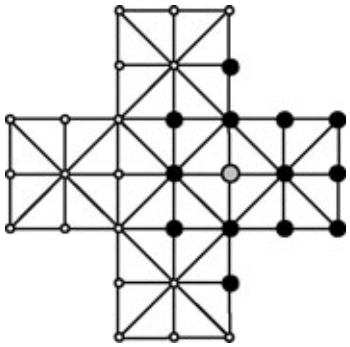
Chapter 3 BLM Answers

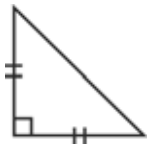
BLM 3–1 Chapter 3 Math Link Introduction

1. Answers will vary. Example:



2. 6 **3. a)** 20 **b)** 5 **c)** 25

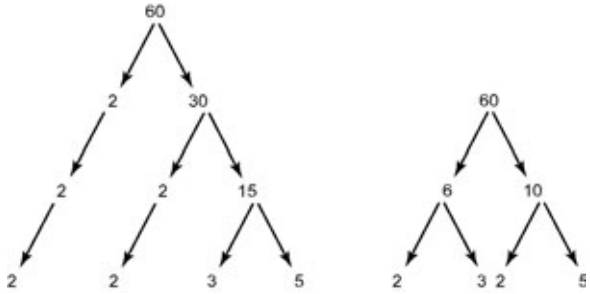
4. isosceles, right



5. Method 1: 25 cm^2, 20, 500 cm^2
Method 2: 100 cm^2, 5, 500 cm^2. The areas are the same. Answers may vary. Example: Four 5 cm × 5 cm squares are equal to one 10 cm × 10 cm square.

BLM 3–2 Chapter 3 Get Ready

1. a), b) Answers will vary. Examples:



c) 1 and 60, 2 and 30, 3 and 20, 4 and 15, 5 and 12, 6 and 10
2. Encourage students to use a factor tree.
1 and 12, 2 and 6, 3 and 4
3. a) 38.8 cm **b)** 56 cm **c)** 30 cm
4. a) 33 m^2 **b)** 81 m^2
5. a) 5, 6, 7, 8
b) 26, 27, 28, 29, 30, 31, 32, 33, 34, 35
6. a) 6.5 **b)** 30.5
7. a) 49. Halfway is 56.5.
b) 100. Halfway is 90.5. **c)** 121. Halfway is 132.5.
8. a) 7 **b)** 16 **9. a)** 6 **b)** 3

BLM 3–3 Chapter 3 Warm-Up

Section 3.1

1. a) $\square = 72$ **b)** $\square = 7.96$ **2.** 32 m
3. \$0.0505 **4.** 81.25 km
5. 33¢ **6.** $\frac{1}{4}$ **7.** 120º **8.** $\frac{1}{8}$
9. 270º **10.** 315º

Section 3.2

1. 1 × 1 = 1; 2 × 2 = 4; 3 × 3 = 9; 4 × 4 = 16; 5 × 5 = 25
2. 120 = 2 × 2 × 2 × 3 × 5. This is not a perfect square.
196 = 2 × 2 × 7 × 7. This is a perfect square.
$14^2 = 196$
3. 484 cm^2
4. 625 = 5 × 5 × 5 × 5; $\sqrt{625} = 25$
5. Answers will vary. Example: The shortened height of the graph and the fact that the space between the number increments is inconsistent make it appear as though there is more of a difference between the cost of a room at the West Hotel and the other hotels. In fact, the East Hotel is almost the same price as the West Hotel. The difference is in cents. This would be clearer if the graph started at 0 and had consistent increments.
6. 49 **7.** 100 **8.** 6 **9.** 11 **10.** 9

Section 3.3

1. 36 cm^2, 64 cm^2, 100 cm^2
2. 6 cm, 8 cm, 10 cm
3. 36 cm^2 + 64 cm^2 = 100 cm^2
4. No. Answers may vary. Example:
20.25 cm^2 + 30.25 cm^2 ≠ 56.25 cm^2
5. 5 : 3 : 8
6. 2 × 2 × 2 × 2 × 2 × 2 × 3 × 3 = 24 × 24; $\sqrt{576} = 24$
7. $\square = 49$ **8.** $\square = 7$
9. $\square = 60$ **10.** $\square = 20$

Section 3.4

1. Estimates may vary. Example: 5.2
Check: 5.3
2. 101, 102, 103,..., 120
3. 5 × 5 = 25; 6 × 6 = 36. 30 is slightly less than halfway, so 5.4 or 5.5.
4. 5.5
5. 2 : 1 : 3
6. 2 × 2 × 3 × 3 × 3 × 3 = 18 × 18; $\sqrt{324} = 18$
7. 5.1 **8.** $\square = 169$ **9.** $\square = 6$ **10.** $\square = 3$

