

3. (i) cone, tetrahedron, triangular prism, pyramid (ii) cone, cylinder, sphere (iii) cube, cuboid, cylinder, square-based pyramid, prism, octahedron
 4. **Across:** 1. stack 4. octahedron 6. hexagonal 7. vertex 9. prism 10. cube
Down: 2. tetrahedron 3. cone 5. roll 8. edge

Chapter 37 Data 2 Averages

Page 155 1. 45

2. 486

3. 214

4. 31

5. (a) (i) 11yrs 4 mths (ii) 37.81kg (iii) 1.55m (b) (i) 2 (ii) 2 (iii) 1
 6. (a) Train A = 2hrs 48mins Train B = 3hrs 15mins Train C = 2hrs 59mins Train D = 3hrs 10mins
 (b) 3hrs 3mins (c) (i) 2 (ii) 2 (d) The average would be 4 minutes faster (2hrs 59mins).
 7. (a) (i) (b) (i) €5.70 (ii) €6.30

Page 156 1. 08:00 : Cars = 15 Vans = 18 Trucks = 12 12:00 : Cars = 24 Vans = 10 Trucks = 26 16:00 : Cars = 24
 Vans = 18 Trucks = 24 20:00 : Cars = 28 Vans = 12 Trucks = 17

2. (a) (i) 20:00 (ii) 08:00 (b) (i) 08:00/16:00 (ii) 12:00 (c) (i) 12:00 (ii) 08:00 (d) (i) 16:00 (ii) 08:00

3. (a) 08:00 (b) 12:00

4. 228

5. 57

6. (a) 5°C (b) 1st Friday (c) 13°C (d) 13°C

Page 157 1. (i) (a) $\frac{1}{6}$ blue (b) $\frac{2}{3}$ blue (c) $\frac{1}{10}$ blue (d) $\frac{3}{8}$ blue

(ii) (a) $\frac{1}{3} = 120^\circ$, $\frac{1}{2} = 180^\circ$, $\frac{1}{6} = 60^\circ$ (b) $\frac{1}{4} = 90^\circ$, $\frac{1}{12} = 30^\circ$, $\frac{2}{3} = 240^\circ$

(c) $\frac{3}{5} = 216^\circ$, $\frac{3}{10} = 108^\circ$, $\frac{1}{10} = 36^\circ$ (d) $\frac{1}{8} = 45^\circ$, $\frac{1}{3} = 120^\circ$, $\frac{1}{6} = 60^\circ$, $\frac{3}{8} = 135^\circ$

2. (a) 120° (b) 60° (c) 90° (d) 45° (e) 36° (f) 30° (g) 18° (h) 12°

3. (a) 270° (b) 135° (c) 144° (d) 150°

4. (a) $\frac{1}{4}$ (b) $\frac{1}{6}$ (c) $\frac{1}{8}$ (d) $\frac{1}{10}$ (e) $\frac{1}{5}$ (f) $\frac{1}{3}$ (g) $\frac{3}{10}$ (h) $\frac{5}{12}$

5. (a) 144° (b) (i) $\frac{1}{10}$ (ii) $\frac{1}{5}$ (iii) $\frac{3}{10}$ (iv) $\frac{2}{5}$

Page 158 (i) To do Activity

(ii) (a)	sport	footabll	swimming	basketball	rounders	other
	boys	80	60	40	30	30
	girls	60	80	40	40	20

(b)	sport	footabll	swimming	basketball	rounders	other
	boys	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{6}$	$\frac{1}{8}$	$\frac{1}{8}$
	girls	$\frac{1}{4}$	$\frac{1}{3}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{12}$

(c)	sport	footabll	swimming	basketball	rounders	other
	boys	120°	90°	60°	45°	45°
	girls	90°	120°	60°	60°	30°

2. (i) Africa 72° , N. America 60° , Asia 108° , other 120° (ii) (a) Africa and Asia (b) 30° (c) 20°
 (iii) (a) S. America 45° , Europe 24° , Antarctica 18° , Australia 36° (b) 123°

