

ZETA PRIMARY

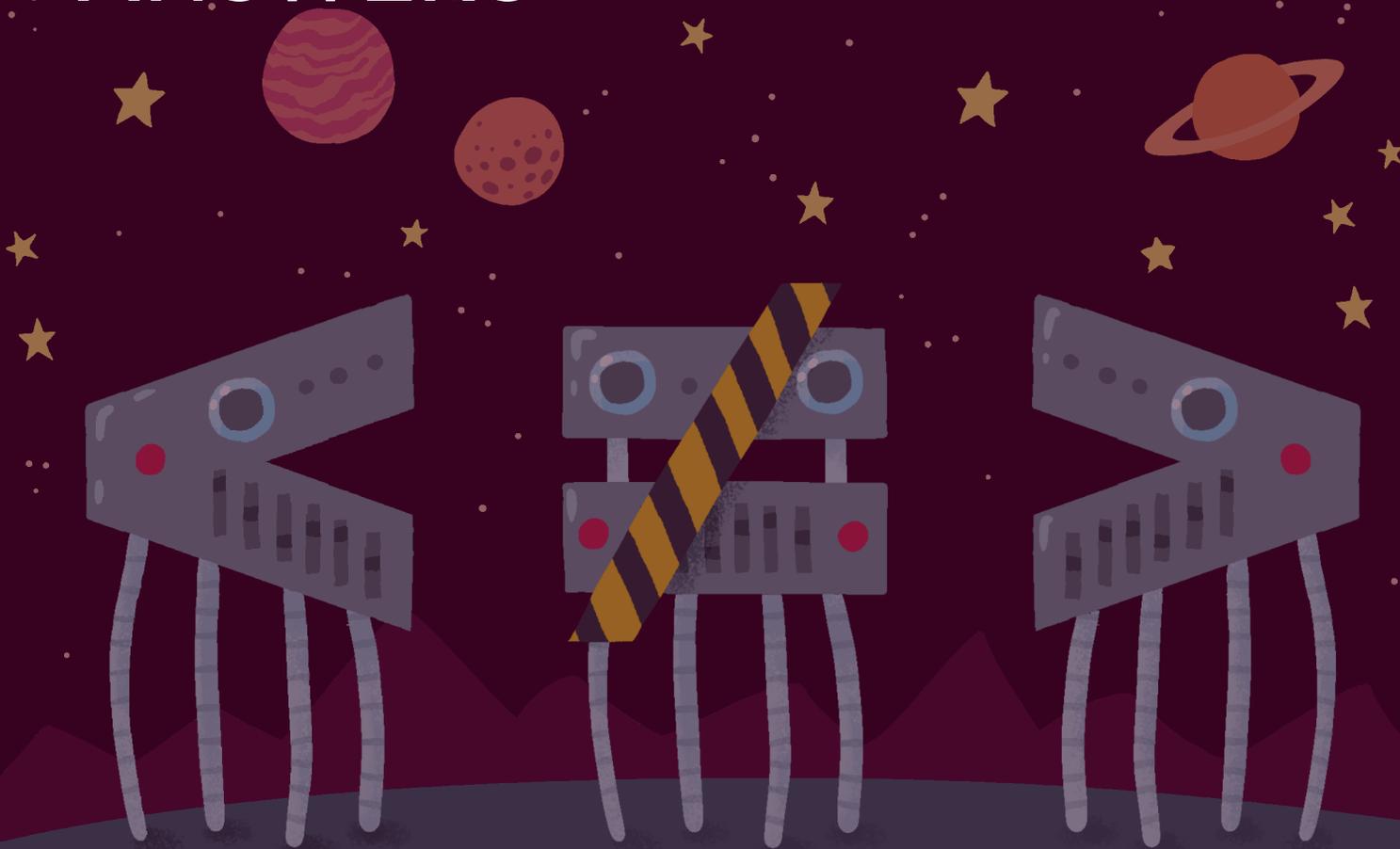
2C

MATHS & NUMERACY

CfE Second Level

TEXTBOOK

ANSWERS



Chapter 1

Exercise 1.1

- 217 405
- 305 302
- 213 411
- 503 391
- 301 129
- 840 000
- 510 239
- 392 566
- 457 808
- 743 252
- 186 317
- 585 107
- 200 007
- 380 886
- 916 249
- 700 210
- 900 101
- 205 805
- 173 123
- 960 106

Exercise 1.2

- One hundred and twenty-five thousand, two hundred and eighty-three.
- Two hundred and thirty-four thousand, two hundred and thirty-three.
- Three hundred and seventy-four thousand, two hundred and seventy-three.
- Seven hundred and ninety-nine thousand, nine hundred and ninety-nine.
- Six hundred and fifty-three thousand, one hundred and sixty-one.
- Eight hundred and seventy-two thousand, two hundred and seventy-three.
- One hundred and eleven thousand, one hundred and eleven.
- Eight hundred and ninety-two thousand.
- One hundred and twenty-three thousand, three hundred and thirty-two.
- Five hundred and forty-five thousand, five hundred and three.
- Nine hundred and twenty-eight thousand and one.
- Six hundred and thirty thousand, nine hundred and twenty-nine.
- Three hundred and eleven thousand and thirty-five.
- Nine hundred and twenty-seven thousand, one hundred and ninety-two.
- Two hundred and twenty-three thousand, one hundred and eighty-two.
- Seven hundred and twenty-five thousand, three hundred and three.
- Eight hundred and twenty-seven thousand, one hundred and thirty-four.
- One hundred thousand and one hundred.
- Seven hundred and twelve thousand and nine.
- Two hundred and eighty-three thousand and seven hundred.

Exercise 1.3

- $200\ 000 + 90\ 000 + 8000 + 300 + 90 + 1$
- $100\ 000 + 10\ 000 + 2000 + 400 + 50 + 5$

- $900\ 000 + 80\ 000 + 8000 + 100 + 10 + 8$
- $100\ 000 + 90\ 000 + 2000 + 500 + 50 + 1$
- $300\ 000 + 20\ 000 + 6000 + 10 + 8$
- $800\ 000 + 70\ 000 + 1000 + 100 + 70 + 2$
- $200\ 000 + 90\ 000 + 3000 + 100 + 10$
- $800\ 000 + 8000 + 800 + 10 + 7$
- $100\ 000 + 20\ 000 + 3000 + 300 + 20 + 3$
- $500\ 000 + 5000 + 100 + 10 + 1$
- $100\ 000 + 80\ 000 + 2000 + 900$
- $100\ 000 + 100$
- $100\ 000 + 60\ 000 + 2000 + 90$
- $100\ 000 + 20\ 000 + 8000 + 90 + 9$
- $200\ 000 + 5$
- $100\ 000 + 90\ 000 + 2000 + 200 + 10 + 3$
- $200\ 000 + 60\ 000 + 6000 + 800 + 70 + 6$
- $900\ 000 + 10\ 000 + 7000 + 900 + 10 + 9$
- $1\ 000\ 000 + 400\ 000$
- $90\ 000 + 9$

Exercise 1.4

- (a) 16 444, 17 127, 60 222 (b) 81 800, 188 811, 888 118
(c) 19 987, 22 221, 91 999 (d) 41 545, 44 435, 444 455
(e) 22 431, 41 223, 442 330 (f) 11 433, 111 122, 111 441
(g) 23 222, 312 261, 331 198 (h) 904, 941, 9222
(i) 1070, 10 091, 18 919
- (a) 100 022, 100 271, 100 644, 100 717, 100 736,
(b) 1811, 18 002, 18 800, 81 818, 88 118
(c) 9919, 90 021, 99 987, 909 000, 919 191
(d) 4000, 4010, 4035, 401 545, 404 555
(e) 22 330, 23 222, 202 231, 222 223, 230 030
(f) 1202, 1204, 12 441, 120 111, 120 433
(g) 60 261, 61 283, 66 222, 166 198, 168 191
(h) 7111, 7714, 70 717, 71 141, 71 222
(i) 9900, 9901, 899 919, 909 000, 939 070
(j) 700 001, 700 637, 700 791, 701 001, 717 171

Exercise 1.5

- 1.1
(a) 402 605 (b) 983 705
- 1.2
(a) Fifty thousand, nine hundred and twenty-four
(b) Nine hundred and eight thousand, three hundred and seventy-one
(c) Six hundred thousand, one hundred and two
- 1.3
(a) $30\ 000 + 1000 + 600 + 40$
(b) $40\ 000 + 200 + 60 + 4$
(c) $900\ 000 + 10\ 000 + 9000 + 400 + 1$

1.4

(a) 65 202, 99 126, 630 144, 912 117

(b) 7241, 31 404, 65 303, 841 422

Chapter 2

Exercise 2.1

1.

(a) 192,000 (b) 88,000 (c) 40,000

(d) 999,000 (e) 918,000 (f) 112,000

(g) 192,000 (h) 88,000 (i) 21,000

(j) 312,000 (k) 509,000 (l) 956,000

(m) 726,000 (n) 185,000 (o) 953,000

(p) 42,000 (q) 569,000 (r) 829,000

2.

(a) 190,000 (b) 90,000 (c) 40,000

(d) 1,000,000 (e) 920,000 (f) 110,000

(g) 190,000 (h) 90,000 (i) 20,000

(j) 310,000 (k) 510,000 (l) 960,000

(m) 480,000 (n) 60,000 (o) 920,000

(p) 310,000 (q) 850,000 (r) 140,000

3.

(a) 700,000 (b) 300,000 (c) 100,000

(d) 500,000 (e) 1,000,000 (f) 100,000

(g) 700,000 (h) 0 (i) 900,000

(j) 400,000 (k) 100,000 (l) 800,000

(m) 300,000 (n) 900,000 (o) 100,000

(p) 800,000 (q) 100,000 (r) 700,000

Exercise 2.2

1.

(a) 53 (b) 24 (c) 210 (d) 21

(e) 95 (f) 28 (g) 572 (h) 26

(i) 52 (j) 9 (k) 612 (l) 298

(m) 842 (n) 278 (o) 4 (p) 624

(q) 29 (r) 227

2.

(a) £18 (b) £14 (c) £2 (d) £14

(e) £81 (f) £101 (g) £42 (h) £17

(i) £12 (j) £4 (k) £77 (l) £10

(m) £70 (n) £17 (o) £34 (p) £143

(q) £114 (r) £1172

3.

(a) 180 cm (b) 5 m (c) £107 (d) 7

Exercise 2.3A

1.

(a) 3.1 (b) 8.5 (c) 6.9

(d) 1.4 (e) 3.3 (f) 48.7

2.

(a) 2.3 and 2.4 (b) 3.7 and 3.8 (c) 5 or 5.0 and 5.1

(d) 0.2 and 0.3 (e) 1.9 and 2 or 2.0 (f) 3.1 and 3.2

(g) 1.5 and 1.6 (h) 0.6 and 0.7 (i) 5.3 and 5.4

(j) 0.9 and 1 or 1.0 (k) 6 or 6.0 and 6.1 (l) 1 or 1.0 and 1.1

3.

(a) 2.3 (b) 3.8 (c) 5 or 5.0 (d) 0.2

(e) 2 or 2.0 (f) 3.1 (g) 1.6 (h) 0.7

(i) 5.4 (j) 0.9 (k) 6.1 (l) 1.1

Exercise 2.3B

1.

