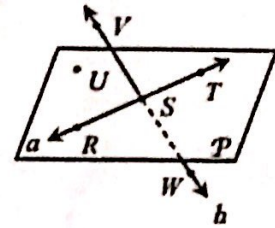


Name Key
 Date _____ Period _____

Topic 1: Geometry Basics

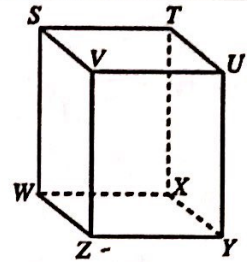
1. Use the diagram to the right to answer the questions below.

- a. Name a point collinear to points S and T. R
same line
- b. Give another name for line b. SW, VS, WV
2 points
- c. Name a point non-coplanar to points R, T, and U. V, W
not on same plane



2. Use the diagram to the right to answer the questions below.

- a. Name the intersection of planes WXYZ and TUXY. XY
bottom right 2 planes intersect @ a line
- b. Name a point coplanar to points T, W, and X. S
same plane
- c. Are points S, Z, and U coplanar? Explain no, they are not on the same plane



Distance Formula:

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Midpoint Formula:

$$MP = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

Use the midpoint and distance formulas for questions 3-4.

3. Find the length of \overline{AB} , given A(-1, 7) and B(11, -1).
 x_1, y_1 x_2, y_2

distance formula

$$d = \sqrt{(11 - (-1))^2 + (-1 - 7)^2}$$

$$d = 14.42$$

4. Find the midpoint of the given segment.

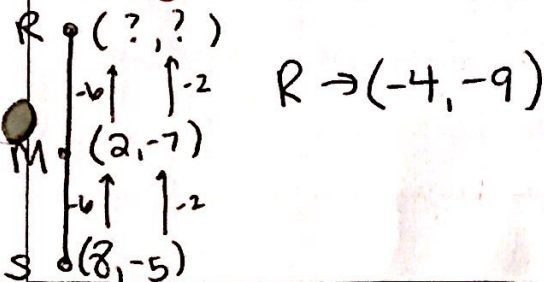
midpoint formula

** find coordinates first*

$MP = \left(\frac{-4+4}{2}, \frac{-4+5}{2} \right)$
 $\frac{0}{2}, \frac{1}{2}$
 $(0, \frac{1}{2})$

5. M(2, -7) is the midpoint of \overline{RS} . The coordinates of S are (8, -5). What are the coordinates of R?

** missing endpoint, draw a diagram*



6. If X is the midpoint of \overline{WY} , $WX = 3x - 1$ and $WY = 10x - 26$, find XY.

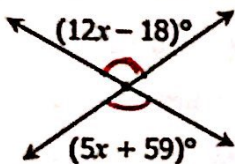
** draw a diagram - no coordinates!*

$3(6) - 1$
 $XY = 17$

$3x - 1 + 3x - 1 = 10x - 26$
 $6x - 2 = 10x - 26$
 $-6x = -24$
 $\frac{-24}{-6} = 4x - 26$
 $\frac{24}{4} = \frac{4x}{4}$ $x = 6$

7. Find the value of x.

**Vertical angles are congruent*



$$\begin{aligned} 12x - 18 &= 5x + 59 \\ -5x &\quad -5x \\ \hline 7x - 18 &= 59 \\ +18 &\quad +18 \\ \hline 7x &= 77 \\ \frac{7x}{7} &= \frac{77}{7} \\ \hline x &= 11 \end{aligned}$$

**label!*

8. If $m\angle LNK = (5x - 27)^\circ$ and $m\angle KNM = (10x - 3)^\circ$, find $m\angle JNM$.

**linear pair = 180*

$$5x - 27 + 10x - 3 = 180$$

$$15x - 30 = 180$$

$$\frac{15x}{15} = \frac{210}{15}$$

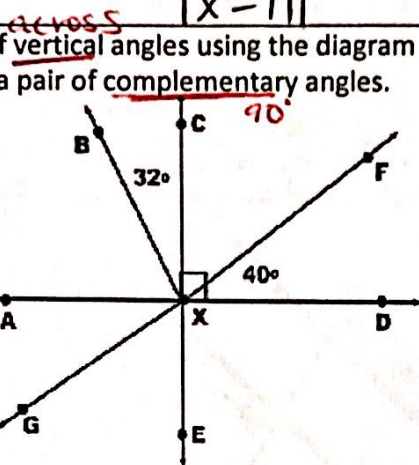
$$x = 14$$

$$5(14) - 27$$

$$m\angle JNM = 43^\circ$$



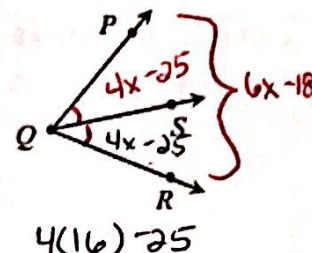
9. Name a pair of vertical angles using the diagram below. Name a pair of complementary angles.



