

Chapter 1 Test Study Guide  
(Geometry Basics)

R

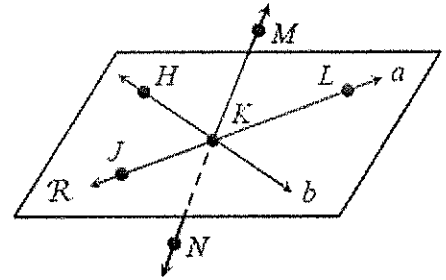
Name: Key  
Date \_\_\_\_\_ Period \_\_\_\_\_

point  $\rightarrow$  1 letter  
line  $\rightarrow$  2 letters  
plane  $\rightarrow$  3 letters

Topic #1: Points, Lines, and Planes

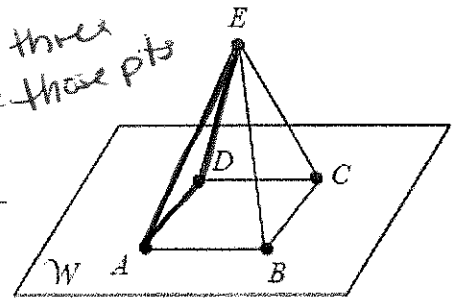
Use the diagram to the right to answer questions 1-4.

- Name two points collinear to point K. M, N or J, L
- Give another name for line b.  $\overleftrightarrow{HK}$
- Name the intersection of line c and plane R. K
- Name a point non-coplanar to plane R. M or N



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 ABCD
- Name the intersection of plane ADE and plane W.  $\overleftrightarrow{AD}$
- Name a point non-collinear to points A and B. D, C, or E



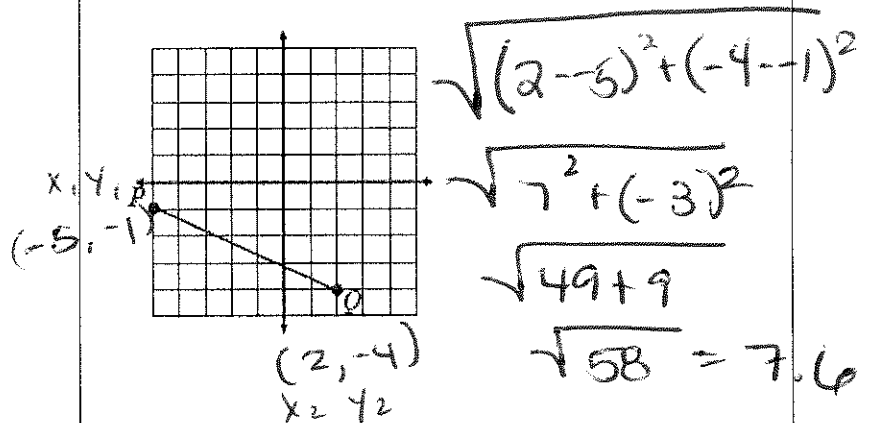
Topic #2: Distance & Midpoint

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \quad MP = \left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

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

$$\begin{aligned} & \begin{matrix} x_1, y_1 & x_2, y_2 \\ (-3, 10) & (-2, 3) \end{matrix} \\ & \sqrt{(-2 - (-3))^2 + (3 - 10)^2} \\ & \sqrt{1^2 + (-7)^2} = \sqrt{1 + 49} \\ & \sqrt{50} = 7.1 \end{aligned}$$

10. Given the graph below. Find PQ.



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

$$\begin{aligned} & \begin{matrix} x_1, y_1 & x_2, y_2 \\ (-1, 2) & (-7, -4) \end{matrix} \\ & \left( \frac{-1 + (-7)}{2}, \frac{2 + (-4)}{2} \right) \\ & \left( \frac{-8}{2}, \frac{-2}{2} \right) = (-4, -1) \end{aligned}$$

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

$$\begin{array}{c|c} -10 & 9 \\ \downarrow & \downarrow -1 \\ -6 & 8 \\ \downarrow & \downarrow -1 \\ -2 & 7 \\ \hline & Z \end{array} \quad (2, 7)$$

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



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

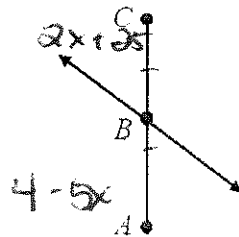
$$5(16) + 17$$

$$3x = 48$$

$$x = 16$$

97

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



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

$$7x = -21$$

$$x = -3$$

$$4 - 5(-3) = 19$$

$$2(-3) + 25 = 19$$

$$19 \times 2 = 38$$

**Topic #3: Angle Relationships**

Use the diagrams below to answer 15-19

<p>A. </p>	<p>B. </p>	<p>C. </p>
<p>D. </p>	<p>E. </p>	<p>F. </p>

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

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

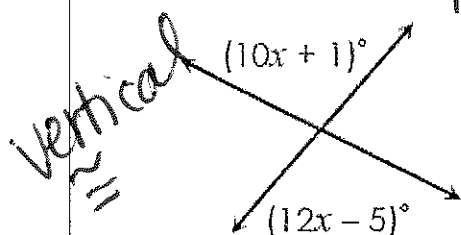
17. Which diagram(s) show complementary angles? A, F

