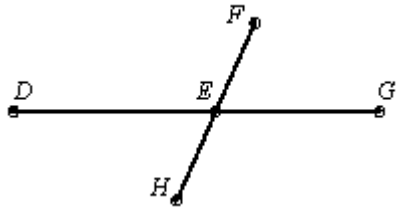
Review 1.6 - 1.8

Multiple Choice

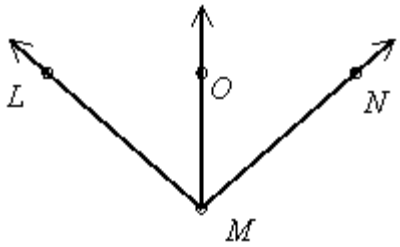
Identify the letter of the choice that best completes the statement or answers the question.

____ 1. If $m\angle DEF = 122$, then what are $m\angle FEG$ and $m\angle HEG$? The diagram is not to scale.



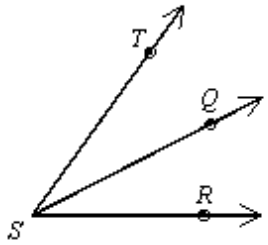
a. $m\angle FEG = 122, m\angle HEG = 58$
b. $m\angle FEG = 58, m\angle HEG = 132$
c. $m\angle FEG = 68, m\angle HEG = 122$
d. $m\angle FEG = 58, m\angle HEG = 122$

____ 2. $\overrightarrow{MO}$ bisects $\angle LMN$, $m\angle LMN = 5x - 23$, $m\angle LMO = x + 32$. Find $m\angle NMO$. The diagram is not to scale.



a. 61 b. 45.75 c. 91.5 d. 66

____ 3. $\overrightarrow{SQ}$ bisects $\angle RST$, and $m\angle RSQ = 3x - 9$. Write an expression for $\angle RST$. The diagram is not to scale.



a. $6x - 9$ b. $6x - 18$ c. $3x - 9$ d. $1.5x - 4.5$

____ 4. Find the distance between points $P(8, 2)$ and $Q(3, 8)$ to the nearest tenth.
a. 11 b. 7.8 c. 61 d. 14.9

____ 5. A high school soccer team is going to Columbus to see a professional soccer game. A coordinate grid is superimposed on a highway map of Ohio. The high school is at point (3, 4) and the stadium in Columbus is at point (7, 1). The map shows a highway rest stop halfway between the cities. What are the coordinates of the rest stop? What is the approximate distance between the high school and the stadium? (One unit ~ 6.4 miles.)

a. $\left(5, \frac{5}{2}\right)$, 5 miles

b. $\left(\frac{3}{2}, \frac{5}{2}\right)$, 160 miles

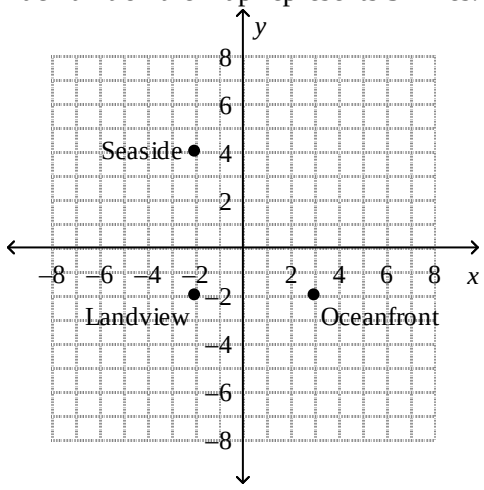
c. $\left(5, \frac{5}{2}\right)$, 32 miles

d. $\left(\frac{3}{2}, \frac{5}{2}\right)$, 16 miles

____ 6. Noam walks home from school by walking 8 blocks north and then 6 blocks east. How much shorter would his walk be if there were a direct path from the school to his house? Assume that the blocks are square.

a. 14 blocks
b. 10 blocks
c. 4 blocks
d. The distance would be the same.