Vertical
 $\angle GXE$ and $\angle CXF$

Complementary
 $\angle CXF$ and $\angle FXD$

10. If \overline{QS} bisects $\angle PQR$, $m\angle PQS = 4x - 25$, $m\angle PQR = 6x - 18$. Find $m\angle SQR$.



$$4(16) - 25$$

$$m\angle SQR = 39^\circ$$

$$4x - 25 + 4x - 25 = 6x - 18$$

$$8x - 50 = 6x - 18$$

$$2x - 50 = -18$$

$$\frac{2x}{2} = \frac{32}{2}$$

$$x = 16$$

Topic 2: Proofs

Write the letter of the property, definition, or postulate that justifies each statement.

**Not all choices will be used, and some may be used more than once.

11. If $\angle ABC \cong \angle CBD$, then $\angle CBD \cong \angle ABC$ G
Switch order

12. If $\underline{VW} + \underline{WY} = \underline{ZY}$, and $\underline{VW} + \underline{WY} = \underline{XZ}$, then $XZ = ZY$ H

13. If S is between R and T, then $RS + ST = RT$ K

14. If $JK + KL = MN + KL$, then $JK = MN$ B
these go away

15. If $m\angle A = m\angle C$, and $m\angle C = m\angle D$, then $m\angle A = m\angle D$ H

16. If $PQ = QT$, then $PQ + RS = QT + RS$ A
how do these get here?

17. $m\angle DEF = m\angle DEF$ F
identical!

18. If $\frac{1}{2}XZ = XY$, then $XZ = 2XY$ C

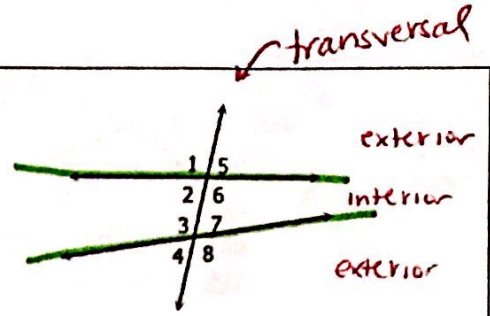
19. If $m\angle LMN = m\angle MNP$, then $\angle LMN \cong \angle MNP$ I
how do you get rid of this?

- A. Addition Property of Equality
- B. Subtraction Property of Equality
- C. Multiplication Property of Equality
- D. Division Property of Equality
- E. Substitution Property
- F. Reflexive Property (of = or \cong)
- G. Symmetric Property (of = or \cong)
- H. Transitive Property (of = or \cong)
- I. Definition of Congruence
- J. Definition of Midpoint
- K. Segment Addition Postulate
- I. Angle Addition Postulate

Topic 3: Parallel & Perpendicular Lines

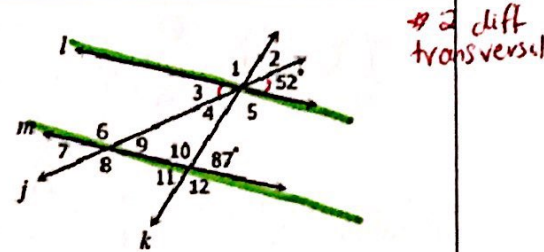
20. Use the diagram to the right to classify each pair of angles.

- a. $\angle 1$ and $\angle 8$ alternate exterior
- b. $\angle 6$ and $\angle 7$ same side interior
- c. $\angle 2$ and $\angle 4$ corresponding
- d. $\angle 3$ and $\angle 6$ alternate interior



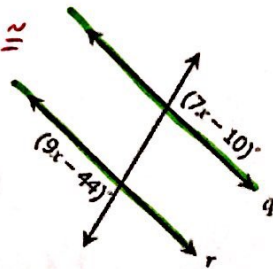
21. If $l \parallel m$, find the measure of each missing angle.

a. $m\angle 1 = 93^\circ$	b. $m\angle 2 = 35^\circ$	c. $m\angle 3 = 52^\circ$
d. $m\angle 4 = 35^\circ$	e. $m\angle 5 = 93^\circ$	f. $m\angle 6 = 128^\circ$
g. $m\angle 7 = 52^\circ$	h. $m\angle 8 = 128^\circ$	i. $m\angle 9 = 52^\circ$
j. $m\angle 10 = 93^\circ$	k. $m\angle 11 = 87^\circ$	l. $m\angle 12 = 93^\circ$



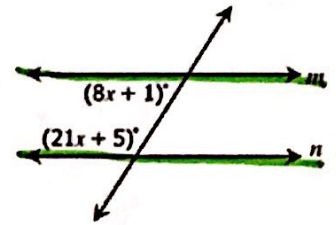
22. If $q \parallel r$, solve for x.

