

Label and mark each diagram with the given INFORMATION, then write the EQUATION that matches the diagram. SOLVE for x, then find the missing values.

DIAGRAM	GIVEN INFORMATION	EQUATION	X =	FIND:
	BC is twice as long as AB AC = 42	$x + 2x = 42$ $3x = 42$ Reason: Seg. Add. Post.	$x = 14$	$AB = 14$ $BC = 28$
	\overline{AC} is the angle bisector of $\angle TAG$ $m\angle TAC = 28^\circ$ $m\angle TAG = 3x - 10$	$28 + 28 = 3x - 10$ $56 = 3x - 10$ $66 = 3x$ $x = 22$ Reason: \overline{AC} bisector, angle add. post.	$x = 22$	$m\angle TAG = 56^\circ$
	$m\angle ABE = 20x + 24$ $m\angle EBD = 30x + 6$	$20x + 24 + 30x + 6 = 180$ $50x + 30 = 180$ $50x = 150$ $x = 3$ Reason: Linear pair	$x = 3$	$m\angle EBD = 96^\circ$ $m\angle CBD = 84^\circ$
	$\overline{NO} \perp \overline{PO}$ $m\angle LMN = 6x - 15$ $m\angle LMO = 13x + 5$	$6x + 5 + 90 = 13x + 5$ $6x + 95 = 13x + 5$ $90 = 7x$ $x = 10$ Reason:	$x = 10$	$m\angle LMN = 45^\circ$ $m\angle PML = 45^\circ$

	<p>\overline{EU} bisects \overline{RN} $RU = 7x + 12$ $NR = 16x - 20$</p>	$7x + 12 + 7x + 12 = 16x - 20$ $14x + 24 = 16x - 20$ $44 = 2x$ $x = 22$ <u>Reason:</u> \overline{EU} bisects \overline{RN} / $\overline{Add. Post.}$	$x = 22$ $RU = 166$ $UN = 166$ $NR = 332$	$m\angle XYD = 18^\circ$ $m\angle XYP = 80^\circ$
	<p>$\angle XYD \cong \angle ZYP$ $m\angle XYD = 3x$ $m\angle DYZ = 50^\circ$ $m\angle XYP = 22x - 46$</p>	$3x + 50 + 3x = 22x - 46$ $6x + 50 = 22x - 46$ $\frac{+46}{+46} \quad \frac{-6x}{-6x} \quad +46$ $96 = 16x$ $x = 6$ <u>Reason:</u> $\overline{Angle add. Post.}$	$x = 6$	$m\angle IGH = 68^\circ$ $m\angle JGI = 22^\circ$
	<p>$\angle FGJ$ and $\angle IGH$ are complementary angles $\cong 90$ $m\angle IGH = 3x + 2$ $m\angle FGJ = x$</p>	$x + 3x + 2 = 90$ $4x + 2 = 90$ $4x = 88$ $x = 22$ <u>Reason:</u> $\overline{defn. complementary}$	$x = 22$	LN is the <u>perpendicular bisector</u> of \overline{KM} $LM = 6$
	<p>$KO = ON$ $\overline{LO} \perp \overline{KM}$ $KL = x + 2$ $LM = 3x - 6$</p>	$x + 2 = 3x - 6$ $8 = 2x$ $x = 4$ <u>Reason:</u> $\overline{1 bisector}$	$x = 4$	

* we didn't learn this yet
 so you can skip this one

Step