

ZETA PRIMARY

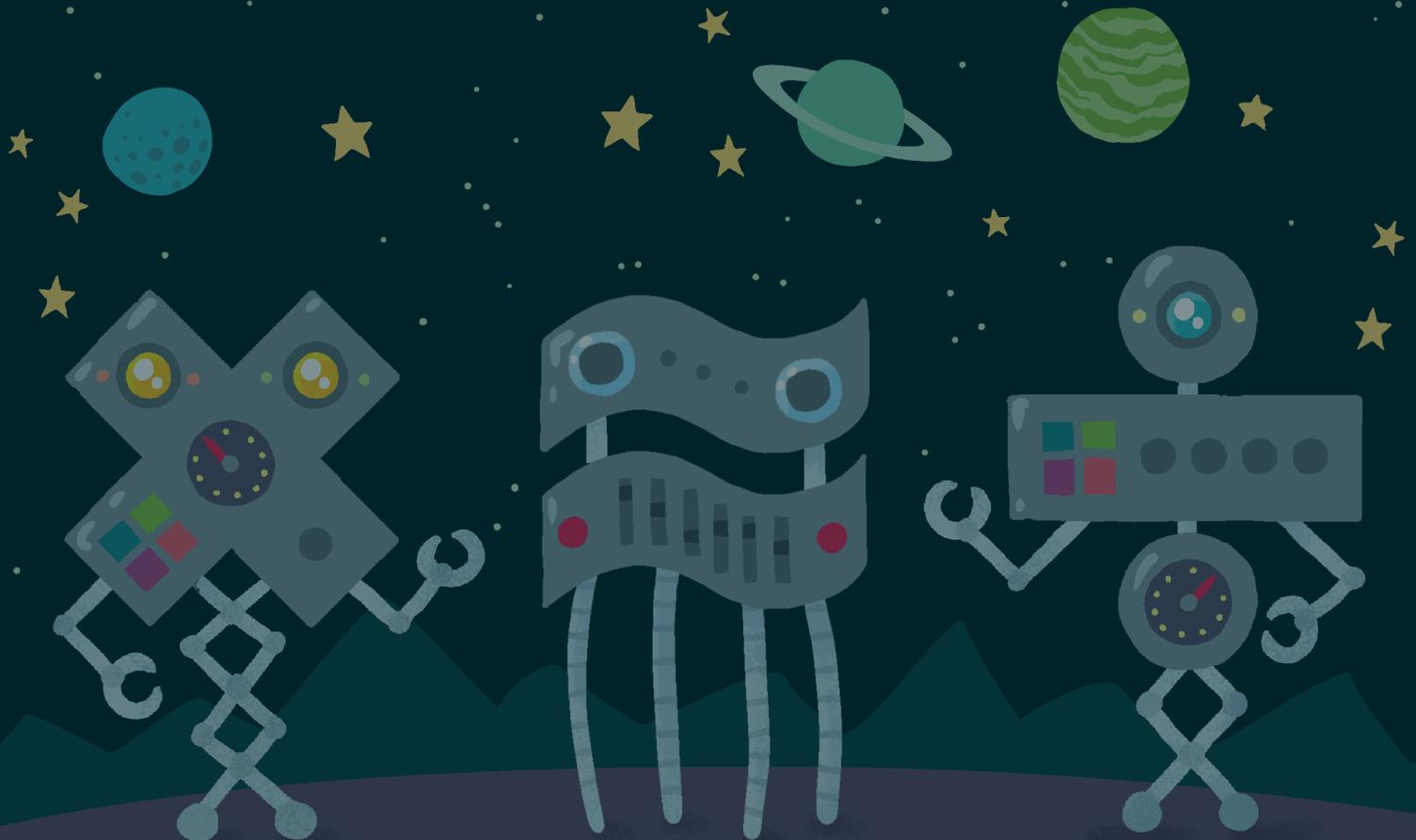
2B

MATHS & NUMERACY

CfE Second Level

TEXTBOOK

ANSWERS



Chapter 1

Exercise 1.1A

- 13 512
- 30 859
- 20 305
- 41 901
- 10 588
- 17 107
- 72 904
- 81 406
- 12 616
- 44 009
- 60 875
- 51 315
- 13 411
- 37 514
- 96 342
- 14 429
- 71 634
- 67 179

Exercise 1.1B

- 211, 409
- 805, 302
- 612 416
- 701 390
- 102 171
- 826 000
- 515 649
- 352 218
- 460 308
- 873 922
- 386 517
- 985 307
- 100 002
- 712 826
- 816 799
- 200 022
- 600 411
- 311 805

Exercise 1.2A

- Eleven thousand and twenty-five.
- Ninety-two thousand, two hundred and seventy-two.
- Thirty-three thousand, one hundred and forty-two.
- Forty-nine thousand, five hundred and twenty-three.
- Ninety-three thousand, nine hundred and three.
- Twenty-three thousand, six hundred and twenty-two.
- Twelve thousand, two hundred and twenty-five.
- Ninety-two thousand, three hundred and fifty-one.
- Ninety-nine thousand, six hundred and three.
- Forty-two thousand, three hundred and forty-three.
- Ten thousand, one hundred and fifteen.
- Ninety thousand and two.
- Twenty-nine thousand, nine hundred and fifty-four.
- Twenty-three thousand, two hundred and five.
- Eighteen thousand and one.
- Thirty-three thousand, four hundred and forty-four.
- Ninety thousand, one hundred and five.
- Thirty thousand, two hundred and ten.
- Eighty-one thousand, seven hundred and twenty.
- Eleven thousand, three hundred and sixty.

Exercise 1.2B

- Six hundred and fifteen thousand.
- Eight hundred and twenty-six thousand, two hundred and fifty-three.
- Four hundred and forty-four thousand, two hundred and seventy-three.
- Seven hundred and twenty-six thousand and two.
- Nine hundred and twenty-two thousand, one hundred and twenty-three.
- Eight hundred and seventy-six thousand, six hundred and seventy-eight.
- One hundred and ninety-two thousand, nine hundred and seventeen.

- Eight hundred and seventy thousand, nine hundred and ninety-six.
- One hundred and twenty-one thousand.
- Five hundred and five thousand, five hundred and five.
- Seven hundred and seventy-four thousand, two hundred and ninety-two.
- Nine hundred thousand, seven hundred and sixty-six.
- Three hundred and eleven thousand, six hundred and fifty-seven.
- Four hundred and fourteen thousand, nine hundred and nineteen.
- One hundred and eighty thousand, one hundred.
- Four hundred and fifty-three thousand, eight hundred and eleven.
- Nine hundred thousand and nine.
- Two hundred and twenty-two thousand, one hundred and ninety two.
- Eight hundred and seventy-three thousand, one hundred and eighteen.
- One hundred and eighteen thousand, one hundred and eighteen.

Exercise 1.3A

- $2000 + 100 + 30 + 1$
- $1000 + 100 + 60 + 3$
- $3000 + 300 + 4$
- $2000 + 50$
- $5000 + 20$
- $1000 + 200 + 40$
- $3000 + 200 + 2$
- $1000 + 600 + 10$
- $200 + 40 + 3$
- $5000 + 100 + 10$
- $1000 + 10$
- $7000 + 2$
- $1000 + 20 + 8$
- $2000 + 70 + 1$
- $1000 + 3$

Exercise 1.3B

- $2000 + 800 + 30 + 9$
- $3000 + 400 + 50 + 5$
- $1000 + 900 + 20 + 8$
- $9000 + 900 + 90 + 1$
- $1000 + 800 + 20 + 9$
- $1000 + 500 + 20 + 1$
- $7000 + 900 + 20 + 3$
- $8000 + 100 + 2$
- $1000 + 1$
- $4000 + 500$
- $2000 + 300 + 30 + 3$
- $9000 + 100 + 80 + 2$
- $5000 + 100 + 40 + 4$
- $9000 + 800 + 70 + 2$
- $7000 + 100 + 60 + 2$
- $6000 + 100 + 20 + 6$
- $1000 + 700 + 20 + 1$
- 4000

Exercise 1.3C

- $10\ 000 + 800 + 20 + 7$
- $90\ 000 + 2000 + 400 + 80 + 3$
- $70\ 000 + 7000 + 300 + 20 + 2$
- $10\ 000 + 9000 + 700 + 40 + 8$
- $90\ 000 + 400 + 1$
- $30\ 000 + 4000 + 400 + 20 + 2$
- $80\ 000 + 2000 + 20 + 1$
- $90\ 000 + 9000 + 700 + 90 + 9$
- $70\ 000 + 1000 + 500$

10. $10\ 000 + 7000 + 900 + 10$
11. $90\ 000 + 1000 + 800 + 20 + 2$
12. $60\ 000 + 5000 + 500 + 40 + 3$
13. $90\ 000 + 1000 + 800 + 90 + 7$
14. $80\ 000 + 9000 + 700$
15. $30\ 000 + 3000 + 200 + 20$
16. $40\ 000 + 4000 + 60 + 7$
17. $80\ 000 + 8000 + 3$
18. $20\ 000 + 300 + 10 + 4$
19. $30\ 000 + 2000 + 200 + 20 + 2$
20. $10\ 000 + 4000 + 1$

Exercise 1.3D

1. $100\ 000 + 20\ 000 + 9000 + 200 + 80 + 2$
2. $100\ 000 + 20\ 000 + 2000 + 400 + 80 + 3$
3. $400\ 000 + 70\ 000 + 7000 + 300 + 70 + 7$
4. $200\ 000 + 8000 + 700 + 70 + 8$
5. $400\ 000 + 50\ 000 + 200 + 1$
6. $60\ 000 + 4000 + 900 + 90 + 9$
7. $100\ 000 + 20\ 000 + 1000$
8. $500\ 000 + 50\ 000 + 9000 + 700 + 90 + 9$
9. $900\ 000 + 80\ 000 + 8000 + 500$
10. $700\ 000 + 900 + 10 + 9$
11. $600\ 000 + 10\ 000 + 5000 + 200 + 70 + 1$
12. $400\ 000 + 20\ 000 + 6000 + 200 + 90 + 1$
13. $600\ 000 + 200 + 70 + 7$
14. $100\ 000 + 10\ 000 + 1000 + 100 + 10 + 1$
15. $800\ 000 + 800 + 60 + 2$
16. $200\ 000 + 70\ 000 + 3000 + 100 + 80 + 2$
17. $900\ 000 + 90\ 000 + 2000 + 100 + 10 + 2$
18. $200\ 000 + 700 + 5$
19. $100\ 000 + 40\ 000 + 2000 + 100 + 70 + 2$
20. $800\ 000 + 80\ 000 + 7000 + 800 + 80 + 1$

Exercise 1.4

1. (a) 4085, 5049, 5094, 5714 (b) 9256, 9560, 9625, 9652
(c) 456, 546, 642, 645 (d) 8060, 8130, 8254, 8310
(e) 989, 1001, 1098, 1908 (f) 936, 3164, 3649, 3694
(g) 784, 785, 847, 7085 (h) 9090, 9090, 9099, 9909
(i) 1333, 1434, 1444, 1473
2. (a) 10 022, 10 644, 10 676, 10 717
(b) 1811, 18 800, 81 180, 88 118
(c) 9919, 90 021, 90 902, 99 987
(d) 4035, 401 454, 401 545, 404 555
(e) 22 330, 202 231, 220 230, 222 223
(f) 1202, 12 441, 120 344, 120 433

Exercise 1.5

- 1.1 (a) 209 116 (b) 812 560

1.2

- (a) Thirty-five thousand and twenty-six
- (b) Nine hundred and twelve thousand
- (c) Three hundred and twenty-five thousand, one hundred and forty-two

1.3A

- (a) $1000 + 200 + 20 + 3$ (b) $3000 + 10 + 4$

1.3B

- (a) $4000 + 600 + 20 + 7$
- (b) $10\ 000 + 2000 + 100 + 50 + 3$
- (c) $500\ 000 + 60\ 000 + 2000 + 400 + 1$

1.4

- (a) 50 044, 50 045, 50 054, 50 405
- (b) 12 451, 12 541, 78 403, 95 804

Chapter 2

Exercise 2.1

1. (a) 700 (b) 900 (c) 300 (d) 100
(e) 700 (f) 900 (g) 800 (h) 1000
(i) 200 (j) 400 (k) 600 (l) 100
2. (a) 3000 (b) 9000 (c) 4000 (d) 9000
(e) 5000 (f) 2000 (g) 1000 (h) 9000
(i) 3000 (j) 4000 (k) 6000 (l) 10 000
3. (a) 40 000 (b) 100 000 (c) 50 000 (d) 30 000
(e) 90 000 (f) 20 000 (g) 10 000 (h) 90 000
(i) 60 000 (j) 90 000 (k) 40 000 (l) 80 000

Exercise 2.2

1. (a) 200 000 and 300 000 (b) 100 000 and 200 000
(c) 300 000 and 400 000 (d) 600 000 and 700 000
(e) 200 000 and 300 000 (f) 600 000 and 700 000
(g) 200 000 and 300 000 (h) 600 000 and 700 000
(i) 400 000 and 500 000 (j) 800 000 and 900 000
(k) 600 000 and 700 000 (l) 100 000 and 200 000
(m) 800 000 and 900 000 (n) 200 000 and 300 000
(o) 700 000 and 800 000 (p) 900 000 and 1 000 000
2. (a) 300 000 (b) 200 000 (c) 300 000 (d) 700 000
(e) 300 000 (f) 600 000 (g) 300 000 (h) 600 000
(i) 400 000 (j) 900 000 (k) 600 000 (l) 200 000
(m) 900 000 (n) 200 000 (o) 800 000 (p) 900 000
3. (a) 400 000 (b) 0 (c) 1 000 000 (d) 800 000
(e) 100 000 (f) 0 (g) 400 000 (h) 200 000
(i) 600 000 (j) 800 000 (k) 100 000 (l) 200 000
(m) 100 000 (n) 200 000 (o) 800 000 (p) 600 000

Exercise 2.3A

1.
(a) 3 (b) 7 (c) 2
(d) 9 (e) 11 (f) 16
2.
(a) 6 and 7 (b) 1 and 2 (c) 8 and 9 (d) 5 and 6
(e) 6 and 7 (f) 1 and 2 (g) 3 and 4 (h) 51 and 52
(i) 22 and 23 (j) 44 and 45 (k) 16 and 17 (l) 17 and 18
3.
(a) 7 (b) 1 (c) 8 (d) 6
(e) 7 (f) 1 (g) 3 (h) 52
(i) 22 (j) 44 (k) 17 (l) 17

Exercise 2.3B

1.
(a) 4 (b) 13 (c) 2 (d) 20
(e) 9 (f) 11 (g) 41 (h) 15
(i) 51 (j) 9 (k) 6 (l) 19
2.
(a) £16 (b) £19 (c) £2 (d) £14
(e) £8 (f) £2 (g) £43 (h) £17
(i) £11 (j) £10 (k) £77 (l) £10

Exercise 2.4

1.
(a) £130 (b) £50 (c) £90 (d) £110
(e) £560 (f) £290 (g) £350 (h) £730
(i) £970 (j) £740 (k) £990 (l) £930
2.
(a) £1500 (b) £1000 (c) £1000 (d) £800
(e) £1500 (f) £500 (g) £1200 (h) £1000
(i) £1200 (j) £1300 (k) £1000 (l) £1000

Exercise 2.5

- 2.1
(a) 27 000 and 30 000 (b) 928 000 and 930 000
(c) 181 000 and 180 000
- 2.2
(a) 800 000 (b) 200 000 (c) 700 000
- 2.3
(a) 868 (b) £12 (c) 28 m
- 2.4
(a) £240 (b) £220 (c) £890

Chapter 3

Exercise 3.1A

1. 31 2. 103 3. 54 4. 67 5. 85
6. 154 7. 79 8. 117 9. 103 10. 103
11. 97 12. 147 13. 101 14. 86 15. 102
16. 152 17. 106 18. 75 19. 107 20. 131

Exercise 3.1B

1. 631 2. 533 3. 826 4. 1277 5. 689
6. 1041 7. 576 8. 619 9. 1388 10. 763

11. 625 12. 718 13. 1116 14. 717 15. 862
16. 1346 17. 373 18. 656 19. 838 20. 1106

Exercise 3.1C

1. 5271 2. 7733 3. 9834 4. 9123 5. 11 389
6. 8711 7. 4776 8. 6149 9. 8388 10. 6457
11. 6819 12. 4428 13. 3316 14. 9817 15. 7662
16. 8146 17. 3033 18. 9456 19. 6177 20. 8431