* alternate exterior \cong



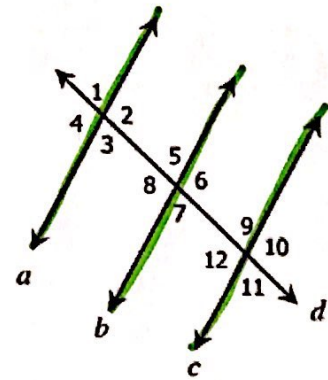
23. If $m \parallel n$, solve for x.

* SSE = 180



24. Use the diagram to the right to answer the questions below.

- a. If $m\angle 1 = 84$, what must $m\angle 5$ be in order for $a \parallel b$? 84
corresponding
- b. If $m\angle 2 = 109$, what must $m\angle 9$ be in order for $a \parallel c$? 71
SSI
- c. If $m\angle 5 = 68$, what must $m\angle 11$ be in order for $c \parallel b$? 68
alt ext
- d. If $m\angle 3 = m\angle 9$, what converse proves $a \parallel c$? alt int
alt int
- e. If $m\angle 8 = m\angle 12$, what converse proves $c \parallel b$? corresp.
corresp
- f. If $m\angle 2 + m\angle 5 = 180$, what converse proves $a \parallel b$? SSI
SSI

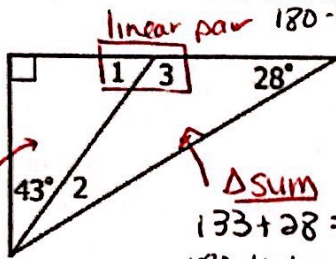


Topic 4: Triangles and Angles

* 3 interiors add to 180

* ext = sum non-adj interior

25. Find the measure of each numbered angle.



linear pair $180 - 47 = 133$

Δ sum

$$133 + 28 = 161$$

$$180 - 161 = 19$$

$$m\angle 1 = 47$$

$$m\angle 2 = 19$$

$$m\angle 3 = 133$$

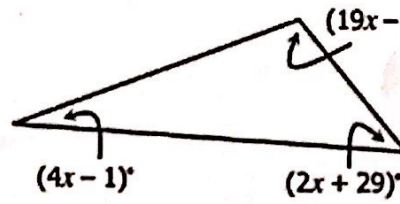
Δ sum

$$90 + 43 = 133$$

$$180 - 133$$

$$47$$

26. Find the value of x.



Δ sum

$$4x - 1 + 19x - 23 + 2x + 29 = 180$$

$$25x + 5 = 180$$

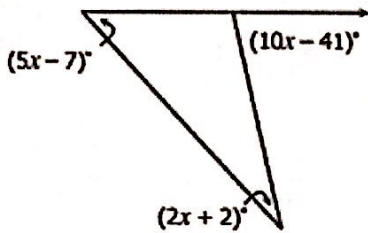
$$-5 \quad -5$$

$$\frac{25x}{25} = \frac{175}{25}$$

$$x = 7$$

27. Find the value of x.

ext theorem



$$10x - 41 = 5x - 7 + 2x + 2$$

$$10x - 41 = 7x - 5$$

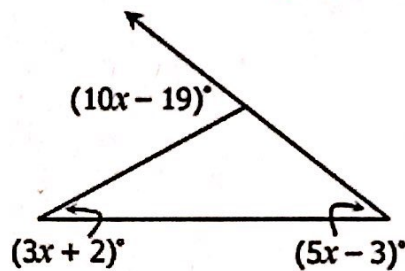
$$\begin{array}{r} 10x - 41 = 7x - 5 \\ -7x \quad -7x \\ \hline 3x - 41 = -5 \\ +41 \quad +41 \\ \hline 3x = 36 \end{array}$$

$$\frac{3x}{3} = \frac{36}{3}$$

$$x = 12$$

28. Find the value of x.

ext theorem



$$10x - 19 = 3x + 2 + 5x - 3$$

$$10x - 19 = 8x - 1$$

$$\begin{array}{r} 10x - 19 = 8x - 1 \\ -8x \quad -8x \\ \hline 2x - 19 = -1 \end{array}$$

$$2x - 19 = -1$$

$$\begin{array}{r} 2x - 19 = -1 \\ +19 \quad +19 \\ \hline 2x = 18 \end{array}$$

$$\frac{2x}{2} = \frac{18}{2}$$

$$x = 9$$