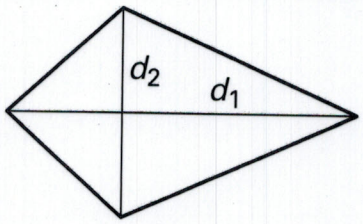
Answers for 11.2

For use with pages 733–736

11.2 Skill Practice

1. height

2. The vertical diagonal is bisected by the horizontal diagonal and the angles are all right angles.

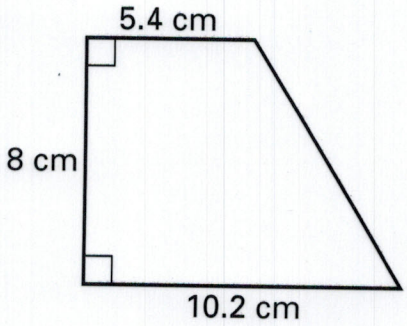


3. 95 square units

4. 48 square units

5. 31 square units

6.



62.4 cm^2

7. 1500 square units

8. 384 square units

9. 189 square units

10. 95 square units

11. 360 square units

12. 18 square units

13. 13 is not the height of the trapezoid; $A = \frac{1}{2}(12)(14 + 19)$, $A = 198\ cm^2$.

14. 12 is not the length of the horizontal diagonal; $A = \frac{1}{2}(24)(21)$, $A = 252\ cm^2$.

15. B

16. 6 ft **17.** 20 m **18.** 20 yd

19. 10.5 square units

20. 8 square units

21. 10 square units

22. 3 ft and 6 ft

23. 5 cm and 13 cm

24. 552 square units

25. 168 square units

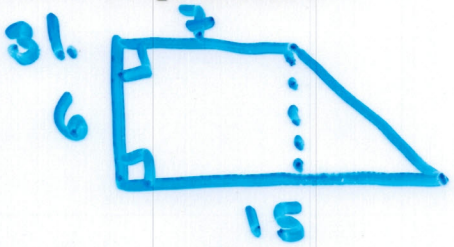
26. 630 square units

27. 67 square units

28. 36 square units

29. 42 square units

31.



38 units

66 sq. units

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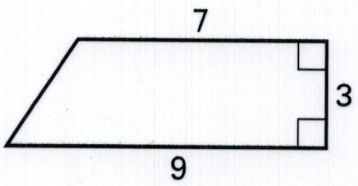
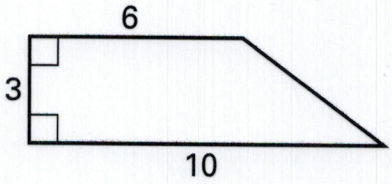
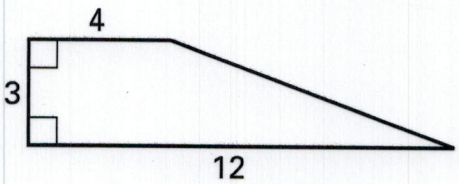
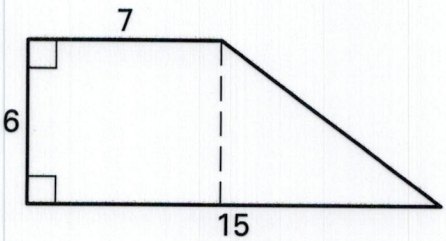
30. *Sample:*





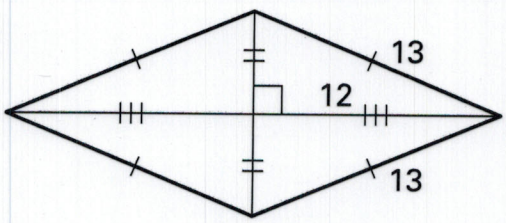


31.



38 units, 66 square units

32.



