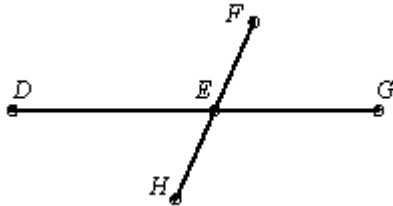


**Review 1.6 - 1.8**

**Multiple Choice**

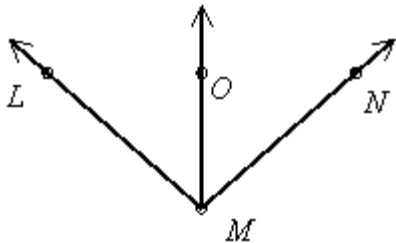
Identify the letter of the choice that best completes the statement or answers the question.

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



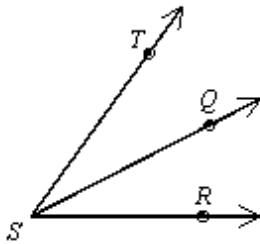
- a.  $m\angle FEG = 122, m\angle HEG = 58$                       c.  $m\angle FEG = 68, m\angle HEG = 122$   
 b.  $m\angle FEG = 58, m\angle HEG = 132$                       d.  $m\angle FEG = 58, m\angle HEG = 122$

- \_\_\_ 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.  $1.5x - 4.5$

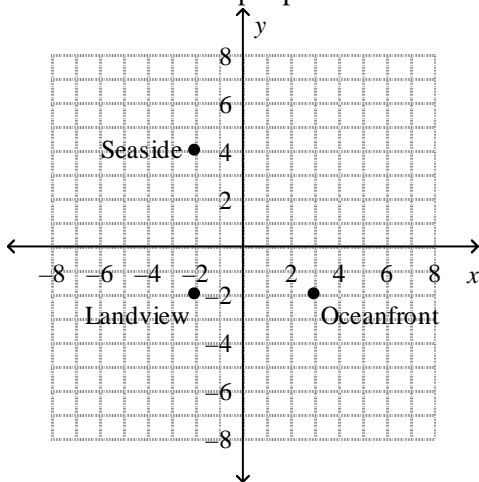
- \_\_\_ 4. Find the distance between points  $P(8, 2)$  and  $Q(3, 8)$  to the nearest tenth.

- a. 11                      b. 7.8                      c. 61                      d. 14.9

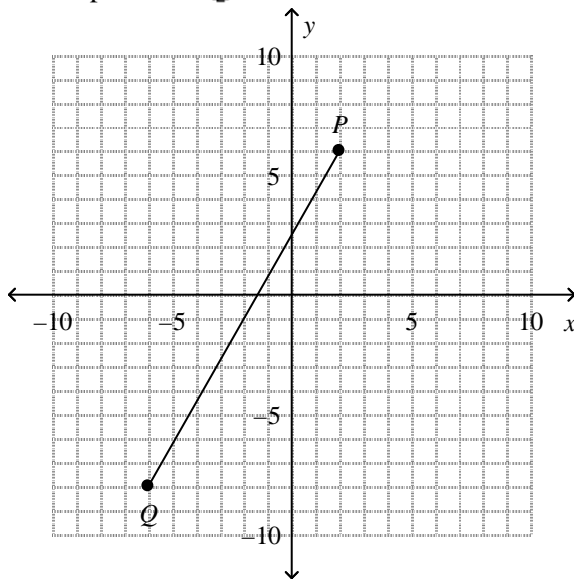
- \_\_\_ 5. A high school soccer team is going to Columbus to see a professional soccer game. A coordinate grid is superimposed on a highway map of Ohio. The high school is at point  $(3, 4)$  and the stadium in Columbus is at point  $(7, 1)$ . The map shows a highway rest stop halfway between the cities.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



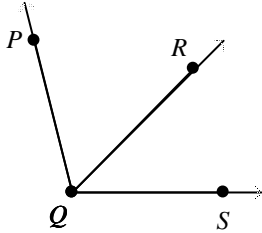
- a. 10 miles
- b. 50 miles
- c. about 8 miles
- d. about 40 miles
- \_\_\_ 8. Find the coordinates of the midpoint of the segment whose endpoints are  $H(8, 2)$  and  $K(6, 10)$ .
- a.  $(7, 6)$
- b.  $(1, 4)$
- c.  $(14, 12)$
- d.  $(2, 8)$
- \_\_\_ 9. Find the midpoint of  $\overline{PQ}$ .