Exercise 3.2A

1. 2 2. 67 3. 20 4. 3 5. 22
6. 14 7. 7 8. 29 9. 19 10. 31
11. 16 12. 14 13. 5 14. 49 15. 24
16. 42 17. 25 18. 47 19. 4 20. 44

Exercise 3.2B

1. 43 2. 49 3. 184 4. 135 5. 147
6. 141 7. 468 8. 163 9. 186 10. 151
11. 178 12. 120 13. 738 14. 381 15. 384
16. 636 17. 589 18. 368 19. 296 20. 631

Exercise 3.2C

1. 4973 2. 4149 3. 6176 4. 4881 5. 4847
6. 1211 7. 5968 8. 3393 9. 186 10. 857
11. 985 12. 4460 13. 747 14. 5775 15. 1184
16. 1436 17. 6189 18. 168 19. 5467 20. 1753

Exercise 3.3A

1. 49 2. 28 3. 24 4. 36 5. 37
6. 37 7. 36 8. 67 9. 38 10. 65
11. 38 12. 11 13. 58 14. 63 15. 12
16. 19 17. 17 18. 62 19. 44 20. 27

Exercise 3.3B

1. 31 2. 319 3. 275 4. 637 5. 218
6. 333 7. 162 8. 560 9. 636 10. 464
11. 162 12. 29 13. 269 14. 103 15. 111
16. 108 17. 199 18. 258 19. 49 20. 429

Exercise 3.3C

1. 1009 2. 1506 3. 6168 4. 2479 5. 8743
6. 2643 7. 4523 8. 2592 9. 6216 10. 12 433
11. 7296 12. 78 13. 5829 14. 2192 15. 552
16. 1577 17. 1980 18. 3073 19. 3721 20. 7493

Exercise 3.4A

1.
(a) 7911 (b) 9868 (c) 7984 (d) 8778
(e) 9012 (f) 10 440 (g) 9955 (h) 7881
(i) 7991 (j) 8950 (k) 9354 (l) 9175
2.
(a) 9003 (b) 4377 (c) 9048 (d) 5984
(e) 9945 (f) 9543 (g) 4359 (h) 9862
(i) 9968 (j) 11 845 (k) 8115 (l) 10 995
(m) 8001 (n) 7175 (o) 6216 (p) 9918
(q) 9961 (r) 9857 (s) 9984 (t) 8839

Exercise 3.4B

1.
(a) 112 110 (b) 71 074 (c) 83 776 (d) 98 874
(e) 54 362 (f) 64 090 (g) 97 989 (h) 41 174
2.
(a) 82 565 (b) 66 718 (c) 110 281 (d) 79 205
(e) 136 526 (f) 92 176 (g) 99 426 (h) 91 754
(i) 98 577 (j) 90 820 (k) 92 383 (l) 86 095
(m) 94 903 (n) 87 618 (o) 56 832 (p) 95 497
(q) 72 732 (r) 96 233 (s) 105 494 (t) 79 020
3.
(a) 82 557 (b) 95 578 (c) 98 683 (d) 30 929
(e) 18 430 (f) 22 099 (g) 33 106 (h) 37 638
(i) 7027 (j) 50 275 (k) 80 893 (l) 68 140
(m) 18 911 (n) 71 118 (o) 27 962 (p) 78 304
(q) 100 054 (r) 85 434 (s) 87 293 (t) 36 864

Exercise 3.5A

1.
(a) 1506 (b) 4024 (c) 1719 (d) 5221
(e) 3793 (f) 6347 (g) 2301 (h) 618
(i) 5609 (j) 5192 (k) 5307 (l) 5094
2.
(a) 2154 (b) 6912 (c) 2627 (d) 1869
(e) 1228 (f) 6836 (g) 3325 (h) 3957
(i) 125 (j) 935 (k) 2368 (l) 4488
(m) 4085 (n) 7086 (o) 1235 (p) 717
(q) 6067 (r) 337 (s) 5134 (t) 967

Exercise 3.5B

1.
(a) 31 666 (b) 3564 (c) 27 888 (d) 27 924
(e) 42 968 (f) 42 552 (g) 52 991 (h) 32 516
2.
(a) 9136 (b) 77 803 (c) 68 609 (d) 28 971
(e) 18 629 (f) 69 046 (g) 25 333 (h) 39 036
(i) 2225 (j) 12 930 (k) 6505 (l) 38 074
(m) 43 064 (n) 63 253 (o) 12 824 (p) 14 023
(q) 75 036 (r) 7257 (s) 54 323 (t) 9966

Exercise 3.6A

1. 104 598 2. 54 654 3. 128 435 4. 84 149
5. 289 018 6. 92 353 7. 99 735 8. 94 722
9. 96 253 10. 80 542 11. 93 378 12. 99 753
13. 65 647 14. 28 494 15. 93 737 16. 70 071

Exercise 3.6B

1. 23 928 2. 68 802 3. 28 522 4. 78 768 5. 2356
6. 52 044 7. 17 649 8. 49 154 9. 46 338 10. 9279

Exercise 3.7

1.
(a) 120 (b) 73 (c) 147 (d) 158 (e) 137
(f) 53 (g) 86 (h) 107 (i) 131 (j) 145
(k) 47 (l) 21 (m) 52 (n) 40 (o) 56
(p) 51 (q) 32 (r) 52 (s) 24 (t) 39

2.

- (a) 888 (b) 814 (c) 1381 (d) 544 (e) 682
(f) 538 (g) 810 (h) 760 (i) 1386 (j) 865
(k) 93 (l) 246 (m) 526 (n) 756 (o) 613
(p) 165 (q) 199 (r) 512 (s) 89 (t) 69

Exercise 3.8

3.1

- (a) 83 (b) 1661 (c) 14 792

3.2

- (a) 19 (b) 184 (c) 2158

3.3

- (a) 41 (b) 455 (c) 2576

3.4

- (a) 853 (b) 5765 (c) 44 554

3.5

- (a) 447 (b) 4967 (c) 11 505

3.6

- (a) 808 (b) 1262 (c) 444 (d) 622

3.7

- (a) 156 (b) 488 (c) 834
(d) 56 (e) 215 (f) 254

Chapter 4

Exercise 4.1A

1.

- (a) 18 (b) 44 (c) 50 (d) 2 (e) 32
(f) 20 (g) 21 (h) 18 (i) 4 (j) 9
(k) 10 (l) 12 (m) 20 (n) 8 (o) 45
(p) 12 (q) 60 (r) 6 (s) 30 (t) 30
(u) 8 (v) 36 (w) 15 (x) 28

2.

- (a) 8 (b) 7 (c) 6 (d) 3 (e) 11
(f) 3 (g) 2 (h) 5 (i) 4 (j) 5
(k) 9 (l) 1 (m) 9 (n) 6 (o) 4
(p) 4 (q) 3 (r) 5 (s) 1 (t) 5

Exercise 4.1B

1.

- (a) 48 (b) 77 (c) 9 (d) 70 (e) 54
(f) 56 (g) 72 (h) 35 (i) 72 (j) 49
(k) 60 (l) 45 (m) 8 (n) 28 (o) 27
(p) 64 (q) 36 (r) 56 (s) 32 (t) 63
(u) 30 (v) 81 (w) 56 (x) 63

2.

- (a) 5 (b) 8 (c) 10 (d) 2 (e) 5
(f) 7 (g) 9 (h) 8 (i) 6 (j) 8
(k) 6 (l) 2 (m) 4 (n) 8 (o) 3
(p) 6 (q) 9 (r) 8 (s) 8 (t) 9

Exercise 4.2

1.

- (a) 600 (b) 1900 (c) 520 (d) 2250
(e) 9090 (f) 5300 (g) 4400 (h) 3400
(i) 106 500 (j) 4020 (k) 10 010 (l) 5420
(m) 439 000 (n) 67 750 (o) 70 280

2.
 (a) 12 500 (b) 45 200 (c) 90 800 (d) 2100
 (e) 10 500 (f) 800 (g) 10 000 (h) 33 300
 (i) 97 800 (j) 289 000 (k) 30 900 (l) 15 000
 (m) 30 800 (n) 342 300 (o) 2 340 000

3.
 (a) 2000 (b) 622 000 (c) 11 000 (d) 202 000
 (e) 434 000 (f) 10 000 (g) 780 000 (h) 24 000
 (i) 782 000 (j) 355 000 (k) 234 000 (l) 50 000
 (m) 90 000 (n) 39 000 (o) 912 000

Exercise 4.3A

1. 120 2. 350 3. 480 4. 360 5. 360
 6. 420 7. 360 8. 240 9. 80 10. 320
 11. 780 12. 1420 13. 1000 14. 480 15. 5760

Exercise 4.3B

1. 2000 2. 4800 3. 1200 4. 4000
 5. 8100 6. 3000 7. 2800 8. 5600
 9. 2400 10. 2400 11. 9200 12. 18 000
 13. 9900 14. 21 500 15. 14 800

Exercise 4.3C

1. 48 000 2. 20 000 3. 18 000 4. 10 000
 5. 63 000 6. 18 000 7. 12 000 8. 14 000
 9. 54 000 10. 21 000 11. 540 000 12. 423 000
 13. 90 000 14. 712 000 15. 304 000

Exercise 4.4A

1.
 (a) 128 (b) 159 (c) 152 (d) 460 (e) 312
 (f) 207 (g) 244 (h) 90 (i) 88 (j) 231
 (k) 272 (l) 184 (m) 116 (n) 126 (o) 258
 (p) 147 (q) 237 (r) 112
2.
 (a) 204 (b) 602 (c) 282 (d) 208 (e) 288
 (f) 623 (g) 371 (h) 462 (i) 406 (j) 576
 (k) 768 (l) 738 (m) 592 (n) 864 (o) 702
 (p) 582 (q) 603 (r) 252
3.
 (a) 66 (b) 426 (c) 192 (d) 270 (e) 64
 (f) 69 (g) 240 (h) 185 (i) 261 (j) 119
 (k) 196 (l) 390 (m) 1680 (n) 380 (o) 1400
 (p) 3250 (q) 2040 (r) 3850

Exercise 4.4B

1.
 (a) 88 (b) 237 (c) 48 (d) 455 (e) 324
 (f) 174 (g) 204 (h) 178 (i) 184 (j) 123
 (k) 276 (l) 248 (m) 58 (n) 198 (o) 213
 (p) 147 (q) 156 (r) 156
2.
 (a) 252 (b) 483 (c) 186 (d) 656 (e) 474
 (f) 612 (g) 294 (h) 497 (i) 574 (j) 624

- (k) 416 (l) 882 (m) 328 (n) 801 (o) 558
 (p) 354 (q) 279 (r) 468
3.
 (a) 93 (b) 180 (c) 219 (d) 455 (e) 783
 (f) 760 (g) 464 (h) 390 (i) 136 (j) 256
 (k) 378 (l) 574 (m) 1300 (n) 1110 (o) 2200
 (p) 1800 (q) 2460 (r) 5180

Exercise 4.5A

1.
 (a) 380 (b) 252 (c) 696 (d) 644 (e) 252
 (f) 345 (g) 184 (h) 747 (i) 330 (j) 460
 (k) 258 (l) 72 (m) 217 (n) 392 (o) 585
 (p) 693 (q) 280 (r) 420 (s) 760 (t) 756
2.
 (a) 406 (b) 414 (c) 460 (d) 376 (e) 567
 (f) 632 (g) 612 (h) 170 (i) 216 (j) 288
 (k) 720 (l) 434 (m) 230 (n) 390 (o) 352
 (p) 222 (q) 344 (r) 378

Exercise 4.5B

1.
 (a) 3730 (b) 1306 (c) 6384 (d) 5496 (e) 4488
 (f) 7191 (g) 3521 (h) 1940 (i) 1645 (j) 5985
 (k) 4974 (l) 1799 (m) 1704 (n) 1350 (o) 2810
2.
 (a) 4452 (b) 5080 (c) 4570 (d) 2628 (e) 2360
 (f) 6876 (g) 2760 (h) 1910 (i) 1959 (j) 5026
 (k) 3048 (l) 5872 (m) 2344 (n) 5312 (o) 8235
 (p) 3042 (q) 6510 (r) 4239

Exercise 4.5C

1.
 (a) 66 262 (b) 37 610 (c) 31 956 (d) 25 192
 (e) 29 064 (f) 46 005 (g) 60 040 (h) 39 897
 (i) 48 660 (j) 22 498 (k) 8785 (l) 23 712
 (m) 68 040 (n) 55 458
2.
 (a) 33 576 (b) 62 216 (c) 26 640 (d) 20 466
 (e) 5225 (f) 45 261 (g) 29 940 (h) 45 945
 (i) 17 298 (j) 18 681 (k) 11 964 (l) 50 216
 (m) 36 376 (n) 57 256 (o) 25 956 (p) 55 098
 (q) 33 950 (r) 35 208

Exercise 4.6A

1.
 (a) 11 (b) 12 (c) 9 (d) 12 (e) 9
 (f) 11 (g) 11 (h) 12 (i) 10 (j) 11
 (k) 8 (l) 9 (m) 7 (n) 8 (o) 8
 (p) 9 (q) 12 (r) 10 (s) 7 (t) 5
 (u) 6 (v) 10 (w) 10 (x) 6
2.
 (a) 12 (b) 11 (c) 12 (d) 11 (e) 11
 (f) 10 (g) 11 (h) 10 (i) 8 (j) 12

- | | | | | |
|-------|--------|--------|-------|-------|
| (k) 9 | (l) 12 | (m) 10 | (n) 9 | (o) 9 |
| (p) 8 | (q) 7 | (r) 9 | (s) 6 | (t) 7 |
| (u) 5 | (v) 7 | (w) 8 | (x) 4 | |

Exercise 4.6B

- 1.
- | | | | | |
|-------|-------|-------|--------|-------|
| (a) 6 | (b) 6 | (c) 9 | (d) 10 | (e) 9 |
| (f) 7 | (g) 4 | (h) 2 | (i) 2 | (j) 3 |
| (k) 5 | (l) 7 | (m) 3 | (n) 10 | (o) 7 |
| (p) 3 | (q) 4 | (r) 3 | (s) 8 | (t) 2 |
| (u) 1 | (v) 8 | (w) 5 | (x) 1 | |
- 2.
- | | | | | |
|-------|-------|--------|--------|-------|
| (a) 9 | (b) 6 | (c) 5 | (d) 9 | (e) 6 |
| (f) 2 | (g) 9 | (h) 10 | (i) 7 | (j) 8 |
| (k) 6 | (l) 7 | (m) 10 | (n) 11 | (o) 4 |
| (p) 3 | (q) 7 | (r) 2 | (s) 3 | (t) 1 |
| (u) 5 | (v) 4 | (w) 4 | (x) 5 | |
- 3.
- | | | | | |
|--------|--------|--------|--------|---------|
| (a) 9 | (b) 5 | (c) 10 | (d) 7 | (e) 8 |
| (f) 40 | (g) 24 | (h) 63 | (i) 64 | (j) 48 |
| (k) 2 | (l) 12 | (m) 4 | (n) 8 | (o) 5 |
| (p) 49 | (q) 30 | (r) 66 | (s) 36 | (t) 110 |

Exercise 4.7

- 1.
- | | | | |
|---------|----------|----------|----------|
| (a) 50 | (b) 167 | (c) 42 | (d) 2040 |
| (e) 702 | (f) 5350 | (g) 1391 | (h) 1250 |
| (i) 302 | (j) 65 | (k) 2301 | (l) 1192 |
| (m) 44 | (n) 909 | (o) 1600 | |
- 2.
- | | | | |
|---------|---------|---------|---------|
| (a) 140 | (b) 411 | (c) 998 | (d) 325 |
| (e) 223 | (f) 9 | (g) 290 | (h) 310 |
| (i) 4 | (j) 112 | (k) 995 | (l) 2 |
| (m) 560 | (n) 650 | (o) 7 | (p) 389 |
- 3.
- | | | | |
|---------|---------|---------|---------|
| (a) 4 | (b) 23 | (c) 150 | (d) 340 |
| (e) 11 | (f) 540 | (g) 13 | (h) 99 |
| (i) 54 | (j) 29 | (k) 562 | (l) 900 |
| (m) 765 | (n) 123 | (o) 66 | (p) 12 |

