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1. Use the diagram at the right.

a. Name three collinear points. G, D, E

b. Give three names for the line containing point B.

BC, CB, line m

c. Name a line that is coplanar with Line m.

line n

d. Name a point that is not collinear with point E but that is coplanar with point E.

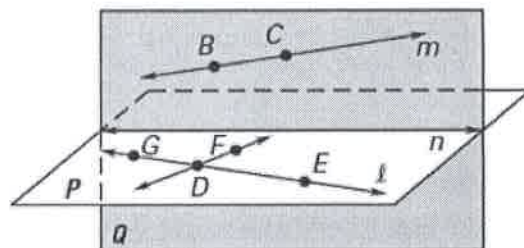
F not on line l on Plane P

e. Give the intersection of Plane P and Plane Q.

line n

f. Give another name for  $\overrightarrow{EG}$ .

$\overrightarrow{EF}$



2. Let D be between E and F. Use the Segment Addition Postulate to solve for y. Then find the lengths of ED and DF.

$ED = 4y + 8$

$DF = 2y + 16$

$EF = 18$

$4y + 8 + 2y + 16 = 18$

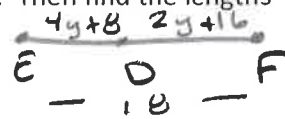
$6y + 24 = 18$

$-24 \quad -24$   
 $6y = -6$

$y = -1$

$ED = 4(-1) + 8$   
 $= -4 + 8$   
 $ED = 4$

$DF = 2(-1) + 16$   
 $= -2 + 16$   
 $DF = 14$



add to total of 18 ✓

3. Solve for x. Then find UW



$x + 12 = 4x - 3$

$-x \quad -x$   
 $12 = 3x - 3$

$+3 \quad +3$   
 $15 = 3x$

$15 = 3x$

$x = 5$

$UW = 5 + 12$

$UW = 17$

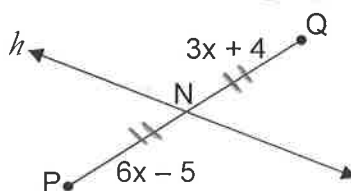
or

$UW = 4(5) - 3$

$= 20 - 3$

$= 17$  ✓

4. Given line h bisects  $\overline{PQ}$ , find PQ



$3x + 4 = 6x - 5$

$-3x + 5 \quad -3x + 5$   
 $9 = 3x$

$3 = x$

$PQ = 6(3) - 5$

$+ 3(3) + 4$

$= 18 - 5 + 9 + 4$

$= 13 + 13$

$PQ = 26$

Find the midpoint between the two given points.  $M(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2})$

5. (-12, 9) and (4, 23)

$(\frac{-12+4}{2}, \frac{9+23}{2}) = (\frac{8}{2}, \frac{32}{2}) = (4, 16)$

6. (7, -5) and (3, -8)

$(\frac{7+3}{2}, \frac{-5+-8}{2}) = (\frac{10}{2}, \frac{-13}{2}) = (5, -6\frac{1}{2})$

Find the other endpoint of the line segment with the given endpoint and midpoint (M).

7. P(8, -5) and M(-2, -6) ← "answer" to average

X's  $Q(x, y)$

W's

$G(x, y)$

$2(\frac{8+x}{2}) = (-2) \cdot 2$   $2(\frac{-5+y}{2}) = (-6) \cdot 2$

$8+x = -4$

$x = -12$

$-5+y = -12$

$y = -7$

$Q(-12, -7)$

$2(\frac{-9+x}{2}) = (10) \cdot 2$   $2(\frac{-7+y}{2}) = (2) \cdot 2$

$-9+x = 20$

$x = 29$

$-7+y = 4$

$y = 11$

$G(29, 11)$

Find the distance between each pair of points. You may leave the answers as radicals if needed.

9. (-1, 6) and (3, 9)

$d = \sqrt{(3-(-1))^2 + (9-6)^2}$   
 $= \sqrt{4^2 + 3^2}$   
 $= \sqrt{16+9}$   
 $= \sqrt{25}$   
 $= 5$

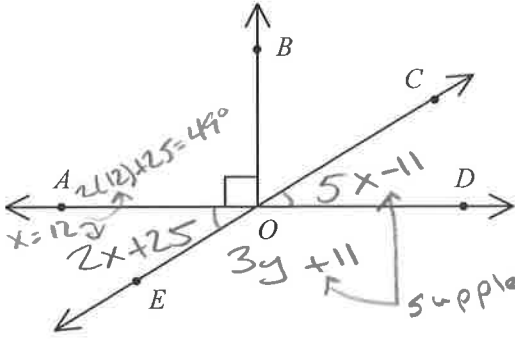
10. (-7, 8) and (-5, 3)