Chapter 38 Capacity

Page 159 2. (i) 10ml (ii) (a) 470ml (b) 390ml (c) 360ml (d) 280ml (e) 80ml (f) 220ml

3. (a) 1l 800ml (b) 200ml (c) 2l 250ml (d) 4l 50ml (e) 2l 50ml

Page 160 1. (i) (a) 2 (b) 4 (c) 8 (d) 5 (e) 10 (f) 20 (ii) (a) 30 (b) 15 (c) 12 (d) 20 (e) 5 (f) 4

2. (a) 500ml (b) 250ml (c) 125ml (d) 250ml (e) 400ml (f) 200ml (g) 750ml
 (h) 625ml (i) 875ml (j) 600ml (k) 2700ml (l) 1200ml

3. (a) 125ml (b) 625ml (c) 893ml (d) 325ml (e) 750ml (f) 250ml (g) 230ml
 (h) 290ml (i) 50ml (j) 10ml (k) 5ml (l) 2ml (m) 2625ml (n) 1875ml (o) 2225ml (p) 2350ml
 (q) 1150ml (r) 1003ml

4. (a) $\frac{1}{2}$ l (b) $\frac{1}{4}$ l (c) $\frac{1}{4}$ l (d) $\frac{1}{10}$ l (e) $\frac{1}{8}$ l (f) $\frac{2}{3}$ l (g) $\frac{3}{5}$ l (h) $\frac{4}{5}$ l (i) $\frac{3}{10}$ l (j) $\frac{3}{8}$ l (k) $\frac{5}{8}$ l (l) $\frac{7}{8}$ l (m) $\frac{3}{4}$ l
 (n) $\frac{7}{10}$ l (o) $\frac{7}{100}$ l (p) $\frac{29}{1000}$ l (q) $\frac{67}{1000}$ l (r) $\frac{17}{1000}$ l

5. (a) 0.5l (b) 0.2l (c) 0.25l (d) 0.1l (e) 0.125l (f) 0.4l (g) 0.6l (h) 0.8l (i) 0.3l
 (j) 0.375l (k) 0.625l (l) 0.875l (m) 0.750l (n) 0.7l (o) 0.007l (p) 0.029l (q) 0.067l (r) 0.017l

6. (a) 5.5ltr (b) 2.3ltr (c) 4.25ltr (d) 2.1ltr (e) 1.25ltr (f) 3.375ltr (g) 5.357ltr (h) 1.649ltr (i) 3.19ltr
 (j) 3.016ltr 7. 0.150ml

- Page 161** 1. (a) $A = 5 \times 3 \times 1$ $B = 4 \times 5 \times 1$ $C = 6 \times 3 \times 1$ $D = 3 \times 3 \times 1$
 (b) $A = 15\text{cm}^3$ $B = 20\text{cm}^3$ $C = 18\text{cm}^3$ $D = 9\text{cm}^3$ (c) $15 \times 1 \times 1$
 (d) $5 \times 2 \times 2$ (e) $3 \times 3 \times 2$ (f) 18 cubes
 2. (a) 8cm^3 (b) two (i) $2 \times 4 \times 1$ (ii) $8 \times 1 \times 1$
 3. (a) $A = 24\text{cm}^3$ $B = 24\text{cm}^3$ $C = 24\text{cm}^3$ $D = 24\text{cm}^3$ They all have the same volume
 (b) 2 A and C are identical. B and D are identical also.
 (c) Cube B / D B is pictured on a base of cubes and D is on a base of 12 cubes

- Page 162** 1. (a) 64cm^3 (b) measure length $\times$ width $\times$ height
 2. (i) (a) $200\text{cm}^3 / 200\text{ml}$ (b) $1200\text{cm}^3 / 1200\text{ml}$ (c) $360\text{cm}^3 / 360\text{ml}$ (ii) (a) 0.2l (b) 1.2l (c) 0.36l
 3. 420cm^3 4. (a) 60l (b) 46.4l

