7 = m + 3$

$2m = 10$

$m = 5$

$4n = 2n + 12$

$2n = 12$

$n = 6$

12. $3x - 1 = x + 5$

$2x = 6$

$x = 3$

13. $2y = y + 8$

$y = 8$

14. $2x = 70$

$x = 35$

$2y = 110$

$y = 55$

15. $\frac{4}{10} = \frac{x}{9}$

$36 = 6x$

$x = 6$

$\frac{4}{6} = \frac{y}{12}$

$48 = 6y$

$y = 8$

16. $\frac{3}{9} = \frac{z}{z+4}$

$3z + 12 = 9z$

$12 = 6z$

$z = 2$

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

$15a = 108$

$a = 7.2$

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

$90 = 15b$

$b = 6$

18. $A = \frac{(4)(3)}{2} = 6m^2$

$PD = \frac{96}{6} = 16$

19. $3x - 11 = x + 7$

$2x = 18$

$x = 9$

$RX = 16$ $\overline{RS} = 32$

20. $8x - 6 = 90$

$8x = 96$

$x = 12$

21. $6x - 5 = 16$

$6x = 21$

$x = 3.5$