- 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  $x$ .



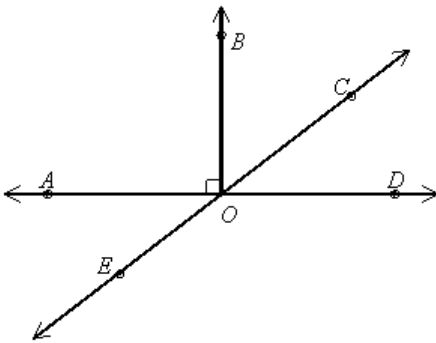
Drawing not to scale

$$\begin{aligned}
 m\angle PQR + m\angle SQR &= m\angle PQS \\
 x - 5 + x - 11 &= 100 \\
 2x - 16 &= 100 \\
 2x &= 116 \\
 x &= 58
 \end{aligned}$$

- a. \_\_\_\_\_  
 b. Substitution Property  
 c. Simplify  
 d. \_\_\_\_\_  
 e. Division Property of Equality

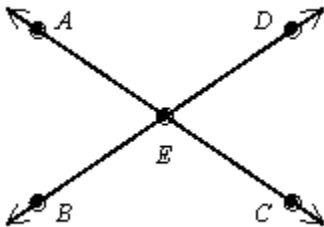
- a. Angle Addition Postulate; Subtraction Property of Equality  
 b. Protractor Postulate; Addition Property of Equality  
 c. Angle Addition Postulate; Addition Property of Equality  
 d. Protractor Postulate; Subtraction Property of Equality

- \_\_\_ 12. Name an angle supplementary to  $\angle EOD$ .



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

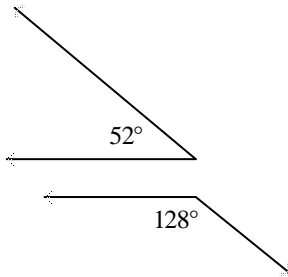
- \_\_\_ 13. In the figure shown,  $m\angle AED = 120$ . Which of the following statements is false?



Not drawn to scale

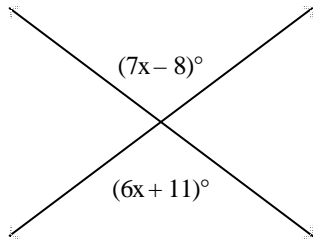
- a.  $m\angle AEB = 60$
- b.  $\angle BEC$  and  $\angle CED$  are adjacent angles.
- c.  $m\angle BEC = 120$
- d.  $\angle AED$  and  $\angle BEC$  are adjacent angles.

- \_\_\_ 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?



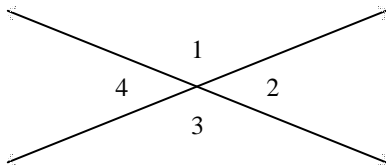
Drawing not to scale

- a. vertical
  - b. supplementary
  - c. complementary
  - d. adjacent
- \_\_\_ 17. The complement of an angle is  $25^\circ$ . What is the measure of the angle?
- a.  $75^\circ$                       b.  $155^\circ$                       c.  $65^\circ$                       d.  $165^\circ$
- \_\_\_ 18.  $\angle DFG$  and  $\angle JKL$  are complementary angles.  $m\angle DFG = x + 5$ , and  $m\angle JKL = x - 9$ . 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  $x$ .