$d = \sqrt{(-5-(-7))^2 + (3-8)^2}$   
 $= \sqrt{2^2 + (-5)^2}$   
 $= \sqrt{4+25}$   
 $= \sqrt{29}$   
 $\approx 5.4$

11. (4, 7) and (-4, -5)

$d = \sqrt{(4-(-4))^2 + (7-(-5))^2}$   
 $= \sqrt{8^2 + 12^2}$   
 $= \sqrt{64+144}$   
 $= \sqrt{208}$   
 $\approx 14.4$

18. Solve for  $x$  and  $y$  if the  $m\angle AOE = 2x + 25$ , the  $m\angle EOD = 3y + 11$ , and the  $m\angle DOC = 5x - 11$ . Vertical Ls are  $\cong$

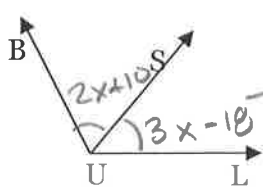


$$\begin{aligned} 2x + 25 &= 5x - 11 \\ -2x + 11 & \quad -2x + 11 \\ \hline 36 &= 3x \\ \frac{36}{3} &= \frac{3x}{3} \\ 12 &= x \end{aligned}$$

18.  $x = \underline{12}$   
 $y = \underline{40}$

$$\begin{aligned} 3y + 11 + 5(12) - 11 &= 180 \\ 3y + 60 &= 180 \\ -60 & \quad -60 \\ \hline 3y &= 120 \\ \frac{3y}{3} &= \frac{120}{3} \\ y &= 40 \end{aligned}$$

19.  $\overrightarrow{US}$  bisects  $\angle BUL$ ,  $m\angle BUS = 2x + 10$ , and  $m\angle SUL = 3x - 18$ . Find  $m\angle BUL$ .



$$\begin{aligned} 2x + 10 &= 3x - 18 \\ -2x & \quad -2x \\ \hline 10 &= x - 18 \\ +18 & \quad +18 \\ \hline 28 &= x \end{aligned}$$

$m\angle BUS = 2(28) + 10 = 66^\circ$   
 $m\angle SUL = 3(28) - 18 = 66^\circ$

$m\angle BUL = 2(66) = 132^\circ$

21.  $\angle 1$  is the supplement of  $\angle 7$ , and  $m\angle 1 = 24^\circ$ . Find  $m\angle 7$ .

add +0  
 $180^\circ$

$m\angle 7 + m\angle 1 = 180$   
 $m\angle 7 + 24 = 180$

$m\angle 7 = 156^\circ$

22.  $\angle ABC$  and  $\angle WXY$  are complementary angles. If  $m\angle ABC = 2x - 5$  and  $m\angle WXY = 3x + 10$ , then find the measures of  $\angle ABC$  and  $\angle WXY$ .

add +0  
 $90^\circ$

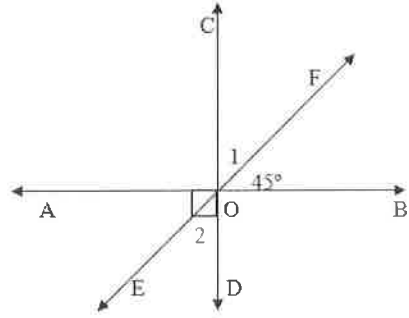
$2x - 5 + 3x + 10 = 90$

$5x + 5 = 90$   
 $5x = 85$   
 $\frac{5x}{5} = \frac{85}{5}$   
 $x = 17$

$m\angle ABC = 2(17) - 5 = 29^\circ$   
 $m\angle WXY = 3(17) + 10 = 61^\circ$

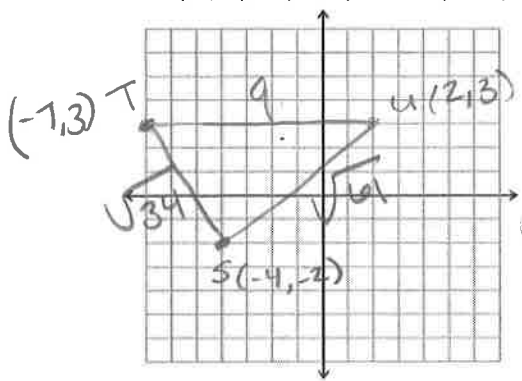
23. Use the diagram to decide whether each of the following statements are TRUE or FALSE

