

**CHAPTER 19 Volume**

Calculators should be used for most numerical work in this chapter.

**EXERCISE 19a (p. 280)**

- |                      |                      |                       |                              |                               |
|----------------------|----------------------|-----------------------|------------------------------|-------------------------------|
| 1. $48\text{cm}^3$   | 6. $10.5\text{cm}^3$ | 10. $7.2\text{cm}^3$  | 14. $125\text{cm}^3$         | 18. $27\text{km}^3$           |
| 2. $1600\text{mm}^3$ | 7. $24\text{m}^3$    | 11. $4.32\text{m}^3$  | 15. $8\text{m}^3$            | 19. $512\text{km}^3$          |
| 3. $5400\text{mm}^3$ | 8. $160\text{m}^3$   | 12. $0.756\text{m}^3$ | 16. $\frac{1}{8}\text{cm}^3$ | 20. $3\frac{3}{8}\text{km}^3$ |
| 4. $16\text{mm}^3$   | 9. $12\text{cm}^3$   | 13. $64\text{cm}^3$   | 17. $15.625\text{cm}^3$      | 21. $39.304\text{m}^3$        |
| 5. $31.72\text{m}^3$ |                      |                       |                              |                               |

**EXERCISE 19b (p. 281)**

- |           |       |      |       |       |
|-----------|-------|------|-------|-------|
| 1. 8      | 2. 6  | 3. 8 | 4. 12 | 5. 64 |
| 6. a) 128 | b) 16 | c) 2 |       |       |

The remainder of this chapter is suitable only for above average ability groups, except for the first few problems in Exercise 19f.

**EXERCISE 19c (p. 283)**

- |                         |                              |                             |                          |                        |
|-------------------------|------------------------------|-----------------------------|--------------------------|------------------------|
| 1. $8000\text{mm}^3$    | 4. $430\text{mm}^3$          | 7. $3\,000\,000\text{cm}^3$ | 9. $420\,000\text{cm}^3$ | 11. $0.022\text{cm}^3$ |
| 2. $14\,000\text{mm}^3$ | 5. $92\,000\,000\text{mm}^3$ | 8. $2\,500\,000\text{cm}^3$ | 10. $6\,300\text{cm}^3$  | 12. $0.731\text{cm}^3$ |
| 3. $6\,200\text{mm}^3$  | 6. $40\text{mm}^3$           |                             |                          |                        |

**EXERCISE 19d (p. 284)**

- |                      |                         |             |                 |                   |
|----------------------|-------------------------|-------------|-----------------|-------------------|
| 1. $2500\text{cm}^3$ | 4. $7.5\text{cm}^3$     | 7. 7 litres | 9. 24 litres    | 11. 12 000 litres |
| 2. $1760\text{cm}^3$ | 5. $35\,000\text{cm}^3$ | 8. 4 litres | 10. 5000 litres | 12. 4600 litres   |
| 3. $540\text{cm}^3$  | 6. $28\text{cm}^3$      |             |                 |                   |

**EXERCISE 19e (p. 284)**

- |                    |                     |                         |                    |                      |
|--------------------|---------------------|-------------------------|--------------------|----------------------|
| 1. $30\text{cm}^3$ | 3. $800\text{cm}^3$ | 5. $5760\text{mm}^3$    | 7. $28\text{cm}^3$ | 9. $17.5\text{cm}^3$ |
| 2. $2\text{m}^3$   | 4. $600\text{cm}^3$ | 6. $40\,000\text{cm}^3$ | 8. $8\text{m}^3$   | 10. $180\text{cm}^3$ |

**EXERCISE 19f (p. 285)**

The first three problems are suitable for everybody to try.

- |                      |                     |                              |         |          |
|----------------------|---------------------|------------------------------|---------|----------|
| 1. $60\text{m}^3$    | 3. $6480\text{m}^3$ | 5. 48                        | 7. 60   | 9. 64    |
| 2. $7776\text{cm}^3$ | 4. 125              | 6. $300\text{m}^3$ ; 300 000 | 8. 9000 | 10. 1600 |

**EXERCISE 19g (p. 287)**

- |                                |                                  |                         |                         |  |
|--------------------------------|----------------------------------|-------------------------|-------------------------|--|
| 1. a) $3\,200\,000\text{cm}^3$ | b) $3\,200\,000\,000\text{mm}^3$ |                         |                         |  |
| 2. $1600\text{cm}^3$           | 3. $64\text{cm}^3$               | 4. $50\,000\text{cm}^3$ | 5. $13\,500\text{mm}^3$ |  |

**EXERCISE 19h (p. 287)**

1. a)  $8000\text{mm}^3$    b)  $0.000\,008\text{m}^3$   
 2. 3.5 litres   3.  $300\text{cm}^3$    4.  $0.512\text{cm}^3$    5.  $120\,000\text{cm}^3$

**EXERCISE 19i (p. 287)**

1. a)  $9000\text{cm}^3$    b)  $9\,000\,000\text{mm}^3$   
 2.  $440\text{cm}^3$    3.  $216\text{cm}^3$    4.  $288\text{cm}^3$    5. 2400 litres

**EXERCISE 19j (p. 287)**

1.  $0.0009\text{m}^3$    2. 10.8 litres   3. 75 litres   4.  $8\text{cm}^3$    5.  $1.2\text{m}^3$

**EXERCISE 19k (p. 288)**

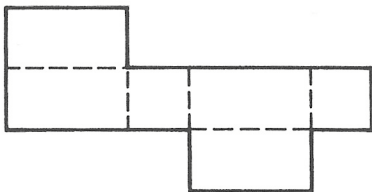
1. a) no   b) no  
 2. Yes, measurements needed. Lengths on the drawing are not correct.   3. no

**EXERCISE 19l (p. 289)**

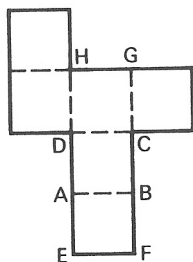
1. and 2. lines are the correct length  
 3. a) lines are the correct length   c) no   d) one vertex is hidden behind another  
 4. a) and b) lines are the correct length

**EXERCISE 19m (p. 291)**

2. a) (i) 2   (ii) 2   (iii) 4cm by 3cm  
 b) e.g.



3. a) 6   b) two faces 1cm by 4cm, two 2cm by 1cm, two 4cm by 2cm  
 4. b) IJ   c) K and G  
 5. a) IH   b) B and D  
 6.



7. There are a large number of arrangements of six squares and of these, 11 will make cubes.  
(Count reflections as the same.)