

Station 5: Bisectors

KEY

1. Complete the following given O is between T and M , $TO = (5x + 12)$ in., $OM = (8x - 27)$ in. and $TM = 154$ in.

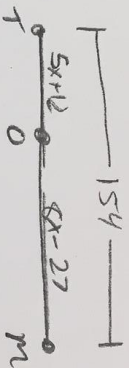
- a) Draw and mark a diagram.
- b) Find the value of x .
- c) Is O the midpoint of \overline{TM} ? Explain.

b) $5x + 12 + 8x - 27 = 154$

$13x - 15 = 154$

$13x = 169$

$x = 13$



c) $5(13) + 12 = 77$ Yes, because $8(13) - 27 = 77$ $\overline{TO} \cong \overline{OM}$

2. Complete the following given \overline{JI} bisects \overline{NH} , $KH = (5x - 6)$ ft. and $NK = (7x - 14)$ ft.

- a) Mark the diagram.
- b) Find the value of x .

$5x - 6 = 7x - 14$

$8 = 2x$

$x = 4$



3. Complete the following given \overline{FH} bisects $\angle EFG$, $m\angle EFH = (2x + 17)^\circ$ and $m\angle EFG = (7x - 11)^\circ$.

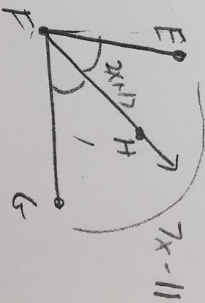
- a) Draw and mark a diagram.
- b) Find the value of x .
- c) Classify $\angle EFG$ as acute, right or obtuse.

$2(2x + 17) = 7x - 11$

$4x + 34 = 7x - 11$

$45 = 3x$

$x = 15$



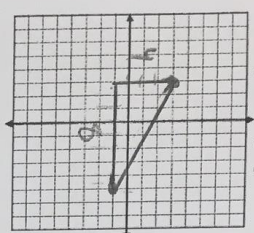
$m\angle EFG = 2(15) - 11 = 94^\circ$

Obtuse

KEY

Station 6: Distance & Midpoint Formula

1. State the distance formula: $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
2. State the midpoint formula: $M\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$
3. State the Pythagorean Theorem: $a^2 + b^2 = c^2$
4. Find DG given $G(-3, 3)$ and $G(5, -1)$.
5. Find the midpoint of HF given $H(-2, 0)$ and $F(4, -8)$.



$$4^2 + 6^2 = c^2$$

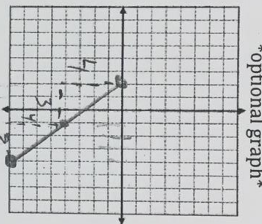
$$16 + 36 = c^2$$

$$80 = c^2$$

$$\sqrt{80} = c$$

$$\sqrt{16} \sqrt{5} = c$$

$$\boxed{4\sqrt{5} = c}$$

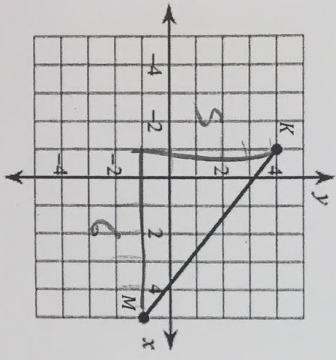


$$M\left(\frac{-2+4}{2}, \frac{0+(-8)}{2}\right)$$

$$M\left(\frac{2}{2}, \frac{-8}{2}\right)$$

$$\boxed{M(1, -4)}$$

6. Find KM .



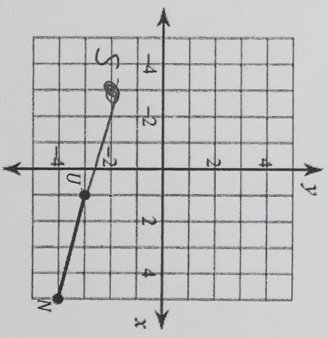
$$3^2 + 6^2 = c^2$$

$$9 + 36 = c^2$$

$$45 = c^2$$

$$c = \sqrt{45}$$

7. If U is the midpoint of SN , find the coordinates of S .



Formula: $N(x_1, y_1)$ $S(x_2, y_2)$ $U(x, y)$

$$\frac{x_1 + x_2}{2} = x$$

$$\frac{-5 + x_2}{2} = -3$$

$$-5 + x_2 = -6$$

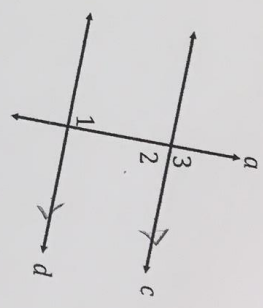
$$x_2 = -1$$

Station 7: Proof

Given: $c \parallel d$

Prove: $m\angle 1 + m\angle 3 = 180$

KEY



Statements	Given
1. $c \parallel d$	1. Given
2. $\angle 1$ and $\angle 2$ are alternate interior angles.	2. Given by diagram
3. $\angle 1 \cong \angle 2$	3. If 2 \parallel lines cut by transversal, then alt int \angle s are \cong
4. $\angle 1 = \angle 2$	4. If two \angle s are \cong , then their measures are =.
5. $\angle 2$ & $\angle 3$ form linear pair	5. Given by diagram
6. $\angle 2$ & $\angle 3$ are supplementary	6. If 2 \angle s form a linear pair, then they are supp
7. $m\angle 2 + m\angle 3 = 180$	7. If two \angle s are supplementary then the sum of their measures is 180.
8. $m\angle 1 + m\angle 3 = 180$	8. Substitution POE