Name: _____ Date: _____

Complete.

13. m∠*X* = 45° and m∠*Y* = 135°

m∠*X* + m∠*Y* = _____ + _____

= _____

So, ∠*X* and ∠*Y* _____ supplementary angles.

Tell whether each pair of angles is supplementary.

14. m∠*D* = 110° and m∠*E* = 90°

15. m∠*X* = 89° and m∠*Y* = 91°

16. m∠*P* = 23° and m∠*Q* = 157°

17. m∠*C* = 78° and m∠*D* = 102°

Find an angle measure involving supplementary angles.

Example

Angles *P* and *Q* are supplementary. Find m ∠*P* for each measure of ∠*Q*.

a) m∠*Q* = 28°
m∠*P* = 180° − 28° = 152°

b) m∠*Q* = 111°
m∠*P* = 180° − 111° = 69°

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Complete.

18. Angles *A* and *B* are supplementary. Find m∠*B* for each measure of ∠*A*.

m∠*A*	m∠*B*
82°	180° − 82° = _____
105°	180° − _____ = _____
91°	_____ − _____ = _____

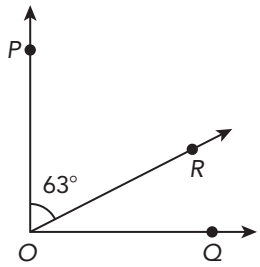
19. Angles *P* and *Q* are supplementary. Find m∠*Q* for each measure of ∠*P*.

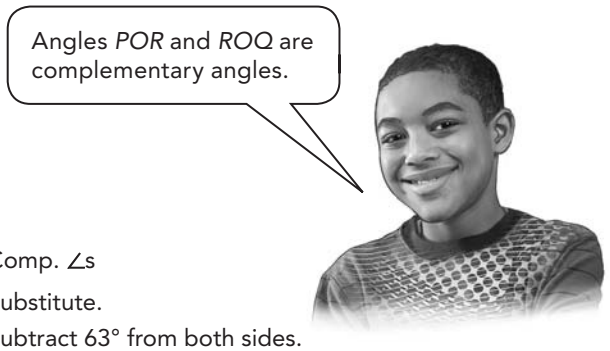
m∠*P*	m∠*Q*
131°	
21°	
55°	

Find an angle measure involving adjacent complementary angles.

Example

In the diagram, $\overrightarrow{OP}$ is perpendicular to $\overrightarrow{OQ}$. Find the measure of ∠*ROQ*.





$m\angle POR + m\angle ROQ = 90°$ Comp. ∠s

$63° + m\angle ROQ = 90°$ Substitute.

$63° + m\angle ROQ - 63° = 90° - 63°$ Subtract 63° from both sides.

$m\angle ROQ = 27°$ Simplify.

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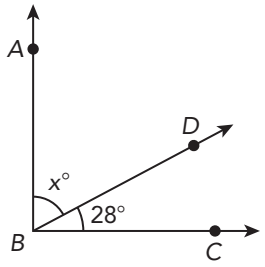
Complete.

20. In the diagram, m∠*ABC* = 90°. Find the value of *x*.



m∠*ABD* + m∠*DBC* = _____ Comp. ∠s

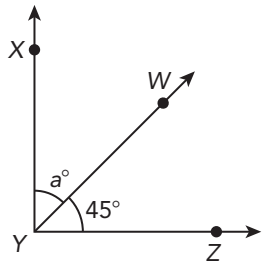
x° + 28° = _____

x° + 28° − _____ = _____ − _____

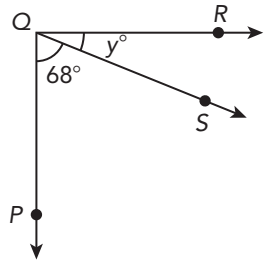
x = _____

Find the value of the unknowns in each of the diagrams.

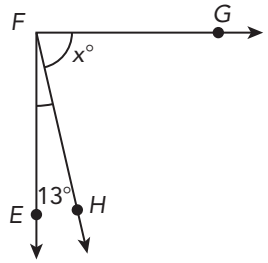
21. In the diagram, m∠*XYZ* = 90°. Find the value of *a*.



22. In the diagram, m∠*PQR* = 90°. Find the value of *y*.



23. In the diagram, m∠*EFG* = 90°. Find the value of *x*.



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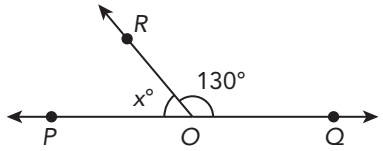
$\overleftrightarrow{PQ}$ is a straight line, find the value of x.

Example

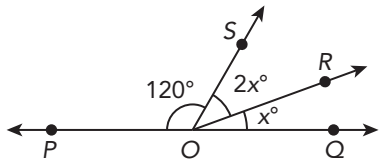


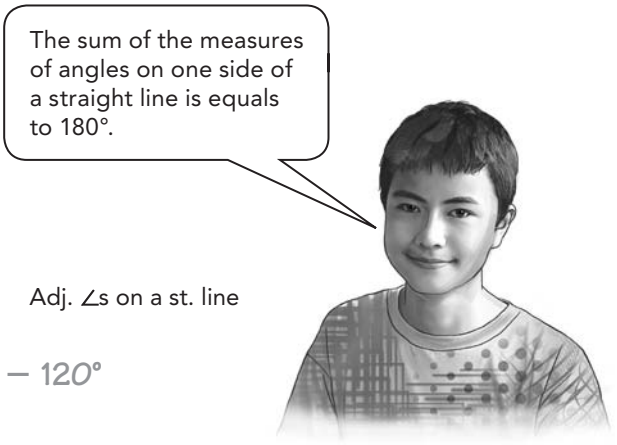
$m\angle POS + m\angle ROQ = 180°$ Adj. ∠s on a st. line

$x° + 130° = 180°$

$x° + 130° - 130° = 180° - 130°$

$x = 50$





$m\angle POS + m\angle SOR + m\angle ROQ = 180°$ Adj. ∠s on a st. line

$120° + 2x° + x° = 180°$

$120° + 3x° - 120° = 180° - 120°$

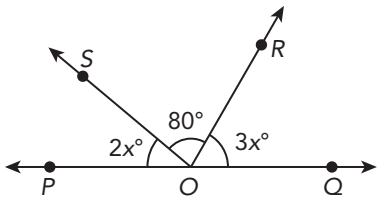
$3x = 60$

$\frac{3x}{3} = \frac{60}{3}$

$x = 20$

Complete.

24.



$m\angle POS + m\angle SOR + m\angle ROQ =$ _____ Adj. ∠s on a st. line

$2x° + 80° + 3x° =$ _____ Substitute.

$80° + 5x° -$ _____ = _____ − _____ Subtract 80° from both sides.

$5x =$ _____ Simplify.

$\frac{5x}{\square} =$ _____ Divide both sides by _____.

$x =$ _____ Simplify.

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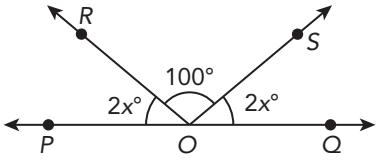
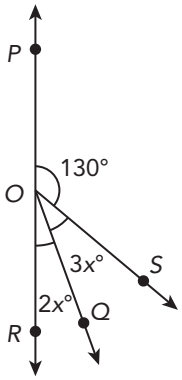
$\overleftrightarrow{PQ}$ is a straight line, find the value of x.

25.



26.



27.