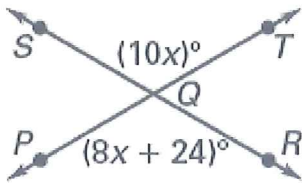


Name: Key

Angle Relationships Day 3 HW

Find the value of the variable and find the $m\angle PQR$. Justify steps!

1.



Geometry
 $\angle SQT \cong \angle RQP$
 $10x = 8x + 24$

Justify
 Vertical \angle s are
 \cong

$2x = 24$

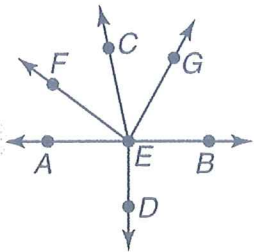
$x = 12$

$m\angle PQR = 120^\circ$

2. In the figure, \overrightarrow{EA} and \overrightarrow{EB} are opposite rays.

\overrightarrow{EF} bisects $\angle AEC$, $\angle AEF = 4(x^2 - x)$ and $\angle FEC = 35^\circ$.

Find the possible values for x . Make sure to check your work and justify your steps.



Geometry:

$\angle AEF \cong \angle FEC$

$4(x^2 - x) = 35$

$4x^2 - 4x = 35$

$4x^2 - 4x - 35 = 0$

$(x - \frac{14}{4})(x + \frac{10}{4}) = 0$

$(x - \frac{7}{2})(x + \frac{5}{2}) = 0$

$(2x - 7)(2x + 5) = 0$

$x = \frac{7}{2} \quad x = -\frac{5}{2}$

$\{-2.5, 3.5\}$

Justify:
 def of \angle bisector

check $x = 3.5$

$\angle AEF = 4(3.5^2 - 3.5)$

$\angle AEF = 35^\circ \checkmark$

$\angle FEC = 35^\circ \checkmark$
 yes!

check $x = -2.5$

$\angle AEF = 4(1 - 2.5)^2 - (-2.5)$

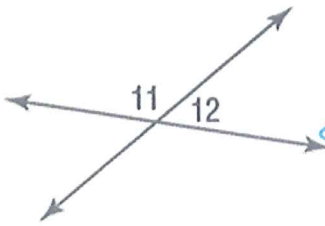
$\angle AEF = 35^\circ \checkmark$

$\angle FEC = 35^\circ \checkmark$

yes!

Name: _____

3. $m \angle 11 = 2x^2 - 7x + 95$, $m \angle 12 = 6x^2 - 3x + 88$. Find the possible value(s) for x . Make sure to justify your steps and check your work.



$$\angle 11 + \angle 12 = 180^\circ$$

$$2x^2 - 7x + 95 + 6x^2 - 3x + 88 = 180$$

$$8x^2 - 10x + 183 = 180$$

$$\left(x - \frac{4}{8}\right)\left(x - \frac{6}{8}\right) = 0$$

$$\left(x - \frac{1}{2}\right)\left(x - \frac{3}{4}\right) = 0$$

$$(2x - 1)(4x - 3) = 0$$

$$\boxed{x = \frac{1}{2}} \quad \boxed{x = \frac{3}{4}}$$

(Both work!)

linear pairs are
Suppl.

check $x = .5$

$$\angle 11 = 2(.5)^2 - 7(.5) + 95 = 92^\circ$$

$$\angle 12 = 6(.5)^2 - 3(.5) + 88 = 88^\circ$$

$$92 + 88 = 180 \checkmark$$

yes!

check $x = .75$

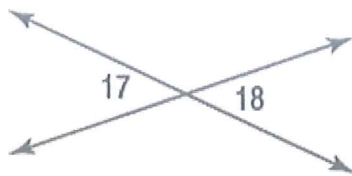
$$\angle 11 = 2(.75)^2 - 7(.75) + 95 = 90.875^\circ \checkmark$$

$$\angle 12 = 6(.75)^2 - 3(.75) + 88 = 89.125^\circ \checkmark$$

$$90.875 + 89.125 = 180 \checkmark$$

yes + + = 180!

4. $m \angle 17 = 10x^2 - 25x$, $m \angle 18 = -4x^2 + 6$. Find the possible value(s) for x . Make sure to justify your steps and check your work.



