

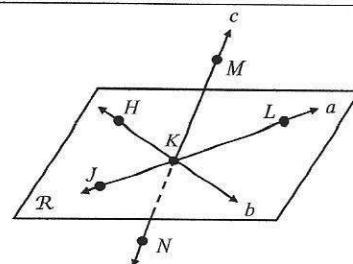
Unit 1 Test Study Guide: Geometry Basics

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|------------------------------|--|
| <h2>What is the format?</h2> | Part I - Vocabulary There will be 15 vocabulary words taken from your dictionary. |
| | Part II - Short Answer There will be 25 short answer questions based all topics covered this unit. |

Topic #1: Points, Lines, & Planes

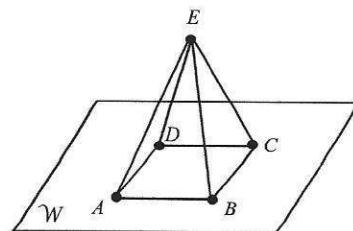
Use the diagram to the right to answer questions 1-4.

- Name a point collinear to point H . K
- Give another name for line a . \overleftrightarrow{JL}
- Name the intersection of line c and plane R . K
- Name a point non-coplanar to point J . M



Use the diagram to the right to answer questions 5-8.

- How many planes are shown in the figure? 5
- Give another name for plane W . plane ABC
- Name the intersection of plane ADE and plane W . \overline{AD}
- Name a point non-collinear to point A . C

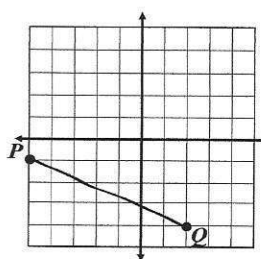


Topic #2: Distance & Midpoint

9. Find ST if $S(-3, 10)$ and $T(-2, 3)$.

$$\begin{aligned}
 d &= \sqrt{(-2+3)^2 + (3-10)^2} \\
 &= \sqrt{1^2 + (-7)^2} \\
 &= \sqrt{1 + 49} \\
 &= \sqrt{50} = \boxed{7.07}
 \end{aligned}$$

10. Given the graph below, find PQ .



$$\begin{aligned}
 &(-5, -1) (2, -4) \\
 d &= \sqrt{(2+5)^2 + (-4+1)^2} \\
 &= \sqrt{7^2 + (-3)^2} \\
 &= \sqrt{49 + 9} \\
 &= \sqrt{58} \\
 &= \boxed{7.62}
 \end{aligned}$$

11. Find the coordinates of the midpoint of HK if $H(-1, 2)$ and $K(-7, -4)$.

$$\begin{aligned}
 M &= \left(\frac{-1+(-7)}{2}, \frac{2+(-4)}{2} \right) \\
 &= \left(\frac{-8}{2}, \frac{-2}{2} \right) = \boxed{(-4, -1)}
 \end{aligned}$$

12. Find the coordinates of Z if Y is the midpoint of \overline{XZ} , $X(-10, 9)$ and $Y(-4, 8)$.

$$\begin{aligned}
 -4 &= \frac{-10+x_2}{2} \rightarrow -8 = -10 + x_2 \\
 &2 = x_2 \\
 8 &= \frac{9+y_2}{2} \rightarrow 16 = 9 + y_2 \\
 &7 = y_2 \\
 &\boxed{(2, 7)}
 \end{aligned}$$

13. If S is the midpoint of \overline{RT} , $RS = 5x + 17$, and $ST = 8x - 31$, find RS .

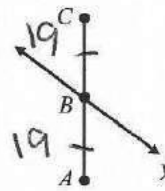
$$5x + 17 = 8x - 31$$

$$-3x = -48$$

$$x = 16$$

$$RS = 5(16) + 17 = \boxed{97}$$

14. If line y bisects \overline{AC} , $AB = 4 - 5x$, and $BC = 2x + 25$, find AC .



$$4 - 5x = 2x + 25$$

$$4 - 7x = 25$$

$$-7x = 21$$

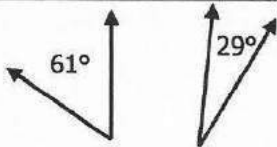
$$x = -3$$

$$AC = 2(19) = \boxed{38}$$

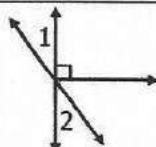
Topic #3: Angle Relationships

Use the diagrams below to answer 15-19.

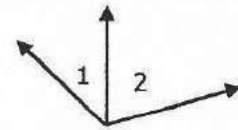
A.



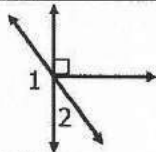
B.



C.



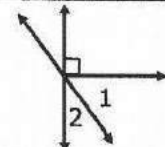
D.



E.



F.