Exercise 4.8A

- | | | | | |
|--------|--------|---------|--------|--------|
| 1. 16 | 2. 6 | 3. 9 | 4. 7 | 5. 5 |
| 6. 8 | 7. 16 | 8. 14 | 9. 13 | 10. 8 |
| 11. 26 | 12. 24 | 13. 35 | 14. 41 | 15. 47 |
| 16. 38 | 17. 48 | 18. 160 | 19. 19 | 20. 21 |

Exercise 4.8B

- | | | | | |
|--------|--------|--------|--------|--------|
| 1. 13 | 2. 12 | 3. 15 | 4. 14 | 5. 130 |
| 6. 23 | 7. 18 | 8. 17 | 9. 54 | 10. 11 |
| 11. 24 | 12. 64 | 13. 31 | 14. 25 | 15. 14 |
| 16. 16 | 17. 36 | 18. 41 | 19. 29 | 20. 22 |

Exercise 4.8C

- | | | | | |
|-------|-------|-------|-------|--------|
| 1. 19 | 2. 23 | 3. 25 | 4. 5 | 5. 17 |
| 6. 16 | 7. 43 | 8. 17 | 9. 24 | 10. 34 |

- | | | | | |
|--------|--------|--------|--------|--------|
| 11. 43 | 12. 52 | 13. 41 | 14. 47 | 15. 28 |
| 16. 29 | 17. 8 | 18. 58 | 19. 14 | 20. 65 |

Exercise 4.9

- 1.
- | | | | | |
|---------|--------|--------|--------|--------|
| (a) 21 | (b) 32 | (c) 16 | (d) 13 | (e) 15 |
| (f) 21 | (g) 52 | (h) 24 | (i) 18 | (j) 25 |
| (k) 113 | (l) 27 | (m) 15 | (n) 17 | (o) 34 |
| (p) 70 | (q) 19 | (r) 43 | (s) 29 | (t) 32 |
- 2.
- | | | | | |
|--------|--------|--------|--------|--------|
| (a) 24 | (b) 13 | (c) 21 | (d) 30 | (e) 14 |
| (f) 17 | (g) 31 | (h) 32 | (i) 12 | (j) 14 |
| (k) 13 | (l) 18 | (m) 17 | (n) 28 | (o) 18 |
| (p) 21 | (q) 26 | (r) 20 | (s) 19 | (t) 24 |

Exercise 4.10A

- | | | | | |
|----------|---------|----------|---------|---------|
| 1. 1301 | 2. 328 | 3. 647 | 4. 987 | 5. 514 |
| 6. 365 | 7. 658 | 8. 1578 | 9. 788 | 10. 888 |
| 11. 1357 | 12. 596 | 13. 322 | 14. 856 | 15. 477 |
| 16. 241 | 17. 587 | 18. 2350 | 19. 986 | 20. 624 |

Exercise 4.10B

- | | | | | |
|----------|------------|-----------|----------|----------|
| 1. 8935 | 2. 5485 | 3. 15 796 | 4. 3247 | 5. 5478 |
| 6. 3258 | 7. 6777 | 8. 5263 | 9. 6852 | 10. 9658 |
| 11. 2359 | 12. 7899 | 13. 3269 | 14. 9568 | 15. 5622 |
| 16. 9002 | 17. 19 740 | 18. 6541 | 19. 7411 | 20. 5244 |

Exercise 4.10C

- | | | | |
|-------------|-------------|-------------|------------|
| 1. 118 159 | 2. 56 844 | 3. 157 200 | 4. 45 867 |
| 5. 152 359 | 6. 135 756 | 7. 98 563 | 8. 56 235 |
| 9. 96 574 | 10. 84 578 | 11. 54 132 | 12. 65 236 |
| 13. 53 286 | 14. 283 821 | 15. 96 533 | 16. 98 564 |
| 17. 180 152 | 18. 85 296 | 19. 339 426 | 20. 63 251 |

Exercise 4.11A

- | | | | |
|-------------|-------------|-------------|--------------|
| 1. 1157 r 4 | 2. 877 r 3 | 3. 3115 r 1 | 4. 760 r 2 |
| 5. 314 r 1 | 6. 1350 r 1 | 7. 1829 r 1 | 8. 1961 r 2 |
| 9. 802 r 3 | 10. 392 r 3 | 11. 228 r 4 | 12. 2421 r 3 |
| 13. 926 r 3 | 14. 431 r 6 | 15. 163 r 3 | |

Exercise 4.11B

- | | | | |
|---------------|----------------|---------------|--------------|
| 1. 12 377 r 4 | 2. 4118 r 2 | 3. 15 288 | 4. 24132 r 3 |
| 5. 4591 r 4 | 6. 1678 r 1 | 7. 18 292 r 1 | 8. 1849 r 7 |
| 9. 29 841 r 2 | 10. 3339 r 1 | 11. 2083 r 1 | 12. 6399 r 3 |
| 13. 8919 r 1 | 14. 10 015 r 6 | 15. 6086 r 3 | |

Exercise 4.11C

- | | | | |
|-----------------|-----------------|----------------|----------------|
| 1. 135 780 r 2 | 2. 17 798 r 2 | 3. 152 957 r 3 | 4. 16 738 r 5 |
| 5. 53 274 r 2 | 6. 95 710 r 2 | 7. 116 370 r 3 | 8. 80 444 r 2 |
| 9. 15 126 r 1 | 10. 142 616 r 2 | 11. 24 902 r 4 | 12. 69 833 r 5 |
| 13. 100 084 r 8 | 14. 337 949 r 1 | 15. 54 507 r 2 | |

Exercise 4.12A

- | | | | | |
|----------|----------|----------|----------|----------|
| 1. 855 | 2. 1288 | 3. 494 | 4. 4455 | 5. 896 |
| 6. 240 | 7. 2184 | 8. 361 | 9. 2992 | 10. 8036 |
| 11. 1938 | 12. 629 | 13. 8613 | 14. 3465 | 15. 4891 |
| 16. 900 | 17. 1323 | 18. 1802 | | |

Exercise 4.12B

1. 544 2. 1558 3. 840 4. 4514 5. 1764
6. 960 7. 5550 8. 342 9. 4018 10. 4056
11. 2508 12. 1564 13. 3403 14. 3588 15. 3741
16. 2200 17. 2090 18. 4717

Exercise 4.12C

1. 1403 2. 4088 3. 1700 4. 1539
5. 2646 6. 1095 7. 3888 8. 1672
9. 4365 10. 2090 11. 2142 12. 910
13. 3149 14. 2080 15. 828 16. 2025
17. 6768 18. 4851

Exercise 4.13

- 4.1
(a) 40 (b) 49 (c) 24
(d) 6 (e) 36 (f) 54
- 4.2
(a) 340 180 (b) 77 800 900 (c) 2 889 000
- 4.3
(a) 420 (b) 32 000 (c) 180 000
- 4.4
(a) 96 (b) 679 (c) 264
- 4.5
(a) 1570 (b) 35 640 (c) 496 728
- 4.6
(a) 7 (b) 8 (c) 5
(d) 8 (e) 8 (f) 9
- 4.7
(a) 8786 (b) 9181 (c) 524
- 4.8
(a) 2415 (b) 253 (c) 177
- 4.9
(a) 24 (b) 16 (c) 46
- 4.10
(a) 102 (b) 1425 (c) 36 524
- 4.11
(a) 603 r 3 (b) 18528 r 2 (c) 62764 r 5
- 4.12
(a) 2856 (b) 2752 (c) 3822
(d) 416 (e) 5518 (f) 949

Chapter 5

Exercise 5.1

1. 3, 6, 9, 12, 15, 18, 21, 24
2. 5, 10, 15, 20, 25, 30, 35, 40
3. 6, 12, 18, 24, 30, 36, 42, 48
4. 8, 16, 24, 32, 40, 48, 56, 64
5. 9, 18, 27, 36, 45, 54, 63, 72
6. 11, 22, 33, 44, 55, 66, 77, 88
7. 30, 60, 90, 120, 150, 180, 210, 240
8. 18, 36, 54, 72, 90, 108, 126, 144
9. 45, 90, 135, 180, 225, 270, 315, 360

10. 14, 28, 42, 56, 70, 84, 98, 112
11. 22, 44, 66, 88, 110, 132, 154, 176
12. 31, 62, 93, 124, 155, 186, 217, 248
13. 50, 100, 150, 200, 250, 300, 350, 400
14. 150, 300, 450, 600, 750, 900, 1050, 1200
15. 200, 400, 600, 800, 1000, 1200, 1400, 1600

Exercise 5.2

1. 1, 2, 7, 14
2. 1, 3, 11, 33
3. 1, 2, 4, 5, 8, 10, 16, 20, 40, 80
4. 1, 2, 4, 7, 8, 14, 28, 56
5. 1, 2, 3, 6, 7, 14, 21, 42
6. 1, 3, 5, 15
7. 1, 2, 3, 6
8. 1, 19
9. 1, 2, 3, 5, 6, 9, 10, 15, 18, 30, 45, 90
10. 1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20, 24, 30, 40, 60, 120
11. 1, 2, 4, 5, 8, 10, 20, 25, 40, 50, 100, 200
12. 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60
13. 1, 3
14. 1, 59
15. 1, 3, 5, 15, 25, 75
16. 1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72
17. 1, 2, 5, 10, 25, 50
18. 1, 7
19. 1, 11
20. 1, 5, 13, 65

Exercise 5.3

- 5.1
(a) 16, 32, 48, 64, 80, 96, 112, 128
(b) 4, 8, 12, 16, 20, 24, 28, 32
(c) 10, 20, 30, 40, 50, 60, 70, 80
(d) 9, 18, 27, 36, 45, 54, 63, 72
(e) 21, 42, 63, 84, 105, 126, 147, 168
(f) 14, 28, 42, 56, 70, 84, 98, 112
- 5.2
(a) 1, 2, 3, 4, 6, 12 (b) 1, 2, 4, 5, 8, 10, 20, 40
(c) 1, 5, 11, 55 (d) 1, 2, 4, 5, 10, 20
(e) 1, 2, 3, 6, 9, 18 (f) 1, 17

Chapter 6

Exercise 6.1

1.
(a) 15, 25, 43, 78 (b) 11, 42, 65, 90 (c) 22, 53, 97, 100
(d) 12, 33, 34, 50 (e) 70, 73, 74, 77 (f) 44, 54, 74, 84
(g) 11, 13, 14, 18 (h) 60, 62, 63, 68 (i) 31, 34, 92, 97
(j) 71, 72, 73, 79 (k) 41, 45, 46, 48 (l) 20, 21, 30, 41
2.
(a) 78, 64, 52, 17 (b) 84, 55, 32, 20 (c) 47, 30, 22, 18
(d) 182, 61, 58, 32 (e) 98, 71, 35, 12 (f) 78, 55, 48, 12

- (g) 92, 78, 50, 35 (h) 63, 50, 29, 10 (i) 71, 67, 53, 20
 (j) 97, 91, 42, 22 (k) 74, 54, 23, 16 (l) 92, 89, 80, 29

Exercise 6.2A

- $a = -5$; $b = -11$; $c = -15$; $d = -1$
- $a = -17$; $b = -7$; $c = -14$; $d = -6$
- $a = -15$; $b = -3$; $c = -12$; $d = -18$
- $a = -1$; $b = -13$; $c = -9$; $d = -19$
- $a = -13$; $b = -16$; $c = -6$; $d = -14$

Exercise 6.2B

- | | |
|----------------------------|----------------------------|
| (a) -9, -8, -6, -4, -3, -2 | (b) -9, -8, -7, -6, -3, -1 |
| (c) -9, -8, -6, -4, -3, -1 | (d) -9, -8, -7, -5, -3, -2 |
| (e) -9, -6, -5, -3, -2, -1 | (f) -9, -7, -5, -3, -2, -1 |
| (g) -7, -6, -5, -3, -2, -1 | (h) -7, -6, -5, -4, -3, -2 |
| (i) -9, -7, -6, -4, -3, -2 | (j) -9, -7, -6, -5, -4, -1 |
- | | |
|----------------------------------|----------------------------------|
| (a) -18, -17, -16, -16, -13, -10 | (b) -20, -19, -18, -16, -13, -11 |
| (c) -19, -18, -16, -14, -13, -10 | (d) -19, -18, -17, -15, -13, -12 |
| (e) -19, -16, -15, -13, -12, -11 | (f) -17, -15, -14, -12, -11, -10 |
| (g) -20, -17, -16, -13, -12, -11 | (h) -20, -17, -16, -15, -14, -13 |
| (i) -19, -17, -14, -13, -12, -11 | (j) -19, -17, -16, -15, -14, -11 |
- | | |
|--------------------------------|--------------------------------|
| (a) -1, -5, -9, -15, -16, -18 | (b) -2, -7, -8, -10, -15, -20 |
| (c) -2, -5, -9, -10, -14, -17 | (d) -2, -9, -11, -13, -14, -17 |
| (e) -1, -8, -11, -12, -13, -15 | (f) -1, -4, -5, -10, -13, -17 |
| (g) -1, -5, -6, -16, -19, -20 | (h) -3, -4, -7, -12, -16, -17 |
| (i) -1, -3, -7, -9, -13, -16 | (j) -1, -2, -4, -8, -9, -15 |

Exercise 6.3A

- | | |
|---------------------------|-------------------------|
| (a) -6, -3, -2, 1, 4, 9 | (b) -7, -4, -2, 5, 8, 9 |
| (c) -9, -7, -5, -1, 1, 2 | (d) -7, -4, -2, 1, 3, 8 |
| (e) -8, -7, -5, -2, 2, 6 | (f) -8, -1, 1, 2, 4, 9 |
| (g) -6, -5, 2, 3, 5, 9 | (h) -9, -7, -4, 1, 2, 3 |
| (i) -8, -6, -5, -4, -3, 8 | |
- | | |
|-------------------------------|-------------------------------|
| (a) -1, -5, -9, -15, -16, -18 | (b) -2, -7, -8, -10, -15, -20 |
| (c) 19, 16, 11, -11, -15, -16 | (d) 19, 18, 6, -8, -12, -14 |
| (e) 11, 3, -9, -10, -15, -16 | (f) 20, 11, 6, -1, -16, -18 |
| (g) 15, 12, -3, -17, -18, -20 | (h) 19, 13, 4, 2, -11, -18 |
| (i) 13, 10, 8, 2, -6, -17 | (j) 13, 11, 2, -7, -14, -15 |
| (k) 13, 8, -5, -13, -14, -18 | (l) 4, -6, -10, -12, -18, -20 |

Exercise 6.3B

- | | | | |
|----------------|----------------|-----------------|---------------|
| 1. $-15 < 7$ | 2. $-6 < -4$ | 3. $-5 > -20$ | 4. $-10 < -6$ |
| 5. $-11 < 20$ | 6. $-18 < -10$ | 7. $9 > -2$ | 8. $-9 < -8$ |
| 9. $16 > 8$ | 10. $-17 < 5$ | 11. $5 > -17$ | 12. $13 > -9$ |
| 13. $18 > -15$ | 14. $7 < 9$ | 15. $-4 > -9$ | 16. $20 > 5$ |
| 17. $-5 > -8$ | 18. $-14 < -1$ | 19. $-11 > -20$ | 20. $-3 < -1$ |

Exercise 6.3C

- $-5, -4, -3, -2, -1, 0$
- $-6, -5, -4, -3, -2, -1$
- $-22, -20, -18, -16, -16, -14$
- $3, 2, 1, 0, -1, -2$
- $3, 2, 1, 0, -1, -2$
- $-4, -3, -2, -1, 0, 1$
- $-4, -2, 0, 2, 4, 6$
- $2, 0, -2, -4, -6, -8$
- $6, 3, 0, -3, -6, -9$
- $-20, -10, 0, 10, 20, 30$
- $-7, -4, -1, 2, 5, 8$
- $-9, -5, -1, 3, 7, 11$
- $10, 5, 0, -5, -10, -15$
- $-8, -3, 2, 7, 12, 17$

Exercise 6.4

- | | | |
|--------------------|--------------------|--------------------|
| (a) 15, 24, 71, 99 | (b) 10, 15, 65, 88 | (c) 11, 16, 28, 75 |
|--------------------|--------------------|--------------------|
- | | | |
|--------------------|----------------------|----------------------|
| (a) -9, -7, -5, -2 | (b) -12, -10, -8, -1 | (c) -17, -14, -8, -6 |
|--------------------|----------------------|----------------------|
- | | | |
|--------------------|---------------------|--------------------|
| (a) -7, -6, 13, 19 | (b) -18, -10, -1, 2 | (c) -20, -4, 9, 16 |
|--------------------|---------------------|--------------------|

