

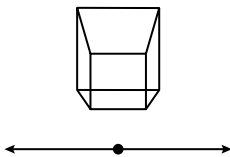
**Warm Up 57**

1. absolute value
2. 10
3. 6.71

**Lesson Practice 57**

- a. 26
- b. 17.62
- c. 12
- d. approximately  
11 square units
- e. approximately  
1200–1400 kg of gravel

## Practice 57

1.  $\frac{1}{2} = 0.500$ ;  $\frac{\sqrt{3}}{2} \approx 0.866$
2. The ratio of corresponding sides is 1.
3. 4 inches and  $5\frac{1}{3}$  inches
4. 
5. 10.5
6. 7.6 cm
7. Marked angles are alternate interior angles and are congruent. By Alternate Interior Angles Theorem, lines  $m$  and  $n$  are parallel.
8.  $2(\sqrt{29} + \sqrt{17})$
9. C
10. Since opposite angles in a parallelogram are congruent, their measures are equal, so  $x - 5 = 3x - 2$ . Solving for  $x$  gives  $x = -1.5$ .
11.  $8\sqrt{2}$  inches; 11.3 inches
12.  $100^\circ$
13. If two triangles are congruent, then by CPCTC, all corresponding parts are congruent; therefore, hypotenuses and one pair of acute angles are congruent.
14. 9
15.  $J(0, 3)$ ;  $K(-2, 2)$ ;  
 $JK = \sqrt{5}$ ;  $GH = \sqrt{20} = 2\sqrt{5}$ . So  $JK = \frac{1}{2}GH$ .
16.  $\frac{16}{3}$  and  $\frac{14}{3}$  inches
17.  $9.6 + 3.2\sqrt{3}$  in.
18.  $\sim p$  and  $q$
19. First, find the coordinates  $D(1, -2)$  and  $E(0, 2)$ . Then use the slope formula to find that the slope of  $\overline{AC} = -\frac{1}{4}$  and the slope of  $\overline{DE} = -\frac{1}{4}$ .  $\overline{AC} \parallel \overline{DE}$ .

20. 29
21. 4.97 units
22. D
23. Instead of finding all three medians, Carina found only two medians and one altitude.
24. 195 minutes
25. In the two triangles,  $AD = AB$ , as they are radii of the smaller circle, and  $AE = AC$ , as they are radii of the larger circle. The angle with the greater measure will therefore be the one across the longer third side, so  $\angle DAE$  has the greater measure.
26. (9, 6), (2, 6) and (2, 0); The building has a 26-unit perimeter.
27. 4 triangles form a triangular pyramid
28. Since all radii in a circle are congruent,  $\overline{PA}$ ,  $\overline{PB}$ ,  $\overline{PC}$ , and  $\overline{PD}$  are all congruent to each other. By definition of congruent segments,  $PA = PD$ . Since  $PX = PY$ ,  $\overline{PX}$  and  $\overline{PY}$  are congruent. Since  $\triangle PAX$  and  $\triangle PYD$  are right triangles with one equal leg and equal hypotenuses, by the Pythagorean Theorem,  $AX = DY$ . By definition of congruent segments,  $\overline{AX} \cong \overline{DY}$ . Similarly  $\overline{AX}$ ,  $\overline{BX}$ ,  $\overline{DY}$ , and  $\overline{CY}$  are all congruent, and so all have the same measure. So  $AX + XB = CY + YD$ , and by the Segment Addition Postulate and by substitution,  $AB = CD$ . By the definition of congruence,  $\overline{AB} \cong \overline{CD}$ .

29. Since  $m\angle 1 + m\angle 2 = 180^\circ$ ,  $\angle 1$  and  $\angle 2$  are supplementary; they are also same-side interior angles; Converse of the Same-Side Interior Angles Theorem implies lines  $d$  and  $e$  are parallel.
30. Solving the Pythagorean Theorem for the first triangle gives a third side length of  $16\sqrt{3}$ , so the first triangle has the proportions of a  $30^\circ$ - $60^\circ$ - $90^\circ$  triangle. By the Triangle Sum Theorem, since the second triangle has a  $90^\circ$  and a  $60^\circ$  angle, the third angle is  $30^\circ$ , so these triangles have the same angles and are similar. But without a side length for the second triangle or a proportionality ratio, it cannot be determined whether they are congruent.