(a) 2.45 (b) 3.03 (c) 5.2 or 5.20

(d) 1.33 (e) 0.61 (f) 7.27

2.

(a) 0.56 and 0.57 (b) 5.19 and 5.2 or 5.20

(c) 4.2 or 4.20 and 4.21 (d) 0.53 and 0.54

(e) 6.02 and 6.03 (f) 5.1 or 5.10 and 5.11

(g) 3.12 and 3.13 (h) 0.02 and 0.03

(i) 6.89 and 6.9 or 6.90 (j) 10.47 and 10.48

(k) 5.28 and 5.29 (l) 8.99 and 9 or 9.00

3.

(a) 0.56 (b) 5.2 or 5.20 (c) 4.21 (d) 0.53

(e) 6.03 (f) 5.1 or 5.10 (g) 3.13 (h) 0.03

(i) 6.9 or 6.90 (j) 10.47 (k) 5.29 (l) 9 or 9.00

Exercise 2.4

1.

(a) £640 (b) £1370 (c) £1180

(d) £640 (e) £1470 (f) £870

2.

(a) £200 (b) £50 (c) £60

(d) £230 (e) £200 (f) £180

3.

(a) £1000 (b) £1400 (c) £1000

(d) £800 (e) £1500 (f) £900

4.

(a) £100 (b) £0 (c) £400

(d) £400 (e) £400 (f) £200

Exercise 2.5

2.1

(a) 26 000, 30 000, 0

(b) 183 000, 180 000, 200 000

(c) 352 000, 350 000, 400 000

2.2

(a) 8068 (b) £102 (c) 289 cm

2.3A

(a) 27.2 (b) 111.3 (c) 5.1

2.3B

(a) 5.24 (b) 1.4 or 1.40 (c) 0.1 or 0.10

2.4

(a) £240 (b) £220 (c) £890

Chapter 3

Exercise 3.1

1.
(a) 821 116 (b) 912 753 (c) 1 027 769
(d) 1 008 745 (e) 946 632 (f) 520 915
(g) 279 992 (h) 911 748 (i) 905 782

2.
(a) 859 849 (b) 917 467 (c) 1 200 698
(d) 974 905 (e) 999 566 (f) 888 624
(g) 408 347 (h) 958 654 (i) 913 077

Exercise 3.2

1.
(a) 712 389 (b) 444 903 (c) 481 787
(d) 166 823 (e) 426 722 (f) 307 422
(g) 128 815 (h) 312 147 (i) 111 888

2.
(a) 119 136 (b) 27 803 (c) 428 609
(d) 319 971 (e) 308 629 (f) 609 046
(g) 215 333 (h) 396 036 (i) 102 225

Exercise 3.3A

1. 927 708 2. 149 492 3. 831 645 4. 213 012
5. 999 018 6. 285 655 7. 45 638 8. 101 999
9. 914 013 10. 627 242 11. 240 217 12. 105 260
13. 330 647 14. 403 725 15. 600 937 16. 237 634
17. 22 950 18. 392 687 19. 110 886 20. 300 538

Exercise 3.3B

1. 203 928 2. 647 802 3. 307 522 4. 592 768
5. 102 356 6. 535 044 7. 182 016 8. 326 547
9. 406 338 10. 113 279

Exercise 3.4

1.
(a) 84 (b) 96 (c) 91 (d) 113 (e) 104
(f) 53 (g) 104 (h) 97 (i) 133 (j) 155
(k) 49 (l) 59 (m) 38 (n) 45 (o) 45
(p) 49 (q) 35 (r) 58 (s) 32 (t) 32
2.
(a) 435 (b) 365 (c) 301 (d) 499 (e) 710
(f) 793 (g) 485 (h) 1,002 (i) 320 (j) 939
(k) 286 (l) 613 (m) 343 (n) 699 (o) 725
(p) 119 (q) 814 (r) 583 (s) 383 (t) 555
3.
(a) 895 (b) 1006 (c) 960 (d) 1014 (e) 1005
(f) 1197 (g) 895 (h) 1221 (i) 895 (j) 1190
(k) 516 (l) 438 (m) 513 (n) 335 (o) 389
(p) 307 (q) 511 (r) 569 (s) 575 (t) 524

Exercise 3.5A

1. 90 2. 113 3. 134 4. 101
5. 374 6. 161 7. 298 8. 166
9. 16 10. 200 11. 300 12. 27
13. 8 14. 9 15. 8 16. 8

Exercise 3.5B

1. 332 2. 792 3. 118 4. 810
5. 176 6. 625 7. 498 8. 1543
9. 722 10. 501 11. 845 12. 375
13. 498 14. 254 15. 633 16. 456

Exercise 3.6

- 3.1
(a) 8621 (b) 68 345 (c) 751 453
- 3.2
(a) 5467 (b) 51 211 (c) 149 348
- 3.3
(a) 16 084 (b) 566 907 (c) 4605
- 3.4
(a) 801 (b) 750 (c) 801
(d) 67 (e) 625 (f) 615
- 3.5
(a) 92 (b) 145 (c) 282

Chapter 4

Exercise 4.1

1.
(a) 140 (b) 192 (c) 336 (d) 132 (e) 128
(f) 92 (g) 228 (h) 248 (i) 104 (j) 176
(k) 124 (l) 152 (m) 200 (n) 336 (o) 288
(p) 424 (q) 176 (r) 576
2.
(a) 132 (b) 108 (c) 186 (d) 228 (e) 90
(f) 252 (g) 204 (h) 264 (i) 168 (j) 246
(k) 324 (l) 300 (m) 204 (n) 378 (o) 276
(p) 840 (q) 486 (r) 492
3.
(a) 279 (b) 207 (c) 198 (d) 648 (e) 378
(f) 225 (g) 153 (h) 459 (i) 558 (j) 504
(k) 612 (l) 531
4.
(a) 260 (b) 215 (c) 175 (d) 220 (e) 145
(f) 120 (g) 455 (h) 285 (i) 335 (j) 340
(k) 205 (l) 385

Exercise 4.2A

1. 340 2. 10 600 3. 76 000
4. 11 200 5. 23 400 6. 880
7. 208 000 8. 500 9. 81 000
10. 5600 11. 12 300 12. 8190
13. 185 000 14. 30 500 15. 22 000

16. 5670 17. 6000 18. 150
 19. 102 000 20. 22 800
- Exercise 4.2B**
1. 4880 2. 230 000 3. 96 000
 4. 36 000 5. 200 000 6. 11 400
 7. 495 000 8. 5280 9. 280 000
 10. 7200 11. 73 800 12. 180 140
 13. 831 000 14. 3300 15. 632 000
 16. 26 250 17. 40 800 18. 17 100
 19. 220 000 20. 78 400

- Exercise 4.3A**
1. 3240 2. 6536 3. 4990
 4. 19 086 5. 14 230 6. 73 548
 7. 36 612 8. 4510 9. 1791
 10. 94 444 11. 65 108 12. 17 568
 13. 209 352 14. 22 560 15. 27 693
 16. 5982 17. 635 068 18. 205 434

- Exercise 4.3B**
1. 696 2. 1425 3. 2768
 4. 2590 5. 4584 6. 6251
 7. 7968 8. 7263 9. 2492
 10. 7125 11. 14 432 12. 28 770
 13. 41 328 14. 55 984 15. 37 458
 16. 75 620 17. 165 684 18. 584 973

- Exercise 4.3C**
1. 472 2. 1743 3. 1708
 4. 3470 5. 5250 6. 6734
 7. 6504 8. 6741 9. 2654
 10. 8547 11. 14864 12. 23 425
 13. 35 562 14. 49 238 15. 38 502
 16. 86 316 17. 242 396 18. 715 149

- Exercise 4.3D**
1. 2492 2. 1634 3. 2380
 4. 25,506 5. 32,835 6. 20,178
 7. 9460 8. 3620 9. 4864
 10. 154,644 11. 164,828 12. 27,144
 13. 104,628 14. 20,460 15. 18,882
 16. 3085 17. 425,768 18. 210,654

- Exercise 4.4**
1. 16 2. 16 3. 14 4. 14 5. 15
 6. 34 7. 23 8. 24 9. 24 10. 32
 11. 31 12. 12 13. 18 14. 15 15. 22
 16. 15 17. 16 18. 14 19. 36 20. 48

- Exercise 4.5**
1. 135 2. 82 3. 1800 4. 63 5. 84
 6. 95 7. 15 8. 64 9. 33 10. 23
 11. 74 12. 22 13. 27 14. 55 15. 69
 16. 17 17. 85 18. 76 19. 32 20. 29

- Exercise 4.6**
1. 2535 2. 215 3. 20 131 4. 32 541
 5. 52 416 6. 652 7. 52 415 8. 65 241
 9. 6528 10. 87 451 11. 85 471 12. 66 668
 13. 652 14. 54 171 15. 874 16. 3526
 17. 2469 18. 65 214 19. 2145 20. 32 541

- Exercise 4.7**
1. 130 819 r 3 2. 65 213 r 4 3. 181 750 r 3
 4. 8745 r 1 5. 65 214 r 3 6. 223 r 1
 7. 58 742 r 2 8. 95 874 r 2 9. 524 r 1
 10. 5416 r 4 11. 87 444 r 5 12. 652 r 2
 13. 8873 r 8 14. 450 437 r 1 15. 85 986 r 2
 16. 963 r 2 17. 108 601 r 4 18. 4155 r 2
 19. 4448 r 1 20. 6853 r 1

- Exercise 4.8A**
1. 1691 2. 736 3. 741 4. 7371
 5. 1512 6. 336 7. 792 8. 323
 9. 7568 10. 8722 11. 4275 9. 407
 13. 2574 14. 2925 15. 1314 16. 1305
 17. 399 18. 1496 19. 5494 20. 3168

- Exercise 4.8B**
1. 17 094 2. 11 466 3. 47 042 4. 13 924
 5. 32 704 6. 26 685 7. 47 196 8. 8323
 9. 27 584 10. 67 044 11. 23 985 9. 10 716
 13. 64 152 14. 62 205 15. 19 642 16. 9906
 17. 37 584 18. 18 108 19. 90 582 20. 52 437

- Exercise 4.9A**
1.
 (a) 144 (b) 292 (c) 175 (d) 376 (e) 114
 (f) 460 (g) 135 (h) 72 (i) 294 (j) 124
 (k) 72 (l) 190 (m) 258 (n) 245 (o) 100
 (p) 136 (q) 288 (r) 90
2.
 (a) 168 (b) 468 (c) 112 (d) 774 (e) 126
 (f) 472 (g) 207 (h) 324 (i) 296 (j) 567
 (k) 567 (l) 174 (m) 423 (n) 616 (o) 512
 (p) 189 (q) 736 (r) 210
3.
 (a) 312 (b) 693 (c) 546 (d) 176 (e) 174
 (f) 162 (g) 224 (h) 217 (i) 364 (j) 304
 (k) 416 (l) 702 (m) 152 (n) 261 (o) 738
 (p) 534 (q) 378 (r) 522