Chapter 7

Exercise 7.1A

- $\frac{4}{5}$
- $\frac{1}{7}$
- $\frac{3}{6}$ or $\frac{1}{2}$
- $\frac{5}{9}$
- $\frac{4}{8}$ or $\frac{1}{2}$
- $\frac{6}{9}$ or $\frac{2}{3}$
- $\frac{6}{10}$ or $\frac{3}{5}$
- $\frac{2}{4}$ or $\frac{1}{2}$

Exercise 7.1B

- $\frac{5}{10}$ or $\frac{1}{2}$
- $\frac{2}{4}$ or $\frac{1}{2}$
- $\frac{2}{6}$ or $\frac{1}{3}$
- $\frac{5}{7}$
- $\frac{1}{4}$
- $\frac{1}{7}$
- $\frac{7}{10}$
- $\frac{3}{5}$
- $\frac{3}{10}$
- $\frac{2}{4}$ or $\frac{1}{2}$
- $\frac{2}{6}$ or $\frac{1}{3}$
- $\frac{1}{4}$
- $\frac{6}{8}$
- $\frac{7}{10}$
- $\frac{6}{12}$ or $\frac{1}{2}$
- $\frac{8}{10}$ or $\frac{4}{5}$
- $\frac{8}{15}$
- $\frac{13}{18}$

Exercise 7.1C

- | | |
|--------------------------|--------------------------|
| (a) Any 4 boxes coloured | (b) Any 5 boxes coloured |
| (c) Any 6 boxes coloured | (d) Any 8 boxes coloured |
| (e) Any 9 boxes coloured | (f) Any 4 boxes coloured |
| (g) Any 5 boxes coloured | (h) Any 6 boxes coloured |
- | | |
|---------------------------|---------------------------|
| (a) Any 4 boxes coloured | (b) Any 2 boxes coloured |
| (c) Any 4 boxes coloured | (d) Any 10 boxes coloured |
| (e) Any 11 boxes coloured | (f) Any 8 boxes coloured |
| (g) Any 10 boxes coloured | (h) Any 16 boxes coloured |
- | | | |
|---|------------------------------|--|
| $\frac{4}{8} = \frac{5}{10} = \frac{6}{12} = \frac{1}{2}$ | $\frac{8}{12} = \frac{2}{3}$ | $\frac{4}{12} = \frac{5}{15} = \frac{6}{18} = \frac{1}{3}$ |
|---|------------------------------|--|

Exercise 7.2

- | | | | |
|--|--|--|--|
| (a) $\frac{2}{10}, \frac{3}{15}, \frac{4}{20}$ | (b) $\frac{2}{16}, \frac{3}{24}, \frac{4}{32}$ | (c) $\frac{2}{20}, \frac{3}{30}, \frac{4}{40}$ | (d) |
| $\frac{2}{8}, \frac{3}{12}, \frac{4}{16}$ | (e) $\frac{2}{6}, \frac{3}{9}, \frac{4}{12}$ | (f) $\frac{2}{4}, \frac{3}{6}, \frac{4}{8}$ | (g) $\frac{2}{12}, \frac{3}{18}, \frac{4}{24}$ |
| (h) $\frac{2}{14}, \frac{3}{21}, \frac{4}{28}$ | | | |

- (i) $\frac{2}{18}, \frac{3}{27}, \frac{4}{36}$ (j) $\frac{2}{22}, \frac{3}{33}, \frac{4}{44}$
- 2.
- (a) $\frac{4}{16}, \frac{6}{24}, \frac{8}{32}$ (b) $\frac{6}{8}, \frac{9}{12}, \frac{12}{16}$ (c) $\frac{8}{14}, \frac{12}{21}, \frac{16}{28}$
- (d) $\frac{6}{10}, \frac{9}{15}, \frac{12}{20}$ (e) $\frac{4}{12}, \frac{6}{18}, \frac{8}{24}$ (f) $\frac{8}{20}, \frac{12}{30}, \frac{16}{40}$
- (g) $\frac{10}{12}, \frac{15}{18}, \frac{20}{24}$ (h) $\frac{12}{20}, \frac{18}{30}, \frac{24}{40}$ (i) $\frac{6}{16}, \frac{9}{24}, \frac{12}{32}$
- (j) $\frac{8}{16}, \frac{12}{24}, \frac{16}{32}$ (k) $\frac{12}{18}, \frac{18}{27}, \frac{24}{36}$ (l) $\frac{12}{14}, \frac{18}{21}, \frac{24}{28}$
- (m) $\frac{14}{16}, \frac{21}{24}, \frac{28}{32}$ (n) $\frac{4}{18}, \frac{6}{27}, \frac{8}{36}$ (o) $\frac{16}{18}, \frac{24}{27}, \frac{32}{36}$
- (p) $\frac{4}{20}, \frac{6}{30}, \frac{8}{40}$ (q) $\frac{6}{12}, \frac{9}{18}, \frac{12}{24}$ (r) $\frac{6}{20}, \frac{9}{30}, \frac{12}{40}$
- (s) $\frac{4}{10}, \frac{6}{15}, \frac{8}{20}$ (t) $\frac{10}{14}, \frac{15}{21}, \frac{20}{28}$

Exercise 7.3

- 1.
- (a) $\frac{2}{4}$ (b) $\frac{1}{3}$ (c) $\frac{1}{4}$ (d) $\frac{1}{4}$
- (e) $\frac{1}{5}$ (f) $\frac{1}{8}$ (g) $\frac{2}{10}$ (h) $\frac{1}{7}$
- (i) $\frac{2}{3}$ (j) $\frac{2}{5}$ (k) $\frac{2}{3}$ (l) $\frac{2}{6}$
- (m) $\frac{1}{10}$ (n) $\frac{2}{10}$ (o) $\frac{1}{50}$
- 2.
- (a) $\frac{1}{2}$ (b) $\frac{5}{7}$ (c) $\frac{6}{7}$ (d) $\frac{1}{2}$
- (e) $\frac{3}{4}$ (f) $\frac{5}{6}$ (g) $\frac{3}{7}$ (h) $\frac{5}{6}$
- (i) $\frac{3}{4}$ (j) $\frac{1}{2}$ (k) $\frac{4}{5}$ (l) $\frac{1}{2}$
- (m) $\frac{2}{3}$ (n) $\frac{1}{3}$ (o) $\frac{5}{8}$ (p) $\frac{2}{3}$
- (q) $\frac{1}{4}$ (r) $\frac{1}{3}$ (s) $\frac{1}{2}$ (t) $\frac{1}{3}$

Exercise 7.4A

1. $\frac{1}{3}, \frac{2}{3}, \frac{3}{3}$ 2. $\frac{1}{5}, \frac{2}{5}, \frac{4}{5}$ 3. $\frac{3}{10}, \frac{5}{10}, \frac{9}{10}$ 4. $\frac{1}{6}, \frac{2}{6}, \frac{4}{6}$
5. $\frac{7}{9}, \frac{8}{9}, \frac{9}{9}$ 6. $\frac{1}{4}, \frac{2}{4}, \frac{3}{4}$ 7. $\frac{2}{8}, \frac{6}{8}, \frac{7}{8}$ 8. $\frac{2}{8}, \frac{3}{8}, \frac{6}{8}$

Exercise 7.4B

- 1.
- (a) $\frac{2}{4} < \frac{5}{8}$ (b) $\frac{1}{4} = \frac{2}{8}$ (c) $\frac{2}{3} > \frac{3}{6}$ (d) $\frac{1}{2} = \frac{5}{10}$
- (e) $\frac{2}{4} < \frac{5}{8}$ (f) $\frac{4}{5} > \frac{3}{10}$ (g) $\frac{5}{9} < \frac{2}{3}$ (h) $\frac{3}{8} > \frac{1}{4}$
- (i) $\frac{4}{10} < \frac{3}{5}$ (j) $\frac{3}{6} > \frac{1}{3}$ (k) $\frac{5}{10} < \frac{3}{5}$ (l) $\frac{3}{5} < \frac{7}{10}$
- (m) $\frac{4}{8} = \frac{2}{4}$ (n) $\frac{6}{10} > \frac{1}{5}$ (o) $\frac{2}{3} > \frac{2}{6}$ (p) $\frac{3}{9} = \frac{1}{3}$
- (q) $\frac{1}{5} < \frac{5}{10}$ (r) $\frac{3}{8} < \frac{1}{2}$ (s) $\frac{3}{4} > \frac{1}{2}$ (t) $\frac{2}{4} < \frac{7}{8}$
- 2.
- (a) $\frac{3}{6} > \frac{1}{9}$ (b) $\frac{2}{5} < \frac{1}{2}$ (c) $\frac{2}{3} > \frac{3}{5}$ (d) $\frac{1}{4} < \frac{5}{6}$
- (e) $\frac{2}{5} < \frac{2}{3}$ (f) $\frac{4}{7} > \frac{3}{8}$ (g) $\frac{3}{4} > \frac{2}{3}$ (h) $\frac{3}{9} > \frac{1}{5}$
- (i) $\frac{5}{7} < \frac{4}{5}$ (j) $\frac{5}{10} = \frac{2}{4}$ (k) $\frac{6}{8} > \frac{3}{6}$ (l) $\frac{3}{4} < \frac{4}{5}$
- (m) $\frac{4}{8} > \frac{2}{6}$ (n) $\frac{1}{2} < \frac{3}{5}$ (o) $\frac{3}{7} > \frac{2}{6}$ (p) $\frac{3}{5} > \frac{3}{6}$
- (q) $\frac{1}{4} < \frac{3}{7}$ (r) $\frac{3}{8} < \frac{3}{6}$ (s) $\frac{1}{2} < \frac{5}{9}$ (t) $\frac{6}{9} > \frac{2}{6}$

Exercise 7.5A

1. 8 2. 25 3. 8 4. 18 5. 9
6. 11 7. 40 8. 12 9. 8 10. 12
11. 14 12. 4 13. 5 14. 20 15. 20
16. 15 17. 7 18. 11 19. 3 20. 5

Exercise 7.5B

1. 16 2. 20 3. 40 4. 72 5. 27
6. 22 7. 24 8. 48 9. 40 10. 84
11. 24 12. 8 13. 20 14. 56 15. 120
16. 30 17. 28 18. 33 19. 14 20. 30

Exercise 7.6

- 7.1
- (a) $\frac{6}{10}$ or $\frac{3}{5}$ (b) $\frac{7}{10}$ (c) $\frac{2}{6}$ or $\frac{1}{3}$ (d) $\frac{8}{9}$
- 7.2
- (a) $\frac{6}{12}, \frac{9}{18}, \frac{12}{24}$ (b) $\frac{10}{16}, \frac{15}{24}, \frac{20}{32}$ (c) $\frac{4}{18}, \frac{6}{27}, \frac{8}{36}$
- 7.3
- (a) $\frac{8}{9}$ (b) $\frac{2}{3}$ (c) $\frac{1}{2}$
- 7.4
- (a) $\frac{3}{5} > \frac{2}{4}$ (b) $\frac{5}{7} > \frac{4}{6}$ (c) $\frac{1}{3} = \frac{3}{9}$
- 7.5
- (a) 15 (b) 15 (c) 16

Chapter 8

Exercise 8.1A

1. (a) $\frac{52}{100}$ (b) 0.52 2. (a) $\frac{34}{100}$ (b) 0.34
3. (a) $\frac{25}{100}$ (b) 0.25 4. (a) $\frac{48}{100}$ (b) 0.48
5. (a) $\frac{66}{100}$ (b) 0.66 6. (a) $\frac{91}{100}$ (b) 0.91
7. (a) $\frac{99}{100}$ (b) 0.99 8. (a) $\frac{72}{100}$ (b) 0.72
9. (a) $\frac{56}{100}$ (b) 0.56 10. (a) $\frac{5}{100}$ (b) 0.05
11. (a) $\frac{21}{100}$ (b) 0.21 12. (a) $\frac{59}{100}$ (b) 0.59
13. (a) $\frac{90}{100}$ (b) 0.9 14. (a) $\frac{37}{100}$ (b) 0.37
15. (a) $\frac{46}{100}$ (b) 0.46 16. (a) $\frac{84}{100}$ (b) 0.84
17. (a) $\frac{100}{100}$ (b) 1 18. (a) $\frac{97}{100}$ (b) 0.97

Exercise 8.1B

1. 0.7 2. 0.5 3. 1.3 4. 0.38
5. 0.04 6. 0.3 7. 5.93 8. 7.06
9. 8.54 10. 10.3 11. 20.95 12. 7.08
13. 19.61 14. 40.82 15. 4.05 16. 6.4
17. 7.51 18. 0.32 19. 4.1 20. 35.03

Exercise 8.2A

1. Two tenths and four hundredths
2. Four units, nine tenths and eight hundredths
3. Six hundredths
4. Two units, three tenths and five hundredths
5. Seven units, eight tenths and seven hundredths

6. One tenth and five hundredths
7. Seven hundredths
8. Two units, two tenths and two hundredths
9. Five hundredths
10. Four tenths and four hundredths
11. Two tenths and two hundredths
12. Seven tenths and five hundredths
13. Four hundredths
14. Five units, five tenths and six hundredths
15. Nine hundredths
16. Three units, nine tenths and two hundredths
17. One tenth and one hundredth
18. Six tenths and seven hundredths
19. One hundredth
20. Eight units, nine tenths and nine hundredths

Exercise 8.2B

- | | |
|----------------------|----------------------|
| 1. $0.1 + 0.04$ | 2. $3 + 0.6 + 0.08$ |
| 3. $1 + 0.04$ | 4. $2 + 0.3 + 0.07$ |
| 5. $6 + 0.7 + 0.02$ | 6. 0.08 |
| 7. $0.7 + 0.05$ | 8. $1 + 0.2 + 0.06$ |
| 9. $5 + 0.4 + 0.03$ | 10. $8 + 0.7 + 0.06$ |
| 11. $0.7 + 0.03$ | 12. $0.2 + 0.09$ |
| 13. $0.1 + 0.06$ | 14. $1 + 0.6 + 0.05$ |
| 15. 0.04 | 16. $4 + 0.3 + 0.08$ |
| 17. $0.3 + 0.01$ | 18. $0.9 + 0.04$ |
| 19. $6 + 0.1 + 0.06$ | 20. $8 + 0.5 + 0.02$ |

Exercise 8.3

- | | |
|----------------------|----------------------|
| 1. 6.63, 6.36, 3.6 | 2. 9.87, 8.79, 8.07 |
| 3. 3.33, 3.3, 2.3 | 4. 8.18, 8.1, 1.8 |
| 5. 6.77, 6.76, 6.7 | 6. 2.31, 2.3, 2.03 |
| 7. 8.56, 5.86, 5.8 | 8. 2.9, 0.91, 0.9 |
| 9. 6.66, 6.6, 6.06 | 10. 3.22, 3.2, 3.02 |
| 11. 4.77, 4.7, 4.07 | 12. 9.01, 1.9, 1.09 |
| 13. 8.22, 8.2, 8.02 | 14. 6.59, 6.5, 6.49 |
| 15. 7.3, 7.05, 7.03 | 16. 4.55, 4.54, 4.05 |
| 17. 2.9, 2.19, 2.09 | 18. 3.81, 3.8, 3.18 |
| 19. 0.31, 0.13, 0.03 | 20. 0.67, 0.13, 0.06 |

Exercise 8.4A

1.

(a) 4.44	(b) 2.76	(c) 9.14	(d) 8.98
(e) 5.55	(f) 1.66	(g) 11.87	(h) 11.02
(i) 17.13	(j) 8.78	(k) 1.27	(l) 10.68
(m) 2.15	(n) 12.75	(o) 8.82	(p) 19.24
2.

(a) 5.75	(b) 8.26	(c) 8.84	(d) 5.76
(e) 12.77	(f) 3.91	(g) 9.30	(h) 13.22
(i) 20.84	(j) 3.17	(k) 9.27	(l) 6.51
(m) 12.66	(n) 12.47	(o) 17.24	(p) 24.04
(q) 12.07	(r) 6.35	(s) 15.01	(t) 6.16

Exercise 8.4B

1.

