

Chapter 3 Study Guide

(Parallel and Perpendicular Lines)

Name _____

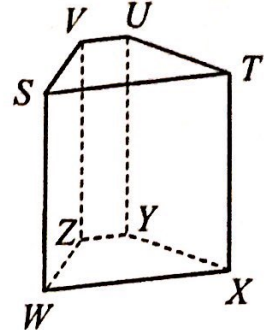
Date _____

Period _____

Topic 1: parallel Lines & Planes

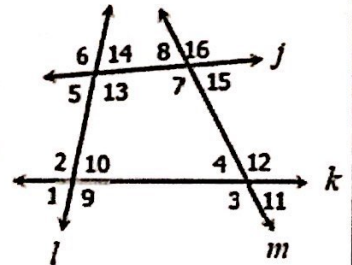
Use the diagram to the right for questions 1-5.

1. Name a plane parallel to plane WXT . VUY
2. Name two segments parallel to VU . ST, WX, ZY
3. Name two segments parallel to SW . UY, VZ, TX
4. Name two segments skew to XY . SV, VU, VZ, ST, VS
5. Name two segments skew to VZ . VX, WX



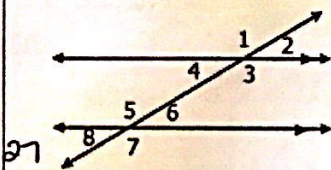
Name each angle pair as corresponding, alternate interior, alternate exterior, same side interior, or no relationship. Identify the transversal that connects each angle pair.

6. $\angle 4$ and $\angle 10$ SSI; Transversal: line k
7. $\angle 8$ and $\angle 11$ alt ext; Transversal: line m
8. $\angle 2$ and $\angle 12$ none; Transversal: line k
9. $\angle 5$ and $\angle 7$ corresp.; Transversal: line j
10. $\angle 2$ and $\angle 13$ alt. int; Transversal: line l



Topic 2: Parallel Lines & Angles

11. If $m\angle 8 = 27^\circ$, find the measures of all the other angles and justify your reasoning.

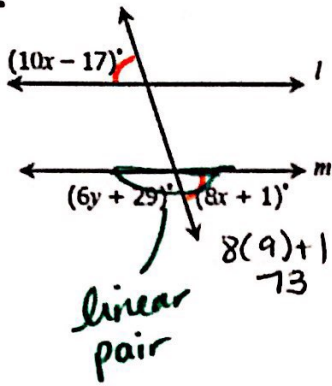


a. $m\angle 1 = 153^\circ$	corresp to $\angle 5$
b. $m\angle 2 = 27^\circ$	alt. ext to $\angle 8$
c. $m\angle 3 = 153^\circ$	vertical to $\angle 3$
d. $m\angle 4 = 27^\circ$	corresp. to $\angle 8$
e. $m\angle 5 = 153^\circ$	linear pair to $\angle 8$
f. $m\angle 6 = 27^\circ$	vertical to $\angle 8$
g. $m\angle 7 = 153^\circ$	vertical to $\angle 5$

reasons may vary

For questions 12-14, find the value of x and y if $l \parallel m$.

12. "



$$10x - 17 = 8x + 1$$

$$2x = 18$$

$$x = 9$$

$$6y + 29 + 73 = 180$$

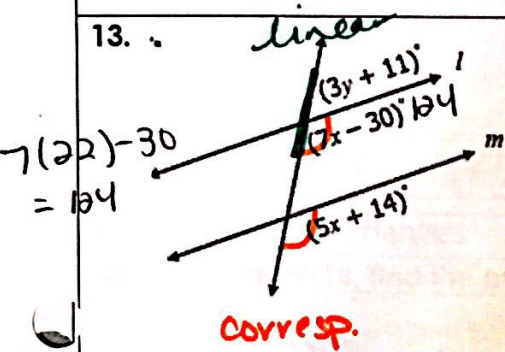
$$6y + 102 = 180$$

$$-102 \quad -102$$

$$6y = 78$$

$$y = 13$$

13. "



$$7x - 30 = 5x + 14$$

$$\frac{-5x}{-5x} \quad \frac{-5x}{-5x}$$

$$2x - 30 = 14$$

$$+30 \quad +30$$

$$2x = 44$$

$$x = 22$$

$$3y + 11 + 124 = 180$$

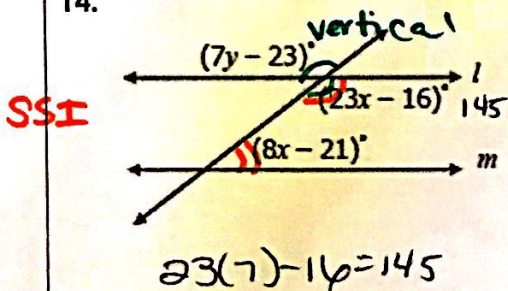
$$3y + 135 = 180$$

$$-135 \quad -135$$

$$3y = 45$$

$$y = 15$$

14.



$$23x - 16 + 8x - 21 = 180$$

$$31x - 37 = 180$$

$$31x = 217$$

$$x = 7$$

$$7y - 23 = 145$$

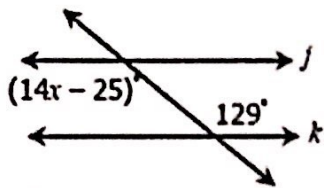
$$7y = 168$$

$$y = 24$$

Topic 3: Proving Lines Are Parallel

For questions 17-18, find the value of x that would prove $j \parallel k$.
State the converse that justifies your answer.