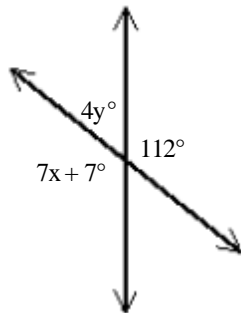
Drawing not to scale

22.  $m\angle 3 = 37$ . Find  $m\angle 1$ .
- a. -19                      b. 125                      c. 19                      d. 55



Drawing not to scale

23. Find the values of  $x$  and  $y$ .
- a. 37                      b. 143                      c. 27                      d. 153

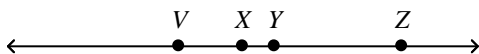


Drawing not to scale

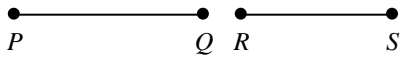
- a.  $x = 15, y = 17$                       c.  $x = 68, y = 112$   
 b.  $x = 112, y = 68$                       d.  $x = 17, y = 15$

### Short Answer

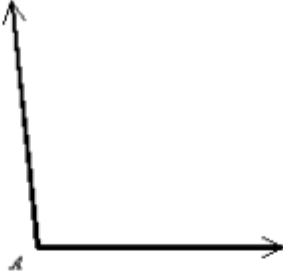
24. Name four rays shown.



25. On a number line,  $P$  has coordinate  $-47$  and  $Q$  has coordinate  $40$ . Find  $PQ$ .
26. Construct  $\overline{GH}$  so that  $GH = PQ + RS$ .

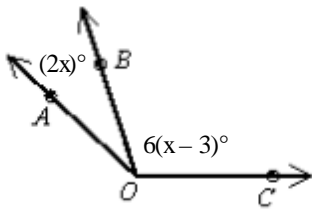


27. Construct  $\angle B$  so that  $\angle B \cong \angle A$ .



**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. \_\_\_\_\_

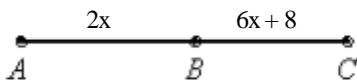
$2x + 6x - 18 = 150$  c. \_\_\_\_\_

$8x - 18 = 150$  d. \_\_\_\_\_

$8x = 168$  e. \_\_\_\_\_

$x = 21$  f. \_\_\_\_\_

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



Drawing not to scale

$$AB + BC = AC \quad \text{a. } \underline{\hspace{2cm}}$$

$$2x + 6x + 8 = 32 \quad \text{b. } \underline{\hspace{2cm}}$$

$$8x + 8 = 32 \quad \text{c. } \underline{\hspace{2cm}}$$

$$8x = 24 \quad \text{d. } \underline{\hspace{2cm}}$$

$$x = 3 \quad \text{e. } \underline{\hspace{2cm}}$$

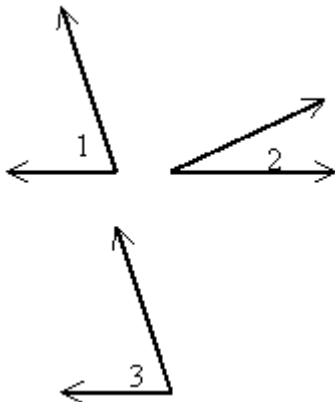
30. Solve for  $x$ . **Justify each step.**

$$4x - 9 = 99$$

## Essay

31. Find the measures of  $\angle PMN$  and  $\angle NMR$  if  $\overrightarrow{MN}$  bisects  $\angle PMR$ . The measure of  $\angle PMR$  is  $136^\circ$ . 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**

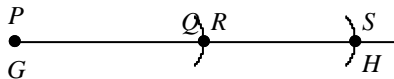
24. ANS:

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

25. ANS:

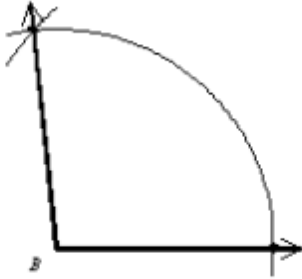
87

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:  

$$\frac{4x - 9}{4} = \frac{99}{4}$$

$$4x - 9 + 9 = 99 + 9$$

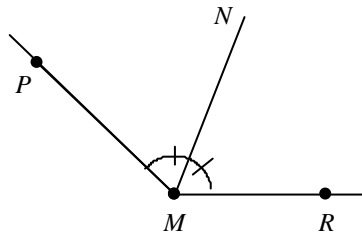
$$4x = 108$$

$$\frac{4x}{4} = \frac{108}{4}$$

$$x = 27$$
 Given  
 Addition Property of Equality  
 Simplify  
 Division Property of Equality  
 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,  $m\angle PMN =$

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

- [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  $C$ .