(a) 2.48	(b) 2.24	(c) 8.43	(d) 1.34
(e) 0.42	(f) 0.55	(g) 3.4	(h) 1.8
(i) 2.05	(j) 2.3	(k) 1.57	(l) 0.9
2.

(a) 1.71	(b) 1.24	(c) 7.28	(d) 0.69	(e) 6.45
(f) 3.49	(g) 1.02	(h) 5.83	(i) 6.01	(j) 5.49
(k) 3.44	(l) 4.81	(m) 2.96	(n) 1.69	(o) 2.60
(p) 1.31	(q) 1.16	(r) 1.12	(s) 0.78	(t) 1.03

Exercise 8.5

1.

(a) 6.9	(b) 27.0	(c) 54.6	(d) 7.5	(e) 23.5
(f) 22.4	(g) 25.2	(h) 1.2	(i) 50.4	(j) 5.6
(k) 40.5	(l) 2.4	(m) 71.2	(n) 9.9	(o) 14.4
(p) 1.5	(q) 18.6	(r) 37.5	(s) 52.0	(t) 16.2
2.

(a) 20.10	(b) 6.75	(c) 55.84	(d) 17.00	(e) 16.71
(f) 9.12	(g) 25.76	(h) 4.08	(i) 13.52	(j) 36.26
(k) 42.80	(l) 49.32	(m) 27.56	(n) 34.92	(o) 81.54
(p) 38.92	(q) 44.65	(r) 54.30	(s) 6.30	(t) 3.35

Exercise 8.6

1.

(a) 2.8	(b) 0.75	(c) 3.95	(d) 1.8	(e) 0.94
(f) 1.4	(g) 1.4	(h) 0.3	(i) 1.12	(j) 1.3
(k) 0.5	(l) 0.3	(m) 2.5	(n) 1.1	(o) 0.9
(p) 0.06	(q) 4.65	(r) 1.5	(s) 14.2	(t) 0.45
2.

(a) 4.5	(b) 3.25	(c) 1.2	(d) 1.25	(e) 3.8
(f) 11.5	(g) 25.75	(h) 30.75	(i) 7.5	(j) 19.5
(k) 21.75	(l) 12.5	(m) 16.25	(n) 24.5	(o) 12.5
(p) 17.2	(q) 15.6	(r) 26.5	(s) 1.5	(t) 19.2

Exercise 8.7

1.

(a) 23	(b) 15.3	(c) 0.8	(d) 21.5	(e) 7
(f) 56.3	(g) 28.2	(h) 6.2	(i) 16	(j) 28.7
(k) 785	(l) 8	(m) 0.9	(n) 71.9	(o) 326
(p) 0.3	(q) 90.3	(r) 25	(s) 65.1	(t) 207
2.

(a) 3435	(b) 2150	(c) 680	(d) 4825	(e) 5257
(f) 456	(g) 3468	(h) 106	(i) 6276	(j) 518
(k) 505	(l) 7648	(m) 699	(n) 8373	(o) 9006
(p) 903	(q) 823	(r) 9105	(s) 3315	(t) 7

Exercise 8.8

1.

(a) 0.93	(b) 0.18	(c) 0.3	(d) 0.65	(e) 0.09
(f) 0.46	(g) 0.77	(h) 0.06	(i) 1.6	(j) 2.87
(k) 7.85	(l) 0.08	(m) 0.07	(n) 5.63	(o) 3.26
(p) 0.03	(q) 0.85	(r) 0.25	(s) 0.61	(t) 0.27

2.
 (a) 34.35 (b) 2.15 (c) 0.06 (d) 48.25 (e) 0.52
 (f) 4.56 (g) 34.68 (h) 1.06 (i) 62.76 (j) 5.18
 (k) 5.05 (l) 0.78 (m) 0.69 (n) 0.83 (o) 9.06
 (p) 0.93 (q) 0.03 (r) 0.95 (s) 0.35 (t) 0.07

Exercise 8.9A

1.
 (a) £9.12 (b) £10.29 (c) £7.33 (d) £16.38
 (e) £30.52 (f) £9.17 (g) £9.55 (h) £8.85
 (i) £33.97 (j) £31.48 (k) £11.78 (l) £36.89
 (m) £20.83 (n) £12.25 (o) £20.03 (p) £12.46
 (q) £22.64 (r) £31.10 (s) £10.99 (t) £12.62

2.
 (a) £5.84 (b) £26.52 (c) £11.08 (d) £10.80
 (e) £7.62 (f) £1.97 (g) £1.92 (h) £7.75
 (i) £0.47 (j) £13.79 (k) £1.37 (l) £17.30
 (m) £9.53 (n) £1.30 (o) £3.34 (p) £1.11
 (q) £17.09 (r) £17.73 (s) £2.09 (t) £6.96

Exercise 8.9B

1. £6.46 2. £15.47 3. £11.77 4. £11.28
 5. £15.55 6. £16.59 7. £10.65 8. £21.15

Exercise 8.10

- 8.1
 (a) $\frac{11}{100}$ 0.11 (b) $\frac{23}{100}$ 0.23 (c) $\frac{8}{100}$ 0.08

- 8.2
 (a) three tenths and five hundredths
 (b) six tenths and six hundredths
 (c) seven tenths and nine hundredths

- 8.3
 (a) 4.99, 4.98, 4.08 (b) 3.22, 3.2, 2.33
 (c) 1.55, 1.51, 1.5

- 8.4
 (a) 0.77 (b) 3.51 (c) 12.55
 (d) 2.49 (e) 2.27 (f) 2.89

- 8.5
 (a) 21.5 (b) 76.5 (c) 46.4
 (d) 25.62 (e) 11.04 (f) 22.68

- 8.6
 (a) 4.3 (b) 0.8 (c) 3.55
 (d) 1.5 (e) 4.2 (f) 15.5

- 8.7
 (a) 63 (b) 79.6 (c) 0.1
 (d) 4722 (e) 1251 (f) 290

- 8.8
 (a) 1.03 (b) 0.14 (c) 0.21
 (d) 44.21 (e) 0.015 (f) 0.032

- 8.9
 (a) £9.81 (b) £21.11 (c) £9.88
 (d) £2.80 (e) £6.55 (f) £2.45

Chapter 9

Exercise 9.1A

1. (a) $\frac{70}{100}$ (b) 70% 2. (a) $\frac{53}{100}$ (b) 53%
 3. (a) $\frac{42}{100}$ (b) 42% 4. (a) $\frac{57}{100}$ (b) 57%
 5. (a) $\frac{25}{100}$ (b) 25% 6. (a) $\frac{100}{100}$ (b) 100%
 7. (a) $\frac{84}{100}$ (b) 84% 8. (a) $\frac{99}{100}$ (b) 99%
 9. (a) $\frac{71}{100}$ (b) 71% 10. (a) $\frac{17}{100}$ (b) 17%
 11. (a) $\frac{4}{100}$ (b) 4% 12. (a) $\frac{40}{100}$ (b) 40%

Exercise 9.1B

1. Blue 34% Green 33% Black 33%
 2. Yellow 40% Orange 40% Blue 20%
 3. Yellow 25% Green 25% Blue 25%
 Red 25%
 4. Pink 20% Green 32% White 48%
 5. Yellow 70% Blue 30%
 6. White 45% Green 55%
 7. Blue 32% Yellow 36% Orange 32%
 8. Green 50% Blue 25% Yellow 25%
 9. Green 8% Yellow 4% Red 14%
 White 74%

Exercise 9.2

1. $\frac{3}{5}$ 2. $\frac{2}{5}$ 3. $\frac{1}{4}$ 4. $\frac{7}{10}$ 5. $\frac{1}{20}$
 6. $\frac{9}{10}$ 7. $\frac{3}{4}$ 8. $\frac{11}{20}$ 9. $\frac{3}{10}$ 10. $\frac{1}{10}$
 11. $\frac{1}{5}$ 12. $\frac{19}{20}$ 13. $\frac{13}{20}$ 14. $\frac{7}{20}$ 15. $\frac{17}{20}$
 16. $\frac{9}{20}$ 17. $\frac{13}{20}$ 18. $\frac{3}{20}$ 19. $\frac{1}{2}$ 20. $\frac{4}{5}$

Exercise 9.3

1.
 (a) 20% (b) 2% (c) 5% (d) 4% (e) 10%
 (f) 75% (g) 60% (h) 4% (i) 70% (j) 20%
 (k) 1% (l) 50% (m) 40% (n) 8% (o) 30%
 2.
 (a) 80% (b) 60% (c) 20% (d) 48% (e) 75%
 (f) 20% (g) 70% (h) 40% (i) 90% (j) 72%
 (k) 56% (l) 80% (m) 95% (n) 50% (o) 15%

Exercise 9.4

1.
 (a) 0.2 (b) 0.3 (c) 0.8 (d) 0.1 (e) 0.7
 (f) 0.5 (g) 0.6 (h) 0.9 (i) 0.75 (j) 0.25
 (k) 0.15 (l) 0.45 (m) 0.95 (n) 0.55 (o) 0.65
 (p) 0.85 (q) 0.05 (r) 0.65 (s) 0.35 (t) 0.4
 2.
 (a) 0.42 (b) 0.66 (c) 0.89 (d) 0.12 (e) 0.77
 (f) 0.23 (g) 0.31 (h) 0.17 (i) 0.92 (j) 0.14
 (k) 0.56 (l) 0.73 (m) 0.62 (n) 0.28 (o) 0.11
 (p) 0.71 (q) 0.26 (r) 0.19 (s) 0.48 (t) 0.37

Exercise 9.5

1.
(a) 6% (b) 1% (c) 25% (d) 9% (e) 4%
(f) 55% (g) 95% (h) 35% (i) 70% (j) 15%
(k) 20% (l) 75% (m) 80% (n) 45% (o) 50%
(p) 65% (q) 30% (r) 85% (s) 5% (t) 10%
2.
(a) 43% (b) 11% (c) 98% (d) 34% (e) 62%
(f) 89% (g) 77% (h) 13% (i) 58% (j) 41%
(k) 54% (l) 93% (m) 66% (n) 16% (o) 51%
(p) 22% (q) 164% (r) 28% (s) 102% (t) 7%

Exercise 9.6A

1.
(a) 60 (b) 70 (c) 45 (d) 11
(e) 44 (f) 80 (g) 23 (h) 26
(i) 7 (j) 38 (k) 17 (l) 125
2.
(a) 42 (b) 36 (c) 6 (d) 15
(e) 9 (f) 23 (g) 5.5 (h) 6.5
(i) 47 (j) 7.8 (k) 82 (l) 11
3.
(a) 100 (b) 40 (c) 5 (d) 15
(e) 20 (f) 24 (g) 9 (h) 16
(i) 1 (j) 11 (k) 6 (l) 110
4.
(a) 3 (b) 40 (c) 10 (d) 12
(e) 18 (f) 25 (g) 9 (h) 15
(i) 100 (j) 80 (k) 6 (l) 128
5.
(a) 150 (b) 90 (c) 30 (d) 18
(e) 60 (f) 180 (g) 300 (h) 450
(i) 6 (j) 12 (k) 24 (l) 48
6.
(a) 10 (b) 11 (c) 3 (d) 2
(e) 19 (f) 9 (g) 15 (h) 22
(i) 18 (j) 36 (k) 40 (l) 33
7.
(a) 20 (b) 25 (c) 6 (d) 4
(e) 22 (f) 18 (g) 30 (h) 44
(i) 36 (j) 72 (k) 80 (l) 66
8.
(a) 60 (b) 90 (c) 200 (d) 15
(e) 50 (f) 4 (g) 1 (h) 12
(i) 10 (j) 5 (k) 8 (l) 22

Exercise 9.6B

1. 60 2. 36 3. 125 4. 20 5. 9
6. 100 7. 8 8. 7 9. 25 10. 20
11. 150 12. 150 13. 9 14. 22 15. 270
16. 130 17. 410 18. 1.3 19. 45 20. 30

Exercise 9.7

- 9.1
(a) $\frac{11}{100} = 11\%$ (b) $\frac{49}{100} = 49\%$ (c) $\frac{7}{10} = 70\%$
- 9.2
(a) $\frac{7}{10}$ (b) $\frac{1}{5}$ (c) $\frac{9}{20}$
- 9.3
(a) 10% (b) 5% (c) 4%
(d) 56% (e) 90% (f) 40%
- 9.4
(a) 0.4 (b) 0.6 (c) 0.9
(d) 0.18 (e) 0.67 (f) 0.33
- 9.5
(a) 50% (b) 20% (c) 45%
(d) 37% (e) 46% (f) 99%
- 9.6
(a) 150 (b) 96 (c) 110
(d) 48 (e) 18 (f) 3

Chapter 10

Exercise 10.1

1. 1898 miles 2. 120 ml
3. £118.75 4. Sci-fi book
5. -4 degrees Celsius 6. £11 637
7. 111 909 bricks 8. 26 394 people
9. 900 toes to bar 10. 35 kick flips
11. 3.59 m 12. -£8

Exercise 10.2

1. 7078 miles 2. 104 ml
3. £60.87 4. Sci-fi book
5. -2 degrees Celsius 6. £22 896
7. 155 008 bricks 8. 47 331 people
9. 770 toes to bar 10. 43 kick flips
11. 4.07 m 12. -£10

Exercise 10.3

1. 2047 minutes 2. £1.50
3. $\frac{7}{10}$ 4. Josh
5. -5 degrees Celsius 6. Her opponent by 2%
7. £141 000
8. £175 000 and yes they achieve the target.
9. 248.11 miles 10. 42 smashes
11. Company 2 is cheaper 12. £150 000

Exercise 10.4

1. 1862 minutes 2. £1.40
3. $\frac{8}{10}$ 4. Leo
5. -3 degrees Celsius 6. Caitlin, by 7%
7. £16 000
8. No, they are £20 000 short
9. 229.95 miles 10. 48 smashes
11. Company 1 12. £120,000

Exercise 10.5

1. £3.70

2. She has eaten more of the ham and pineapple by $\frac{1}{24}$.
3. 65%
4. 43.845 seconds
5. $\frac{17}{20}$
6. 672 500 pencils
7. £14.70
8. £136.91
9. -£43
10. £9870.98
11. 46 business class seats
12. 857 g

Exercise 10.6

1. £3.50
2. Both are the same
3. 45%
4. 29.038 seconds
5. $\frac{13}{20}$
6. 842 800 pencils
7. £19.32
8. £601.53
9. -£41
10. £8261.92
11. 24 business class seats
12. 966 g

Chapter 11

Exercise 11.1

1. 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60
2. 11.6
3. 24
4. 147
5. 3284
6. Twenty-two thousand, four hundred and forty-five
7. 18
8. 536
9. 20 000
10. 11
11. 80
12. 639

Exercise 11.2

1. 1, 2, 4, 7, 14, 28
2. 5.1
3. 28
4. 72
5. 14 188
6. Thirty-four thousand and two.
7. 22
8. 335
9. 70 000
10. 12
11. 19
12. 58

Exercise 11.3

1. 1, 2, 4, 8, 16, 32, 64
2. 55.3
3. 40
4. 70 000
5. 118 308
6. Two hundred and fifty-four thousand, eight hundred and eighty-nine.
7. 206
8. -15
9. $\frac{23}{100}$ and 0.23
10. 18
11. 99
12. 191

Exercise 11.4

1. 1, 3, 17, 51
2. 56.8
3. 180
4. 80 000
5. 209 105
6. Five hundred and fifty-five thousand, eight hundred and twenty-eight
7. 3576
8. -11
9. $\frac{71}{100}$ and 0.71
10. 11
11. 91
12. 142

Exercise 11.5

1. 680
2. -35
3. 350
4. 500 000
5. £7.30
6. 0.5
7. 84
8. 7
9. 750 000
10. 600
11. 17
12. 0.076

Exercise 11.6

1. 420
2. -29
3. 240
4. 700 000
5. £7.19
6. 605.5
7. 168
8. 9
9. 570 000
10. 600
11. 24
12. 0.099

Chapter 12

Exercise 12.1

1. 680 000
2. Nine hundred and eighty-seven thousand, seven hundred and seventy-six
3. 17 730
4. 111, 1110, 1112, 1122
5. 4888
6. 89 380
7. 1235
8. 37.6
9. 9912
10. 145
11. 91 671
12. 48
13. 27
14. 43 001
15. 192 100
16. 28 000
17. 2910
18. 56
19. 55.5
20. 300

