

Draw a diagram and justify all steps.

Using the Segment Addition Postulate

Given: B is between A and C . \leftarrow
 AB is 6 less than 5 times BC .
 AC is 66 cm long.

Find: AB and BC



$$AB = 5BC - 6$$

$$AC = 66 \text{ cm}$$

$$\boxed{1} \quad AB + BC = AC \quad [\text{Seg. Add. Post.}]$$

$$5BC - 6 + BC = 66$$

$$6BC = 72$$

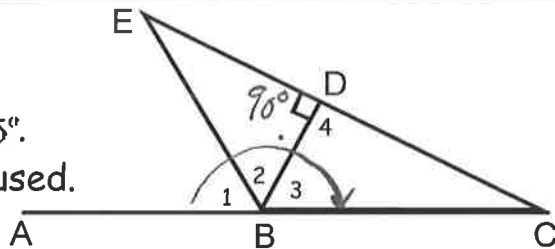
$$\boxed{BC = 12 \text{ cm}}$$

$$\boxed{2} \quad AB = 5(12) - 6$$

$$\boxed{AB = 54 \text{ cm}}$$

\overline{BD} bisects $\angle EBC$.

Find the measures of all of the numbered angles if $m\angle 3 = 55^\circ$.
 Justify any equations that are used.



$$\boxed{1} \quad m\angle 3 = 55^\circ \quad [\text{Given}]$$

$$\boxed{2} \quad \angle 2 \cong \angle 3 \quad [\text{Def. of } \angle \text{ bisector}]$$

$$\boxed{m\angle 2 = 55^\circ} \quad [\text{Def. of } \cong \angle s]$$

$$\boxed{3} \quad m\angle 1 + m\angle 2 + m\angle 3 = 180^\circ \quad [\angle \text{ Add. Post.}]$$

$$m\angle 1 + 110 = 180^\circ$$

$$\boxed{m\angle 1 = 70^\circ}$$

$$\boxed{4} \quad m\angle 4 + m\angle EDB = 180^\circ \quad [\angle \text{ Add. Post.}]$$

$$m\angle 4 + 90 = 180^\circ$$

$$\boxed{m\angle 4 = 90^\circ}$$

Draw a diagram and justify all steps.

Using the Angle Addition Postulate

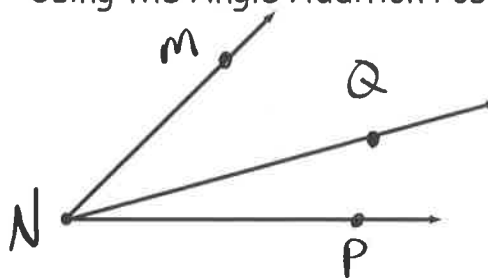
Given: Q is in the interior of $\angle MNP$

$$m\angle MNQ = x^2 - 8$$

$$m\angle QNP = 6x + 3$$

$$m\angle MNP = 50^\circ$$

Find: $m\angle MNQ$ and $m\angle QNP$



$$\boxed{1} \quad m\angle MNQ + m\angle QNP = m\angle MNP \quad \{ \angle \text{Add. Post.} \}$$

$$x^2 - 8 + 6x + 3 = 50$$

$$\boxed{2} \quad x = -11$$

$$x = 5$$

$$x^2 + 6x - 55 = 0$$

$$(x + 11)(x - 5) = 0$$

$$x = -11, 5$$

$$m\angle MNQ = 113^\circ$$

$$m\angle QNP = -63^\circ$$

\times No neg. measures!

$$\boxed{\begin{matrix} m\angle MNQ = 17^\circ \\ m\angle QNP = 33^\circ \end{matrix}}$$