- Exercise 4.9B**
1.
 (a) 16 (b) 18 (c) 26 (d) 19 (e) 31
 (f) 110 (g) 41 (h) 67 (i) 29 (j) 74
 (k) 170 (l) 29 (m) 90 (n) 170 (o) 48

2.
 (a) 12 (b) 17 (c) 24 (d) 16 (e) 50
 (f) 28 (g) 78 (h) 13 (i) 23 (j) 42
 (k) 55 (l) 53 (m) 90 (n) 85 (o) 27

Exercise 4.10

- 4.1
 (a) 296 (b) 354 (c) 540
- 4.2
 (a) 6 048 630 (b) 174 800 (c) 294 000
- 4.3
 (a) 4085 (b) 20 724 (c) 827 307
- 4.4
 (a) 29 (b) 21 (c) 15
 (d) 23 (e) 23 (f) 19
- 4.5
 (a) 6523 (b) 632 (c) 142
- 4.6
 (a) 1711 (b) 8476 (c) 31
- 4.7
 (a) 541 r 1 (b) 13175 r 1 (c) 85 623
- 4.8
 (a) 4284 (b) 3040 (c) 3108
 (d) 3952 (e) 28 658 (f) 8359
- 4.9
 (a) 304 (b) 588 (c) 864
 (d) 26 (e) 57 (f) 31

Chapter 5

Exercise 5.1A

- 13, 26, 39, 52, 65, 78, 91, 104
- 19, 38, 57, 76, 95, 114, 133, 152
- 60, 120, 180, 240, 300, 360, 420, 480
- 80, 160, 240, 320, 400, 480, 560, 640
- 110, 220, 330, 440, 550, 660, 770, 880
- 10, 20, 30, 40, 50, 60, 70, 80
- 32, 64, 96, 128, 160, 192, 224, 256
- 17, 34, 51, 68, 85, 102, 119, 136
- 120, 240, 360, 480, 600, 720, 840, 960
- 18, 36, 54, 72, 90, 108, 126, 144
- 25, 50, 75, 100, 125, 150, 175, 200
- 35, 70, 105, 140, 175, 210, 245, 280
- 45, 90, 135, 180, 225, 270, 315, 360
- 250, 500, 750, 1000, 1250, 1500, 1750, 2000
- 500, 1000, 1500, 2000, 2500, 3000, 3500, 4000

Exercise 5.1B

- True 2. True 3. False 4. False 5. True
- True 7. True 8. True 9. False 10. True
- False 12. True

Exercise 5.2

- 30 2. 12 3. 12 4. 63 5. 20
- 40 7. 35 8. 18 9. 15 10. 56
- 60 12. 36 13. 40 14. 28 15. 24
- 132 17. 33 18. 72 19. 22 20. 77

Exercise 5.3

- 1, 2, 11, 22 2. 1, 3, 11, 33
- 1, 43 4. 1, 5, 11, 55
- 1, 2, 4, 5, 10, 20, 25, 50, 100
- 1, 2, 4, 5, 8, 10, 20, 40
- 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60
- 1, 29 9. 1, 97
- 1, 2, 4, 5, 8, 10, 16, 20, 32, 40, 80, 160
- 1, 2, 5, 10, 25, 50, 125, 250
- 1, 3, 17, 51 13. 1, 73
- 1, 5, 7, 35 15. 1, 2, 5, 7, 10, 14, 35, 70
- 1, 71 17. 1, 2, 3, 6, 9, 18
- 1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20, 24, 25, 30, 40, 50, 60, 75, 100, 120, 150, 200, 300, 600
- 1, 2, 7, 14 20. 1, 61

Exercise 5.4

- Prime (b) Prime (c) Prime (d) Not prime
 - Prime (f) Not prime (g) Not prime (h) Prime
 - Prime (j) Prime (k) Not prime (l) Not prime
 - Prime (m) Prime (n) Not prime (o) Prime
- Apart from 2, all prime numbers are odd
- Answers will vary

Exercise 5.5

- 5 2. 9 3. 2 4. 1 5. 20
- 2 7. 10 8. 5 9. 1 10. 2
- 10 12. 5 13. 20 14. 2 15. 5
- 5 17. 4 18. 6 19. 100 20. 10

Exercise 5.6

5.1

- 12, 24, 36, 48, 60, 72, 84, 96
- 10, 20, 30, 40, 50, 60, 70, 80
- 30, 60, 90, 120, 150, 180, 210, 240
- 16, 32, 48, 64, 80, 96, 112, 128
- 25, 50, 75, 100, 125, 150, 175, 200
- 14, 28, 42, 56, 70, 84, 98, 112

5.2

- 1, 17 (b) 1, 3, 5, 9, 15, 45
- 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60
- 1, 5, 25 (e) 1, 31
- 1, 5

Chapter 6

Exercise 6.1

1.
(a) 14, 39, 72, 88 (b) 9, 54, 62, 67 (c) 18, 21, 35, 83
(d) 46, 47, 52, 61 (e) 33, 79, 86, 92 (f) 13, 66, 75, 82
(g) 10, 19, 37, 42 (h) 53, 59, 93, 95 (i) 4, 36, 91, 98
(j) 14, 68, 73, 76 (k) 17, 23, 29, 56 (l) 12, 17, 69, 81

2.
(a) 76, 41, 29, 18 (b) 88, 64, 57, 13 (c) 99, 94, 55, 27
(d) 52, 38, 37, 15 (e) 78, 76, 74, 72 (f) 86, 71, 58, 49
(g) 97, 89, 35, 27 (h) 74, 67, 66, 61 (i) 95, 93, 35, 32
(j) 81, 80, 77, 75 (k) 74, 50, 45, 23 (l) 90, 45, 26, 13

Exercise 6.2

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

2.
(a) -49, -44, -38, -35, -27, -21
(b) -97, -93, -91, -85, -81, -76
(c) -92, -86, -71, -65, -37, -33
(d) -58, -53, -41, -31, -27, -24
(e) -79, -61, -52, -47, -42, -16
(f) -62, -55, -43, -34, -29, -26
(g) -95, -81, -68, -57, -41, -23
(h) -85, -75, -66, -61, -19, -14
(i) -96, -77, -64, -58, -28, -21
(j) -83, -62, -50, -37, -16, -12

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

Exercise 6.3

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

- (i) -18, -14, -13, -12, -5, 8 (j) -20, -18, -12, -10, -6, 4

Exercise 6.4

- 6.1
(a) 27, 62, 84, 95 (b) 16, 41, 73, 99 (c) 7, 68, 85, 92
- 6.2
(a) -97, -88, -34, -12 (b) -61, -49, -35, -14
(c) -69, -58, -32, -27
- 6.3
(a) -62, -14, 31, 58 (b) -93, -26, -17, 81
(c) -9, -4, 72, 88

Chapter 7

Exercise 7.1

1. Answers may vary.
(a) $\frac{2}{4}, \frac{3}{6}, \frac{5}{10}$ (b) $\frac{2}{6}, \frac{3}{9}, \frac{5}{15}$ (c) $\frac{2}{12}, \frac{3}{18}, \frac{5}{30}$
(d) $\frac{2}{8}, \frac{3}{12}, \frac{5}{20}$ (e) $\frac{2}{18}, \frac{3}{27}, \frac{4}{36}$ (f) $\frac{2}{20}, \frac{3}{30}, \frac{5}{50}$
2. Answers may vary.
(a) $\frac{2}{30}, \frac{3}{45}, \frac{4}{60}$ (b) $\frac{2}{22}, \frac{3}{33}, \frac{5}{55}$ (c) $\frac{2}{24}, \frac{3}{36}, \frac{5}{60}$
(d) $\frac{2}{28}, \frac{3}{42}, \frac{5}{70}$ (e) $\frac{2}{14}, \frac{3}{21}, \frac{4}{28}$ (f) $\frac{2}{14}, \frac{3}{21}, \frac{4}{28}$
(g) $\frac{2}{100}, \frac{3}{150}, \frac{5}{250}$ (h) $\frac{2}{200}, \frac{3}{300}, \frac{4}{400}$ (i) $\frac{2}{2000}, \frac{3}{3000}, \frac{4}{4000}$
(j) $\frac{2}{150}, \frac{3}{225}, \frac{4}{300}$ (k) $\frac{5}{75}, \frac{6}{90}, \frac{7}{105}$ (l) $\frac{2}{36}, \frac{3}{54}, \frac{4}{72}$
3. Answers may vary.
(a) $\frac{4}{34}, \frac{6}{51}, \frac{8}{68}$ (b) $\frac{6}{30}, \frac{9}{45}, \frac{12}{60}$ (c) $\frac{8}{40}, \frac{12}{60}, \frac{16}{80}$
(d) $\frac{6}{20}, \frac{9}{30}, \frac{12}{40}$ (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) $\frac{18}{20}, \frac{27}{30}, \frac{36}{40}$ (i) $\frac{6}{16}, \frac{9}{24}, \frac{12}{32}$
(j) $\frac{8}{18}, \frac{12}{27}, \frac{16}{36}$ (k) $\frac{12}{22}, \frac{18}{33}, \frac{24}{44}$ (l) $\frac{12}{40}, \frac{18}{60}, \frac{24}{80}$
(m) $\frac{14}{26}, \frac{21}{39}, \frac{28}{52}$ (n) $\frac{6}{28}, \frac{9}{42}, \frac{12}{56}$ (o) $\frac{16}{24}, \frac{24}{36}, \frac{32}{48}$
(p) $\frac{4}{28}, \frac{6}{42}, \frac{8}{56}$ (q) $\frac{6}{100}, \frac{9}{150}, \frac{12}{200}$ (r) $\frac{12}{50}, \frac{18}{75}, \frac{24}{100}$

Exercise 7.2

1.
(a) $\frac{1}{5}$ (b) $\frac{2}{7}$ (c) $\frac{1}{3}$ (d) $\frac{5}{6}$ (e) $\frac{3}{7}$
(f) $\frac{1}{10}$ (g) $\frac{1}{9}$ (h) $\frac{1}{8}$ (i) $\frac{1}{5}$ (j) $\frac{1}{5}$
(k) $\frac{1}{11}$ (l) $\frac{4}{7}$ (m) $\frac{1}{4}$ (n) $\frac{8}{21}$ (o) $\frac{9}{32}$
2.
(a) $\frac{4}{5}$ (b) $\frac{7}{11}$ (c) $\frac{6}{7}$ (d) $\frac{3}{5}$ (e) $\frac{13}{14}$
(f) $\frac{2}{3}$ (g) $\frac{5}{9}$ (h) $\frac{3}{5}$ (i) $\frac{2}{7}$ (j) $\frac{4}{5}$
(k) $\frac{9}{14}$ (l) $\frac{1}{4}$ (m) $\frac{4}{7}$ (n) $\frac{7}{9}$ (o) $\frac{4}{5}$
(p) $\frac{3}{5}$ (q) $\frac{4}{5}$ (r) $\frac{5}{7}$ (s) $\frac{1}{3}$ (t)
- $\frac{1}{4}$

