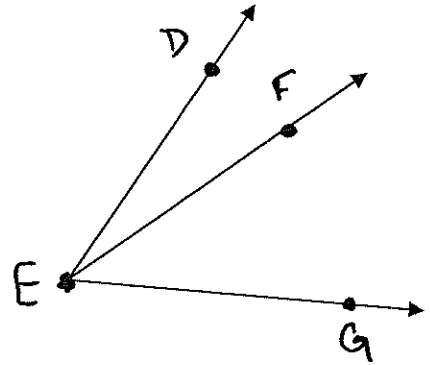


Practice Worksheet 1.5A – Angle Bisectors

Geometry Homework

For # 1-5, \overline{EF} bisects $\angle DEG$. (The diagram is not drawn to scale.)



1. If $m\angle DEG = 88^\circ$, find $m\angle FEG = \underline{44^\circ}$

2. If $m\angle FED = 27^\circ$, find $m\angle GED = \underline{54^\circ}$

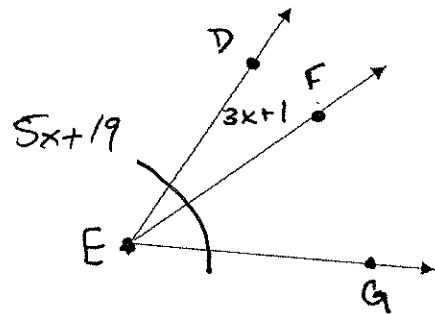
3. If $m\angle DEF = 3x+1$ and $m\angle DEG = 5x+19$, find the value of x .

$$2(3x+1) = 5x+19$$

$$6x+2 = 5x+19$$

$$x = 17$$

$$\begin{aligned} \angle DEF &= 52^\circ & \angle DEG &= 104^\circ \\ \angle FEG &= 52^\circ \end{aligned}$$



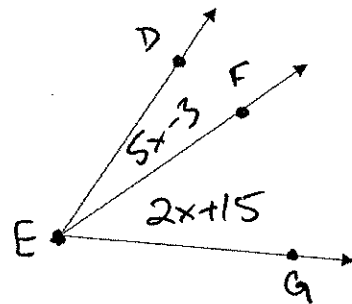
4. If $m\angle DEF = 5x-3$ and $m\angle FEG = 2x+15$, find the value of x .

$$5x-3 = 2x+15$$

$$3x = 18$$

$$x = 6$$

$$\begin{aligned} \angle DEF &= 27 & \angle DEG &= 54 \\ \angle FEG &= 27 \end{aligned}$$



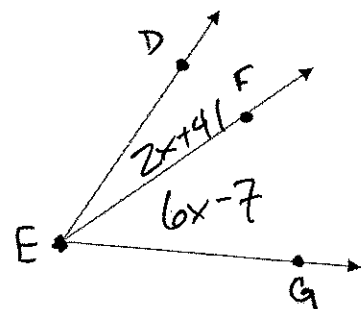
5. If $m\angle FEG = 6x-7$ and $m\angle FED = 2x+41$, find the $m\angle DEG$. (solve for x first!)

$$2x+41 = 6x-7$$

$$48 = 4x$$

$$12 = x$$

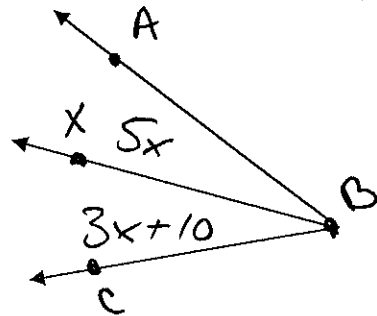
$$\begin{aligned} \angle DEG &= 65^\circ & \angle DEG &= 130^\circ \\ \angle FEG &= 65^\circ \end{aligned}$$



For #6-9, \overline{BX} is the BISECTOR of $\angle ABC$. (Diagrams are not drawn to scale)

6. If $m\angle ABX = 5x$ and $m\angle XBC = 3x + 10$, find the $m\angle ABC$. (Solve for x first!)

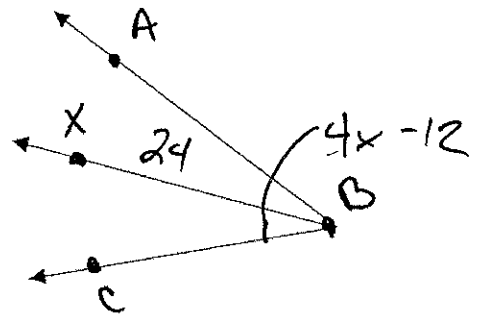
$$\begin{aligned} 5x &= 3x + 10 \\ 2x &= 10 \\ x &= 5 \\ m\angle ABX &= 25 \\ m\angle XBC &= 25 \\ m\angle ABC &= 50 \end{aligned}$$



7. If $m\angle ABC = 4x - 12$ and $m\angle ABX = 24$, find the value of x .

$$\begin{aligned} m\angle ABX &= 24 \\ m\angle XBC &= 24 \\ m\angle ABC &= 48 \end{aligned}$$

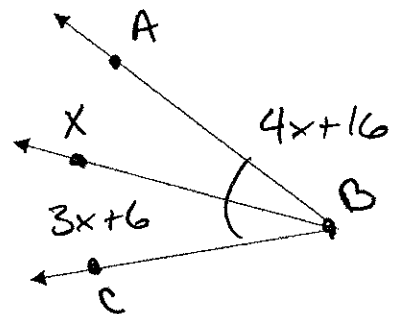
$$\begin{aligned} 4x - 12 &= 48 \\ 4x &= 60 \\ x &= 15 \end{aligned}$$



8. If $m\angle ABC = 4x + 16$ and $m\angle CBX = 3x + 6$, find the value of x .

$$\begin{aligned} 2(3x + 6) &= 4x + 16 \\ 6x + 12 &= 4x + 16 \\ 2x &= 4 \\ x &= 2 \end{aligned}$$

$$\begin{aligned} m\angle ABX &= 12^\circ \\ m\angle XBC &= 12^\circ \\ m\angle ABC &= 24^\circ \end{aligned}$$



9. If $m\angle ABC = 5x + 18$ and $m\angle CBX = 2x + 12$, find the value of x , and the $m\angle ABC$.

$$\begin{aligned} 2(2x + 12) &= 5x + 18 \\ 4x + 24 &= 5x + 18 \\ 6 &= x \end{aligned}$$

$$\begin{aligned} m\angle ABX &= 24^\circ \\ m\angle XBC &= 24^\circ \\ m\angle ABC &= 48^\circ \end{aligned}$$

