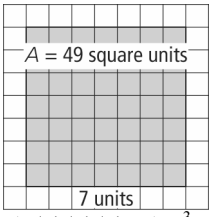
Chapter 4 BLM Answers

BLM 4–2 Chapter 4 Prerequisite Skills

1. a) (2)(3)(3)(3) **b)** (2)(2)(2)(2)(2)(3)(3)(3)
c) (7)(7)(7)(7)(3) **d)** (2)(2)(3)(3)(5)(5)

2. a) 6^4 **b)** $(-4)^5$

3.



4. a) (5)(5)(5) **b)** 5^3

5. a) $(-3)^7$ **b)** 2^8 **c)** 7^7 **d)** $2^{12} = 8^4$ **e)** –6

6. a) 512 **b)** 2592 **c)** 1 **d)** $\frac{3}{4}$

7. a) 88.2 m **b)** 80 km/h

8. 268 cm^3

BLM 4–3 Chapter 4 Warm-Up

Section 4.1

1. a) $\square = 8$ **b)** $\square = 10$ **c)** $\square = 5$ **d)** $\square = 12$

2. a) Example: 5.2 **b)** Example: 9.5 **c)** Example: 8.8

3. a) $\square = 4$ **b)** $\square = 2$ **c)** $\square = 3$ **d)** $\square = 10$

4. a) 8 **b)** 9 **c)** 125

5. a) (2)(2)(3) **b)** (2)(3)(3)(5) **c)** (2)(2)(2)(2)(7)

Section 4.2

1. a) x^8 **b)** y^6 **c)** b^4

2. a) x^{10} **b)** y **c)** b^{22}

3. a) $4x^6$ **b)** $64y^6$ **c)** $9x^{12}y^{10}$

4. a) $\frac{9}{10}$ **b)** $\frac{1}{16}$ **c)** $\frac{15}{2}$

5. a) $\square = 5$ **b)** $\square = 4$ **c)** $\square = 4$ **d)** $\square = 3$

Section 4.3

1. a) $\frac{19}{12}$ **b)** $\frac{1}{8}$ **c)** $\frac{13}{12}$ **2. a)** 1 **b)** $\frac{1}{8}$ **c)** $\frac{16}{9}$ **d)** $\frac{81}{625}$

3. a) y^6 **b)** b^7 **c)** x^{-10} **d)** y^{-5}

4. a) 0.875 **b)** 0.8 **c)** 0.6875 **5.** $21 494

Section 4.4

1. a) (2)(3)(3)(3) **b)** (2)(2)(3)(3)(5) **c)** (2)(2)(2)(5)(5)

2. a) 5 **b)** –100 **c)** –4

3. a) $7^{\frac{1}{2}}$ **b)** $(-8)^{\frac{1}{3}}$ **c)** $x^{\frac{5}{3}}$

4. a) 9 **b)** $\frac{1}{4}$ **c)** $\frac{1}{16}$

5. Both b) and c)

BLM 4–6 Section 4.1 Extra Practice

1. a) perfect square **b)** neither **c)** perfect cube
d) perfect square **e)** both **f)** perfect cube

2. a) 16 **b)** 15 **c)** 10 **d)** 41 **e)** 8 **f)** 4

3. a) 17 **b)** 38 **c)** 55 **d)** 12 **e)** 18 **f)** 20

4. 250 m **5.** 12 m **6.** 30 cm **7.** 6 m **8.** 60 cm

BLM 4–7 Section 4.2 Extra Practice

1. a) $\frac{1}{c^4}$ **b)** $\frac{m}{n^2}$ **c)** $\frac{3}{x^3}$ **d)** $\frac{4m^3}{n^2}$ **e)** $\frac{-2}{x^4}$ **f)** $\frac{-5}{x^3y^2}$