Exercise 12.2

1. 140 000
2. Eight hundred and fifty-six thousand, eight hundred and seventy-five
3. 10 505
4. 4414, 4411, 2544, 2445
5. 4328
6. 277 648
7. 24 895
8. 65
9. 8561
10. 275
11. 56 266
12. 20
13. 36
14. 34 170
15. 96
16. 733 200
17. 26 000
18. 7230
19. 14.8
20. 2000

Exercise 12.3

1. 100 000
2. One hundred and twenty-five thousand and two
3. 102 379
4. 95, 919, 958, 966, 9065, 9745
5. 24 070
6. 410 112
7. 40 621
8. 954.66
9. 8944.57
10. 541.859
11. 9
12. 104
13. 87
14. 280 577
15. 125.258
16. 2 014 200
17. 466 000
18. 2538.51
19. 708.68
20. 100.25, 100.3, 101.2, 103.25

Exercise 12.4

1. 900 000
2. Three hundred and sixty-four thousand one hundred and eleven
3. 44 650
4. 33, 365, 369, 3025, 3500, 3562
5. 460 773
6. 1 095 753
7. 21 346

8. 378.98 9. 5243.69 10. 202.411
 11. 2 12. 375 13. 224
 14. 555 303 15. 352.852 16. 21 422 500
 17. 145 000 18. 2998.77 19. 850.57
 20. 4.12, 42.14, 44.21, 401.11

Exercise 12.5

1. 1 000 000 2. 1.7 3. 1 358 000
 4. 35.6, 35.7, 37.6, 37.66
 5. 9.365 6. 245.6 7. 7.2
 8. 3910.433 9. 8.878 10. 0.785
 11. 987.420 12. 117 13. -22
 14. -38 15. 0.711 16. 0.3
 17. 9009 18. 2.821 19. 129
 20. 17.089, 17.098, 18.917, 18.971

Exercise 12.6

1. 900 000 2. 4.6 3. 578 100
 4. 88.5, 88.65, 88.67, 89.6
 5. 3.425 6. 314.4 7. 9.4
 8. 7185.603 9. 7.543 10. 0.965
 11. 958.073 12. 90.75 13. -31
 14. -41 15. 0.41 16. 0.8
 17. 7401 18. 7.842 19. 75.6
 20. 22.014, 22.214, 23.241, 23.365

Chapter 13

Exercise 13.1

1.
 (a) 11 (b) 9 (c) 14 (d) 13 (e) 7
 (f) 16 (g) 11 (h) 15 (i) 8 (j) 12
 (k) 15 (l) 11 (m) 16 (n) 12 (o) 10
 (p) 8 (q) 12 (r) 13 (s) 5 (t) 9
2.
 (a) 30 (b) 26 (c) 26 (d) 35 (e) 64
 (f) 84 (g) 78 (h) 73 (i) 79 (j) 46
 (k) 86 (l) 47 (m) 101 (n) 68 (o) 36
 (p) 55 (q) 72 (r) 79 (s) 100 (t) 88

Exercise 13.2A

1.
 (a) 17 (b) 54 (c) 36 (d) 66 (e) 68
 (f) 10 (g) 41 (h) 65 (i) 19 (j) 46
 (k) 32 (l) 20 (m) 54 (n) 11 (o) 28
 (p) 79 (q) 74 (r) 87 (s) 31 (t) 28
2.
 (a) 26 (b) 46 (c) 26 (d) 65 (e) 25
 (f) 4 (g) 25 (h) 20 (i) 10 (j) 35
 (k) 54 (l) 25 (m) 30 (n) 15 (o) 15
 (p) 33 (q) 20 (r) 67 (s) 7 (t) 28

Exercise 13.2B

1.
 (a) 3 (b) 12 (c) 17 (d) 8 (e) 13
 (f) 3 (g) 11 (h) 16 (i) 2 (j) 23
 (k) 18 (l) 1 (m) 19 (n) 21 (o) 1
 (p) 18 (q) 25 (r) 17 (s) 0 (t) 37
2.
 (a) 4 (b) 71 (c) 21 (d) 44 (e) 79
 (f) 8 (g) 38 (h) 27 (i) 6 (j) 25
 (k) 57 (l) 6 (m) 46 (n) 26 (o) 2
 (p) 24 (q) 61 (r) 60 (s) 1 (t) 66

Exercise 13.3

- 13.1
 (a) 43 (b) 91 (c) 97
 (d) 25 (e) 56 (f) 4
- 13.2
 (a) 34 (b) 40 (c) 57
 (d) 22 (e) 25 (f) 49

Chapter 14

Exercise 14.1A

1.
 (a) £35.99 (b) £37.85 (c) £87.67 (d) £30.53
 (e) £96.35 (f) £71.79 (g) £45.18 (h) £77.41
 (i) £79.25 (j) £74.15 (k) £79.93 (l) £109.40
 (m) £91.85 (n) £38 (o) £139.86 (p) £20.13
 (q) £64.93 (r) £80.79 (s) £63.75 (t) £96.01
2.
 (a) £27.06 (b) £42.59 (c) £34.18 (d) £74.73
 (e) £21.46 (f) £8.44 (g) £25.58 (h) £44.41
 (i) £21.24 (j) £20.83 (k) £51.68 (l) £40.77
 (m) £31.75 (n) £53.84 (o) £54.40 (p) £23.01
 (q) £21.71 (r) £11.75 (s) £20.74 (t) £33.61

Exercise 14.1B

1.
 (a) £117.20 (b) £164.04 (c) £151.06 (d) £121.85
 (e) £157.68 (f) £44.00 (g) £57.89 (h) £51.29
 (i) £44.76 (j) £39.36 (k) £59.25 (l) £92.60
 (m) £16.00 (n) £60.64 (o) £562.23 (p) £115.59
 (q) £343.08 (r) £569.92 (s) £9.81 (t) £169.26
2.
 (a) £10.28 (b) £7.13 (c) £9.50 (d) £6.50
 (e) £5.26 (f) £2.09 (g) £1.57 (h) £41.74
 (i) £1.50 (j) £3.50 (k) £16.15 (l) £12.75
 (m) £14.15 (n) £10.50 (o) £2.56 (p) £12.77
 (q) £0.34 (r) £23.11 (s) £0.75 (t) £19.15

Exercise 14.1C

1. £28.04 2. £6.31 3. £32.49 4. £19.35
 5. £19.87 6. £13.39 7. £30.36 8. £44.28
 9. £34.42 10. £29.35

Exercise 14.1D

1.
(a) £20.34 (b) £7.98 (c) £5.87 (d) £11.80
(e) £23.56 (f) £40.67 (g) £42.77 (h) £11.55
(i) £3.67 (j) £21.13 (k) £46.24 (l) £30.69
(m) £7.51 (n) £13.06 (o) £0.88 (p) £21.22
(q) £32.90 (r) £41.99 (s) £25.50 (t) £4.13
2.
(a) £30.85 (b) £4.79 (c) £15.61 (d) £3.31
(e) £28.90 (f) £37.06 (g) £14.23 (h) £7.98
(i) £25.35 (j) £17.83

Exercise 14.2A

- The ten-pack of cereal bars are cheaper
- The individual peaches are cheaper
- The three-pack of muffins are cheaper
- The individual mince pies are cheaper
- The eight-pack of rice cakes and the individual cost of rice cakes is equal
- The individual cans of lemonade are cheaper
- The individual eggs are cheaper
- The individual pears are cheaper
- The packet of three mangos are cheaper
- The four-pack of biscuit bars are cheaper
- The individual oranges are cheaper
- The six-pack of cola and six individual cans cost is equal

Exercise 14.2B

- In store is cheaper as $£68.18 < £75.53$
- Online is cheaper as $£86.95 < £92.73$
- Online is cheaper as $£82.10 < £86.88$
- Online is cheaper as $£97.77 < £104.22$
- In store is cheaper as $£62.97 < £66.50$
- Online is cheaper as $£74.49 < £75.78$

Exercise 14.2C

- 6 oranges for £1.20
- 1000ml carton of milk for £1.20
- 10 pencils for £6.50
- 600g of cheese for £6
- 5 water bottles for £20
- 8 tea towels for £32.80
- 400ml of diluting juice for £3.20
- 500g of cereal for £4.50
- 30g of crisps for 50p
- 5 hair clips for £12
- 500ml bottle of fizzy juice for £1.20
- 10 squishes for £3.50

Exercise 14.3A

- Yes, as $£250 > £241$
- No, as $£256 > £230$
- No, as $£137 > £122$
- Yes, as $£44.23 < £46$
- No, as $£27.43 < £27$
- Yes, as $£347.10 > £360$

- No, as $£108 > £100$
- No, as $£240.80 < £240$
- Yes, as $£125 > £108.60$
- No, as $£245 < £245.05$
- No, as $£125 < £129.30$
- Yes, as $£131 < £135$

Exercise 14.3B

- 8 months
- 10 months
- 9 weeks
- 14 weeks
- 4 months
- 8 months
- 5 weeks
- 11 weeks
- 4 weeks
- 6 months
- 4 months
- 5 months

Exercise 14.4A

1.
(a) Profit, $£520 > £430$ (b) Loss, $£240 < £300$
(c) Profit, $£435 > £210$ (d) Profit, $£1005 > £604$ (e) Loss, $£192 < £328$ (f) Profit, $£872 > £172$
(g) Loss, $£235 < £350$ (h) Break-even
(i) Profit, $£677 > £564$ (j) Loss, $£102 < £291$
(k) Profit, $£981 > £750$ (l) Profit, $£2038 > £1920$
(m) Profit, $£3500 > £2100$ (n) Loss, $£2451 < £2500$
(o) Profit, $£899 > £320$ (p) Loss, $£6423 < £6483$

Exercise 14.4B

- Sarah makes a profit of £4.10
- Donald makes a profit of £19.50
- Akmal makes a loss of £0.15
- Layla makes a profit of £18.07
- Sofia makes a loss of £0.15
- Samuel makes a profit of £1.70
- Victoria makes a loss of £7.34
- Nathan makes a profit of £1050

Exercise 14.5

14.1A

- (a) £48.71 (b) £11.68 (c) £356.92 (d) £9.89

14.1D

- (a) £16.55 (b) £20.62 (c) £40.23

14.2

- (a) Individual packets of crisps costing 55p each
(b) 6 boxes of strawberries for £12.60

14.3

- (a) Luanne does not have enough money to buy the items
(b) 9 weeks

14.4A

- (a) Profit (b) Loss

14.4B

- (a) Roxanna makes a profit
(b) Profit of £33.60

Chapter 15

Exercise 15.1A

- Twenty-five past one
- Ten to seven
- Five past two
- Twenty-five past four
- Ten past nine
- Twenty to seven
- Quarter past ten
- Twenty past ten
- One o'clock
- Five to twelve

11. Ten past eight
13. Quarter to twelve
15. Five past three
17. Ten to eight
19. Twenty to two
12. Twenty-five past three
14. Twenty-five to two
16. Half past nine
18. Twenty-five past eight
20. Five o'clock

Exercise 15.1B

1. Ten past three
3. Half past three
5. One o'clock
7. Ten to five
9. Ten to three
11. Eight o'clock
13. Twenty past two
15. Ten past twelve
17. Half past two
19. Quarter to three
2. Quarter to eleven
4. Quarter past eight
6. Half past ten
8. Twenty-five to one
10. Quarter past one
12. Four o'clock
14. Twenty to seven
16. Five to eleven
18. Quarter past seven
20. Five to one

Exercise 15.2

1.
(a) 30 mins (b) 15 mins (c) 20 mins
(d) 6 mins (e) 12 mins (f) 10 mins
(g) 3 mins (h) 5 mins
2.
(a) 90 mins (b) 225 mins (c) 255 mins
(d) 225 mins (e) 615 mins (f) 510 mins
(g) 765 mins (h) 390 mins (i) 135 mins
(j) 495 mins (k) 270 mins (l) 375 mins
3.
(a) 210 secs (b) 615 secs (c) 555 secs
(d) 75 secs (e) 525 secs (f) 330 secs
(g) 645 secs (h) 375 secs (i) 105 secs
(j) 405 secs (k) 270 secs (l) 495 secs

Exercise 15.3A

1. 2 hrs 40 mins
3. 6 hrs 55 mins
5. 2 hrs 25 mins
7. 4 hrs 50 mins
9. 3 hrs 25 mins
12. 1 hr 28 mins
15. 3 hrs 43 mins
18. 7 hrs 58 mins
21. 14 hrs 34 mins
2. 1 hr 55 mins
4. 6 hrs 20 mins
6. 14 hrs 15 mins
8. 55 mins
10. 48 mins
13. 5 hrs 1 min
16. 2 hrs 13 mins
19. 2 hrs 46 mins
11. 4 hrs 15 mins
14. 6 hrs 31 mins
17. 4 hrs 51 mins
20. 2 hrs 47 mins

Exercise 15.3B

1. 10.25 pm
5. 0750
9. 1355
2. 9.35 pm
6. 5.20 pm
10. 6.05 pm
3. 8.30 pm
7. 1943
11. 10.48 pm
4. 0848
8. 2.52 pm
12. 6.37 pm

Exercise 15.4

1. 5 hrs
5. 5 hrs
9. 2 hrs
13. 3 hrs
17. 100 secs
2. 4 hrs
6. 20 secs
10. 5 hrs
14. 2 hrs
18. 5 secs
3. 2 hrs
7. 60 secs
11. 2 hrs
15. 20 secs
19. 6 hrs
4. 4 hrs
8. 2 hrs
12. 4 hrs
16. 25 secs
20. 4 hrs

Exercise 15.5A

1.
(a) 0950–1040
(c) 15 mins
(e) 1 hr 40 mins
(g) Science
(i) Maths
- (b) Art
(d) Wednesday 1145–1235
(f) 4 hrs 10 mins
(h) 1 hr 40 mins
(j) 5 hrs
2.
(a) 1040
(c) 20 mins
(e) 50 mins
(g) Art
(i) P.E
- (b) Tech
(d) Thursday 1040–1130
(f) 2 hrs 30 mins
(h) 5 times
(j) 45 mins

Exercise 15.5B

1. 1159
3. The Glasgow Central train leaving Platform 14 at 1202
4. The Dundee train leaving Platform 1 at 1159
5. The Glasgow Central train leaving Platform 13 at 1157
6. No
7. The Glasgow Central train leaving Platform 14 at 1202
8. 7
10. Yes
2. 7
9. 3

Exercise 15.5C

1.
(a) 1138
(c) 11 mins
(e) 14 mins
(f) The 18A does not stop at Rutherglen Cross
(g) 1157
(h) It doesn't stop at Rutherglen Cross
- (b) 1214
(d) 1220
2.
(a) 16 mins
(c) 8 mins
(e) 1hr 12 mins
(g) 40 mins
(i) 1 hr 11 mins
(k) 1804
(m) 1916
(o) True
- (b) 1739
(d) 1824
(f) Only the 3
(h) 1 hr 30 mins
(j) The 3 by 19 mins
(l) 1724
(n) False

Exercise 15.6

- 15.1
(a) Ten past twelve (b) Four o'clock (c) Ten to seven
- 15.2
(a) 150 mins (b) 105 mins (c) 210 mins
(d) 135 secs (e) 225 secs (f) 90 secs
- 15.3
(a) 1 hr 45 mins (b) 5 hrs 30 mins

(c) 3 hrs 40 mins

15.4

(a) 5 hrs

(b) 2 hrs

Chapter 16

Exercise 16.1

1.

(a) (i) 6.5

(ii) 7.5

(iii) 8.5

(b) (i) 13

(ii) 14.5

(iii) 16.5

(c) (i) 57

(ii) 59.5

(iii) 61.5

(d) (i) 101.5

(ii) 104

(iii) 104.5

(e) (i) 3.4

(ii) 4.8

(iii) 6

(f) (i) 24.1

(ii) 26.3

(iii) 26.9

(g) (i) 207.5

(ii) 208.8

(iii) 209.3

(h) (i) 87.1

(ii) 88.2

(iii) 88.8

(i) (i) 6.5

(ii) 7.75

(iii) 8.25

(j) (i) 16.25

(ii) 17

(iii) 17.25

(k) (i) 20.25

(ii) 20.5

(iii) 22.5

(l) (i) 52.75

(ii) 54.25

(iii) 54.75

(m) (i) 3.8

(ii) 4.4

(iii) 6.2

(n) (i) 12.6

(ii) 13.8

(iii) 15.4

(o) (i) 12.4

(ii) 14.2

(iii) 15

(p) (i) 39.4

(ii) 40.6

(iii) 41.8

2.

