

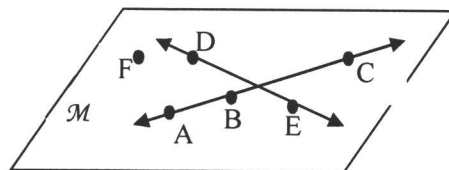
Name: Answer key

SEMESTER 1 FINAL
STUDY GUIDE

CHAPTER 1

Use the figure to name each of the following in #1-5

- Two points D and E
- One line AC
- Name the plane FDC
- One ray BC
- A line containing point B AC



- Sketch a segment with endpoints A and B

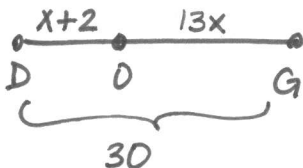


- Name and sketch a pair of opposite rays



\vec{ED} and \vec{EF}

- O is between \overline{DG} . $DO = x+2$, $OG = 13x$, and $DG = 30$. Find the length of OG



$$\begin{aligned} x+2+13x &= 30 \\ 14x+2 &= 30 \\ 14x &= 28 \\ x &= 2 \end{aligned}$$

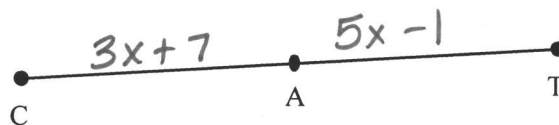
$$\begin{aligned} OG &= 13x \\ &= 13(2) \\ &= \boxed{26} \end{aligned}$$

Refer to the diagram on the right for #9-11.

A is the midpoint of CT, $CA = 3x + 7$, $AT = 5x - 1$.

- Find the value of x.

$$\begin{aligned} 3x+7 &= 5x-1 \\ 8 &= 2x \\ \boxed{x=4} \end{aligned}$$



- Find the length of CA

$$\begin{aligned} CA &= 3x+7 \\ &= 3(4)+7 \\ &= \boxed{19} \end{aligned}$$

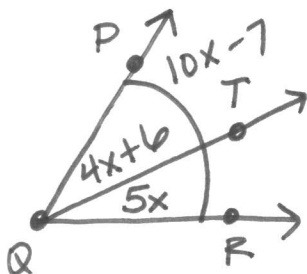
- Find the length of CT

$$\begin{aligned} CT &= 19+19 \\ &= \boxed{38} \end{aligned}$$

T is in the interior of $\angle PQR$. Find each of the following.

- Find $m\angle PQR$ if $m\angle PQR = (10x - 7)^\circ$,

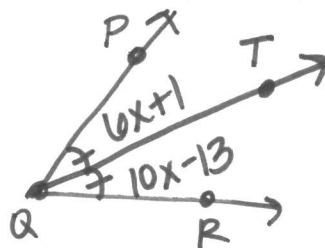
$m\angle RQT = 5x^\circ$, and $m\angle PQT = (4x + 6)^\circ$.



$$\begin{aligned} 4x+6+5x &= 10x-7 \\ 9x+6 &= 10x-7 \\ 13 &= x \\ \angle PQR &= 10x-7 \\ &= 10(13)-7 \\ &= \boxed{123} \end{aligned}$$

- Find $m\angle PQR$ if \overline{QT} bisects $\angle PQR$,

$m\angle RQT = (10x - 13)^\circ$, and $m\angle PQT = (6x + 1)^\circ$.



$$\begin{aligned} 6x+1 &= 10x-13 \\ \frac{14}{4} &= \frac{4x}{4} \\ 3.5 &= x \\ \angle RQT &= 10(3.5)-13 \\ &= 22 \\ \angle PQR &= 22+22 \\ &= \boxed{44^\circ} \end{aligned}$$

14. Find the complement and the supplement of the following angles.

a) 45 $\begin{array}{r} 90 \\ -45 \\ \hline 45^\circ \end{array}$ $\begin{array}{r} 180 \\ -45 \\ \hline 135^\circ \end{array}$ b) 120 ^a
 No complement
 $180 - 120 = 60^\circ$

c) $3x$ $\begin{array}{r} 90 - 3x \\ 180 - 3x \end{array}$

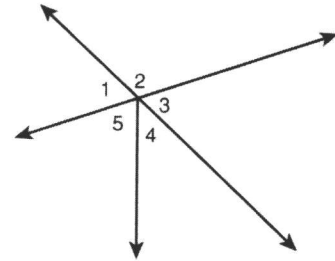
Tell whether the indicated angles are only vertical, only adjacent, are adjacent and form a linear pair, or are none.

15. $\angle 5$ and $\angle 4$ adjacent

16. $\angle 1$ and $\angle 4$ none

17. $\angle 2$ and $\angle 3$ linear pair

18. $\angle 1$ and $\angle 3$ vertical angles



19. Find the midpoint of \overline{TU} with endpoints

$T(5, -1)$ and $U(1, -5)$.

$\begin{array}{c} \bullet \text{---} \bullet \\ T \quad U \\ (5, -1) \quad (1, -5) \end{array}$ $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$
 $\left(\frac{5+1}{2}, \frac{-1+(-5)}{2} \right)$
 $\left(\frac{6}{2}, \frac{-6}{2} \right)$
 $\boxed{(3, -3)}$

20. Use the Distance Formula to find the distance between $K(-7, -4)$ and $L(-2, 0)$.

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

$$\sqrt{(-7 - (-2))^2 + (-4 - 0)^2}$$

$$\sqrt{(-5)^2 + (-4)^2}$$

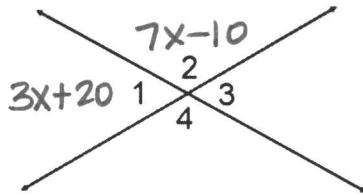
$$\sqrt{25 + 16}$$

$$\sqrt{41} = \boxed{6.4}$$

21. $\angle 1 = 3x + 20$

$\angle 2 = 7x - 10$

Find $m\angle 3$



$$3x + 20 + 7x - 10 = 180$$

$$10x + 10 = 180$$

$$10x = 170$$

$$x = 17$$

$$\angle 1 = 3(17) + 20$$

$$= 71^\circ$$

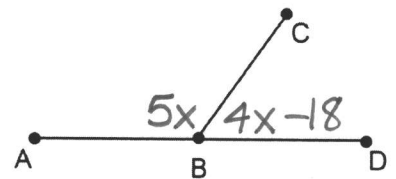
$$\angle 1 = \angle 3 \text{ (vertical \(\angle\))}$$

$$\boxed{\angle 3 = 71^\circ}$$

22. $\angle ABC = 5x$

$\angle CBD = 4x - 18$

Find x and $m\angle ABC$



$$5x + 4x - 18 = 180$$

$$9x - 18 = 180$$

$$\frac{9x}{9} = \frac{198}{9}$$

$$x = 22$$

$$\angle ABC = 5x$$

$$= 5(22) = \boxed{110^\circ}$$