____ 7. Each unit on the map represents 5 miles. What is the actual distance from Oceanfront to Seaside?

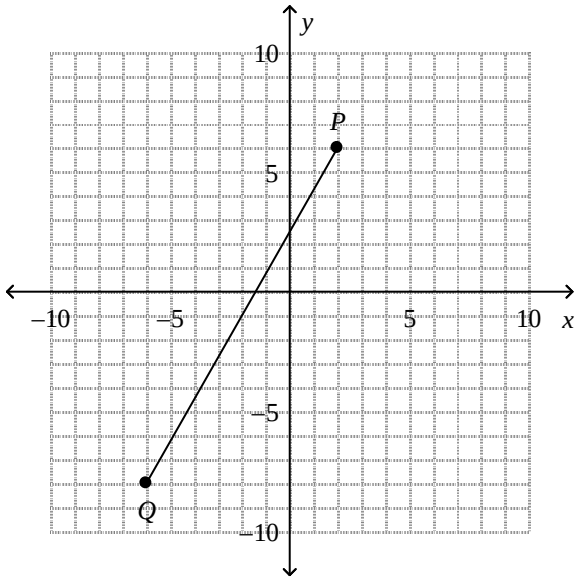


a. 10 miles
b. 50 miles
c. about 8 miles
d. about 40 miles

____ 8. Find the coordinates of the midpoint of the segment whose endpoints are $H(8, 2)$ and $K(6, 10)$.

a. (7, 6)
b. (1, 4)
c. (14, 12)
d. (2, 8)

____ 9. Find the midpoint of $\overline{PQ}$.



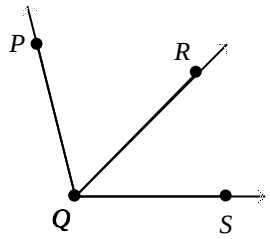
a. (–3, –1)
b. (–2, 0)
c. (–2, –1)
d. (–3, 0)

____ 10. $M(9, 8)$ is the midpoint of $\overline{RS}$. The coordinates of S are (10, 10). What are the coordinates of R?

a. (9.5, 9)
b. (11, 12)
c. (18, 16)
d. (8, 6)

Fill in each missing reason.

____ 11. **Given:** $m\angle PQR = x - 5, m\angle SQR = x - 11$, and $m\angle PQS = 100$.
Find *x*.

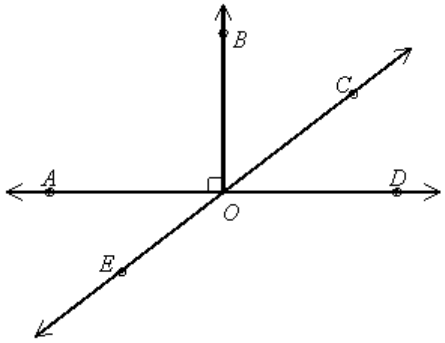


Drawing not to scale

$m\angle PQR + m\angle SQR = m\angle PQS$	**a.** _____
$x - 5 + x - 11 = 100$	**b.** Substitution Property
$2x - 16 = 100$	**c.** Simplify
$2x = 116$	**d.** _____
$x = 58$	**e.** Division Property of Equality

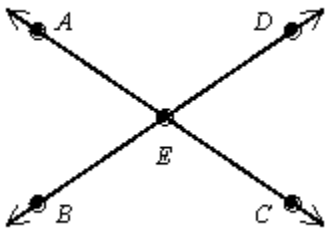
a. Angle Addition Postulate; Subtraction Property of Equality
b. Protractor Postulate; Addition Property of Equality
c. Angle Addition Postulate; Addition Property of Equality
d. Protractor Postulate; Subtraction Property of Equality

____ 12. Name an angle supplementary to $\angle EOD$.



a. $\angle BOC$ b. $\angle BOE$ c. $\angle DOC$ d. $\angle BOA$

____ 13. In the figure shown, $m\angle AED = 120$. Which of the following statements is false?



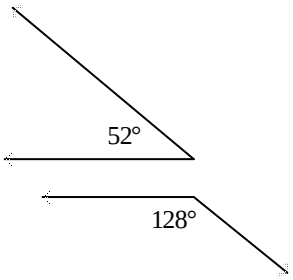
Not drawn to scale

a. $m\angle AEB = 60$
b. $\angle BEC$ and $\angle CED$ are adjacent angles.
c. $m\angle BEC = 120$
d. $\angle AED$ and $\angle BEC$ are adjacent angles.

____ 14. Supplementary angles are two angles whose measures have sum ____.
Complementary angles are two angles whose measures have sum ____.
a. 90; 180 b. 90; 45 c. 180; 360 d. 180; 90

____ 15. Two angles whose sides are opposite rays are called ____ angles. Two coplanar angles with a common side, a common vertex, and no common interior points are called ____ angles.
a. vertical; adjacent
b. adjacent; vertical
c. vertical; supplementary
d. adjacent; complementary

____ 16. How are the two angles related?



Drawing not to scale

a. vertical
b. supplementary
c. complementary
d. adjacent

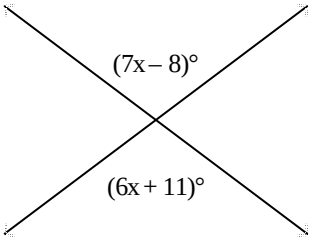
____ 17. The complement of an angle is 25°. What is the measure of the angle?
a. 75° b. 155° c. 65° d. 165°

