

- b) 40, since $32^2 + 24^2 = 40^2$
 c) 35, since $12^2 + 35^2 = 37^2$
 d) 99, since $20^2 + 99^2 = 101^2$

13. Hold the 1st, 4th, and 8th knots to form a right triangle with side lengths 3 units, 4 units, and 5 units.

14. Yes; Since $48^2 + 55^2 = 73^2$; all angles are right angles.

15. 40 m and 9 m, since $9 + 40 + 41 = 90$ and $9^2 + 40^2 = 41^2$

16.a) For obtuse triangles, the area of the square on the longest side is greater than the sum of the areas of the squares on the two smaller sides.

b) For acute triangles, the area of the square on the largest side is less than the sum of the areas of the squares on the two smaller sides.

c) In question 6,

- the acute triangle is: b
- the right triangles are: a, c, d, h
- the obtuse triangles are: e, f, g

17. Answers will vary. For example:

Lesser number: 8; Greater number: 14
 Triple: 224, 132, 260

1.7 Applying the Pythagorean Theorem, page 49

4.a) 29 cm b) 12.2 cm c) 15.8 cm

5.a) 24 cm b) 15 cm c) 5.7 cm

6. 4 m

7.a) 26 cm or 21.8 cm

b) The unknown side could be a leg or the hypotenuse of the right triangle.

8.a) 6.7 units b) 7.8 units

9. 65 cm

10. 91 m

11. 38.18 m

12.a) The area of the square on the hypotenuse is equal to the sum of the areas of the squares on the legs.

b) The square of the length of the hypotenuse is equal to the sum of the squares of the lengths of the legs.

13. 57.4 cm

14. F; I drew two right triangles with hypotenuses AB and AF. The legs of both triangles were 4 units and 3 units.

15. 5.8 units 16. 216.9 m

17. Yes; $650^2 + 720^2 = 970^2$

18. 403.1 km 19. 7.6 cm 20. 17 cm

21. 37.3 m 22. 291.2 km

Unit 1 Unit Review, page 54

1. Rectangles: 1 unit by 24 units, 2 units by 12 units, 3 units by 8 units, 4 units by 6 units
 Not a perfect square since 24 cannot be modelled by a square

2. 25

3. Answers may vary. For example: 16, 25, 1024, 1600, 2401, 2500

4.a) 25 b) 49 c) 81 d) 169

5.a) 7 b) 17 c) 20

6.a) i) 1, 2, 3, 4, 6, 9, 12, 18, 27, 36, 54, 108

ii) 1, 19, 361

iii) 1, 2, 3, 5, 6, 10, 15, 25, 30, 50, 75, 150

iv) 1, 2, 11, 13, 22, 26, 143, 286

v) 1, 2, 3, 4, 6, 9, 12, 18, 27, 36, 54, 81, 108, 162, 324

vi) 1, 2, 4, 7, 8, 14, 28, 56

b) 361 and 324; Both have an odd number of factors.

7. 44 cm

8. $A = 17$ square units; $s = \sqrt{17}$ units

9.a) $\sqrt{75}$ cm b) $\sqrt{96}$ cm c) 9 cm

10. b; I drew a square on each line segment and found the area. Square b has a greater area.

11.a) 26 b) 5 c) 50 d) 13

12.a) 6 and 7 b) 9 and 10

c) 10 and 11 d) 34 and 35

13.a) 2 b) 3 c) 5 d) 6 e) 8 f) 9

14.a) 7.4 b) 8.7 c) 9.7 d) 10.2 e) 6.8 f) 10.7

15. 8.49, since $8.48^2 = 71.9104$ and $8.49^2 = 72.0801$

16. 130 cm

17.a) False b) True c) True

18.a) 34 cm b) 28 cm c) 16.2 cm

19.a) 8.5 cm b) 7.8 cm

20. Yes, since $24 + 57 = 81$

21. No; $7^2 + 12^2 \neq 15^2$

22. a and c

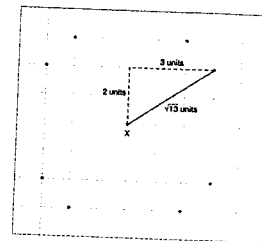
23. 21; One solution, because in a Pythagorean triple all three numbers must be whole numbers

24. 40 km

25. 42 cm

26. The distance from each possible position to x is the hypotenuse of a right triangle with legs lengths 2 units and 3 units.

27. 31.2 km



Unit 1 Practice Test, page 58

1.a) 11 b) 196 c) 6.32 d) 81

2. $\sqrt{1} = \sqrt{1 \times 1} = 1$

3. $s = 8$ cm, $A = 64$ cm²

4.a) 25 square units b) 5 units

5.a) Yes; $15 + 9 = 24$ b) No; $11 + 7 \neq 20$

6.a) 14.2 cm b) 16 cm

7.a) No; $20^2 + 48^2 \neq 54^2$ b) Yes; $18^2 + 24^2 = 30^2$

8.a) 16.2 m b) 81 m

9.a) 3.6 cm, 2.2 cm, 2.0 cm