Exercise 7.3A

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

Exercise 7.3B

1. $\frac{2}{4} = \frac{4}{8}$ 2. $\frac{3}{5} = \frac{9}{15}$ 3. $\frac{5}{7} = \frac{15}{21}$ 4. $\frac{3}{4} = \frac{15}{20}$
5. $\frac{6}{7} = \frac{24}{28}$ 6. $\frac{2}{5} = \frac{12}{30}$ 7. $\frac{5}{8} = \frac{25}{40}$ 8. $\frac{5}{6} = \frac{25}{30}$
9. $\frac{24}{27} = \frac{8}{9}$ 10. $\frac{8}{9} = \frac{32}{36}$ 11. $\frac{25}{30} = \frac{100}{120}$ 12. $\frac{84}{12} = \frac{42}{60}$
13. $\frac{4}{6} = \frac{36}{54}$ 14. $\frac{3}{5} = \frac{27}{45}$ 15. $\frac{7}{8} = \frac{84}{96}$

Exercise 7.3C

1. $\frac{3}{8}, \frac{2}{4}, \frac{4}{6}$ 2. $\frac{2}{5}, \frac{5}{10}, \frac{8}{10}$ 3. $\frac{3}{14}, \frac{10}{21}, \frac{6}{7}$ 4. $\frac{1}{6}, \frac{5}{6}, \frac{11}{12}$
5. $\frac{2}{3}, \frac{7}{9}, \frac{15}{18}$ 6. $\frac{2}{8}, \frac{5}{16}, \frac{3}{4}$ 7. $\frac{1}{3}, \frac{1}{2}, \frac{4}{6}$ 8. $\frac{3}{9}, \frac{5}{9}, \frac{2}{3}$
9. $\frac{2}{5}, \frac{5}{10}, \frac{9}{10}$ 10. $\frac{3}{6}, \frac{2}{3}, \frac{7}{9}$ 11. $\frac{1}{5}, \frac{6}{15}, \frac{3}{4}$ 12. $\frac{1}{5}, \frac{3}{5}, \frac{8}{10}$
13. $\frac{3}{16}, \frac{2}{4}, \frac{6}{8}$ 14. $\frac{2}{9}, \frac{1}{3}, \frac{6}{9}$ 15. $\frac{3}{12}, \frac{5}{6}, \frac{11}{12}$ 16. $\frac{2}{4}, \frac{13}{20}, \frac{4}{5}$
17. $\frac{7}{16}, \frac{4}{8}, \frac{3}{4}$ 18. $\frac{2}{6}, \frac{9}{18}, \frac{2}{3}$ 19. $\frac{2}{6}, \frac{6}{8}, \frac{20}{24}$ 20. $\frac{7}{10}, \frac{4}{5}, \frac{5}{6}$

Exercise 7.4A

1. 7 2. 9 3. 7 4. 8 5. 10
6. 27 7. 25 8. 50 9. 50 10. 191
11. 111 12. 52 13. 108 14. 230 15. 63
16. 305 17. 68 18. 41 19. 86 20. 147

Exercise 7.4B

1. 49 2. 122 3. 45 4. 198 5. 69
6. 66 7. 110 8. 120 9. 140 10. 100
11. 60 12. 150 13. 88 14. 46 15. 152
16. 75 17. 58 18. 57 19. 90 20. 126

Exercise 7.5

7.1 Answers may vary.

- (a) $\frac{6}{8}, \frac{9}{12}, \frac{12}{16}$ (b) $\frac{10}{22}, \frac{15}{33}, \frac{20}{44}$ (c) $\frac{16}{18}, \frac{24}{27}, \frac{32}{36}$

7.2

- (a) $\frac{2}{3}$ (b) $\frac{1}{2}$ (c) $\frac{1}{5}$

7.3

- (a) $\frac{3}{5}, \frac{2}{3}, \frac{4}{5}$ (b) $\frac{8}{18}, \frac{3}{6}, \frac{5}{9}$ (c) $\frac{3}{8}, \frac{5}{12}, \frac{2}{3}$

7.5

- (a) 51 (b) 72 (c) 160

Chapter 8

Exercise 8.1

1. 0.009 2. 0.003 3. 0.007 4. 0.502
5. 0.086 6. 0.421 7. 0.643 8. 1.035

9. 0.852 10. 0.403 11. 14.095 12. 11.003

13. 0.044 14. 22.082 15. 0.405 16. 0.003

17. 0.707 18. 0.032

Exercise 8.2A

- Two tenths and two thousandths
- One hundredth and nine thousandths
- Eight tenths and five thousandths
- Three tenths and six hundredths
- Eight tenths and seven hundredths
- Seven tenths and five hundredths
- Four thousandths
- Eight hundredths and one thousandth
- Six thousandths
- Two ones and four hundredths
- Three ones, five hundredths and two thousandths
- Five ones, six tenths and five hundredths
- Four ones and four hundredths
- Three ones, six tenths and six thousandths
- One one, nine tenths and nine hundredths
- Seven ones, four tenths and three hundredths
- Nine ones and one hundredth
- Four ones and six thousandths
- One one, two hundredths and eight thousandths
- Three ones, four tenths and nine thousandths

Exercise 8.2B

1. $0.2 + 0.02$ 2. $0.2 + 0.01 + 0.009$
3. $0.8 + 0.05$ 4. $0.07 + 0.006$
5. 0.007 6. $0.7 + 0.05 + 0.004$
7. $0.4 + 0.009$ 8. $0.2 + 0.03 + 0.001$
9. $0.6 + 0.05 + 0.005$ 10. $5 + 0.02$
11. $3 + 0.3 + 0.04 + 0.004$ 12. $5 + 0.8 + 0.02$
13. $2 + 0.3 + 0.002$ 14. $3 + 0.6 + 0.05$
15. $1 + 0.9 + 0.05$ 16. $5 + 0.2 + 0.003$
17. $9 + 0.1 + 0.002$ 18. $4 + 0.6$
19. $2 + 0.02 + 0.008$ 20. $3 + 0.5 + 0.05$

Exercise 8.3

1.

- (a) 0.017 and $\frac{17}{1000}$ (b) 0.053 and $\frac{53}{1000}$

- (c) 0.14 and $\frac{14}{100}$ (d) 0.031 and $\frac{31}{1000}$

- (e) 0.066 and $\frac{66}{1000}$ (f) 0.98 and $\frac{98}{100}$

- (g) 0.201 and $\frac{201}{1000}$ (h) 0.415 and $\frac{415}{1000}$

2.

- (a) 0.01 (b) 0.005 (c) 0.21 (d) 0.7

- (e) 0.03 (f) 0.56 (g) 0.3 (h) 1.7

- (i) 0.39 (j) 1.9

3.
 (a) $\frac{1}{2}$ (b) $\frac{3}{4}$ (c) $\frac{1}{20}$ (d) $\frac{2}{5}$
 (e) $\frac{1}{5}$ (f) $\frac{1}{4}$ (g) $\frac{1}{250}$ (h) $\frac{12}{25}$
 (i) $\frac{8}{5}$ (j) $\frac{47}{20}$

Exercise 8.4

1.
 (a) 8.07, 8.69, 9.67, 9.76 (b) 4.45, 4.54, 5.4, 5.45
 (c) 2.3, 3.03, 3.3, 3.33 (d) 4.7, 7.4, 7.47, 7.74
 (e) 4.089, 4.8, 4.89, 4.98 (f) 2.03, 2.1, 2.12, 2.21
 (g) 5.05, 5.8, 5.85, 8.58 (h) 2.4, 2.41, 4.12, 4.2
 (i) 6.006, 6.6, 6.606, 6.66
2.
 (a) 8.22, 8.2, 8.022, 8.020 (b) 6.96, 6.76, 6.7, 6.67
 (c) 5.7, 5.074, 5.07, 5.007 (d) 4.5, 4.454, 4.44, 4.004
 (e) 7.3, 7.23, 7.03, 7.003 (f) 6.861, 6.6, 6.128, 6.12
 (g) 0.32, 0.23, 0.203, 0.032 (h) 0.65, 0.21, 0.176, 0.067
 (i) 5.46, 5.04, 0.604, 0.54

Exercise 8.5A

1. 10.957 2. 10.115 3. 3.665 4. 5.021
 5. 9.999 6. 8.42 7. 6.72 8. 9.139
 9. 15.905 10. 12.158 11. 11.547 12. 7.903
 13. 11.647 14. 22.021 15. 30.188

Exercise 8.5B

1. 4.651 2. 3.815 3. 0.725 4. 1.194
 5. 7.543 6. 0.801 7. 0.191 8. 5.59
 9. 1.037 10. 10.975 11. 7.684 12. 6.445

Exercise 8.6A

1.
 (a) 24.56 (b) 37.94 (c) 44.52 (d) 11.16
 (e) 40.59 (f) 31.9 (g) 19.6 (h) 4.44
 (i) 17.67 (j) 22.47 (k) 8.18 (l) 4.59
 (m) 34.52 (n) 26.88 (o) 39.04 (p) 6.37
 (q) 29.43 (r) 14.9 (s) 57.06 (t) 16.56
2.
 (a) 24.353 (b) 11.305 (c) 20.736 (d) 34.224
 (e) 46.698 (f) 41.886 (g) 11.472 (h) 5.356
 (i) 33.73 (j) 15.594 (k) 32.25 (l) 37.856
 (m) 20.487 (n) 52.518 (o) 67.109 (p) 28.683
 (q) 32.144 (r) 42.735 (s) 65.151 (t) 0.504

Exercise 8.6B

1.
 (a) 0.5 (b) 0.25 (c) 0.2 (d) 0.125 (e) 0.75
 (f) 0.4 (g) 0.6 (h) 0.8 (i) 0.375 (j) 0.875

2.
 (a) $\frac{1}{2}$ (b) $\frac{1}{4}$ (c) $\frac{1}{5}$ (d) $\frac{1}{8}$ (e) $\frac{3}{4}$
 (f) $\frac{2}{5}$ (g) $\frac{3}{5}$ (h) $\frac{4}{5}$ (i) $\frac{3}{8}$ (j) $\frac{7}{8}$

Exercise 8.6C

1.
 (a) 52.63 (b) 1.265 (c) 12.356 (d) 12.244
 (e) 1.251 (f) 5.265 (g) 7.326 (h) 2.355
 (i) 0.003 (j) 1.2 (k) 3.599 (l) 0.007
 (m) 2.03 (n) 47.23 (o) 0.198
2.
 (a) 3.25 (b) 2.25 (c) 2.5 (d) 3.5
 (e) 22.25 (f) 9.875 (g) 24.5 (h) 4.6
 (i) 25.4 (j) 11.25 (k) 9.375 (l) 4.375
 (m) 18.125 (n) 3.2 (o) 92.5

Exercise 8.7A

1.
 (a) 34.8 (b) 16.7 (c) 110.4 (d) 31.9
 (e) 8.5 (f) 64.3 (g) 29.6 (h) 4.75
 (i) 19.08 (j) 70.6 (k) 719.2 (l) 57.1
 (m) 4.3 (n) 616.4 (o) 814.9
2.
 (a) 27 413 (b) 12 506 (c) 9084 (d) 41 275
 (e) 58 632 (f) 3947 (g) 26 508 (h) 6005
 (i) 16 879 (j) 8153 (k) 4027 (l) 63 187
 (m) 7219 (n) 89 735 (o) 64 713