15.



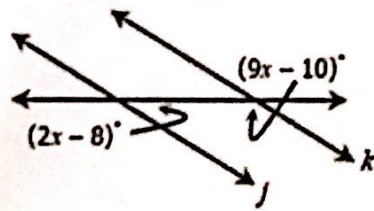
$$14x - 25 = 129$$

$$14x = 154$$

$$x = 11$$

Converse alt. int

16.



$$2x - 8 + 9x - 10 = 180$$

$$11x - 18 = 180$$

$$11x = 198$$

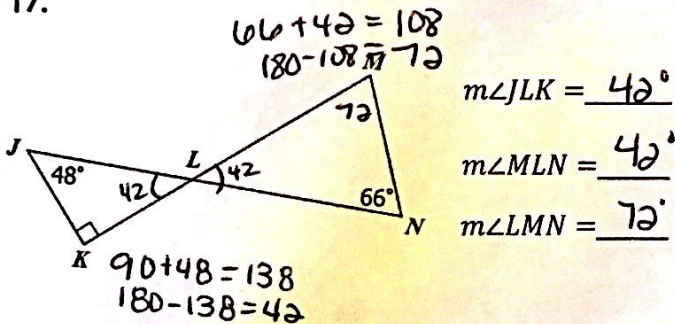
$$x = 18$$

Converse SSI

Topic 4: Angles of Triangles

For questions 17-18, find the measure of each missing angle.

17.

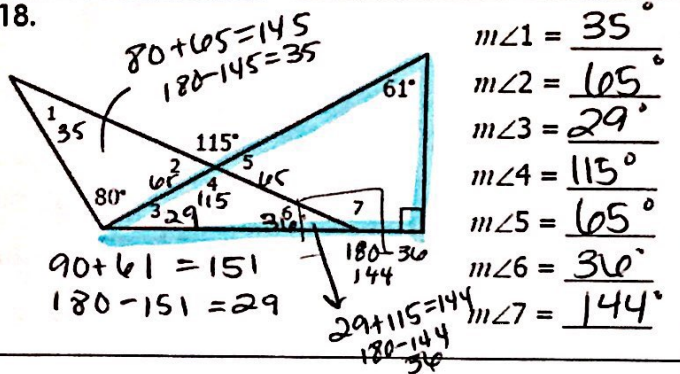


$$m\angle JLK = 42^\circ$$

$$m\angle MLN = 42^\circ$$

$$m\angle LMN = 72^\circ$$

18.



$$m\angle 1 = 35^\circ$$

$$m\angle 2 = 105^\circ$$

$$m\angle 3 = 29^\circ$$

$$m\angle 4 = 115^\circ$$

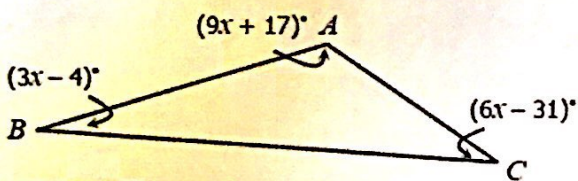
$$m\angle 5 = 65^\circ$$

$$m\angle 6 = 36^\circ$$

$$m\angle 7 = 144^\circ$$

For questions 19-20, find the $m\angle A$.

19.



$$9x + 17 + 3x - 4 + 6x - 31 = 180$$

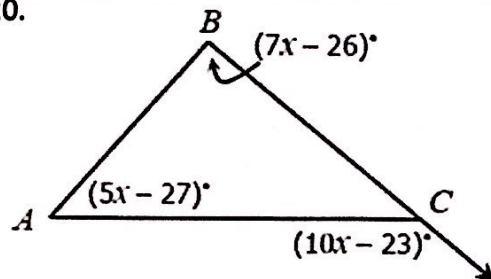
$$18x - 18 = 180$$

$$18x = 198$$

$$x = 11$$

$$9(11) + 17 = 116^\circ$$

20.



$$10x - 23 = 7x - 26 + 5x - 27$$

$$10x - 23 = 12x - 53$$

$$30 = 2x$$

$$15 = x$$

$$5(15) - 27$$

$$48^\circ$$