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

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

**Topic #4: Solving Angle Problems**

20. Solve for x.

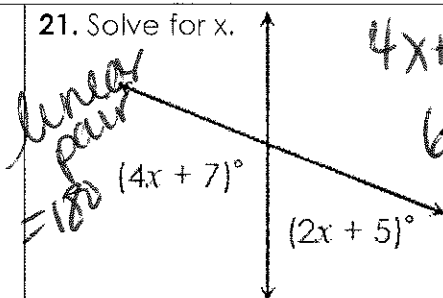


$$10x + 1 = 12x - 5$$

$$2x = 6$$

$$x = 3$$

21. Solve for x.



$$4x + 7 + 2x + 5 = 180$$

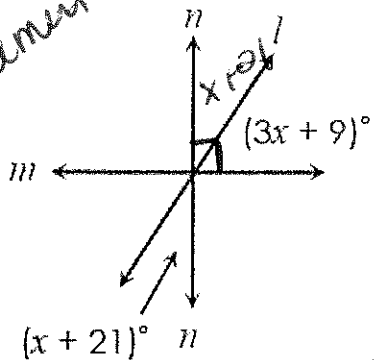
$$6x + 12 = 180$$

$$6x = 168$$

$$x = 28$$

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

Complement



$$3x + 9 + x + 21 = 90$$

$$4x + 30 = 90$$

$$4x = 60$$

$$x = 15$$

23.  $\angle 1$  and  $\angle 2$  form a linear pair. If  $m\angle 1 = 18x - 1$  and  $m\angle 2 = 23x + 17$ , find  $m\angle 2$ .

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

$$41x + 16 = 180$$

$$41x = 164$$

$$x = 4$$

$$23(4) + 17$$

$$109^\circ$$

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

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

$$9x - 9 = 90$$

$$9x = 99$$

$$x = 11$$

$$3(11) + 6$$

$$33 + 6$$

$$39$$

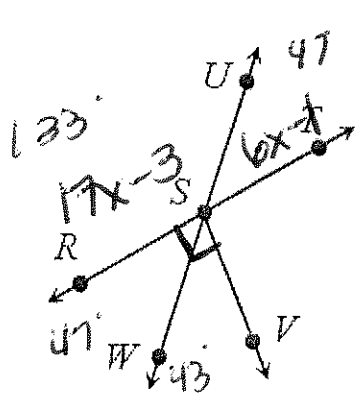
25.  $\angle 1$  and  $\angle 2$  are vertical angles. If  $m\angle 1 = 5x + 12$  and  $m\angle 2 = 6x - 11$ , find  $m\angle 1$ .

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

$$x = 23$$

$$5(23) + 12 = 127$$

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



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

$$23x - 4 = 180$$

$$23x = 184$$

$$x = 8$$

$$x = 8$$

$$17(8) - 3 \quad m\angle RSU = 133^\circ$$

$$6(8) - 1 \quad m\angle UST = 47^\circ$$

$$90 - 47 \quad m\angle WSV = 43^\circ$$

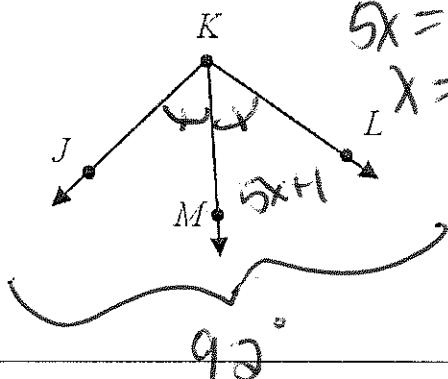
$$90 + 47 \quad m\angle VSU = 137$$

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

$$5x + 1 = 46$$

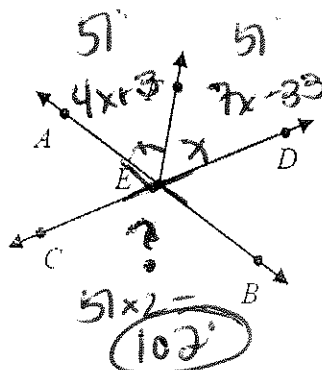
$$5x = 45$$

$$x = 9$$



$$92/2 = 46$$

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



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

$$3x = 36$$

$$x = 12$$

$$4(12) + 3 = 51$$