Exercise 8.7B

1.
 (a) 0.864 (b) 0.173 (c) 0.308 (d) 0.629
 (e) 0.084 (f) 4.372 (g) 0.805 (h) 0.123
 (i) 1.567 (j) 0.833 (k) 0.864 (l) 0.009
 (m) 0.0056 (n) 0.052 (o) 0.038
2.
 (a) 2.715 (b) 0.905 (c) 0.742 (d) 0.418
 (e) 5.6 (f) 6.804 (g) 0.359 (h) 0.014
 (i) 0.072 (j) 0.915 (k) 0.027 (l) 0.084
 (m) 0.66 (n) 0.187 (o) 0.07 (p) 0.008
 (q) 0.002 (r) 0.007 (s) 0.049 (t) 0.011

Exercise 8.7

- 8.1
 (a) 7.035 (b) 0.543 (c) 0.809
- 8.2
 (a) $1 + 0.2 + 0.06 + 0.002$ (b) $6 + 0.04 + 0.004$
 (c) $0.8 + 0.01 + 0.007$
- 8.4
 (a) 445.222, 404.678, 45.789
 (b) 11.991, 11.99, 11.919 (c) 15.99, 15.091, 15.009
- 8.5
 (a) 4.139 (b) 9.138 (c) 9.929
 (d) 4.668 (e) 3.636 (f) 0.235

- 8.6
 (a) 5.316 (b) 33.16 (c) 97.335
 (d) 12.35 (e) 53.2 (f) 19.6

- 8.7
 (a) 4.52 (b) 500.6 (c) 11 244
 (d) 7.67 (e) 8.054 (f) 0.031

Chapter 9

Exercise 9.1

1. $\frac{13}{20}$ 2. $\frac{21}{50}$ 3. $\frac{7}{25}$ 4. $\frac{18}{25}$ 5. $\frac{51}{100}$
 6. $\frac{49}{50}$ 7. $\frac{11}{25}$ 8. $\frac{31}{50}$ 9. $\frac{7}{20}$ 10. $\frac{1}{25}$
 11. $\frac{43}{50}$ 12. $\frac{23}{25}$ 13. $\frac{8}{25}$ 14. $\frac{17}{100}$ 15. $\frac{19}{20}$
 16. $\frac{3}{25}$ 17. $\frac{12}{25}$ 18. $\frac{17}{20}$ 19. $\frac{9}{25}$ 20. $\frac{6}{25}$

Exercise 9.2

1.
 (a) 60% (b) 64% (c) 15% (d) 76% (e) 90%
 (f) 22% (g) 74% (h) 60% (i) 70% (j) 88%
 (k) 24% (l) 90% (m) 85% (n) 96% (o) 65%
 (p) 45% (q) 70% (r) 84% (s) 44% (t) 20%
2.
 (a) 8% (b) 6% (c) 40% (d) 80% (e) 80%
 (f) 14% (g) 37% (h) 44% (i) 70% (j) 60%
 (k) 20% (l) 9% (m) 48% (n) 80% (o) 80%
 (p) 90% (q) 20% (r) 68% (s) 30% (t) 20%
3.
 (a) 90% (b) 85% (c) David, as 90% > 85%

Exercise 9.3

1. 0.81 2. 0.63 3. 0.54 4. 0.47 5. 0.79
 6. 0.58 7. 0.35 8. 0.22 9. 0.085 10. 0.61
 11. 0.44 12. 0.74 13. 0.125 14. 0.82 15. 0.39
 16. 0.41 17. 0.14 18. 0.027 19. 0.91 20. 0.96
 21. 0.064 22. 0.038 23. 0.87 24. 0.19

Exercise 9.4

1.
 (a) 72% (b) 8% (c) 33% (d) 91% (e) 46%
 (f) 57% (g) 97% (h) 38% (i) 63% (j) 12%
 (k) 24% (l) 79% (m) 82% (n) 49% (o) 52%
 (p) 68% (q) 27% (r) 88%
2.
 (a) 4.7% (b) 1.2% (c) 9.5% (d) 3.6%
 (e) 0.3% (f) 8.2% (g) 6.4% (h) 1.7%
 (i) 56.2% (j) 41.8% (k) 53.1% (l) 9.1%
 (m) 6.9% (n) 10.7% (o) 5.4% (p) 2.4%
 (q) 0.5% (r) 7.5%

Exercise 9.5A

1.
 (a) 180 (b) 490 (c) 370 (d) 1200 (e) 530
 (f) 452 (g) 781 (h) 134.4 (i) 120 (j) 99

- (k) 36 (l) 27 (m) 24.5 (n) 19 (o) 68
 (p) 5.18
 2.
 (a) 128 (b) 47 (c) 80 (d) 185 (e) 540
 (f) 1125 (g) 40.5 (h) 324 (i) 25 (j) 82
 (k) 105 (l) 8

Exercise 9.5B

100%	50%	25%	10%	5%
40	20	10	4	2
80	40	20	8	4
120	60	30	12	6
240	120	60	24	12
60	30	15	6	3
1000	500	250	100	50
360	180	90	36	18
70	35	17.5	7	3.5
180	90	45	18	9

Exercise 9.5C

1. 576 2. 18 3. 144 4. 364 5. 35
 6. 45 7. 12 8. 54 9. 360 10. 78
 11. 385 12. 44 13. 30 14. 72 15. 63
 16. 12 17. 144 18. 156 19. 42 20. 60

Exercise 9.5D

1. 200 2. 160 3. 1200 4. 800 5. 30
 6. 80 7. 160 8. 1400 9. 280 10. 900
 11. 160 12. 300 13. 10 14. 990 15. 50
 16. 400

Exercise 9.5E

1. 50% 2. 25% 3. 20% 4. 75% 5. 30%
 6. 1% 7. 30% 8. 60%

Exercise 9.6

1.
 (a) £27 (b) £45 (c) £36 (d) £54
 (e) £31.50 (f) £25.20
2.
 (a) £30.40 (b) £56 (c) £28 (d) £22.40
3.
 (a) £16.80 (b) £375 (c) £72 (d) £294
 (e) £20.40 (f) £30.60

Exercise 9.7

- 9.1
 (a) $\frac{18}{25}$ (b) $\frac{13}{50}$ (c) $\frac{49}{50}$
- 9.2
 (a) 70% (b) 85% (c) 48%
 (d) 15% (e) 90% (f) 30%
- 9.3
 (a) 0.44 (b) 0.62 (c) 0.91
 (d) 0.055 (e) 0.067 (f) 0.033

Exercise 12.2

- 600 000
- 8.7
- 960
- 17.44, 17.5, 17.54, 17.55
- 7.323
- 371.2
- 11.2
- 7118.487
- 8.742
- 0.881
- 859.417
- 78
- 18
- 80
- 0.201
- 0.5
- 6032
- 1.422
- 78
- 10.254, 11.002, 11.201, 11.214

Exercise 12.3

- 115 000
- 1.65
- 844 400
- 18.003, 18.03, 18.032, 18.233
- 56.933
- 940.016
- 21.332
- 10 573.26
- 61.541
- 121.741
- 3962.689
- 294
- 21
- 10
- 3.654
- 1700.2
- 39 304
- 65.413
- 684.44
- 301.201, 301.21, 321.011, 321.101

Exercise 12.4

- 322 000
- 3.02
- 3 868 200
- 32.211, 32.877, 36.014, 36.144
- 955.039
- 3187.026
- 130.842
- 16 148.57
- 7.252
- 955.733
- 8157.202
- 144
- 180
- 16
- 5.74
- 4563.11
- 12 055
- 36.542
- 280.24
- 54.004, 534.412, 534.42, 542.04

Exercise 12.5

- 2 452 000
- 13.24
- 4 096 880
- 44, -34, -33, -31
- 17, 19 or 23
- 46 010.16
- 200.25
- < (less than)
- 4.25
- 2.36
- 64 756.348
- 108

- 18
- 4
- 35
- 575.449
- 21
- 31 or 37
- 348.5
- 0.002, 0.01, 0.02, 0.112, 0.211

Exercise 12.6

- 3 549 000
- 22.37
- 1 812 880
- 47, -37, -17, -14
- 41, 43 or 47
- 8662.08
- 473.851
- > (greater than)
- 14.3
- 1.33
- 123 285.305
- 330
- 28
- 30
- 24
- 1288.326
- 837
- 71, 73 or 79
- 2282.85
- 0.004, 0.04, 0.14, 0.424, 0.441

Chapter 13

Exercise 13.1A

- | | | | | |
|---------|---------|---------|---------|---------|
| (a) -7 | (b) 129 | (c) 43 | (d) 122 | (e) 34 |
| (f) -16 | (g) 69 | (h) 130 | (i) 26 | (j) 156 |
| (k) 65 | (l) -24 | | | |
- | | | | | |
|---------|---------|--------|---------|---------|
| (a) 4 | (b) 106 | (c) 54 | (d) 104 | (e) 115 |
| (f) -34 | (g) 35 | (h) 79 | (i) 21 | (j) 111 |
| (k) 77 | (l) 9 | | | |

Exercise 13.1B

- | | | | | |
|--------|---------|--------|--------|--------|
| (a) -6 | (b) 22 | (c) 18 | (d) 19 | (e) 20 |
| (f) 2 | (g) 22 | (h) 30 | (i) -8 | (j) 29 |
| (k) 28 | (l) -12 | | | |
- | | | | | |
|---------|--------|---------|--------|--------|
| (a) -29 | (b) 32 | (c) 50 | (d) 30 | (e) -4 |
| (f) -1 | (g) 31 | (h) -10 | (i) -9 | (j) 67 |
| (k) -2 | (l) -4 | | | |

Exercise 13.2A

- | | | | |
|--------|--------|---------|---------|
| (a) 12 | (b) 50 | (c) 14 | (d) 22 |
| (e) 14 | (f) 74 | (g) 105 | (h) 100 |
| (i) 11 | (j) 58 | (k) 14 | (l) 39 |
| (m) 4 | (n) 30 | (o) 16 | (p) 1 |
- | | | | |
|--------|--------|--------|--------|
| (a) 7 | (b) -1 | (c) 14 | (d) 22 |
| (e) 9 | (f) 10 | (g) -1 | (h) 3 |
| (i) 18 | (j) 1 | (k) 14 | (l) -4 |
| (m) 15 | (n) 16 | (o) 17 | (p) 28 |

Exercise 13.2B

- | | | | | |
|---------|--------|---------|--------|--------|
| 1. 17 | 2. 19 | 3. 50.5 | 4. 2 | 5. 21 |
| 6. 40 | 7. 2 | 8. 1 | 9. 53 | 10. 32 |
| 11. 4.4 | 12. 8 | 13. 16 | 14. 39 | 15. 53 |
| 16. 31 | 17. 55 | 18. 58 | 19. 86 | 20. 0 |

Exercise 13.3

13.1A

- | | | |
|--------|--------|--------|
| (a) 13 | (b) 62 | (c) 63 |
| (d) -5 | (e) 90 | (f) 12 |

13.1B

- | | | |
|--------|--------|--------|
| (a) 3 | (b) 22 | (c) 15 |
| (d) 23 | (e) -1 | (f) 1 |