- a.  $m\angle FOB = 45^\circ$  True  
b.  $m\angle DOC = 180^\circ$  True  
c.  $\overline{AO} \cong \overline{OB}$  False (no lengths given)  
d.  $\angle AOC \cong \angle BOC$  True (both  $90^\circ$ )  
e. Points A, E, and F are collinear False  
f.  $m\angle FOC = 50^\circ$  False  
g.  $\angle COF$  and  $\angle BOF$  are complementary True  
h.  $\angle 1$  and  $\angle 2$  are vertical angles True



12. Plot the points S, T, and U. Give the lengths of all three sides, then find the perimeter of  $\Delta STU$ .

S (-4, -2), T (-7, 3) and U (2, 3)



$$ST = \sqrt{(-4 - (-7))^2 + (-2 - 3)^2}$$

$$ST = \sqrt{3^2 + (-5)^2}$$

$$ST = \sqrt{9 + 25}$$

$$ST = \sqrt{34}$$

$$P = \sqrt{34} + 9 + \sqrt{61}$$

$$P \approx 22.6 \text{ units}$$

$$TU = 2 - (-7) = 9$$

$$US = \sqrt{(2 - (-4))^2 + (3 - (-2))^2}$$

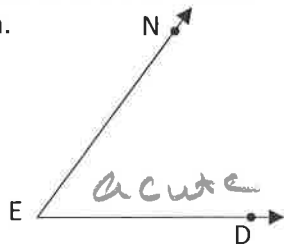
$$US = \sqrt{6^2 + 5^2}$$

$$US = \sqrt{36 + 25}$$

$$US = \sqrt{61}$$

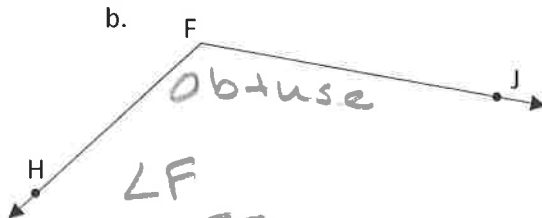
13. Give three names for the angle, and classify the angle as acute, right, obtuse, or straight.

a.



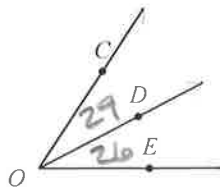
$\angle E$   
 $\angle DEN$   
 $\angle NED$

b.



$\angle F$   
 $\angle H F J$   
 $\angle J F H$

14. If  $m\angle DOE = 26^\circ$  and  $m\angle COD = 29^\circ$ , then what is the measure of  $\angle COE$ ?



$$m\angle COE = 29 + 26$$

$$m\angle COE = 55^\circ$$

15.  $m\angle SQR = (2x + 5)^\circ$  and  $m\angle PQR = (10x - 3)^\circ$  and  $m\angle SQP = 62^\circ$ . Find  $m\angle SQR$  and  $m\angle PQR$ .

$$2x + 5 + 10x - 3 = 62$$

$$12x + 2 = 62$$

$$\begin{array}{r} 12x + 2 = 62 \\ -2 \quad -2 \\ \hline 12x = 60 \end{array}$$

$$\frac{12x}{12} = \frac{60}{12}$$

$$x = 5$$

Add to total  $62^\circ$

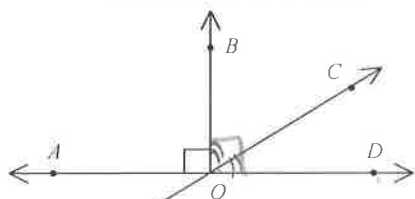
$$m\angle SQR = 2(5) + 5$$

$$m\angle SQR = 15^\circ$$

$$m\angle PQR = 10(5) - 3$$

$$m\angle PQR = 47^\circ$$

16. If  $\overline{CO}$  bisects  $\angle BOD$ , what is the measure of  $\angle COD$ ?



$$\frac{1}{2}(90) = 45^\circ$$

$$m\angle COD = 45^\circ$$

17. Given  $\angle 1$  and  $\angle 2$  are congruent,  $\cong \Rightarrow =$ .  $m\angle 1 = 73^\circ$ , and the  $m\angle 2 = 6x + 7$ . Solve for x.

$$m\angle 1 = m\angle 2$$

$$73 = 6x + 7$$

$$\begin{array}{r} 73 = 6x + 7 \\ -7 \quad -7 \\ \hline 66 = 6x \end{array}$$

$$\frac{66}{6} = \frac{6x}{6}$$

$$11 = x$$