

Geo A Unit 1 Puzzle Solutions

① Find the length of CD using the distance formula

$$\begin{aligned} CD &= \sqrt{(-6--2)^2 + (12-4)^2} \\ &= \sqrt{(-6+2)^2 + (12-4)^2} \\ &= \sqrt{(-4)^2 + (8)^2} \\ &= \sqrt{16+64} \\ &= \sqrt{80} \\ &\approx \boxed{8.9} \end{aligned}$$

② Find the midpoint using the midpoint formula

$$\begin{aligned} M &= \left(\frac{-6+4}{2}, \frac{8+2}{2} \right) \\ &= \left(\frac{-2}{2}, \frac{6}{2} \right) \\ &= \boxed{(-1, 3)} \end{aligned}$$

③ Find the distance from an endpoint to the midpoint from #2

$$\begin{aligned} &(-6, 8) \text{ to } (-1, 3) \\ &= \sqrt{(-1--6)^2 + (3-8)^2} \\ &= \sqrt{(-1+6)^2 + (3-8)^2} \\ &= \sqrt{(5)^2 + (-5)^2} \\ &= \sqrt{25+25} \\ &= \sqrt{50} \\ &\approx 7.07 \times 10 = \boxed{70.7 \text{ ft}} \end{aligned}$$

④ $x+9=4x$ (tickmarks indicate that M is the midpoint)

$$9=3x$$

$$\boxed{x=3}$$

$$LN = x+9+4x$$

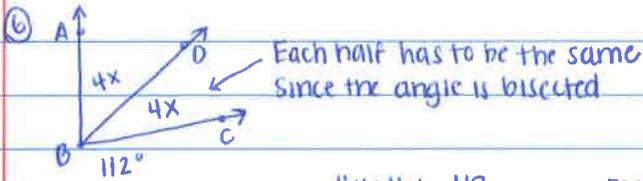
$$= 5x+9$$

$$= 5(3)+9$$

$$\boxed{LN=24}$$

5) Use coordinate plane to count from endpoint \rightarrow midpoint \leftarrow repeat

$$\boxed{(14, -7)}$$



$$4x + 4x = 112$$

$$8x = 112$$

$$\boxed{x = 14}$$

$$m\angle DBC = 4(14)$$

$$\boxed{m\angle DBC = 56^\circ}$$

7) $5x + 16 = 8x - 23$ (both halves are equal)

$$16 = 3x - 23$$

$$39 = 3x$$

$$\boxed{x = 13}$$

$$m\angle ABC = 5x + 16 + 8x - 23$$

$$= 13x - 7$$

$$= 13(13) - 7$$

$$\boxed{m\angle ABC = 162^\circ}$$

8) $9x + 7 = 5x + 67$ \leftarrow vertical angles are equal

$$4x = 60$$

$$\boxed{x = 15}$$

9) $3x + 1 + 4x - 3 = 180$

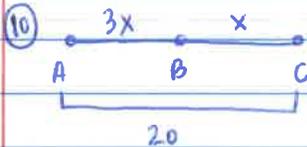
$$7x - 2 = 180$$

$$7x = 182$$

$$\boxed{x = 26}$$

$$m\angle ABC = 3(26) + 1$$

$$\boxed{= 79^\circ}$$



$$3x + x = 20$$

$$4x = 20$$

$$\boxed{x = 5}$$

$$\textcircled{11} \quad 8x + 38 + 8x - a = 180 \text{ (Linear Pair)}$$

$$16x + 38 = 180$$

$$16x = 142$$

$$\boxed{x = 9}$$

$$11y + 4 + 12y + 38 = 180$$

$$23y + 42 = 180$$

$$23y = 138$$

$$\boxed{y = 6}$$

$$m\angle AEB = 8(9) + 38 = 110^\circ$$

$$m\angle BED = 8(9) - a = 70^\circ$$

$$m\angle DEC = 12(6) + 38 = 110^\circ$$

$$m\angle CEA = 11(6) + 4 = 70^\circ$$