13.2A

- | | | |
|--------|--------|--------|
| (a) 2 | (b) 18 | (c) 15 |
| (d) 18 | (e) 10 | (f) 7 |

13.2B

- | | | |
|--------|--------|--------|
| (a) 11 | (b) 24 | (c) 50 |
|--------|--------|--------|

Chapter 14

Exercise 14.1A

- 1.
- | | | | |
|-------------|-------------|-------------|-------------|
| (a) £88.07 | (b) £116.53 | (c) £12.96 | (d) £143.18 |
| (e) £207.47 | (f) £69.00 | (g) £215.48 | (h) £171.71 |
| (i) £181.34 | (j) £275.63 | (k) £84.34 | (l) £8.84 |
| (m) £110.54 | (n) £13.61 | (o) £167.30 | (p) £43.36 |
| (q) £18.01 | (r) £274.63 | (s) £30.54 | (t) £146.29 |
- 2.
- | | | | |
|-------------|-------------|-------------|-------------|
| (a) £175.92 | (b) £5.68 | (c) £661.85 | (d) £15.93 |
| (e) £8.16 | (f) £168.44 | (g) £442.68 | (h) £162.99 |
| (i) £365.88 | (j) £48.56 | (k) £7.80 | (l) £405.00 |
| (m) £14.16 | (n) £44.20 | (o) £13.50 | (p) £27.62 |
| (q) £289.20 | (r) £222.45 | (s) £0.56 | (t) £6.20 |

Exercise 14.1B

- | | | | |
|------------|------------|------------|------------|
| 1. £21.21 | 2. £130.57 | 3. £18.40 | 4. £44.28 |
| 5. £116.28 | 6. £5.17 | 7. £12.66 | 8. £13.92 |
| 9. £5.83 | 10. £32.26 | 11. £30.97 | 12. £69.01 |

Exercise 14.1C

- | | | | |
|------------|------------|------------|------------|
| 1. £22.56 | 2. £19.20 | 3. £58.10 | 4. £21.11 |
| 5. £40.48 | 6. £93.72 | 7. £14.44 | 8. £13.65 |
| 9. £41.09 | 10. £52.95 | 11. £31.08 | 12. £76.86 |
| 13. £26.08 | 14. £72.25 | | |

Exercise 14.1D

- | | | | |
|-----------|-----------|-----------|------------|
| 1. £28.07 | 2. £16.71 | 3. £16 | 4. £13.13 |
| 5. £31.97 | 6. £19.69 | 7. £8.22 | 8. £22.29 |
| 9. £8.25 | 10. £5.18 | 11. £1.17 | 12. £15.10 |

Exercise 14.2A

- | | |
|------------------------|--------------------------|
| 1. Kyle has £1514 left | 2. Aurora has £3666 left |
|------------------------|--------------------------|

- | | |
|-------------------------|----------------------------|
| 3. George has £677 left | 4. Beatrice has £1924 left |
| 5. Esme has £156 left | 6. Elijah has £3172 left |
| 7. Josh has £544 left | 8. Harriet has £604 left |
| 9. Arya has £3925 left | 10. Milo has £1252 left |
| 11. Leo has £1895 left | 12. Maryam has £1176 left |

Exercise 14.2B

- | | |
|--------------|--------------|
| 1. (a) £300 | (b) 18 weeks |
| 2. (a) £300 | (b) 13 weeks |
| 3. (a) £129 | (b) 4 weeks |
| 4. (a) £55 | (b) 8 weeks |
| 5. (a) £2000 | (b) 60 weeks |
| 6. (a) £90 | (b) 25 weeks |
| 7. (a) £108 | (b) 16 weeks |
| 8. (a) £240 | (b) 9 weeks |
| 9. (a) £3000 | (b) 60 weeks |
| 10. (a) £231 | (b) 8 weeks |
| 11. (a) No | (b) 15 weeks |
| 12. (a) No | (b) 15 weeks |

Exercise 14.3A

- | | | |
|------------------|------------------|-----------------|
| 1. £45 loss | 2. £49.77 profit | 3. £8.72 profit |
| 4. £77.09 profit | 5. £2.64 profit | 6. £0.74 loss |
| 7. £142.06 loss | 8. £6550 profit | |

Exercise 14.3B:

- | | | |
|------------------|----------------|------------------|
| 1. £14.08 profit | 2. £1.00 loss | 3. £34.20 profit |
| 4. £1250 | 5. £176 profit | 6. £14 loss |
| 7. £12.06 profit | 8. £2.00 loss | |

Exercise 14.4A

- | | | |
|------------|--------------|-------------|
| 1. £1.61 | 2. £4.65 | 3. £5.22 |
| 4. £3.85 | 5. £13.72 | 6. £2.22 |
| 7. £119.67 | 8. £221.45 | 9. £1031.56 |
| 10. £12.31 | 11. £1527.22 | 12. £8202 |

Exercise 14.4B

- | | | | |
|----------|------------|-----------|-----------|
| 1. £1.17 | 2. £6.00 | 3. £12.16 | 4. £31.95 |
| 5. £1.10 | 6. £1.68 | 7. £126 | 8. £4000 |
| 9. £270 | 10. £10.20 | 11. £1040 | 12. £200 |

Exercise 14.5

14.1A

- | | | | |
|------------|------------|-------------|-----------|
| (a) £66.21 | (b) £27.88 | (c) £249.88 | (d) £9.18 |
|------------|------------|-------------|-----------|

14.1C

- | | |
|------------|------------|
| (a) £10.10 | (b) £23.38 |
|------------|------------|

14.2

- | | |
|-------------------------|--------------|
| (a) Carol has £969 left | |
| (b) (i) No | (ii) 5 weeks |

14.3

- | | |
|-----------------------|----------|
| (a) Paul makes a loss | (b) £214 |
|-----------------------|----------|

14.4

- | | |
|-----------|----------|
| (a) £2.72 | (b) £114 |
|-----------|----------|

Chapter 15

Exercise 15.1

1.
(a) 144 mins (b) 220 mins (c) 252 mins
(d) 168 mins (e) 96 mins (f) 150 mins
(g) 165 mins (h) 630 mins (i) 200 mins
(j) 492 mins (k) 260 mins (l) 378 mins

2.
(a) 210 secs (b) 620 secs (c) 495 secs
(d) 78 secs (e) 204 secs (f) 912 secs
(g) 585 secs (h) 375 secs (i) 102 secs
(j) 378 secs (k) 252 secs (l) 264 secs

Exercise 15.2A

1. 7 hrs 44 mins 2. 8 hrs 4 mins 3. 12 hrs 40 mins
4. 6 hrs 16 mins 5. 12 hrs 44 mins 6. 16 hrs 38 mins
7. 5 hrs 49 mins 8. 6 hrs 26 mins 9. 10 hrs 7 mins
10. 9 hrs 37 mins 11. 8 hrs 17 mins 12. 4 hrs 32 mins
13. 21 hrs 23 mins 14. 16 hrs 21 mins 15. 5 hrs 12 mins
16. 1 hr 28 mins 17. 7 hrs 43 mins 18. 21 hrs 45 mins
19. 14 hrs 56 mins 20. 11 hrs 46 mins 21. 13 hrs 47 mins

Exercise 15.2B

1. 10:24 pm 2. 8:23 pm 3. 7:11 pm 4. 08:22
5. 10:30 6. 4:03 pm 7. 20:06 8. 8.40 pm
9. 1750 10. 7:49 pm 11. 8.56 pm 12. 5.52 pm

Exercise 15.3

1. 4 hrs 2. 60 secs 3. 40 mins
4. 4 hrs 5. 4 hrs 6. 50 secs
7. 17 hrs 8. 30 mins 9. 15 mins
10. 30 mins 11. 10 hrs 12. 15 mins
13. 3 hrs 14. 2 hrs 30 mins 15. 1 sec
16. 100 secs 17. 25 secs 18. 4.5 secs
19. 5 hrs 20. 2 hrs

Exercise 15.4A

1. 52 mins 2. Yes 3. 4A leaving at 1038
4. 26 mins 5. 22 mins 6. 10:00
7. 11:01 8. 18 mins 9. 09:38
10. 11:33

Exercise 15.4B

1. 30 mins 2. Channel 4
3. 4 4. 3 hrs 15 mins
5. The only way is Dundee 6. Evening news
7. 45 mins 8. Judge Jess
9. QW 10. Selling sunrise
11. 21 mins 12. 1748

Exercise 15.5

15.1

- (a) 216 mins (b) 320 mins (c) 156 mins
(d) 78 secs (e) 204 secs (f) 912 secs

15.2

- (a) 6 hrs 39 mins (b) 19 hrs 42 mins (c) 11 hrs 19 mins

15.3

- (a) 3 hrs (b) 6 secs (c) 30 mins

Chapter 16

Exercise 16.1A

1. (i) 13 (ii) 14.5 (iii) 15.5
2. (i) 5.6 (ii) 7.2 (iii) 8.8
3. (i) 22.5 (ii) 23 (iii) 23.5
4. (i) 30.9 (ii) 32.4 (iii) 33.2
5. (i) 10.25 (ii) 11.25 (iii) 12.5
6. (i) 6 (ii) 7.4 (iii) 9.2
7. (i) 12.75 (ii) 13.5 (iii) 14.25
8. (i) 16 (ii) 18.2 (iii) 18.6
9. (i) -8.5 (ii) -7.5 (iii) -7
10. (i) -12 (ii) -10.8 (iii) -9.8
11. (i) 0 (ii) 1.5 (iii) 2.5
12. (i) -5.5 (ii) -4.7 (iii) -3.8
13. (i) -19.5 (ii) -18.75 (iii) -18.25
14. (i) -2 (ii) -1.4 (iii) -0.4
15. (i) -1.5 (ii) 0 (iii) 0.5
16. (i) -3.4 (ii) -2.4 (iii) -1.4

Exercise 16.1B

1. 30°C 2. 20°C 3. 44°C 4. -6°C 5. 24°C
6. -17°C 7. 8°C 8. -1°C 9. 49°C 10. 0°C
11. 34°C 12. 7°C

Exercise 16.2

1.

- (a) length = 54 mm breadth = 28 mm
(b) length = 55 mm breadth = 36 mm
(c) length = 45 mm breadth = 58 mm
(d) length = 65 mm breadth = 64 mm
(e) length = 73 mm breadth = 31 mm
(f) length = 19 mm breadth = 42 mm
(g) length = 32 mm breadth = 28 mm
(h) length = 81 mm breadth = 24 mm

2.