____ 18. $\angle DFG$ and $\angle JKL$ are complementary angles. $m\angle DFG = \underline{x + 5}$, and $m\angle JKL = \underline{x - 9}$. Find the measure of each angle.
a. $\angle DFG = 47, \angle JKL = 53$
b. $\angle DFG = 47, \angle JKL = 43$
c. $\angle DFG = 52, \angle JKL = 48$
d. $\angle DFG = 52, \angle JKL = 38$

____ 19. $\angle 1$ and $\angle 2$ are supplementary angles. $m\angle 1 = x - 39$, and $m\angle 2 = x + 61$. Find the measure of each angle.
a. $\angle 1 = 79, \angle 2 = 101$
b. $\angle 1 = 40, \angle 2 = 140$
c. $\angle 1 = 40, \angle 2 = 150$
d. $\angle 1 = 79, \angle 2 = 111$

____ 20. If $\angle A$ and $\angle B$ are supplementary angles and $m\angle A = 4m\angle B$, find $m\angle A$ and $m\angle B$.
a. 72, 18 b. 144, 36 c. 18, 72 d. 36, 144

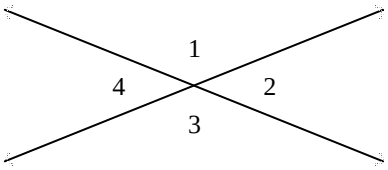
____ 21. Find the value of *x*.



Drawing not to scale

a. –19 b. 125 c. 19 d. 55

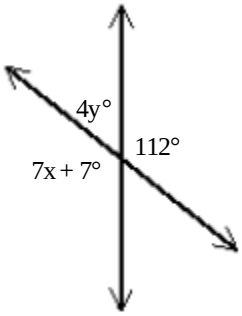
____ 22. $m\angle 3 = 37$. Find $m\angle 1$.



Drawing not to scale

a. 37 b. 143 c. 27 d. 153

____ 23. Find the values of *x* and *y*.

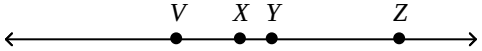


Drawing not to scale

a. $x = 15, y = 17$
b. $x = 112, y = 68$
c. $x = 68, y = 112$
d. $x = 17, y = 15$

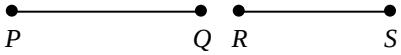
Short Answer

24. Name four rays shown.

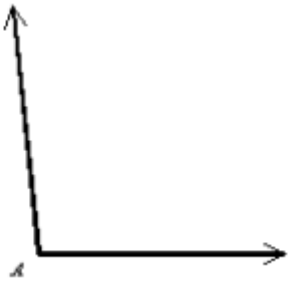


25. On a number line, *P* has coordinate –47 and *Q* has coordinate 40. Find *PQ*.

26. Construct $\overline{GH}$ so that $GH = PQ + RS$.

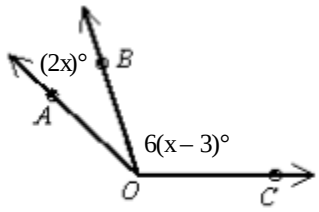


27. Construct $\angle B$ so that $\angle B \cong \angle A$.



Fill in each missing reason.

28. **Given:** $m\angle AOC = 150$



Drawing not to scale

$m\angle AOB + m\angle BOC = m\angle AOC$ a. _____

$2x + 6(x - 3) = 150$ b. _____

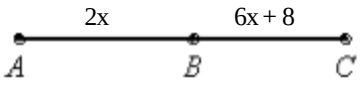
$2x + 6x - 18 = 150$ c. _____

$8x - 18 = 150$ d. _____

$8x = 168$ e. _____

$x = 21$ f. _____

29. **Given:** $AC = 32$



Drawing not to scale

$AB + BC = AC$ a. _____

$2x + 6x + 8 = 32$ b. _____

$8x + 8 = 32$ c. _____

$8x = 24$ d. _____

$x = 3$ e. _____

30. Solve for *x*. ***Justify each step.***

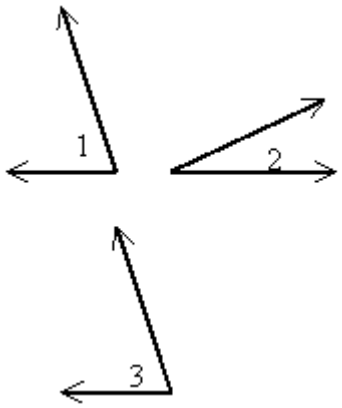
$4x - 9 = 99$

Essay

31. Find the measures of $\angle PMN$ and $\angle NMR$ if $\overrightarrow{MN}$ bisects $\angle PMR$. The measure of $\angle PMR$ is 136°. Draw a sketch that shows the given information. Explain your answer.