Section 3.5
1. 6.7 cm **2.** 13.9 m **3.** 6.32 m **4.** 8.94 m
5. 6 : 9 : 6 = 2 : 3 : 2
6. 2 × 2 × 11 × 11 = 22 × 22
7. 3 × 3 × 7 × 7 = 21 × 21
8. Estimates may vary. Example: 7.7 or 7.8
9. 81 **10.** 144

BLM 3–4 Chapter 3 Problems of the Week
1. Jill and Phil can make a right triangle.
2. a)

Decimal Value of Mixed Number	Value of Square Root
$4\frac{1}{9}$ = 4.111111111 …	$\sqrt{17}$ = 4.123105626 …
$4\frac{2}{9}$ = 4.222222222 …	$\sqrt{18}$ = 4.242640687 …
$4\frac{3}{9}$ = 4.333333333 …	$\sqrt{19}$ = 4.358898944 …
$4\frac{4}{9}$ = 4.44444444 …	$\sqrt{20}$ = 4.472135955 …
$4\frac{5}{9}$ = 4.555555555 …	$\sqrt{21}$ = 4.582575695 …
$4\frac{6}{9}$ = 4.666666666 …	$\sqrt{22}$ = 4.69041576 …
$4\frac{7}{9}$ = 4.777777777 …	$\sqrt{23}$ = 4.795831523 …
$4\frac{8}{9}$ = 4.888888888 …	$\sqrt{24}$ = 4.898979486 …

The value of the mixed number is close to the value of the square root above it on the number line.
b) $\sqrt{32} \approx 5\frac{7}{11}; 5\frac{7}{11} = 5.636363636 \ldots;$
$\sqrt{32} \approx 5.656854249 \ldots$
3. $(15-9)^2 + 8^2 = AB^2$
$6^2 + 8^2 = AB^2$
$36 + 64 = AB^2$
$100 = AB^2$
$\sqrt{100} = AB$
$10 = AB$
The length of AB is 10 cm.
4. 13 m
5. 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225, 196, 169, 144, 121, 100, 81, 64, 49, 36, 25, 16, 9, 4, 1
6. 7.21 m

BLM 3–7 Section 3.1 Extra Practice
1. b) even **c)** multiplied **d)** square

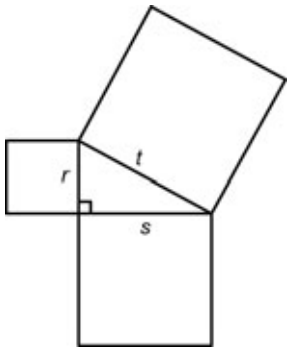
2.

	Prime Factorization	Perfect Square?
35	5 × 7	Circle one: YES (NO) Justify your answer: There is an odd number (1) of each factor.
64	2 × 2 × 2 × 2 × 2 × 2	Circle one: (YES) NO Justify your answer: There is an even number (6) of each factor.

3. a) 4 **b)** 7 × 7 **c)** 36 **d)** 10 × 10, 100
4. a) 10, 15, 20 **b)** 20, 25, 30
c) 10, 12, 14 **d)** 15, 18, 21
5. a) 49 cm^2 **b)** 121 mm^2 **c)** 225 m^2
d) 484 cm^2 **e)** 1600 m^2 **f)** 8100 mm^2
6. a) 10 cm **b)** 11 mm **c)** 13 m
d) 16 cm **e)** 23 mm **f)** 50 m

BLM 3–8 Section 3.1 Math Link
1. 32, 32, 64
2. Answers may vary but table should include the following answers.
40 × 40, 1600, 64, 25, yes, yes
32 × 32, 1024, 64, 16, yes, yes
24 × 24, 576, 64, 9, yes, yes
3. Answers may vary. Example: The dimensions that work have an answer of yes for the last two columns.
4. 40 cm × 40 cm, 32 cm × 32 cm, and 24 cm × 24 cm
5. Yes, there is a pattern. Answers may vary. Example: The dimensions are multiples of 4.