Chapter 39 Mental strategies 3

- Page 163** 1. (a) 443 (b) 662 (c) 414 (d) 827 (e) 646 (f) 6369 (g) 4662 (h) 5881 (i) 8445 (j) 12 070
 (k) 8838 (l) 13 879
 2. (a) 5086 (b) 8690 (c) 7724 (d) 7051 (e) 5861 (f) 9266 (g) 8194 (h) 9415 (i) 8292 (j) 7115 (k) 10 365
 (l) 11 375

- Page 164** 1. (a) $(3 \times 3) + 4 = 13$ (b) $4 \times 4 + 3 = 19$ (c) $(4 \times 4) + 3 + 3 = 22$ (d) $(4 \times 4) + 3 + 4 = 23$
 (e) $(4 \times 4 \times 3) + 3 = 51$ (f) $(4 \times 4 \times 3) + 4 = 52$ (g) $(4 \times 4 \times 4) + 4 = 68$ (h) $3 \times 3 \times 3 \times 4 = 108$
 (i) $(3 \times 3 \times 3 \times 4) + (3 \times 4) + (3 \times 4) = 132$ (j) $(4 \times 4 \times 4 \times 3) + (3 \times 4) = 204$
 (k) $(3 \times 3 \times 3 \times 3 \times 3) + 3 + 3 + 3 = 252$ (l) $(4 \times 3 \times 4 \times 3 \times 3) + (4 \times 4 \times 3) = 480$
 2. (a) $8 \times 8 = 64$ (b) $(5 \times 8) + 5 = 45$ (c) $(8 \times 3) + (5 \times 3) = 39$
 (d) $(5 \times 8) + 5 - 3 = 42$ (e) $(8 \times 8) + 5 + 3 + 3 = 75$
 (f) $8 \times 5 \times 3 = 120$ (g) $(8 \times 5 \times 5) - 8 = 192^*$ (h) $(8 \times 8 \times 3) + 3 = 195$ (i) $(8 \times 8 \times 3) + 8 = 200$
 (j) $(3 \times 5 \times 8) + 8 = 128$ (k) $(8 \times 8 \times 5) - 8 = 312$ (l) $8 \times 5 \times 3 \times 3 = 360$
 3. (a) $34 - 14 + 186 = 206$ (b) $258 + 459 + 132 = 849$ (c) $(684 \div 18) - 15 = 23$ (d) $(34 \times 19) + 237 = 883$
 (e) $66 \times 9 \div 6 = 99$ (f) $(960 \div 80) \times 11 = 132$ (g) $563 - 187 + 493 = 869$ (h) $(216 \div 12) \times 38 = 684$
 (i) $(983 - 875) \div 4 = 27$ (j) $812 \div 4 \div 7 = 29$ (k) $(74 - 46) \times 34 = 952$ (l) $26 \times 38 + 11 = 999$
 4. (a) $100 \times 8 + 6 + 4 + 5 - 1$ (b) $50 \times 2 \times 9 + 4 + 7 - 3$ (c) $100 \times 5 - 9 - 8 + 4 + 3$
 (d) $(8 + 9) \times 50 + 7 + 6 + 4$ (e) $(100 \times 6) - 25 + 5 + 3 - 2$ (f) $(75 + 1) \times 9 + 10 + 7$
 (g) $(50 \times 2 \times 6) + (3 \times 10) + 25$ (h) $(5 + 1) \times 6 \times 7$ (i) $50 \times (7 + 5) - 4$ (j) $75 \times (4 + 8) + 25 - 2 - 1$
 (k) $(75 + 25) \times 3 - 10 - 8$ (l) $100 \times (8 - 3) + 25 - 75 - 10$