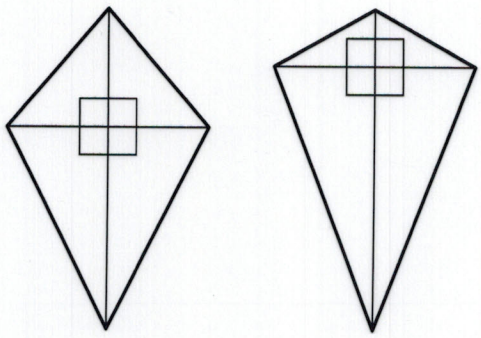
52 units, 120 square units

33. 122 square units. *Sample answer:* After drawing the two auxiliary lines, let X be the point where the line through A intersects $\overline{BF}$ and let Y be the poiont where the line though D intersects $\overline{CH}$. After showing that $\angle BAX \cong \angle CDY$, $\triangle ABX$ and $\triangle DCY$ can be shown congruent by AAS. This fact leads to $GH = 8$ and $DG = 9 - 6$, or 3. The area of parallelogram $ABCD$ can then be found by finding the sum of the areas of trapezoids $ABFE$ and $FBCH$, and subtracting the sum of the areas of trapezoids $ADGE$ and $GDCH$.

11.2 Problem Solving

34. 2607.5 in.^{2}

35. 20 mm^2;



36. 24 in.

37. a. right triangle and trapezoid

b. 103,968 ft^2; 11,552 yd^2

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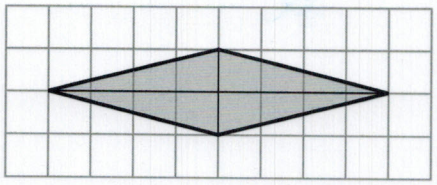
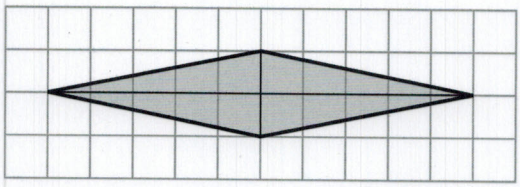
38. a. 4; 8; 5; 10





b. The area of the rhombus is twice the value of n; $A_n = 2n$.

c. $2n$; $A_n = \frac{1}{2}(2)(2n) = 2n$; the rules are the same.

39. If the kites in the activity were a rhombus, the results would be the same.

40. $A_{\triangle PSR} = \frac{1}{2}b_1h$ and $A_{\triangle PQR} = \frac{1}{2}b_2h$

$$A_{\triangle PSR} + A_{\triangle PQR} = A_{\text{trapezoid}}$$

$$\frac{1}{2}b_1h + \frac{1}{2}b_2h = A_{\text{trapezoid}}$$

$$\frac{1}{2}h(b_1 + b_2) = A_{\text{trapezoid}}$$

41. $A_{\triangle PSR} = \frac{1}{2}\left(\frac{1}{2}d_1\right)d_2$ and

$A_{\triangle PQR} = \frac{1}{2}\left(\frac{1}{2}d_1\right)d_2$, so

$A_{\triangle PSR} = \frac{1}{4}d_1d_2$ and

$A_{\triangle PQR} = \frac{1}{4}d_1d_2$.

$$A_{PQRS} = A_{\triangle PQR} + A_{\triangle PSR}$$

$$A_{PQRS} = \frac{1}{4}d_1d_2 + \frac{1}{4}d_1d_2$$

$$A_{PQRS} = \frac{1}{2}d_1d_2$$

42. a. Check students' work. In addition to a variety of kites, an isosceles triangle and a right triangle are possible.

b. Yes; when you slide the vertical diagonal to one side or to the top or bottom, you get triangles.

c. The areas are all the same; the measures of the diagonals remain constant and become the base and height measures in the triangle.

43. $\frac{1}{2}(a + b)(a + b) = \frac{ab}{2} + \frac{ab}{2} + \frac{c^2}{2}$

$$\frac{a^2 + 2ab + b^2}{2} = \frac{2ab + c^2}{2}$$

$$a^2 + 2ab + b^2 = 2ab + c^2$$

$$a^2 + b^2 = c^2$$

11.2 Mixed Review

44. $t = \frac{d}{r}$; Multiplication Property of Equality

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44. $t = d/r$; mult. p.o.e.

45. $h = \frac{2A}{b}$; Multiplication Property of Equality

46. $\frac{1}{2}P = \ell + w$; Multiplication Property of Equality,

$w = \frac{1}{2}P - \ell$; Addition Property of Equality

47. 20°, 80°, 80°

48. 12 in., 54 in.

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