BLM 3–11 Section 3.2 Extra Practice
1. right, squares, hypotenuse
2. a), b)



c) $r^2 + s^2 = t^2$
3. a) 25 cm^2, 36 cm^2, 64 cm^2
b) No. The sum of the areas of the two smaller squares is 25 + 36 = 61 cm^2. The sum does not equal the area of the large square. 61 $cm^2 \neq$ 64 cm^2
4. a) 27 cm^2 **b)** 100 cm^2

5. a) $17^2 = 289$, $26^2 = 676$, $289 + 676 = 965$
The area is 965 cm^2.
b) $7^2 = 49$, $15^2 = 225$, $49 + 225 = 274$
The area is 274 cm^2.

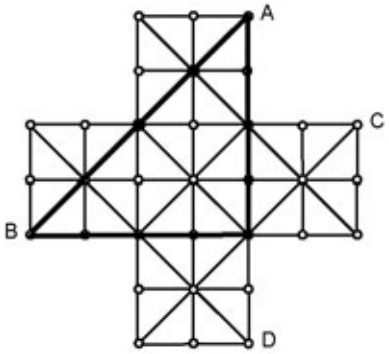
BLM 3–12 Section 3.2 Math Link
1. #2, 5, 25, #8, 6, 36, #7, 61, none
#4, 5, 25, #8, 5, 25, #8 but already used, 50, #1
#5, 4, 16, #10, 5, 25, #8, 41, #3
#9, 4, 16, #10, 3, 9, none, 25, #8
2. a) Triangle #5
b) Square #10, Square #8, Square #3

BLM 3–13 Section 3.3 Extra Practice
1. perfect squares
2. 33, 25, 36, 36
11, 9, 16, 9
47, 36, 49, 49
6, 4, 9, 4
70, 64, 81, 64
116, 100, 121, 121
3. Estimates may vary. Checks: **a)** 5.7
b) 3.3 **c)** 6.9 **d)** 2.4 **e)** 8.4 **f)** 10.8
4. a) 9, 16, 16, estimates may vary, 3.7
b) 36, 49, 36, estimates may vary, 6.2
c) 121, 144, 144, estimates may vary, 11.8
d) 81, 100, 100, estimates may vary, 9.7
5. 10, 11, 12, 13, 14, 15
6. a) Estimates may vary. Estimates should be between 3 and 4.
b) 3.2 cm

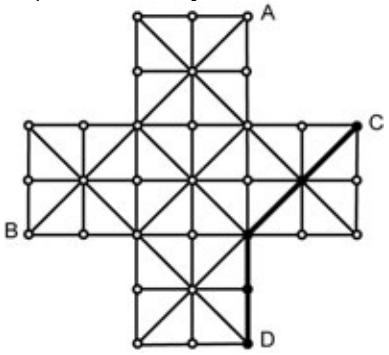
BLM 3–14 Section 3.3 Math Link
1. a) Answers may vary. Example: You find the square root of the area.
b) Answers may vary. Example: 11.5 cm
c) 11.6 cm
2. a) Boxes A, B, and C **b)** Boxes D and E
They have side lengths the same as or larger than the game board.
3. a) Box D **b)** 11.6 cm × 11.7 cm
c) Answers may vary. Example: I would choose Box D. It is the smallest box that will hold the game. It might be less expensive than Box E.

BLM 3–15 Section 3.4 Extra Practice
1. $t^2 = 6^2 + 8^2$, $t^2 = 36 + 64$, $t^2 = 100$,
$t = \sqrt{100}$, $t = 10$, 10 cm
2. $e^2 + 12^2 = 13^2$, $e^2 + 144 = 169$,
$e^2 + 144 - 144 = 169 - 144$, $e^2 = 25$, $e = \sqrt{25}$,
$e = 5$, 5 cm
3. a) $d^2 = 12^2 + 20^2$, $d^2 = 144 + 400$,
$d^2 = 544$, $d \approx 23.3$, 23.3 cm
b) $z^2 = 8^2 + 10^2$, $z^2 = 64 + 100$, $z^2 = 544$,
$z \approx 12.8$, 12.8 cm
4. a) $11^2 + w^2 = 17^2$, $121 + w^2 = 289$,
$121 - 121 + w^2 = 289 - 121$, $w^2 = 168$,
$w \approx 13$, 13 m
b) $p^2 + 13^2 = 18^2$, $p^2 + 169 = 324$,
$p^2 + 169 - 169 = 324 - 169$, $p^2 = 155$,
$p \approx 12$, 12 m

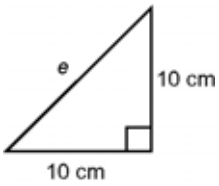
BLM 3–16 Section 3.4 Math Link
1. a), b)



