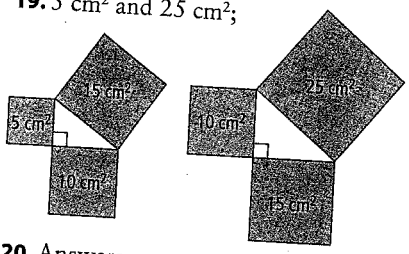


14. Triangle A is a right triangle:  $9^2 + 12^2 = 15^2$ .  
 Triangle B is not a right triangle:  $7^2 + 8^2 \neq 11^2$ .  
 Triangle C is a right triangle:  $7^2 + 24^2 = 25^2$ .  
 Triangle D is a right triangle:  $16^2 + 30^2 = 34^2$ .  
 Triangle E is not a right triangle:  $10^2 + 11^2 \neq 14^2$ .
15. No, the angle is not a right angle. The diagonal would have to be 10 m for the angle to be right angled.  
 $6^2 + 8^2 = 100$ ;  $\sqrt{100} = 10$
16. Answers may vary. Example: Baldeep should ensure that the sum of the areas of the squares for the width and the length of the rectangle equals the area of the square that can be drawn on the diagonal of the rectangle:  
 $144 + 400 = 544$ .

17. a) 1225 cm<sup>2</sup> b) 169 mm<sup>2</sup>  
 18. a) 28 m<sup>2</sup> b) 16 m<sup>2</sup>  
 19. 5 cm<sup>2</sup> and 25 cm<sup>2</sup>;



20. Answers may vary. Example: The sum of the areas of the two smaller semicircles is equal to the area of the semicircle attached to the hypotenuse of the triangle.
21. a) 6, 8, and 10 form a Pythagorean triple:  
 $6^2 + 8^2 = 10^2$ . b) Answers may vary. Example: Multiply each number by 10:  $60^2 + 80^2 = 100^2$ . The results form a Pythagorean triple. c) No, there is no natural number that does not make a Pythagorean triple when 3, 4, and 5 are multiplied by it.

### 3.3 Estimating Square Roots, pages 99–100

4. Answers may vary for the estimates. a) 8.5 b) 10.1 c) 7.4  
 5. Answers may vary for the estimates. a) 3.7 b) 9.3 c) 11.7  
 6. Answers may vary. Example: 90  
 7. Answers may vary. Example: 130  
 8. 5, 6, 7, and 8  
 9. 17, 18, 19, 20, 21, 22, 23, 24  
 10. Answer may vary. Example: 5.2 m  
 11. a) Answers may vary. Example: 4.5 cm b) 4.5 cm  
 12. a) Answers may vary. Example: An estimate is 3.2 m.  
 b) 3.3 m c) Yes, the rug will fit since its side length, 3.3 m, is smaller than the shorter side of the room.  
 13. a) 10.7 m b) Answers may vary. Example: 10 m or 11 m c) 100 m<sup>2</sup> or 121 m<sup>2</sup> d) She will choose the 121 m<sup>2</sup> dance floor since it is much closer to her desired size.  
 14. a) 60 b) No, there is only one answer. The number must be between 49 and 64. The only multiple of 12 in this range is 60.  
 15.  $\sqrt{27}$ , 5.8, 6.3,  $\sqrt{46}$ , 7  
 16. a) 27 m<sup>2</sup> b) Answers may vary. Example: The fitness centre should order dimensions of 5.1 m by 5.1 m so that the area does not exceed 75% of the space available.

17. a) 324 cm<sup>2</sup> b) 1296 cm<sup>2</sup> c) 36 cm by 36 cm  
 18. a) 3 b) Answers may vary. Example: 1.7 c) 1.73  
 d) Answers may vary. Example: 0.03  
 19. Answers may vary. Example: A reasonable estimate for the square root of 160 100 is 400.  
 $16 \times 10\ 000 = 160\ 000$ . The square root of 16 is 4.  
 The square root of 10 000 is 100. The square root of 160 100 is approximately  
 $4 \times 100 = 400$ .  
 20. 14  
 21. 106 500 and 106 800

### 3.4 Using the Pythagorean Relationship, pages 104–105

3. a) 20 cm b) 34 m  
 4. a) 9.2 cm b) 13.6 cm  
 5. a) 36 cm<sup>2</sup>; 64 cm<sup>2</sup> b) 100 cm<sup>2</sup> c) 10 cm  
 6. a) 24 cm b) 10 cm  
 7. a) 7.5 mm b) 10.2 mm  
 8. 206 cm  
 9. 13.4 m  
 10. 38.2 m  
 11. 72.2 cm  
 12. 8.6 cm  
 13. 12 mm  
 14.  $b = 4$  m;  $c = 7.2$  m  
 15. 4.5 cm  
 16. 14.8 mm

Key #3-14

### 3.5 Applying the Pythagorean Relationship, pages 110–111

3. a) 420 m b) 323 m c) Maria walked further by 97 m.  
 4. 9.8 m  
 5. Yes, these dimensions could form a rectangle. Square both sides of the rectangle and then sum the values:  
 $9^2 + 22^2 = 565$ . Calculate the square root of 565, which is 23.8 cm. This length is equal to the length of the diagonal.  
 6. No, there is not a right angle at first base because  
 $27^2 + 27^2 = 38.2^2$ . Since the distance between home plate and second base is 37.1 m and not 38.2 m, the triangle is not a right triangle.  
 7. 12.6 cm  
 8. Answers may vary. Example: Shahriar is correct. The diagonal is 39.1 cm when calculated with the Pythagorean relationship, which is smaller than the advertised 42 cm diagonal.  
 9. a) 4.2 cm b) 34 cm  
 10. Yes, she will have enough room. The diagonal of the mat is  $\sqrt{12^2 + 12^2} \approx 17.0$  m, according to the Pythagorean relationship. The gymnast requires 16 m for the tumbling run and she will have one metre to spare.  
 11. maximum of 291.7 cm, minimum of 279.1 cm  
 12. a) 9.65 m b) \$19.30  
 13. 235 km  
 14. 15.6 mm