Chapter 40 Chance

- Page 165** 2. (a) impossible (b) highly likely (c) possible
 (d) absolutely certain (e) most unlikely (f) an even chance
- Page 166** 1. (a) probable (b) impossible (c) improbable (d) impossible
 (e) improbable (f) improbable (g) probable (h) impossible
 (i) improbable (j) improbable
2. 2 in 4, 1 in 2, $\frac{1}{2}$, 50%, 0.5, 0.5 or evens 3. 1 in 4, $\frac{1}{4}$, 25% or 0.25 4. 1 in 2, $\frac{1}{2}$ 50%, 0.5 or evens
- Page 167** 1. (a) 1 in 6 or $\frac{1}{6}$ (b) 1 in 6 or $\frac{1}{6}$ (c) 1 in 6 or $\frac{1}{6}$ (d) 3 in 6 or $\frac{1}{2}$
 (e) 3 in 6 or $\frac{1}{2}$ (f) 2 in 6 or $\frac{1}{3}$ (g) 1 in 6 or $\frac{1}{6}$ (h) 3 in 6 or $\frac{1}{2}$
 (i) 0 in 6 or 0 (j) 1 in 6 or $\frac{1}{6}$
- Page 168** 1. (a) 52 (b) 26 (c) 26 (d) 12
 (e) (i) 13 in 52 or $\frac{1}{4}$ (ii) 13 in 52 or $\frac{1}{4}$ (iii) 26 in 52 or $\frac{1}{2}$ (iv) 12 in 52 or $\frac{3}{13}$ (v) 4 in 52 or $\frac{1}{13}$
 (vi) 2 in 52 or $\frac{1}{26}$
2. (a) 50

- (b) What are the chances of picking
 a King?
 a red ace?
 the ace of hearts?
 any heart?
 a red card?

chances	fraction	decimal	%
4 in 50	$\frac{4}{50}$ or $\frac{8}{100}$	0.08	8%
2 in 50	$\frac{2}{50}$ or $\frac{4}{100}$	0.04	4%
1 in 50	$\frac{1}{50}$ or $\frac{2}{100}$	0.02	2%
13 in 50	$\frac{13}{50}$ or $\frac{26}{100}$	0.26	25%
26 in 50	$\frac{12}{50}$ or $\frac{24}{100}$	0.24	24%

a club?	12 in 50	$\frac{12}{50}$		
a black two?	0	0	0	0
a red two?	2 in 50	$\frac{2}{50}$ or $\frac{4}{100}$	0.04	4%
a black court card?	6 in 50	$\frac{6}{50}$ or $\frac{12}{100}$	0.12	12%
any court card?	12 in 50	$\frac{12}{50}$ or $\frac{24}{100}$	0.24	24%

3. What are the chances of picking	chances	fraction	decimal	%
a heart?	1 in 2	$\frac{1}{2}$	0.5	50%
the 4 of spades?	1 in 20	$\frac{1}{20}$	0.05	5%
a two?	1 in 10	$\frac{1}{10}$	0.1	10%
an even black card?	1 in 4	$\frac{1}{4}$	0.25	25%
an odd red card?	1 in 4	$\frac{1}{4}$	0.25	25%
an even card?	1 in 2	$\frac{1}{2}$	0.5	50%
a multiple of 4?	1 in 5	$\frac{1}{5}$	0.2	20%
a multiple of 3?	3 in 10	$\frac{3}{10}$	0.3	30%

Page 169 2. (a) 6 list them = 6 and 1, 1 and 6, 5 and 2, 2 and 5, 4 and 3, 3 and 4

(b) (i) 2 (ii) 3 (iii) 4 (iv) 5 (v) 4

3. (a) 2 in 36 or $\frac{2}{36}$ or $\frac{1}{18}$ (b) 3 in 36 or $\frac{3}{36}$ or $\frac{1}{12}$ (c) 4 in 36 or $\frac{4}{36}$ or $\frac{1}{9}$
 (d) 5 in 36 or $\frac{5}{36}$ (e) 5 in 36 or $\frac{5}{36}$ (f) 3 in 36 or $\frac{3}{36}$ or $\frac{1}{12}$
 (g) 2 in 36 or $\frac{2}{36}$ or $\frac{1}{18}$ (h) 1 in 36 or $\frac{1}{36}$ (i) 0