- (a) length = 31 mm (b) length = 15 mm
(c) length = 22 mm (d) length = 17 mm
(e) length = 12 mm (f) length = 56 mm
(g) length = 19 mm (h) length = 11 mm
(i) length = 22 mm

Exercise 16.3

1.
(a) Washing machine = 0.85 m (b) Cat = 0.45 m
(c) Water bottle = 20 cm (d) Egg = 70 mm
(e) Wooden spoon = 30 cm

2.
(a) Giraffe = 5 m (b) Runway = 2 km
(c) Car = 400 cm (d) Living room = 2.5 m
(e) Bus = 12 cm

Exercise 16.4A

1.
(a) 76 mm (b) 88 mm (c) 47 mm (d) 114 mm
(e) 12 mm (f) 146 mm (g) 103 mm (h) 28 mm
(i) 179 mm (j) 268 mm (k) 225 mm (l) 283 mm
(m) 336 mm (n) 144 mm (o) 187 mm (p) 443 mm
(q) 437 mm (r) 512 mm (s) 648 mm (t) 769 mm

2.
(a) 9.4 cm (b) 1.8 cm (c) 4.1 cm (d) 11.8 cm
(e) 15.2 cm (f) 14.7 cm (g) 16.3 cm (h) 2.9 cm
(i) 13.2 cm (j) 56.2 cm (k) 48.9 cm (l) 27.1 cm
(m) 32.9 cm (n) 17.9 cm (o) 29.3 cm (p) 37.2 cm
(q) 57.9 cm (r) 64.2 cm (s) 77.4 cm (t) 18.9 cm

Exercise 16.4B

1.
(a) 730 cm (b) 205 cm (c) 422 cm (d) 1001 cm
(e) 109 cm (f) 1610 cm (g) 1155 cm (h) 621 cm
(i) 1966 cm (j) 2103 cm (k) 2367 cm (l) 2545 cm
(m) 3302 cm (n) 1509 cm (o) 1810 cm (p) 4965 cm
(q) 4549 cm (r) 5505 cm (s) 6450 cm (t) 7432 cm
2.
(a) 8.99 m (b) 0.12 m (c) 4.38 m (d) 11.02 m
(e) 15.23 m (f) 0.16 m (g) 12.99 m (h) 20.12 m
(i) 23.67 m (j) 55.39 m (k) 50.48 m (l) 26.26 m
(m) 32.35 m (n) 14.9 m (o) 264.93 m (p) 367.58 m
(q) 5.83 m (r) 601.82 m (s) 79.38 m (t) 0.09 m

Exercise 16.4C

1.
(a) 19 000 m (b) 8740 m (c) 287 500 m
(d) 10 360 m (e) 15 270 m (f) 24 000 m
(g) 41 680 m (h) 3950 m (i) 12 840 m
(j) 1090 m (k) 35 000 m (l) 2570 m
(m) 4300 m (n) 618 420 m (o) 870 m
(p) 1090 m (q) 2503 m (r) 106 m
(s) 30 m (t) 8 m
2.
(a) 3.572 km (b) 8.119 km (c) 12 km (d) 0.014 km
(e) 6.483 km (f) 2.205 km (g) 21.784 km (h) 0.007 km

- (i) 1.365 km (j) 1.982 km (k) 37.45 km (l) 0.102 km
(m) 96.511 km (n) 6.934 km (o) 34.608 km (p) 0.205 km
(q) 141.2 km (r) 165 km (s) 4700 km (t) 0.032 km

Exercise 16.4D

1.
(a) 6300 g (b) 2080 g (c) 1007 g (d) 9640 g
(e) 21 842 g (f) 3900 g (g) 4050 g (h) 5732 g
(i) 11 209 g (j) 10 109 g (k) 6400 g (l) 1308 g
(m) 3590 g (n) 5070 g (o) 8450 g (p) 7602 g
(q) 201 g (r) 51 g (s) 908 g (t) 401 g
2.
(a) 4.6 kg (b) 5 kg (c) 7.2 kg (d) 3.4 kg
(e) 5.5 kg (f) 6.05 kg (g) 3.06 kg (h) 52 kg
(i) 12 kg (j) 18 kg (k) 0.56 kg (l) 0.84 kg
(m) 0.59 kg (n) 0.735 kg (o) 0.225 kg (p) 95.12 kg
(q) 71.2 kg (r) 220.5 kg (s) 710.2 kg (t) 0.025 kg

Exercise 16.4E

1.
(a) 700 ml (b) 30 ml (c) 790 ml (d) 210 ml
(e) 420 ml (f) 3645 ml (g) 5804 ml (h) 680 ml
(i) 1230 ml (j) 2770 ml (k) 64 309 ml (l) 7011 ml
(m) 2147 ml (n) 5009 ml (o) 11 902 ml (p) 500 ml
(q) 601 ml (r) 7 ml (s) 2005 ml (t) 4007 ml
2.
(a) 0.005 litres (b) 0.011 litres (c) 0.028 litres
(d) 0.097 litres (e) 0.142 litres (f) 0.205 litres
(g) 0.456 litres (h) 0.823 litres (i) 1.247 litres
(j) 1.536 litres (k) 2.438 litres (l) 3.912 litres
(m) 4.605 litres (n) 6.332 litres (o) 10.408 litres
(p) 15.292 litres (q) 22.501 litres (r) 47.386 litres
(s) 98.23 litres (t) 134 litres

Exercise 16.5

- 16.1A
(a) 7.5 (b) 11.1 (c) 24.75 (d) 32.2

- 16.1B
(a) 23°C (b) -15°C

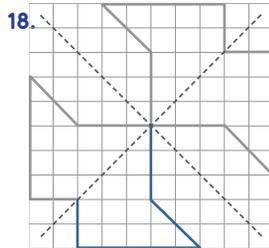
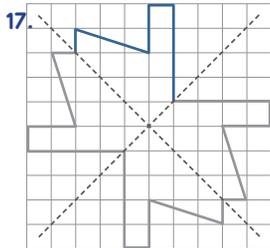
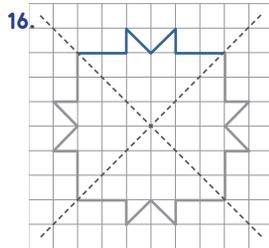
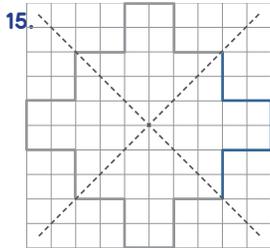
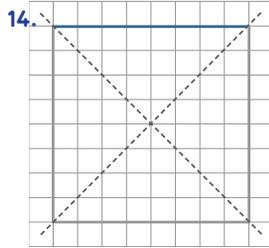
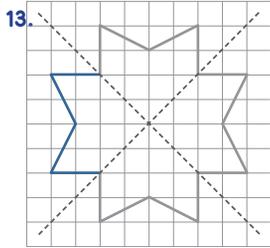
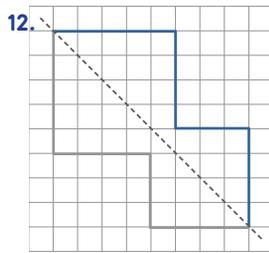
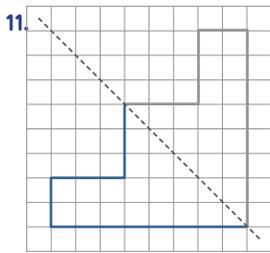
- 16.2A
(a) 56 mm (b) 11 mm (c) 48 mm

- 16.4
(a) 60 mm (b) 0.47 m (c) 1991 ml
(d) 8100 g (e) 4.477 litres (f) 0.055 kg
(g) 98.1 cm (h) 51 cm

Chapter 17

Exercise 17.1

1.
(a) Straight (b) Acute (c) Obtuse (d) Reflex
(e) Right



Chapter 19

Exercise 19.1

- (a) Scalene (b) Equilateral (c) Isosceles
- (a) Scalene (b) Isosceles
- (a) Kite (b) Trapezium
- (a) Trapezium (b) Parallelogram & Kite

Exercise 19.2

- Decagon
 - Pentagon
 - Octagon
 - Hendecagon
 - Nonagon
 - Heptagon
 - Dodecagon
 - Hexagon
- Pentagon
 - Decagon
 - Octagon
 - Dodecagon
 - Hexagon
 - Hendecagon
 - Heptagon
 - Nonagon
 - Octagon
 - Icosagon
 - Dodecagon
 - Decagon
- Pentagon
 - Heptagon
 - Hexagon
 - Nonagon
 - Hexagon
 - Decagon
 - Octagon
 - Pentagon

Exercise 19.3A

- Diameter
- Radius
- Circumference
- Chord
- Chord
- Circumference
- Radius
- Diameter

Exercise 19.3B

- 3 cm
- 7 mm
- 15 cm
- 10 mm
- 22 mm
- 32 cm
- 60 mm
- 44 cm

Exercise 19.3C

- 6 cm
- 24 cm
- 80 mm
- 170 mm
- 64 cm
- 242 cm
- 218 cm
- 198 mm

Exercise 19.3D

- 42 cm
 - 60 mm
 - 69 cm
 - 123 mm
 - 360 mm
 - 180 cm
 - 162 mm
 - 267 cm
- 18 cm
 - 60 cm
 - 90 mm
 - 120 mm
 - 150 cm
 - 240 cm
 - 216 cm
 - 690 mm

Exercise 19.4

19.2

- Hendecagon
- Hexagon
- Hexagon
- Dodecagon
- Icosagon
- Pentagon
- Hexagon

19.3A

- 30 mm
- 62.5 mm

19.3B

- 38 cm
- 108 cm

19.3C

- 120 cm
- 144 mm

Chapter 20

Exercise 20.1

- Cube
 - six
 - twelve
 - eight
- Triangular prism
 - five
 - nine
 - six
- Square-based pyramid
 - five
 - eight
 - five
- Hexagonal prism
 - eight
 - eighteen
 - twelve
- Tetrahedron
 - four
 - six
 - four
- Cuboid
 - six
 - twelve
 - eight
- Cone
 - two
 - one
 - one
- Sphere
 - one
 - zero
 - zero

Exercise 20.2A

- Triangular prism
 - Cuboid

- (c) Tetrahedron (d) Cube
(e) Square-based pyramid (f) Cylinder

2. See the website for possible nets



Exercise 20.3A

1. 8 cm³ 2. 12 cm³ 3. 40 cm³ 4. 27 cm³
5. 24 cm³ 6. 36 cm³ 7. 46 cm³ 8. 75 cm³
9. 75 cm³

Exercise 20.3B

1.
(a) 8 cm³ (b) 1000 mm³ (c) 64 m³
(d) 1 cm³ (e) 125 cm³ (f) 8000 mm³
(g) 216 mm³ (h) 1 000 000 mm³
3.
(a) 20 cm³ (b) 128 cm³ (c) 270 cm³
(d) 175 cm³ (e) 32 cm³ (f) 3726 m³
(g) 270 cm³ (h) 14 112 cm³ (i) 14 288 m³
(j) 3300 m³ (k) 525 mm³ (l) 2970 m³

Exercise 20.4

- 20.1
(a) (i) Cuboid (ii) six (iii) twelve (iv) eight
(b) (i) Triangular prism (ii) five (iii) nine (iv) six
(c) (i) Square-based pyramid (ii) five (iii) eight (iv) five

20.2

- (a) Cylinder (b) Cuboid (b) Square-based pyramid

20.3B

- (a). 27 cm³ (b) 30 m³

Chapter 21

Exercise 21.1A

1. A(2,6) B(10,2) C(9,4) D(5,5) E(0,9)
F(1,1) G(3,0) H(4,3) I(8,8) J(7,1)
2. A(1,4) B(5,0) C(8,5) D(10,4) E(5,3)
F(6,6) G(2,1) H(0,7) I(3,9) J(9,10)

Exercise 21.1B

- A(6,8) B(3,0) C(2,13) D(17,14) E(12,8)
F(0,10) G(6,16) H(19,0) I(10,5) J(14,3)
K(3,18) L(10,17) M(17,10) N(15,17)

Exercise 21.2A

1. See the website for possible nets

- (d) Triangular prism

2.

