

9. 3234.9065 cm<sup>3</sup>  
 10. a) P6 Truss solar array; volume: 6578.82438 m<sup>3</sup>.  
 b) Estimate of the total volume is 7000 m<sup>3</sup>. Total volume: 7209.078115 m<sup>3</sup>  
 11. 3.925 m<sup>3</sup>  
 12. Martha should buy the "Popcorn Lover's" container because it has a larger volume. The volume of the "Jumbo" popcorn container is 12 560 cm<sup>3</sup>. The volume of the "Popcorn Lover's" container is 14 130 cm<sup>3</sup>.  
 13. 5 m<sup>3</sup>  
 14. 251.2 m<sup>3</sup>  
 15. a) The volume of the cylinder is four times as large. The volume of the cylinder is calculated using the formula  $V = (\pi \times r^2) \times h$ . If the radius is doubled, the formula will be  $V = (\pi \times (2r)^2) \times h$   
 $V = (\pi \times 4r^2) \times h$   
 $V = 4(\pi \times r^2) \times h$   
 b) The volume of the cylinder is twice as large. The volume of the cylinder is calculated using the formula  $V = (\pi \times r^2) \times h$ . If the height is doubled, the formula will be  $V = (\pi \times r^2) \times 2h$   
 $V = 2(\pi \times r^2) \times h$   
 16. 1695.6 cm<sup>3</sup>; Assume that one quarter of the block of cheese was cut away.  
 17. a) 1.884 m<sup>3</sup> b) 0.4 m<sup>3</sup> c) 0.628 m<sup>3</sup>  
 18. 7 h

#### 7.4 Solving Problems Involving Prisms and Cylinders, pages 273–275

3. a) To build a giant prism with a triangular base of length 5.6 m and height 6.8 m requires four prisms on the bottom layer.  $4 + 3 + 3 + 2 + 2 + 1 + 1 = 16$   
 The artist would need 16 small prisms to build the large prism. With 20 prisms, he has enough. b) 22.47 m<sup>3</sup>  
 4. 46.9 cm  
 5. 2.826 m<sup>3</sup>  
 6. 2.0 cm<sup>3</sup>  
 7. 48 937.5 cm<sup>3</sup>  
 8. One crate will be enough. The volume of the crate is 63 m<sup>3</sup> and the volume of the 25 000 boxes is 50 m<sup>3</sup>.  
 9. All of the files will fit in the carton. The volume of the carton is 72 000 000 cm<sup>3</sup> and the volume of 9000 boxes is 70 200 000 cm<sup>3</sup>.  
 10. a) 372 875 cm<sup>3</sup> b) 1 864 375 cm<sup>3</sup> c) To reach this goal the garbage can should be 0.5 full on each lunch hour on each of the five school days.  
 11. 60 cm  
 12. 91 pails  
 13. 27 prisms  
 14. \$12.78 per jar  
 15. a) 1300 cm<sup>3</sup> b) You can check your calculations by dividing the shape into a different set of rectangular prisms.  
 16. a) 203 472 cm<sup>3</sup> b) 13 200 cm<sup>3</sup> c) 15.4 pails  
 17. Answers may vary. Example: Rolling the cylinder so that the circumference is 28 cm and the height is 22 cm will produce the larger volume. The cylinder with a circumference of 22 cm and a height of 28 cm has a

- volume of 1077 cm<sup>3</sup>. The cylinder with a circumference of 28 cm and a height of 22 cm has a volume of 1373 cm<sup>3</sup>.  
 18. 5 cm  
 19. 6280 cm<sup>3</sup>  
 20. 2.5 m  
 21. a) 149 250 m<sup>3</sup> b) 4 h and 9 min

#### Chapter Review, pages 276–277

1. B 2. D 3. A 4. C  
 5. a) 84 cm<sup>3</sup> b) 14 080 cm<sup>3</sup> c) 81 cm<sup>3</sup>  
 6. a) 24 cm<sup>3</sup> b) 40 cm<sup>3</sup> c) 150 cm<sup>3</sup>  
 7. 196 cm<sup>3</sup>  
 8. a) 168 cm<sup>3</sup> b) 2250 cm<sup>3</sup>  
 9. a) 1000 cm<sup>3</sup> b) 614.125 cm<sup>3</sup>  
 10. a) 120 cm<sup>3</sup> b) 70 cm<sup>3</sup>  
 11. a) 100 cm<sup>3</sup> b) 14 400 mm<sup>3</sup>  
 12. 0.6 m<sup>3</sup>  
 13. a) 55 080 m<sup>3</sup> b) 1311.4 truck loads c) 11 days  
 14. a) 125 600 cm<sup>3</sup> b) 327 910.2 m<sup>3</sup>  
 15. a) 2317.32 cm<sup>3</sup> c) 4578.12 cm<sup>3</sup>  
 16. 141.3 m<sup>3</sup>  
 17. 76.93 m<sup>3</sup> or 77 m<sup>3</sup>  
 18. 301.3 mm<sup>3</sup>  
 19. 8.79 m  
 20. a) volume of water: 0.9375 m<sup>3</sup>  
 b) length of time: 1 min 34 s

## Chapter 8

### 8.1 Exploring Integer Multiplication, pages 291–292

5. a) (+5) × (+1) b) (+2) × (−6)  
 6. a) (+3) × (+7) b) (+4) × (−4)  
 7. a) (+8) + (+8) + (+8)  
 b) (−6) + (−6) + (−6) + (−6) + (−6)  
 8. a) (+2) + (+2) + (+2) + (+2) + (+2) + (+2)  
 b) (−9) + (−9) + (−9) + (−9)  
 9. a) (+2) × (+4) b) (+4) × (−2)  
 10. a) (+7) × (+2) b) (+6) × (−1)  
 11. a) (−3) × (−2) b) (−3) × (+3)  
 12. a) (−1) × (+7) b) (−2) × (−5)  
 13. a) (+4) × (+6) = 24 b) (+7) × (−2) = −14  
 c) (−1) × (+5) = −5 d) (−8) × (−2) = 16  
 14. a) (+6) × (+2) = 12; The temperature increased 12 °C in 6 h. b) (+4) × (+8) = 32; Ayesha repaid a total of \$32.  
 15. (+12) × (−3) = −36; The aircraft descends 36 m.  
 16. a) 40 m b) 12 m  
 17. 16 m  
 18. No. Doubling a negative integer results in an integer of lesser value.  
 19. a) 3 b) Yes; −6 c) The easiest solution is to multiply each integer in part a) by −4. Many other solutions are possible. Example:

−4	−22	14
−4	4	−12
−4	6	−14