(a) 600 ml

(b) 0.5 L

(c) 400 ml

(d) 800 ml

(e) 0.75 L

(f) 1000 ml

(g) 700 ml

(h) 0.375 L

(i) 300ml

(j) 500ml

(k) 0.875 L

(l) 300 ml

3.

(a) 500 g

(b) 150 g

(c) 850 g

(d) 910 g

(e) 770 g

(f) 1340 g

Exercise 16.3A

1.

(a) 4.5 cm

(b) 1 cm

(c) 6.5 cm

(d) 7 cm

(e) 5.5 cm

(f) 6 cm

(g) 4 cm

(h) 1.5 cm

(i) 5 cm

(j) 7.5 cm

(k) 8.5 cm

(l) 10 cm

(m) 9 cm

(n) 8 cm

(o) 12.5 cm

(p) 9.5 cm

2.

(a) 42 mm

(b) 18 mm

(c) 54 mm

(d) 63 mm

(e) 12 mm

(f) 82 mm

(g) 46 mm

(h) 88 mm

(i) 77 mm

(j) 56 mm

(k) 66 mm

(l) 79 mm

(m) 109 mm

(n) 93 mm

(o) 123 mm

(p) 84 mm

Exercise 16.3A

1. (c)

2. (e)

3. (f)

4. (b)

5. (d)

6. (a)

Exercise 16.3B

1. (c)

2. (e)

3. (a)

4. (f)

5. (b)

6. (d)

Exercise 16.4A

1.

(a) 7000 m

(b) 9000 m

(c) 3000 m

(d) 10000 m

(e) 14000 m

(f) 2000 m

(g) 8000 m

(h) 4000 m

(i) 13000 m

(j) 1000 m

(k) 3300 m

(l) 2400 m

(m) 4500 m

(n) 6100 m

(o) 2900 m

(p) 1300 m

(q) 7200 m

(r) 9600 m

(s) 5300 m

(t) 3100 m

2.

(a) 3 km

(b) 8 km

(c) 1 km

(d) 9 km

(e) 6 km

(f) 2 km

(g) 3.2 km

(h) 5.1 km

(i) 1.6 km

(j) 1.7 km

(k) 3.6 km

(l) 1.2 km

(m) 9.4 km

(n) 7.1 km

(o) 2.5 km

(p) 9.8 km

(q) 7.25 km

(r) 9.12 km

(s) 4.65 km

(t) 3.28 km

Exercise 16.4B

1.

(a) 6000 g

(b) 2000 g

(c) 1000 g

(d) 9000 g

(e) 22000 g

(f) 3000 g

(g) 4000 g

(h) 5000 g

(i) 11000 g

(j) 10000 g

(k) 6200 g

(l) 1100 g

(m) 3600 g

(n) 7200 g

(o) 4400 g

(p) 8500 g

(q) 10300 g

(r) 2900 g

(s) 5500 g

(t) 3100 g

2.

(a) 4 kg

(b) 2 kg

(c) 7 kg

(d) 3 kg

(e) 5 kg

(f) 6 kg

(g) 3.6 kg

(h) 5.3 kg

(i) 1.2 kg

(j) 1.9 kg

(k) 4.7 kg

(l) 1.7 kg

(m) 1.5 kg

(n) 7.7 kg

(o) 2.2 kg

(p) 9.6 kg

(q) 0.2 kg

(r) 0.19 kg

(s) 0.34 kg

(t) 0.12 kg

Exercise 16.4C

1.

(a) 4000 ml

(b) 1000 ml

(c) 2000 ml

(d) 18 000 ml

(e) 40 000 ml

(f) 32 000 ml

(g) 55 000 ml

(h) 62 000 ml

(i) 14 000 ml

(j) 27 000 ml

(k) 6700 ml

(l) 1200 ml

(m) 2500 ml

(n) 3300 ml

(o) 1900 ml

(p) 5600 ml

(q) 15 400 ml

(r) 10 200 ml

(s) 400 ml

(t) 900 ml

2.

(a) 7 L

(b) 5 L

(c) 9 L

(d) 8 L

(e) 4 L

(f) 10 L

(g) 16 L

(h) 14 L

(i) 9.8 L

(j) 3.9 L

(k) 4.4 L

(l) 2.3 L

(m) 13.5 L

(n) 19.4 L

(o) 28.5 L

(p) 18.7 L

(q) 0.25 L

(r) 0.14 L

(s) 0.34 L

(t) 0.1 L

Exercise 16.5

16.1

(a) 4.5

(b) 8.1

(c) 12.75

(d) 23.2

(e) 600 ml

(f) 0.25 litres

(g) 650 g

(h) 1070 g

16.4A

(a) 6500 m

(b) 2700 m

(c) 7.6 km

(d) 4.53 km

16.4B.

(a) 3300 g

(b) 5700 g

(c) 4.5 kg

(d) 19.8 kg

16.4C

(a) 12 500 ml

(b) 3800 ml

(c) 5.6 L

(d) 12.3 L

Chapter 17

Exercise 17.1

- (a) Obtuse (b) Straight (c) Right (d) Acute
(e) Reflex
- (a) Acute (b) Reflex (c) Reflex (d) Acute
(e) Right

Exercise 17.2

- (a) 65° (b) 90° (c) 15° (d) 20° (e) 80°
(f) 40° (g) 10° (h) 25° (i) 60° (j) 50°
(k) 85° (l) 55° (m) 35° (n) 30° (o) 70°
- (a) 95° (b) 115° (c) 180° (d) 140° (e) 175°
(f) 155° (g) 120° (h) 105° (i) 170° (j) 150°
(k) 160° (l) 165°

Exercise 17.4

- 30° 2. 35° 3. 15° 4. 40° 5. 80°
- 5° 7. 45° 8. 65° 9. 10° 10. 55°
- 50° 12. 38° 13. 52° 14. 18° 15. 25°
- 67° 17. 31° 18. 2° 19. 9° 20. 43°

Exercise 17.5

- 60° 2. 90° 3. 70° 4. 120° 5. 50°
- 100° 7. 95° 8. 135° 9. 35° 10. 10°
- 105° 12. 98° 13. 140° 14. 130° 15. 101°
- 138° 17. 45° 18. 80° 19. 65° 20. 124°

Exercise 17.6A

- South 2. East 3. West 4. South
- West 6. East 7. North 8. West
- South 10. North 11. East 12. West
- South 14. South

Exercise 17.6B

- (a) South-east (b) South-east (c) North-east
(d) South-west (e) South-west (f) North-west
(g) North-east (h) North-west (i) East
(j) East (k) North (l) West
(m) North (n) West (o) South
(p) East
- (a) North-east (b) South-west (c) South-east
(d) South-east (e) North-west (f) North-east
(g) North-west (h) South-west (i) South
(j) North (k) East (l) South
(m) West (n) North (o) East
(p) South
- (a) North-west (b) North-west (c) South-west
(d) North-east (e) North-east (f) South-east

- (g) South-west (h) South-east (i) West
(j) West (k) South (l) East
(m) South (n) East (o) North
(p) West

- (a) South-west (b) North-east (c) North-west
(d) North-west (e) South-east (f) South-west
(g) South-east (h) North-east (i) North
(j) South (k) West (l) North
(m) East (n) South (o) West
(p) North

Exercise 17.7

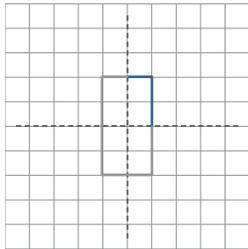
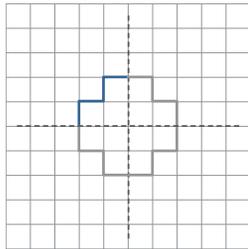
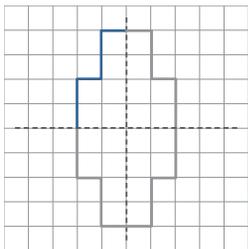
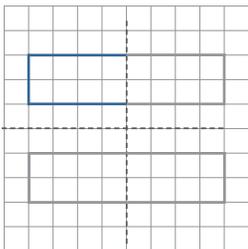
- 17.2 (a) 122° (b) 47° (c) 19°
- 17.4 (a) 40° (b) 38°
- 17.5 (a) 102° (b) 46°
- 17.6 (a) North-east (b) West
(c) South-east (d) West

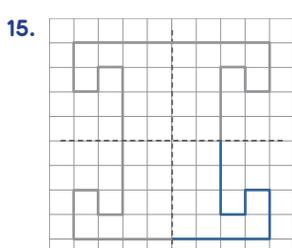
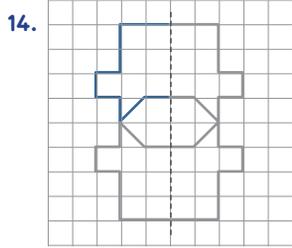
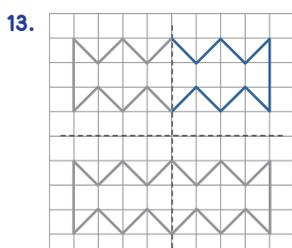
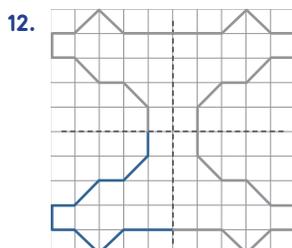
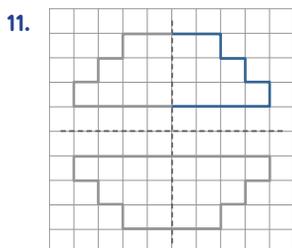
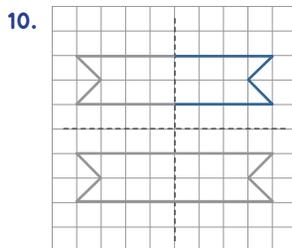
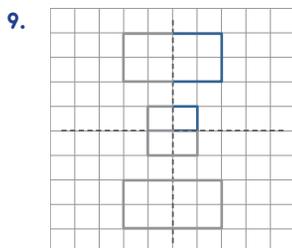
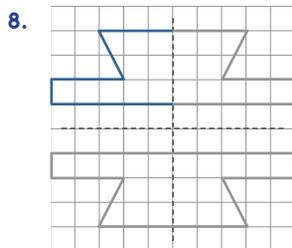
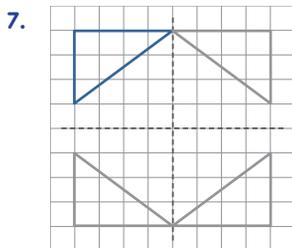
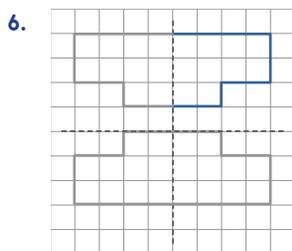
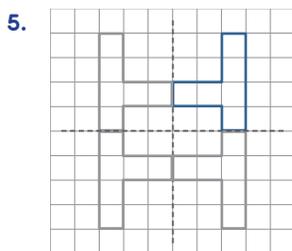
Chapter 18

Exercise 18.1

- (a) 2 (b) 4 (c) 2 (d) 0
(e) 1 (f) 1 (g) 4 (h) 2
(i) 1 (j) 1 (k) 2 (l) 1
(m) 2 (n) 2 (o) 0
- (a) An infinite number (b) 3 (c) 6
(d) 5 (e) 1 (f) 1 (g) 1
(h) 1 (i) 1 (j) 3 (k) 1
(l) 1

Exercise 18.2

- 
- 
- 
- 



Chapter 19

Exercise 19.1

1.
 (a) Scalene (b) Right angled (c) Isosceles
 (d) Isosceles (e) Equilateral (f) Scalene
 (g) Right-angled (h) Equilateral (i) Isosceles

- (j) Right-angled (k) Right-angled (l) Isosceles
 (m) Equilateral (n) Equilateral (n) Scalene
 (o) Scalene

2.
 (a) Scalene (b) Isosceles (c) Isosceles
 (d) Right-angled triangle (e) Equilateral
 (f) Scalene (g) Equilateral (h) Isosceles

Exercise 19.2

1.
 (a) Square (b) Parallelogram (c) Kite
 (d) Rectangle (e) Rhombus (f) Trapezium
 (g) Kite (h) Trapezium (i) Kite
 (j) Trapezium (k) Rhombus (l) Rectangle
3.
 (a) Trapezium (b) Square & Rhombus
 (c) Square, Rectangle, Parallelogram, Rhombus & Kite
 (d) Trapezium & Kite. (e) Trapezium
 (f) Square & Rectangle (g) Square & Rectangle (h) Rhombus, Kite, Trapezium & Parallelogram

Exercise 19.3

- 19.1
 (a) Equilateral (b) Scalene (c) Right angled
 (d) Isosceles (e) Right-angled
- 19.2
 (a) Rhombus (b) Trapezium
 (a) Square and Rectangle (b) Trapezium

Chapter 20

Exercise 20.1A

1.
 (a) 9 mm² (b) 16 cm² (c) 49 cm² (d) 64 cm²
 (e) 3956mm² (f) 1444cm² (g) 324m² (h) 2310cm²
2.
 (a) 32 cm² (b) 75 cm² (c) 108 m² (d) 147 m²
 (e) 64 cm² (f) 20 000 mm² (g) 192 m² (h) 80 cm²
 (i) 288 mm²

Exercise 20.1B

1.
 (a) 484 mm² (b) 256 cm² (c) 10.89 m²
 (d) 42.25 cm² (e) 204.49 cm² (f) 46.24 m²
 (g) 27.04 cm² (h) 10609 mm²
2.
 (a) 308 cm² (b) 429 cm² (c) 315 m²
 (d) 192 m² (e) 303.16 mm² (f) 161 cm²
 (g) 70.35 m² (h) 364 cm² (i) 16.8 mm²

Exercise 20.2

1.
 (a) 50 cm² (b) 36 cm² (c) 12 cm²
 (d) 75 mm² (e) 6 cm² (f) 60 mm²
 (g) 16 m² (h) 84 m² (i) 48 cm²
 (j) 6 m² (k) 80 cm² (l) 300 m²

2.
 (a) 56 mm^2 (b) 126 cm^2 (c) 42 mm^2
 (d) 33 cm^2 (e) 117 cm^2 (f) 44 mm^2
 (g) 660 m^2 (h) 63 m^2 (i) 320 cm^2
 (j) 90 mm^2 (k) 104 cm^2 (l) 660 m^2

Exercise 20.3A

1.
 (a) 16 cm (b) 24 cm (c) 30 m (d) 32 m
 (e) 8 cm (f) 18 mm (g) 26 cm (h) 48 mm
2.
 (a) 92 cm (b) 68 mm (c) 208 cm (d) 124 mm
 (e) 18 m (f) 5.6 mm (g) 104 mm (h) 12.4 m
3.
 (a) 12 m (b) 80 mm (c) 30 m (d) 70 cm
 (e) 35 cm (f) 52 m (g) 70 cm (h) 72 cm

Exercise 20.3B

1.
 (a) 52 cm (b) 64 cm (c) 104 cm (d) 112 cm
 (e) 44 cm (f) 184 cm (g) 90 cm (h) 216 cm
 (i) 90 cm
2.
 (a) 46 cm (b) 56 cm (c) 232 cm
3.
 (a) 99 cm (b) 140 mm (c) 164 cm

Exercise 20.4

Answers to this exercise will vary

Exercise 20.5

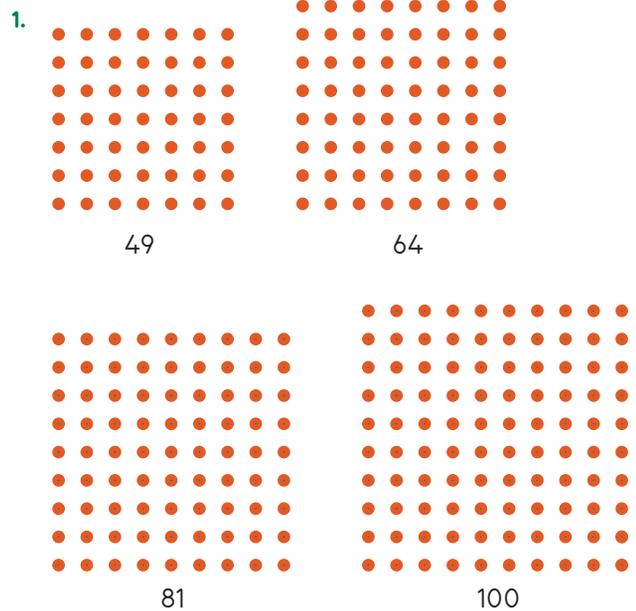
- 20.1
 (a) 49 cm^2 (b) 900 mm^2 (c) 189 cm^2 (d) 176 mm^2
- 20.2
 (a) 18 cm^2 (b) 6 mm^2 (c) 120 m^2 (d) 56 m^2
- 20.3A
 (a) 36 mm (b) 76 cm (c) 42 m (d) 51 m
- 20.3B
 (a) 124 cm (b) 37 m (c) 136 cm
- 20.4
 Answers to this question will vary