- (d) Cuboid

Exercise 21.2B

1. See the website for possible nets



Chapter 22

Exercise 22.1A

1.
(a) 2 m (b) 6 m (c) 30 m (d) 28 m
(e) 36 m (f) 200 cm (g) 48 m (h) 390 cm
2.
(a) 5.6 m (b) 14.8 m (c) 42.3 m (d) 325 cm
(e) 1120 m (f) 13.2 km (g) 2550 m (h) 700 m
3.
(a) 4 m by 4 m (b) 42 m by 7 m
(c) 100 m by 30 m (d) 52 m by 18 m
(e) 1100 m by 500 m (f) 4200 m by 900 m

Exercise 22.2B

1.
(a) 1 m (b) 2.5 m (c) 1 m
2.
(a) 5 m (b) 4 m (c) 2.2 m
(d) 0.9 m by 1.5 m
3.
(a) 10 m (b) 6 m (c) 1.6 m by 3 m
(d) 1.2 m by 2.4 m
4.
(a) 6 m (b) 10 m (c) 16 m (d) 12 m

Exercise 22.1C

1. 1000 m 2. 1200 m 3. 2500 m 4. 500 m
5. 750 m 6. 750 m 7. 4500 m 8. 4200 m

Chapter 23

Exercise 23.1A

1. a = 59 2. b = 161 3. c = 11 4. d = 85
5. e = 46 6. f = 303 7. g = 155 8. H = 361
9. j = 116 10. a = 24 11. b = 263 12. c = 22
13. d = 188 14. e = 38 15. f = 322 16. g = 810
17. H = 326 18. j = 130 19. a = 400 20. b = 439

Exercise 23.1B

1. a = -7 2. b = 2 3. c = 6 4. d = -5
5. e = 3 6. f = 9 7. g = -2 8. h = -6
9. j = -3 10. k = 5 11. a = -4 12. m = 6
13. n = 6 14. p = 2 15. q = 3 16. r = 8
17. b = -6 18. t = -5 19. w = -2 20. y = 4

Exercise 23.2A

1. a = 4 2. b = 4 3. c = 3 4. d = 4
5. e = 3 6. f = 5 7. g = 3 8. h = 1
9. j = 2 10. k = 2 11. m = 2 12. n = 3

Exercise 23.2B

1.
(a) $a = 10$ (b) $b = 5$ (c) $c = 10$ (d) $d = 9$
(e) $e = 4$ (f) $f = 3$ (g) $g = 2$ (h) $h = 5$
(i) $j = 9$ (j) $k = 30$ (k) $m = 11$ (l) $n = 20$
(m) $p = 5$ (n) $q = 45$ (o) $r = 16$ (p) $w = 13$

2.
(a) $a = 27$ (b) $b = 8$ (c) $c = 10$ (d) $d = 30$
(e) $e = 24$ (f) $f = 40$ (g) $g = 32$ (h) $h = 25$
(i) $i = 84$ (j) $j = 27$ (k) $k = 150$ (l) $m = 18$
(m) $n = 140$ (n) $p = 160$ (o) $q = 500$ (p) $r = 64$

Exercise 23.3

- 23.1A
(a) $x = 35$ (b) $t = 57$ (c) $y = 104$ (d) $r = 36$

- 23.1B
(a) $x = -1$ (b) $a = 13$ (c) $y = -16$ (d) $y = -14$

- 23.2
(a) $m = 11$ (b) $e = 21$ (c) $y = 33$ (d) $t = \frac{1}{2}$

Chapter 24

Exercise 24.1

1. Likely 2. Certain 3. Likely
4. Highly unlikely 5. Unlikely 6. Impossible
7. Highly likely 8. Even chance 9. Even chance
10. Certain 11. Even chance 12. Highly likely
13. Impossible 14. Highly likely 15. Impossible
16. Unlikely 17. Impossible 18. Highly likely
19. Certain 20. Even chance

Exercise 24.2A

1. $\frac{1}{3}$ 2. $\frac{1}{2}$ 3. $\frac{1}{2}$ 4. $\frac{1}{6}$
5. $\frac{2}{9}$ 6. $\frac{4}{9}$ 7. 0 8. $\frac{1}{3}$
9. $\frac{3}{12}$ or $\frac{1}{4}$ 10. $\frac{5}{12}$

Exercise 24.2B

1. $\frac{1}{6}$ 2. $\frac{1}{3}$ 3. $\frac{1}{2}$ 4. 0 5. $\frac{1}{6}$
6. 0 7. $\frac{1}{6}$ 8. $\frac{1}{6}$ 9. $\frac{1}{3}$ 10. $\frac{1}{2}$

Chapter 25

Exercise 25.1

1. 77 2. 150 3. 230
4. 4.2 5. 11 6. -10
7. 3900 m 8. $\frac{9}{5}$ 9. 15 degrees
10. £80 11. 50 12. 43

Exercise 25.2

1. 96 2. 240 3. 80
4. 5.6 5. 12 6. -19

7. 6800 m 8. $\frac{10}{7}$ 9. 65 degrees
10. £33 11. 40 12. 8

Exercise 25.3

1. 72 2. 1200 3. 48
4. £36.13 5. -1.8 6. £33
7. 240 8. 26 9. 69 degrees
10. North-east 11. 12 cm 12. 0.02

Exercise 25.4

1. 32 2. 3200 3. 25
4. £32.55 5. -2.4 6. £4
7. 210 8. 9 9. 57 degrees
10. South-west 11. 4 cm 12. 0.007

Exercise 25.5

1. 66 2. $\frac{4}{5}$ 3. 10 000
4. $x = 30$ 5. 6 hrs 50 mins 6. £135
7. 54 km 8. £75 9. 0.375
10. 25, 36, 49 11. 1600 12. eleven hundredths

Exercise 25.6

1. 95 2. $\frac{2}{3}$ 3. 120 000
4. $x = 80$ 5. 10 hrs 40 mins 6. £260
7. 67 km 8. £140 9. 0.875
10. 15, 21, 28 11. 3600 12. twenty-eight hundredths

Chapter 26

Exercise 26.1

1. £597.94 2. £19.25 3. £43.89
4. £12.68 5. 588 mins 6. 5 hrs 19 mins
7. 5 hrs 48 mins 8. 2211 mm² 9. 686 mm²
10. $e = 9$ 11. $f = 16$ 12. $k = 209$
13. $m = 102$ 14. 285 15. 97
16. 17 190 ml 17. 5.097 litres 18. 1.082 kg
19. 1950 g 20. 110 cm

Exercise 26.2

1. £375.76 2. £96.21 3. £87.80
4. £83.39 5. 636 mins 6. 6 hrs 28 mins
7. 3 hrs 49 mins 8. 1118 mm² 9. 816 mm²
10. $g = 4$ 11. $h = 16$ 12. $n = 311$
13. $m = 223$ 14. 695 15. 97
16. 26 780 ml 17. 9.87 litres 18. 6.754 kg
19. 2330 g 20. 192 cm

Exercise 26.3

1. £1243.74 2. £218.95 3. £3.16
4. £50.31 5. 732 mins 6. 14 hrs 27 mins
7. 6 hrs 13 mins 8. 9408 mm² 9. 2250 mm²

10. $i = 14$ 11. $j = 16$ 12. $k = 20$
 13. $m = 75$ 14. 55 15. 1
 16. 200 ml 17. 0.098 litres 18. 0.0031 kg
 19. 600 g 20. 2.4 m

Exercise 26.4

1. £2451.88 2. £144.33 3. £4.80
 4. £6.30 5. 876 mins 6. 16 hrs 23 mins
 7. 6 hrs 31 mins 8. 5175 mm^2 9. 960 mm^2
 10. $n = 10$ 11. $p = 20$ 12. $q = 60$
 13. $r = 60$ 14. 88 15. 6
 16. 800 ml 17. 0.065 litres 18. 0.0119kg
 19. 300 g 20. 1.6 m

Exercise 26.5

1. £7428.54 2. £1287.85 3. £2.05
 4. £24.72 5. 1224 mins 6. 13 hrs 42 mins
 7. 16 hrs 11 mins 8. 5 cm^2 9. 1.4 mm^2
 10. $p = 8$ 11. $t = 4$ 12. $u = 136$
 13. $v = 63$ 14. 19 15. 94
 16. 20 ml 17. 0.005 litres 18. 0.00009 kg
 19. 200 g 20. 1.56 m

Exercise 26.6

1. £73 954.71 2. £1089.37 3. £4.20
 4. £4.84 5. 996 mins 6. 14 hrs 36 mins
 7. 15 hrs 32 mins 8. 38 cm^2 9. 15 mm^2
 10. $w = 12$ 11. $x = 33$ 12. $y = 2160$
 13. $z = 3825$ 14. 34 15. 73
 16. 70 ml 17. 0.009 litres 18. 0.00005 kg
 19. 800 g 20. 1.26 m

Chapter 27

Exercise 27.1

1. 22 mins 2. Rectangle 3. 5 km from start
 4. 350 m 5. 16 km 6. $27\,000 \text{ cm}^3$
 7. 24 m^2 8. £34.85 9. 2600 g
 10. 1°C 11. 1 hr 15 mins 12. 13 panels
 13. 6 14. 50 m
 15. 44% as $44\% > 40\%$

Exercise 27.2

1. 35 mins 2. Square 3. 7 km
 4. 334 m 5. 36 km 6. 8000 cm^3
 7. 6 m^2 8. £20.66 9. 4200 g
 10. 9°C 11. 1 hr 46 mins 12. 14 panels
 13. 28 14. 76 m
 15. 0.55, as $0.55 > 0.5$

Exercise 27.3

1. 24 mins 2. Rhombus 3. 10 km

4. 16 litres 5. 19 km 6. $60\,000 \text{ cm}^3$
 7. £300 8. £34.85 9. 400 g
 10. 56°C 11. 600 miles 12. £400
 13. 24 14. 40 m
 15. 11, multiply before addition

Exercise 27.4

1. 9 mins 2. Trapezium 3. 4 km
 4. 11.8 litres 5. 32.5 km 6. $120\,000 \text{ cm}^3$
 7. £100 8. £76.99 9. 1.25 kg
 10. 57°C 11. 1250 miles 12. £160
 13. 2 14. 24 m
 15. 33, multiply before addition

Exercise 27.5

1. £15 2. Rhombus 3. 4 km
 4. £59.50 5. 3 km 6. 64 litres
 7. £918 8. 46° 9. £2200
 10. 152°C 11. 3 hrs 30 mins 12. 8 slats
 13. 4 14. 37 m 15. 4800

Exercise 27.6

1. £13 2. Parallelogram 3. 57.6 km
 4. £26.50 5. 2 km 6. 60 litres
 7. £230 8. 117° 9. £2650
 10. 948.5°C 11. 2 hrs 30 mins 12. 10 slats
 13. 16 14. 74 m 15. 3200