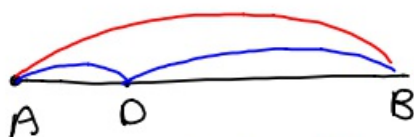


8-31-17 5th Geo

- ① What is the distance from $(1, 2)$ to $(5, 10)$.

$$\begin{aligned} D &= \sqrt{\Delta x^2 + \Delta y^2} \\ &= \sqrt{4^2 + 8^2} \\ &= \sqrt{16 + 64} \\ &= \sqrt{80} \\ &\approx 8.9 \end{aligned}$$

- ② If D is between A and B with $AB = 4n + 10$ and $AD = n - 2$, what is BD?



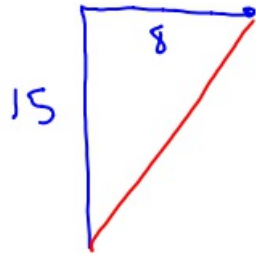
$$\begin{aligned} AD + DB &= AB \\ (n-2) + BD &= 4n+10 - n + 2 \end{aligned}$$

$$BD = 3n + 12$$

- ③ What is the midpoint of a line that has endpoints of $(-4, 6)$ and $(-6, 12)$?

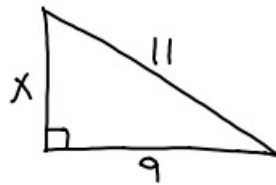
$$\left(\frac{-4 + -6}{2}, \frac{6 + 12}{2} \right) = (-5, 9)$$

- ④ I walk due West 8 miles and then turn and walk due South 15 miles. How far from the starting point on I?



$$\begin{aligned}8^2 + 15^2 &= c^2 \\64 + 225 &= c^2 \\ \sqrt{289} &= \sqrt{c^2} \\ c &= 17\end{aligned}$$

⑤



$$x^2 + 9^2 = 11^2$$

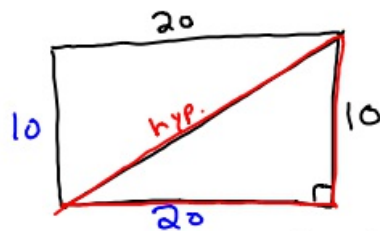
$$x^2 + 81 = 121$$

$$\begin{array}{r} -81 \\ -81 \end{array}$$

$$\sqrt{x^2} = \sqrt{40}$$

$$x \approx 6.3$$

⑥



What is the length of the diagonal?

$$20^2 + 10^2 = c^2$$

$$400 + 100 = c^2$$

$$\sqrt{500} = \sqrt{c^2}$$

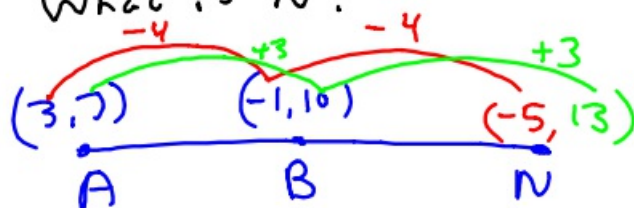
$$c \approx 22.4$$

- ⑦ $\angle XYZ$ and $\angle AYD$ are vertical angles. If $\angle XYZ = 4n + 20$ and $\angle AYD = 6n - 10$, what is $m\angle XYZ$?

$$\begin{aligned}\angle XYZ &= \angle AYD \\ 4n + 20 &= 6n - 10 \\ \underline{-4n \quad -4n} & \\ 20 &= 2n - 10 \\ \underline{+10 \quad +10} & \\ 30 &= 2n \\ \frac{30}{2} &= \frac{2n}{2} \\ 15 &= n\end{aligned}$$

$$\begin{aligned}\angle XYZ &= 4n + 20 \\ &= 4 \cdot 15 + 20 \\ &= 60 + 20 \\ &= 80^\circ\end{aligned}$$

- ⑧ B is midpoint of \overline{AN} .
If $A = (3, 7)$ and $B = (-1, 10)$,
what is N?



8-31-17 6th Geo

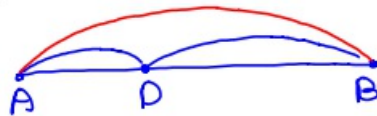
- ① What is the distance from $(2, 5)$ to $(4, 15)$?

$$\begin{aligned} D &= \sqrt{\Delta x^2 + \Delta y^2} \\ &= \sqrt{2^2 + 10^2} \\ &= \sqrt{4 + 100} \\ &= \sqrt{104} \\ &10.2 \end{aligned}$$

- ② What is the midpoint between $(-1, 6)$ and $(-7, 16)$?

$$\begin{aligned} &\left(\frac{-1 + -7}{2}, \frac{6 + 16}{2} \right) \\ &(-4, 11) \end{aligned}$$

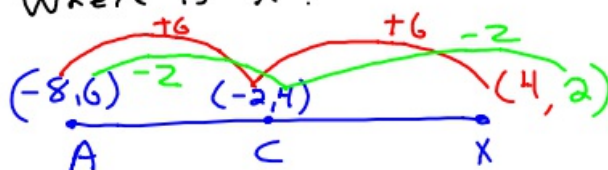
- ③ If D is between A and B and $AB = 4n + 10$ and $AD = n - 2$, what is BD?



$$\begin{aligned} AD + DB &= AB \\ \downarrow & \quad \quad \downarrow \\ n - 2 + BD &= 4n + 10 - n + 2 \end{aligned}$$

$$BD = 3n + 12$$

- ④ C is the midpoint on \overline{AX} .
If $A = (-8, 6)$ and $C = (-2, 4)$,
where is X?



- ⑤ $\angle ABC$ and $\angle XBT$ are vertical angles. If $\angle ABC = 6n - 10$ and $\angle XBT = 4n + 20$, what is $\angle ABC$?

$$\angle ABC = \angle XBT$$

$$6n - 10 = 4n + 20$$

$$\begin{array}{r} -4n \\ \hline 2n - 10 = 20 \end{array}$$

$$2n - 10 = 20$$

$$\begin{array}{r} +10 \\ \hline 2n = 30 \end{array}$$

$$2n = 30$$

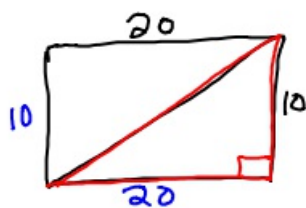
$$n = 15$$

$$\angle ABC = 6n - 10$$

$$6 \cdot 15 - 10$$

$$80$$

⑥



What is the length of the diagonal of the rectangle?

$$leg^2 + leg^2 = hyp^2$$

$$20^2 + 10^2 = c^2$$

$$400 + 100 = c^2$$

$$\sqrt{500} = \sqrt{c^2}$$

$$c \approx 22.4$$

