

2. a) i) $\sqrt[3]{35^2}$, or $(\sqrt[3]{35})^2$
 ii) $\sqrt{32^3}$, or $(\sqrt{32})^3$
 iii) $\sqrt[5]{(-32)^2}$, or $(\sqrt[5]{-32})^2$
 iv) $\sqrt{400^3}$, or $(\sqrt{400})^3$
 v) $\sqrt[3]{-125}$
 vi) $\sqrt[3]{\left(\frac{8}{125}\right)^2}$, or $\left(\sqrt[3]{\frac{8}{125}}\right)^2$
- b) iii) 4 iv) 8000
 v) -5 vi) $\frac{4}{25}$

3. a) $4^{\frac{1}{3}}$
 b) $9^{\frac{1}{2}}$, or $9^{0.5}$
 c) $18^{\frac{1}{4}}$, or $18^{0.25}$
 d) $10^{\frac{3}{2}}$, or $10^{1.5}$
 e) $(-10)^{\frac{2}{3}}$

4. Approximately 53 s

5. $\sqrt[3]{3}$, $3^{\frac{2}{3}}$, $(\sqrt[3]{3})^4$, $3^{\frac{3}{2}}$, $(\sqrt{3})^5$

6. $\sqrt[3]{421\,875}$ mm, $421\,875^{\frac{1}{3}}$ mm, 75 mm

7. a) $\frac{81}{16}$ b) 4
 c) $\frac{1}{100}$ d) 2
 e) 100 f) 625
8. \$4589.06

4.6 Applying the Exponent Laws, page 241

3. a) x^7 b) $\frac{1}{a^3}$
 c) b^2 d) $\frac{1}{m}$
4. a) 0.5^5 b) 0.5^{-1}
 c) 0.5^{-1} d) 0.5^5
5. a) x^2 b) $\frac{1}{x^3}$
 c) n d) $\frac{1}{a^4}$

6. a) n^6 b) $\frac{1}{z^6}$
 c) n^{12} d) $\frac{1}{c^4}$
7. a) $\left(\frac{3}{5}\right)^{12}$ b) $\left(\frac{3}{5}\right)^{-12}$
 c) $\left(\frac{3}{5}\right)^{12}$ d) $\left(-\frac{3}{5}\right)^{12}$
8. a) $\frac{a^2}{b^2}$ b) $\frac{n^6}{m^3}$
 c) $\frac{d^8}{c^8}$ d) $\frac{4b^2}{25c^2}$
 e) a^2b^2 f) n^6m^3
 g) $\frac{1}{c^{12}d^8}$ h) $\frac{x^3}{y^3}$

9. a) x ; product of powers law
 b) a^{-5} ; product of powers law
 c) b^3 ; product of powers law
 d) 1; product of powers law
 e) $\frac{1}{x^7}$; quotient of powers law
 f) s^{10} ; quotient of powers law
 g) $\frac{1}{b^5}$; quotient of powers law
 h) 1; quotient of powers law

10. a) 2.25 b) $\frac{9}{16}$
 c) 0.36 d) 1
 e) $\frac{5}{3}$ f) $-\frac{3}{8}$
 g) $\frac{1000}{343}$ h) $\frac{3}{10}$

11. a) x^3y^6 b) $\frac{a^4}{4b^4}$
 c) $\frac{1}{64m^6n^9}$ d) $\frac{16m^8n^{12}}{81}$

12. 10.6 cm

13. 251 ft.²

14. a) $\frac{a^5}{b}$ b) $\frac{d^4}{c^2}$

15. a) -32 b) $-\frac{1}{8}$
 c) $-\frac{1}{32}$ d) $\frac{1}{1024}$