32. **Given:** $\angle 1$ and $\angle 2$ are complementary, and $\angle 2$ and $\angle 3$ are complementary.

Prove: $\angle 1 \cong \angle 3$



Other

33. If $\overrightarrow{AB}$ is opposite $\overrightarrow{AC}$ and $\overrightarrow{AC}$ is opposite $\overrightarrow{AD}$, what can you conclude? Explain.

Review 1.6 - 1.8
Answer Section

MULTIPLE CHOICE

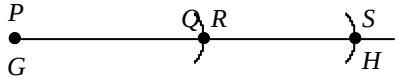
1. ANS: D
2. ANS: A
3. ANS: B
4. ANS: B
5. ANS: C
6. ANS: C
7. ANS: D
8. ANS: A
9. ANS: C
10. ANS: D
11. ANS: C
12. ANS: C
13. ANS: D
14. ANS: D
15. ANS: A
16. ANS: B
17. ANS: C
18. ANS: D
19. ANS: B
20. ANS: B
21. ANS: A
22. ANS: A
23. ANS: A

SHORT ANSWER

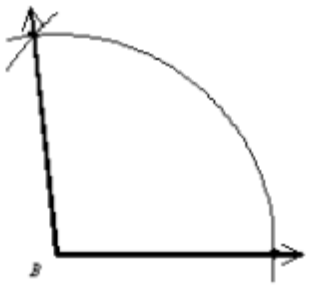
24. ANS:
Answers may vary. Sample: $\overrightarrow{VX}$, $\overrightarrow{XY}$, $\overrightarrow{YZ}$, $\overrightarrow{ZY}$

25. ANS:
87

26. ANS:



27. ANS:



28. ANS:
a. Angle Addition Postulate
b. Substitution Property
c. Distributive Property
d. Simplify
e. Addition Property of Equality
f. Division Property of Equality

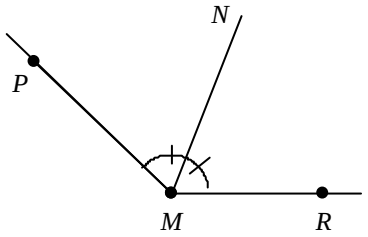
29. ANS:
a. Segment Addition Postulate
b. Substitution
c. Simplify
d. Subtraction Property of Equality
e. Division Property of Equality

30. ANS:

$4x - 9 = 99$	Given
$4x - 9 + 9 = 99 + 9$	Addition Property of Equality
$4x = 108$	Simplify
$\frac{4x}{4} = \frac{108}{4}$	Division Property of Equality
$x = 27$	Simplify

ESSAY

31. ANS:
[4]



$m\angle PMN = m\angle NMR = 68$. Since $\overrightarrow{MN}$ bisects $\angle PMR$, $m\angle PMN = m\angle NMR$. By the Angle Addition Postulate, $m\angle PMN + m\angle NMR = m\angle PMR$. By Substitution, $m\angle PMN + m\angle PMN = m\angle PMR$, or $2m\angle PMN = m\angle PMR$. Thus, $m\angle PMN =$

$\frac{1}{2}m\angle PMR = \frac{1}{2}(136) = 68$, and $m\angle NMR = 68$ as well.

[3] finds correct angle measures and gives explanation, but no diagram

[2] finds correct angle measures and draws correct diagram, but incomplete or incorrect explanation

[1] finds correct angle measures only

32. ANS:

[4] By the definition of complementary angles, $m\angle 1 + m\angle 2 = 90$ and $m\angle 2 + m\angle 3 = 90$. By the Transitive Property of Equality (or Substitution Property), $m\angle 1 + m\angle 2 = m\angle 2 + m\angle 3$. By the Subtraction Property of Equality, $m\angle 1 = m\angle 3$, and $\angle 1 \cong \angle 3$ by the definition of congruent angles.
OR
equivalent explanation

[3] one step missing OR one incorrect justification

[2] two steps missing OR two incorrect justifications

[1] correct steps with no explanations

OTHER

33. ANS:

$\overrightarrow{AB}$ is $\overrightarrow{AD}$. Sample explanation: Both rays have endpoint *A* and extend in the direction away from point *C*.