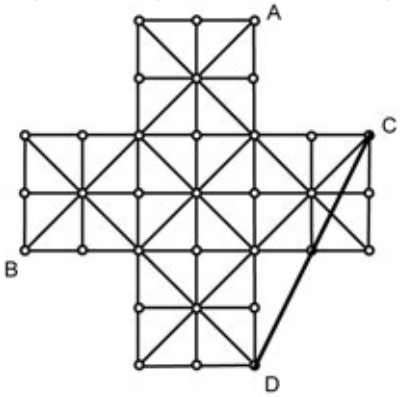
c) 20 cm
d) $20^2 + 20^2 = c^2$, $400 + 400 = c^2$,
$800 = c^2$, $28.3 \approx c$ **e)** 28.3 cm
2. a)



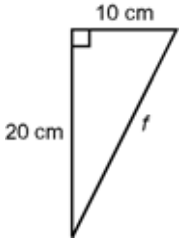
b)



c) $10^2 + 10^2 = e^2$, $100 + 100 = e^2$,
$200 = e^2$, $14.1 \approx e$, $14.1 + 10 = 24.1$, 24.1 cm
3. a)



b)



c) $10^2 + 20^2 = f^2$, $100 + 400 = f^2$, $500 = f^2$, $22.4 \approx f$, 22.4 cm

BLM 3–17 Section 3.5 Extra Practice

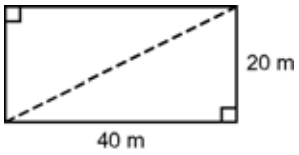
1. $d^2 = 700^2 + 2400^2$
$d^2 = 490\,000 + 5\,760\,000$
$d^2 = 6\,250\,000$
$d = \sqrt{6\,250\,000}$
$d = 2500$ m

2.

Left Side	**Right side**
$3^2 = 169$	$5^2 + 12^2 = 225 + 144$
	$= 169$

Yes. The triangle is a right triangle because the area of the large square is the same as the sum of the areas of the two smaller squares.

3. a)



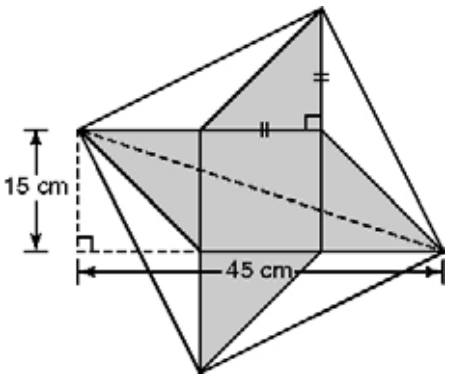
b) 44.7 m **c)** 60 m **d)** The distance of 44.7 m is shorter by 15.3 m.

4. No, the walls do not meet at a right angle. To the nearest centimetre, the diagonal should measure 212 cm.

BLM 3–18 Section 3.5 Math Link

1. a) Answers will vary. Example: To find the side length, determine the square root of the area.
b) 15 cm **c)** They are the same.
d) 15 cm **e)** 21.1 cm **f)** 144.8 cm

2. a)–c), e)



d) Shorter leg: 15 cm
Longer leg: 15 + 15 + 15 = 45 cm
f) $15^2 + 45^2 = d^2$, where d is the length of the hypotenuse
$225 + 2025 = d^2$
$2250 = d^2$
$47.4 \approx d$
The length of the diagonal line is 47.4 cm.

BLM 3–19 Chapter 3 Test

1. C **2.** D **3.** D **4.** B **5.** A
6. a) 64 cm^2 **b)** 121 m^2
c) 2500 mm^2 **d)** 169 cm^2
7. 10.8 mm
8. Yes, it is a right triangle. $10^2 = 6^2 + 8^2$, $100 = 100$. The area of the large square is the same as the sum of the areas of the two smaller squares.
9. 4.5 m
10. Answers may vary. Examples:
a) 6.2 **b)** 11.7 **c)** 13.2 **d)** 20.5
11. The square of the hypotenuse of a right triangle equals the sum of the squares of the other two sides.
12. Martin: 3.02 h, or 3 h and 1 min; Kathleen: 3.5 h, or 3 h and 30 min
a) Martin will arrive first. **b)** 29 min
13. a) 5 m **b)** Answers may vary. Example: It provides a basis for the traditional square shape of a room and is visually appealing.
14. No, it is not possible. When you square any number from 0 to 9, the result never has a last digit that is 2, 3, 7, or 8. That means if you square any number having a last digit from 0 to 9, the result will never have a last digit that is 2, 3, 7, or 8.