Chapter 21

Exercise 21.1A

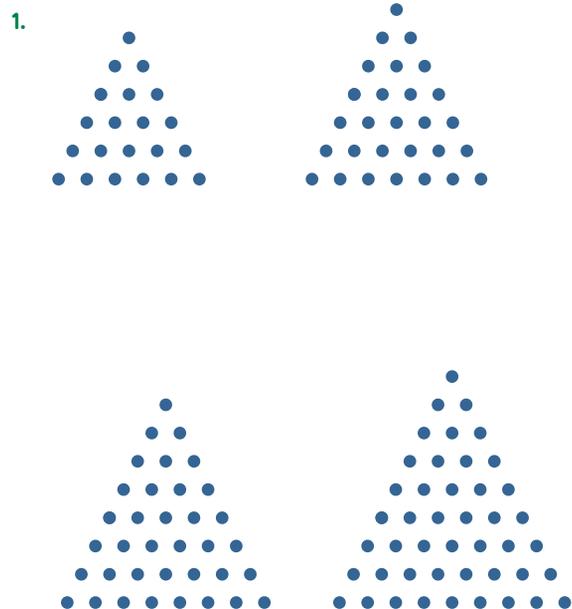
1. 4, 8, 12, 16, 20 2. 12, 17, 22, 27, 32
 3. 100, 85, 70, 55, 40 4. 6, 12, 24, 48, 96
 5. 20, 31, 42, 53, 64 6. 80, 71, 62, 53, 44
 7. 5, 30, 55, 80, 105 8. 10, 9.5, 9, 8.5, 8
 9. 15, 28, 41, 54, 67

Exercise 21.1B



2. 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144

Exercise 21.1C



2. 1, 3, 6, 10, 15, 21, 28, 36, 45, 55, 66, 78

Exercise 21.1D

1. 21, 34, 55, 89, 144, 233, 377, 610, 987, 1597.

Chapter 22

Exercise 22.1A

1.
 (a) ? = 12 (b) ? = 9 (c) ? = 13 (d) ? = 25
 (e) ? = 19 (f) ? = 17 (g) ? = 17 (h) ? = 54
 (i) ? = 18 (j) ? = 28 (k) ? = 58 (l) ? = 27
 (m) ? = 15 (n) ? = 27 (o) ? = 28 (p) ? = 36

2.
 (a) ? = 5 (b) ? = 4 (c) ? = 2 (d) ? = 6
 (e) ? = 3 (f) ? = 11 (g) ? = 6 (h) ? = 8
 (i) ? = 6 (j) ? = 3 (k) ? = 6 (l) ? = 1
 (m) ? = 7 (n) ? = 12 (o) ? = 5 (p) ? = 6

Exercise 22.2A

1.
 (a) a = 12 (b) b = 5 (c) c = 8 (d) d = 8
 (e) e = 2 (f) f = 8 (g) g = 12 (h) h = 12
 (i) i = 20 (j) j = 3 (k) k = 13 (l) a = 16
 (m) b = 4 (n) c = 39 (o) d = 16 (p) e = 15
2.
 (a) a = 14 (b) b = 8 (c) c = 2 (d) d = 4
 (e) e = 13 (f) f = 11 (g) g = 9 (h) h = 25
 (i) i = 5 (j) j = 3 (k) k = 7 (l) a = 32
 (m) b = 6 (n) c = 27 (o) d = 10 (p) e = 9
3.
 (a) x = 12 (b) x = 10 (c) x = 14 (d) x = 24
 (e) x = 4 (f) x = -16 (g) x = 17 (h) x = 40
 (i) x = 4 (j) x = 0 (k) x = 61 (l) x = 54
 (m) x = 3 (n) x = -50 (o) x = 18 (p) x = 11

Exercise 22.2B

1.
 (a) a = 12 (b) b = 18 (c) c = 4 (d) d = 20
 (e) e = 18 (f) f = 50 (g) g = 9 (h) h = 20
 (i) i = 65 (j) j = 14 (k) k = 7 (l) a = 15
 (m) b = 30 (n) c = 14 (o) d = 18 (p) e = 75
2.
 (a) a = 13 (b) b = 18 (c) c = 15 (d) d = 25
 (e) e = 37 (f) f = 40 (g) g = 12 (h) h = 24
 (i) i = 63 (j) j = 29 (k) k = 39 (l) a = 88
 (m) b = 115 (n) c = 62 (o) d = 39 (p) e = 81
3.
 (a) x = 30 (b) x = 37 (c) x = 38 (d) x = 58
 (e) x = 18 (f) x = 19 (g) x = 66 (h) x = 108
 (i) x = 13 (j) x = 55 (k) x = 92 (l) x = 81
 (m) x = 31 (n) x = 190 (o) x = 72 (p) x = 77

Exercise 22.3

- 22.1
 (a) ? = 16 (b) ? = 23 (c) ? = 60 (d) ? = 95

22.2A

- (a) x = 4 (b) y = 12 (c) x = 35 (d) y = 82

22.2B

- (a) x = 28 (b) y = 50 (c) x = 63 (d) y = 72

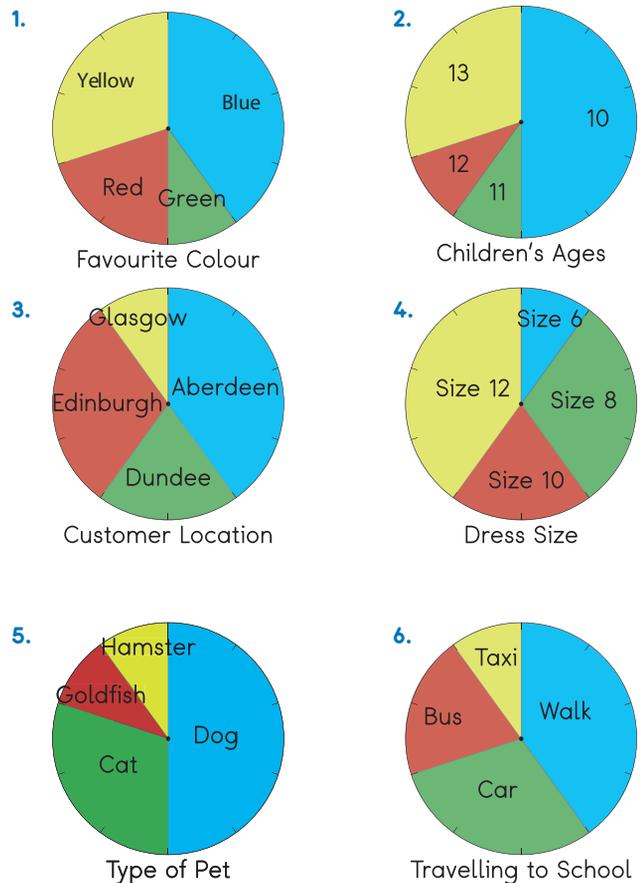
Chapter 23

Exercise 23.1

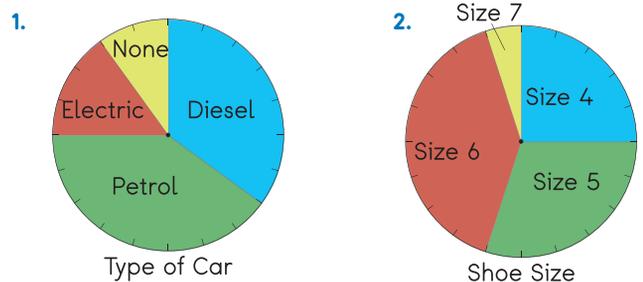
1. The information is unreliable as the sample size is too small.

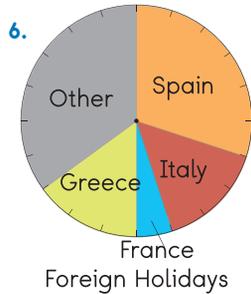
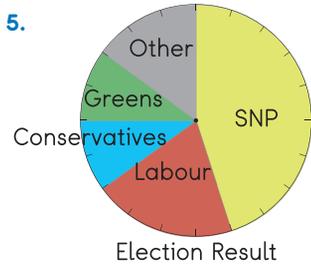
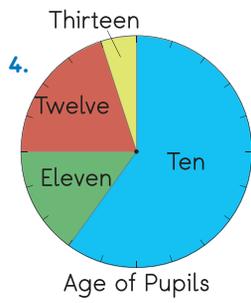
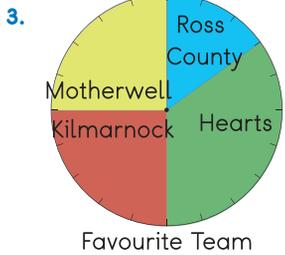
2. The information is unreliable as the sample size is too small and information is biased.
 3. The information is reliable.
 4. The information is unreliable as the graph is misleading.
 5. The information is unreliable as the information is biased.
 6. The information is unreliable as the sample size is too small and narrow (P5 boys only).
 7. The information is reliable.
 8. The information is reliable.
 9. The information is unreliable as the sample size is too small and narrow (20 pupils from one year).
 10. The information is unreliable as the information only includes YouTuber's audience.

Exercise 23.2A



Exercise 23.2B





Exercise 23.2C

- (a) Train (b) Walk (c) 25 (d) 30
- (a) 2 (b) None (c) 45 (d) 20
- (a) Z2 (b) Z-fone (c) 90 (d) 240

Chapter 24

Exercise 24.1

- 28
- 2
- £15.95
- £120
- 1, 2, 3, 4, 6, 12
- 135 minutes
- 4500 m
- 79.6
- 3 degrees
- £10
- Isosceles triangle
- 100 cm²

Exercise 24.2

- 16
- 2
- £16.95
- £30
- 1, 2, 11, 22
- 210 minutes
- 2500 m
- 632
- 75 degrees
- £15
- Square or Rhombus
- 49 cm²

Exercise 24.3

- 38
- 20
- £17.50
- £40
- $\frac{43}{100}$ and 0.43
- 140 minutes
- 7200 grams
- 0.21
- 55 degrees
- South
- 3.25 Litres
- 30 cm²

Exercise 24.4

- 60
- 9
- £18.30
- £50
- $\frac{79}{100}$ and 0.79
- 315 minutes
- 4.8 kilograms
- 0.13
- 10 degrees
- Southwest
- 7.04 litres
- 28 cm²

Exercise 24.5

- 1
- 7
- $x = 32$
- £30
- 5 hrs 10 mins
- £33.25
- 200 metres
- 97 cm
- 77, 69, 61
- North
- 4 hrs 55 mins
- 200 millilitres

Exercise 24.6

- 27
- 6
- $x = 24$
- £0.90
- 7hrs 30 mins
- £19.75
- 600 m
- 102 cm
- 90, 69, 48
- North-west
- 8 hrs 40 mins
- 50 millilitres

Chapter 25

Exercise 25.1

- £56.46
- £20.51
- £38.19
- £24.39
- 345 mins
- 2 hrs 45 mins
- 2 hrs 24 mins
- 2026
- 9.11am
- ? = 34
- $a = 16$
- $b = 48$
- ? = 54
- 216
- 153
- 10 000 m
- 7.6 cm
- 25 mm
- 9.8 km
- 90 mm²

Exercise 25.2

- £50.91
- £7.95
- £56.48
- £50.83
- 585 mins
- 2 hrs 27 mins
- 3 hrs 48 mins
- 11:54
- 7.23pm
- ? = 256
- $c = 25$
- $d = 59$
- ? = 38
- 267
- 64
- 12 000 m
- 5.1 cm
- 34 mm
- 2.3 km
- 80 mm²

Exercise 25.3

- £72.54
- £1.41
- £44.26
- £35.49
- 375 secs
- 6 hrs 32 mins
- 9 hrs 58 mins
- 00:58
- 4.18pm
- 175 cm²
- 36 mm²
- $e = 59$
- $f = 25$
- 70
- 81
- 15 000 ml
- 6.5 L
- 8.7 kg
- 5700 g
- 28 cm

Exercise 25.4

- £125.02
- £3.24
- £22.52
- £36.83
- 585 secs
- 2 hrs 46 mins
- 4 hrs 52 mins
- 01:33
- 3.47 pm
- 392mm²
- 21 mm²
- $e = 87$
- $f = 5$
- 265
- 29
- 41 000 ml
- 2.3 L
- 7.5 kg
- 4 800 g
- 36 cm

Exercise 25.5

- £231.75
- £5.69
- £92.14
- £53.68
- 252 secs
- 4 hrs 14 mins
- 5 hrs 46 mins
- 1495 mm²
- 384 mm²

- | | | |
|---------------|-------------|---------------|
| 10. $a = 3$ | 11. $b = 6$ | 12. $g = 170$ |
| 13. $h = 125$ | 14. 420 | 15. 28 |
| 16. 56 970 ml | 17. 9.876 L | 18. 6.432 kg |
| 19. 9900g | 20. 84 cm | |

Exercise 25.6

- | | | |
|------------------|-------------------------|------------------------|
| 1. £558.88 | 2. £18.65 | 3. £119.44 |
| 4. £43.01 | 5. 516 secs | 6. 3 hrs 46 mins |
| 7. 3 hrs 49 mins | 8. 3300 mm ² | 9. 504 mm ² |
| 10. $c = 9$ | 11. $d = 4$ | 12. $i = 154$ |
| 13. $j = 36$ | 14. 450 | 15. 51 |
| 16. 13 960 ml | 17. 6.555 L | 18. 9.887 kg |
| 19. 6200 g | 20. 84 cm | |

Chapter 26

Exercise 26.1

- | | | |
|---------------|---------------------|------------|
| 1. 4:20 pm | 2. 20 cm | 3. £0.80 |
| 4. 16 minutes | 5. 4750 m | 6. 6 faces |
| 7. 3 hours | 8. Scalene triangle | |
| 9. £240 | 10. 12 pull ups | 11. 9 |
| 12. 4 hours | | |

Exercise 26.2

- | | | |
|---------------------|--------------------------|------------|
| 1. 6:20 pm | 2. 30 cm | 3. £1.35 |
| 4. 33 minutes | 5. 9900 m | 6. 4 sides |
| 7. 7 hours | 8. Right angled triangle | |
| 9. 3 m ² | 10. 1 press up | 11. 25 |
| 12. 5 hours | | |

Exercise 26.3

- | | | |
|---------------|-------------|----------------|
| 1. £60.61 | 2. 6.10 pm | 3. 25 kg |
| 4. 22.4 m | 5. No | 6. North West |
| 7. 25 minutes | 8. 10:28 pm | 9. 33 beads |
| 10. 12% | 11. 4 sides | 12. 15 minutes |

Exercise 26.4

- | | | |
|---------------|-------------|----------------|
| 1. £26.17 | 2. 5:55 pm | 3. 24 kg |
| 4. 29.4 m | 5. 12:39 pm | 6. North |
| 7. 50 minutes | 8. 8:58 pm | 9. 16 beads |
| 10. 9% | 11. 4 | 12. 20 seconds |

Exercise 26.5

- | | | |
|---------------|--------------|------------------------|
| 1. 1:14 am | 2. 73 cm | 3. 6 runs |
| 4. 36 mm | 5. 0.5 hours | 6. 9 sides |
| 7. North West | 8. 8 cm | 9. £9000 |
| 10. £620 | 11. Hexagon | 12. 48 cm ² |

Exercise 26.6

- | | | |
|---------------|--------------|------------------------|
| 1. 1:13 am | 2. 75 cm | 3. 4 runs |
| 4. 14 mm | 5. 0.5 hours | 6. 8 sides |
| 7. North East | 8. 24 cm | 9. £25 200 |
| 10. £1035 | 11. Heptagon | 12. 30 cm ² |