2. a) 2 **b)** $\frac{1}{3^3}$ **c)** 5^7 **d)** $\frac{1}{(3^{16})(4^2)}$ **e)** 2^{12} **f)** $\frac{1}{3^8}$

g) $\frac{2^6}{4^2}$ **h)** $\frac{1}{(6^6)(5^9)}$

3. a) $6y^2$ **b)** $\frac{12m^6}{n}$ **c)** $\frac{1}{m^3n^8}$ **d)** $9x^2y^8$

e) $\frac{y^6}{16x^2}$ **f)** $-500x^4$ **g)** $\frac{9n^4}{4m^2}$ **h)** $\frac{4y^4}{9x^2}$

4. a) $\frac{1}{25}$ **b)** 1 **c)** $\frac{49}{36}$ **d)** –9 **e)** 9 **f)** $\frac{7}{12}$

g) –20 **h)** 30 **i)** $\frac{4096}{729}$

5. a) 32 000 **b)** 125 **6.** Yes. $\left(\frac{2}{1}\right)^3 = 8$

BLM 4–8 Section 4.3 Extra Practice

1. a) x^4 **b)** $3m^{\frac{17}{4}}$ **c)** x^2 **d)** $\frac{x}{2}$ **e)** x^2y^4

2. a) $y^{\frac{1}{2}}$ **b)** $\frac{-2}{x^2}$ **c)** x **d)** $\frac{1}{4x^{\frac{1}{4}}}$ **e)** x^2

3. a) $5^{-3} = \frac{1}{125}$ **b)** $3^{-3} = \frac{1}{27}$ **c)** $2^8 = 256$ **d)** $3^5 = 243$

e) $\left(\frac{1}{5}\right)^2 = \frac{1}{25}$

4. a) $7^{-3.6} = 0.0009$ **b)** $4^{\frac{9}{2}} = 512$ **c)** $7^2 = 49$

d) $\frac{6^{\frac{2}{3}}}{3} = 1.1006$ **e)** $3^{-1} = 0.3333$

5. a) The number of bacteria increases by 1.5 times every 40 h.
b) 7500. There are 7500 bacteria after 40 h.
c) 5154.385; 5154.385 – 5000 = 154.385. There are approximately 154 more bacteria after 3 h.
d) Example: The value $h = 0$ indicates the starting population of 5000 bacteria.

BLM 4–9 Section 4.4 Extra Practice

1. a) $\sqrt{5^3}$ **b)** $\left(\sqrt[3]{27}\right)^4$ **c)** $\sqrt{4x^3}$ **d)** $\sqrt{\frac{y^6}{x^{12}}}$ **e)** $\sqrt[3]{x^6y}$

2. a) $(9x)^{\frac{3}{2}}$ **b)** $\left(4x^2\right)^{\frac{3}{2}}$ **c)** $\left(64x^6\right)^{\frac{1}{3}}$ **d)** $y^{\frac{1}{2}}$

e) $9\left(x^{\frac{5}{2}}\right)^{\frac{1}{5}}$

3. a) 52.3832 **b)** 4.6416 **c)** 0.8660 **d)** 2.9240
e) –2.6321

4. a) $\sqrt{75}$ **b)** $\sqrt{\frac{8}{5}}$ **c)** $\sqrt[3]{32}$ **d)** $\sqrt[3]{-128}$ **e)** $\sqrt[3]{375}$

5. a) $6\sqrt{5}$ **b)** $6\sqrt{3}$ **c)** $5\sqrt[3]{6}$ **d)** $3\sqrt[3]{3}$ **e)** $9\sqrt{6}$

6. a) $3\sqrt{20}$, $\sqrt{35}$, $\sqrt[3]{45}$, $\sqrt{\frac{5}{3}}$. Example: I estimated the values and plotted the values on a number line.
b) $4\sqrt{5}$, $\sqrt{60}$, $2\sqrt[3]{5}$, $\sqrt[3]{4}$. Example: I converted each mixed radical to an entire radical.

BLM 4–10 Chapter 4 Test

1. C **2.** A **3.** B **4.** D **5.** C **6.** A

7. a) 5^{11} **b)** $\frac{b^2}{8a}$

8. a) $6^{\frac{2}{3}}$ **b)** $20^{\frac{1}{2}}$

9. a) 1927 **b)** 16 377

10. a) 2.5 ft **b)** 6.25 ft^2; 25 ft^2