15. Which diagram(s) show adjacent angles? C, D, F

16. Which diagram(s) show vertical angles? B

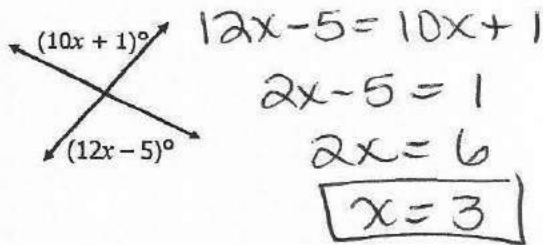
17. Which diagram(s) show complementary angles? A, F

18. Which diagram(s) show supplementary angles? D, E

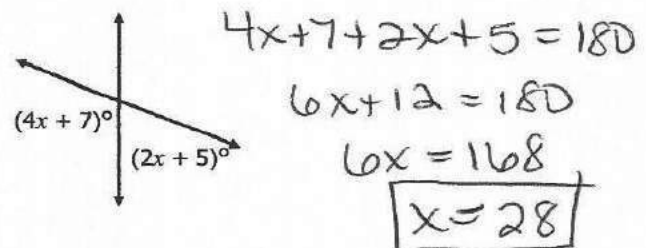
19. Which diagram(s) show a linear pair? D

Topic #4: Solving Angle Problem

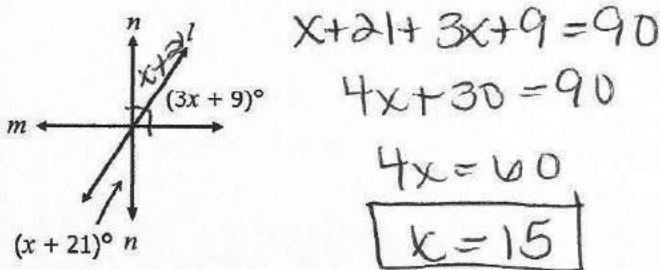
20. Solve for x .



21. Solve for x .



22. If $m \perp n$, solve for x .



23. $\angle M$ and $\angle N$ form a linear pair. If $m\angle M = 18x - 1$ and $m\angle N = 23x + 17$, find $m\angle N$.

$$18x - 1 + 23x + 17 = 180$$

$$41x + 16 = 180$$

$$41x = 164$$

$$x = 4$$

$$m\angle N = 23(4) + 17$$

$$m\angle N = 109$$

24. $\angle G$ and $\angle H$ are complementary angles. If $m\angle G = 6x - 15$ and $m\angle H = 3x + 6$, find $m\angle H$.

$$6x - 15 + 3x + 6 = 90$$

$$9x - 9 = 90$$

$$9x = 99$$

$$x = 11$$

$$m\angle H = 3(11) + 6 = \boxed{39^\circ}$$

25. $\angle A$ and $\angle B$ are vertical angles. If $m\angle A = 5x + 12$ and $m\angle B = 6x - 11$, find $m\angle A$.

$$5x + 12 = 6x - 11$$

$$-x + 12 = -11$$

$$-x = -23$$

$$x = 23$$

$$m\angle A = 5(23) + 12 = \boxed{127^\circ}$$

26. The measure of $\angle P$ is five less than four times the measure of $\angle Q$. If $\angle P$ and $\angle Q$ are supplementary angles, find $m\angle P$.

$$\text{Let } x = m\angle Q$$

$$x + 4x - 5 = 180$$

$$5x - 5 = 180$$

$$5x = 185$$

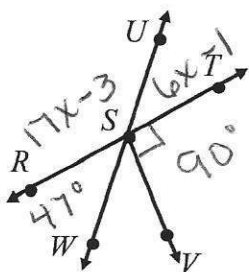
$$x = 37$$

$$\text{Let } 4x - 5 = m\angle P$$

$$m\angle P = 4(37) - 5$$

$$= \boxed{143^\circ}$$

27. If $\overrightarrow{SV} \perp \overrightarrow{RT}$, $m\angle RSU = 17x - 3$, and $m\angle UST = 6x - 1$, find each missing measure.



$$17x - 3 + 6x - 1 = 180$$

$$23x - 4 = 180$$

$$23x = 184$$

$$x = 8$$

a) $x = \underline{8}$

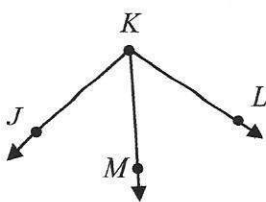
b) $m\angle RSU = \underline{133^\circ}$

c) $m\angle UST = \underline{47^\circ}$

d) $m\angle WSV = \underline{43^\circ}$

e) $m\angle VSU = \underline{137^\circ}$

28. If \overrightarrow{KM} bisects $\angle JKL$, $m\angle JKL = 92^\circ$, and $m\angle MKL = 5x + 1$, find the value of x .



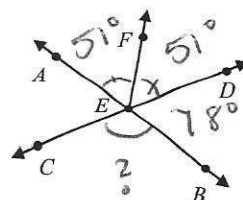
$$2(5x + 1) = 92$$

$$10x + 2 = 92$$

$$10x = 90$$

$$\boxed{x = 9}$$

29. If \overrightarrow{EF} bisects $\angle AED$, $m\angle AEF = 4x + 3$, and $m\angle FED = 7x - 33$, find $m\angle CEB$.



$$4x + 3 = 7x - 33$$

$$-3x + 3 = -33$$

$$-3x = -36$$

$$x = 12$$

$$m\angle CEB = 180 - 78 = \boxed{102^\circ}$$