$\angle 17 \cong \angle 18$ vertical
 \angle s are \cong

$$10x^2 - 25x = -4x^2 + 6$$

$$14x^2 - 25x - 6 = 0$$

$$\left(x - \frac{28}{14}\right)\left(x + \frac{3}{14}\right) = 0$$

$$(x - 2)(14x + 3) = 0$$

~~$$x = 2 \quad x = -\frac{3}{14}$$~~

Hint
Don't
round!

check $x = 2$

$$\angle 17 = 10(2)^2 - 25(2)$$

$$\angle 17 = -10^\circ$$

$$\angle 18 = -4(2)^2 + 6$$

$$\angle 18 = -10^\circ$$

(They are equal but the \angle
measure can't be neg.)

check $x = -\frac{3}{14}$

$$\angle 17 = 10\left(-\frac{3}{14}\right)^2 - 25\left(-\frac{3}{14}\right)$$

$$\angle 17 = 5.8163\dots$$

$$\angle 18 = -4\left(-\frac{3}{14}\right)^2 + 6 \quad \text{yes!}$$

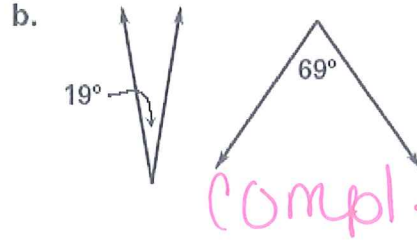
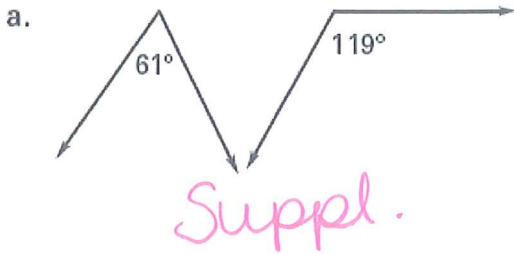
$$\angle 18 = 5.816\dots$$

$$\boxed{x = -\frac{3}{14}}$$

Name: _____

Rapid Practice: No justifications!

5. Determine whether the angles are *complementary*, *supplementary*, or *neither*.



6.

a. $\angle A$ is a supplement of $\angle B$, and $m\angle B = 42^\circ$. Find $m\angle A$.

138°

b. $\angle C$ is a complement of $\angle D$, and $m\angle C = 42^\circ$. Find $m\angle D$.

48°

Decide whether the statement is true or false. If the statement is false, reword the statement so it is true. (ANS may be diff for all students)

7. Two angles are complementary if the sum of their measures is 180°

F

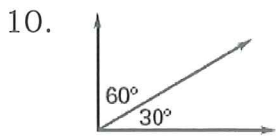
8. Two angles are supplementary if the sum of their measures is 180°

T

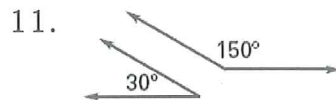
9. Two angles are adjacent angles if they share a common vertex.

F

Determine whether the angles are complementary, supplementary or neither.



Compl.

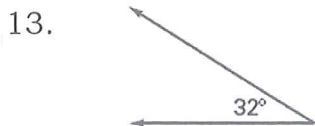


Suppl.

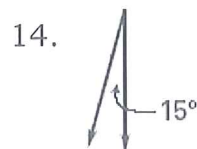


Nope!

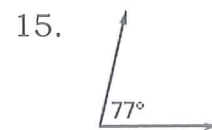
Find the measure of the complement of the given angle.



58°



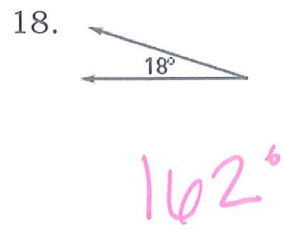
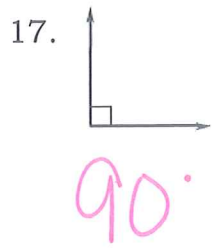
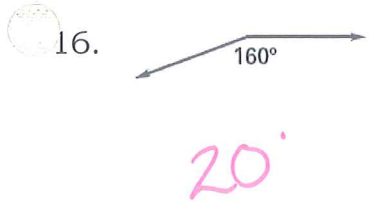
75°



13°

Name: _____

Find the measure of the supplement of the given angle.



Find the measure of EACH numbered angle.