Page 170 1. (a) 3 in 5 or $\frac{3}{5}$ or 0.6 or 60%

2. (i) 2 in 4 or $\frac{2}{4}$ or 0.5 or 50% (ii) 1 in 4 or $\frac{1}{4}$ or 0.25 or 25% (iii) 1 in 4 or $\frac{1}{4}$ or 0.25 or 25%
 3. (i) 1 in 3 or $\frac{1}{3}$ or 0.33 or 33 $\frac{1}{3}$ % (ii) 2 in 3 or $\frac{2}{3}$ or 0.66 or 66 $\frac{2}{3}$ % (iii) 0
 4. (i) 1 in 2 or $\frac{1}{2}$ or 0.5 or 50% (ii) 1 in 2 or $\frac{1}{2}$ or 0.5 or 50% (iii) 0
 5. (i) 0 (ii) 1 or 100% (iii) 0 (iv) 0

Chapter 41 Equations

Page 171 1. $16 + 8 = 19 + 5$

2. $23 + 9 = 8 \times 4$

3. $63 \div 7 = 14 - 5$

4. $38 + 26 = 4 \times 16$

5. $96 \div 12 = 17 - 9$

6. $122 - 10 = 7 \times 16$

7. $26 - 9 = 17$

8. $18 + 14 = 32$

9. $46 - 18 = 28$

10. $6 \times 15 = 90$

11. $3 \times 24 - 17 = 55$

12. $19 + 4 \times 16 = 83$

13. (a) 17 (b) 35 (c) 19 (d) 31 14. (a) 18 (b) 44 (c) 8 (d) 7

15. (a) 153 (b) 11 (c) 144 (d) 29

Page 172 1. $34 + a = 46$ (a = 12)

2. $42 - x = 28$ (x = 14)

3. $9 \times y = 72$ (y = 8)

4. $56 \div a = 8$ (a = 7)

5. $y - 26 = 38$ (y = 64)

6. $x \div 6 = 9$ (x = 54)

7. $48 \div 12 = 4$ (4 hours)

8. $54 - 16 = 38$ (38 sweets)

9. (a) 6 (b) 8 (c) 12 (d) 11

10. (a) 12 (b) 7 (c) 13 (d) 17

11. (a) 8 (b) 9 (c) 7 (d) 6

12. (a) 12 (b) 5 (c) 9 (d) 6

13. (a) 3 (b) 9 (c) 6 (d) 7

14. (a) 8 (b) 8 (c) 9 (d) 5

15. (a) 9 (b) 12 (c) 7 (d) 3

Page 173 1. (a) 7 (b) 3 (c) 8 (d) 6

2. (a) 8 (b) 7 (c) 10 (d) 7

3. (a) 5 (b) 10 (c) 12 (d) 11

4. (a) 75 (b) 36 (c) 48 (d) 98

5. (a) 27 (b) 48 (c) 50 (d) 60

6. (a) 72 (b) 36 (c) 75 (d) 64

7. (a) 81 (b) 64 (c) 72 (d) 54

8. $\frac{1}{3}x = 28$ (x = 84cm)

9. $\frac{1}{5}x = 16$ (x = 80m)

Page 174 1. $\frac{1}{6}x = 24$ (x = 144)

2. $\frac{1}{8}x = 36$ (x = 288)

3. $\frac{2}{3}x = 36$ (x = 54)

4. $\frac{2}{5}x = 18$ (x = 45)

5. (a) x = 340 (b) y = 472 (c) a = 950 (d) c = 1683

6. (a) y = 784 (b) y = 624 (c) a = 576 (d) c = 567

7. (a) a = 729 (b) c = 1152 (c) y = 1008 (d) y = 756

8. (a) x = 1380 (b) y = 1072 (c) y = 1240 (d) a = 608

9. (a) 2 (b) 6 (c) 15 (d) 16

10. (a) 22 (b) 10 (c) 10 (d) 5

11. (a) 17 (b) 34 (c) 11 (d) 18

12. (a) $^+3$ (b) $^-2$ (c) $^-10$

13. (a) $^-15$ (b) $^+19$ (c) $^-5$

14. (a) $^+14$ (b) $^-11$ (c) $^-7$

15. (a) $^-21$ (b) $^+13$ (c) $^-26$

16. (a) $^+18$ (b) $^-6$ (c) $^-8$

17. (a) 6 (b) 54 (c) 6

18. (a) 108 (b) 12 (c) 15

19. (a) 14 (b) 76 (c) 18

20. (a) 456 (b) 30 (c) 4536