

# Pupil's Book Answers

## 1. Look Back

### Page 2

1. a) 100 b) 200 c) 100  
d) 200 e) 600 f) 800  
g) 1200 h) 2600 i) 8000  
j) 10000
2. a) 4000 b) 2000 c) 6000  
d) 8000 e) 10000 f) 12000  
g) 19000 h) 27000 i) 22000  
j) 40000
3. a) 756 b) 1250 c) 4057  
d) 13059 e) 14654 f) 18444  
g) 3028 h) 3134 i) 665  
j) 4138 k) 6147 l) 8846
4. 17, 29, 1, 71, 53, 91, 41
5. a) 1, 2, 4, 8, 16  
b) 1, 2, 4, 5, 10, 20  
c) 1, 2, 4, 8, 16, 32  
d) 1, 2, 4, 5, 8, 10, 20, 40  
e) 1, 2, 4, 7, 14, 28  
f) 1, 2, 4, 7, 8, 14, 28, 56
6. a) 1, 3 b) 1, 2, 4, 8  
c) 1, 2, 3, 6  
d) 1, 2, 4, 8  
e) 1, 3, 5, 15  
f) 1, 2, 3, 4, 6, 8, 12
7. a) 3, 6, 9, 12, 15, 18, 21, 24  
b) 5, 10, 15, 20, 25, 30, 35, 40  
c) 12, 24, 36, 48, 60, 72, 84, 96  
d) 9, 18, 27, 36, 45, 54, 63, 72  
e) 10, 20, 30, 40, 50, 60, 70, 80  
f) 6, 12, 18, 24, 30, 36, 42, 48

### Page 3

8. Teacher check
9.  $30^\circ$ ,  $70^\circ$ ,  $120^\circ$ ,  $160^\circ$ ,  $55^\circ$
10. Teacher check
11. a) 1152 b) 1602 c) 1905  
d) 2941 e) 4899 f) 12888

### Page 4

12. a) 37  
b) 19  
c) 20 R 15  
d) 29  
e) 18

- f) 22 R 17  
g) 7 hrs 27 mins  
h) 8 hrs 38 mins  
i) 12 hrs 29 mins  
j) 10 hrs 22 mins  
k) 2 hrs 34 mins  
l) 3 hrs 18 mins  
m) 3 hrs 47 mins  
n) 1 hr 47 mins
13. a) 16:34 b) 08:51 c) 22:19  
d) 11:47 e) 19:28 f) 12:37  
g) 01:38 h) 20:06
14. a) 5:05pm b) 10:17am  
c) 11:12pm d) 12:15pm  
e) 5:39pm f) 3:56am  
g) 9:42pm h) 12:45am
15. Teacher check
16. Teacher check
17. a)  $\frac{5}{6}$  b)  $\frac{5}{8}$  c)  $\frac{13}{15}$   
d)  $\frac{23}{24}$  e)  $1\frac{5}{12}$  f)  $\frac{19}{24}$
18. a)  $\frac{3}{20}$  b)  $\frac{11}{18}$  c)  $\frac{1}{24}$   
d)  $\frac{13}{18}$  e)  $\frac{1}{20}$  f)  $\frac{4}{21}$

### Page 5

19. a)  $\frac{9}{5}$  b)  $\frac{16}{9}$  c)  $\frac{11}{14}$   
d)  $\frac{10}{3}$  e)  $\frac{17}{6}$  f)  $\frac{19}{4}$   
g)  $\frac{51}{8}$  h)  $\frac{77}{10}$
20. a)  $3\frac{1}{5}$  b)  $5\frac{1}{4}$  c)  $6\frac{1}{3}$   
d)  $3\frac{3}{8}$  e)  $4\frac{1}{10}$  f)  $6\frac{4}{7}$   
g)  $8\frac{5}{6}$  h)  $6\frac{8}{9}$
21. a)  $2\frac{3}{4}$  b)  $3\frac{8}{15}$   
c)  $4\frac{11}{12}$  d)  $7\frac{5}{12}$   
e)  $6\frac{7}{12}$  f)  $6\frac{5}{24}$
22. a)  $1\frac{1}{3}$  b)  $2\frac{17}{24}$  c)  $1\frac{1}{20}$   
d)  $3\frac{7}{24}$  e)  $1\frac{11}{20}$  f)  $5\frac{13}{18}$
23. a) €89 b) €195 c) €66  
d) €545 e) €1482 f) €1440
24. a) €952 b) €1041 c) €645  
d) €918 e) €5176 f) €3773

25. a) 0.1 b) 0.09 c) 0.13  
d) 0.48 e) 0.003 f) 0.028  
g) 0.329 h) 0.07

26. a)  $\frac{3}{100}$  b)  $\frac{7}{1000}$  c)  $\frac{9}{10}$   
d)  $\frac{159}{1000}$  e)  $\frac{27}{100}$  f)  $\frac{601}{1000}$

27. a) 89.152 b) 474.17  
c) 686.078 d) 125.768  
e) 472.246 f) 313.496

28. a) 1.44 b) 11.071 c) 844.25  
d) 21.872 e) 2.454 f) 33.739

### Page 6

29. a) 11.76 b) 427.68  
c) 40.752 d) 812.84  
e) 229.944 f) 61.975
30. a) 0.097 b) 0.68 c) 35.8  
d) 3.8 e) 1.87 f) 0.267
31. a) 6% b) 14% c) 23%  
d) 98% e) 11% f) 76%
32. a)  $\frac{64}{100}$  b)  $\frac{83}{100}$  c)  $\frac{9}{100}$   
d)  $\frac{56}{100}$  e)  $\frac{78}{100}$  f)  $\frac{25}{100}$
33. a) €43 b) €48 c) €0.79  
d) €55 e) €5.64 f) €891
34. €42
35. €378
36. Teacher check
37. Teacher check

### Page 7

38. a) Because they have 2 dimensions: length and width  
b) A polygon is a 2-D shape with straight sides  
c) A regular polygon has sides that are all the same length  
d) Teacher check  
e) It is a trapezium  
f) C = 1, F = 0, H = 2, O = Infinite, W = 1, Y = 1  
g) Teacher check  
h) Isosceles
39. Cylinder, cube, pyramid, tetrahedron



40.

| Shape       | No. of flat faces | No. of curved faces | No. of edges | No. of vertices |
|-------------|-------------------|---------------------|--------------|-----------------|
| Cube        | 6                 | 0                   | 12           | 8               |
| Pyramid     | 5                 | 0                   | 8            | 5               |
| Cone        | 1                 | 1                   | 0            | 0               |
| Cuboid      | 6                 | 0                   | 12           | 8               |
| Cylinder    | 2                 | 1                   | 0            | 0               |
| Tetrahedron | 4                 | 0                   | 6            | 4               |
| Sphere      | 0                 | 1                   | 0            | 0               |

**Page 8**

41. a) 1.87cm b) 2m 9cm  
c) 3.45m d) 5.03m  
e) 2km 96m f) 8752m  
g) 1280m h) 0.984km  
i) 3cm 3mm j) 51mm  
k) 9.2cm l) 4cm 7mm
42. a) 3000g b) 1250g c) 3500g  
d) 34g e) 673g f) 5286g
43. a) 1kg 967g, 1.967kg  
b) 3kg 40g, 3.040kg  
c) 798g, 0.798kg  
d) 8kg 105g, 8.105kg  
e) 94g, 0.094kg  
f) 1kg 850g, 1.85kg
44. a) 5l 69ml b) 1l 827ml  
c) 4l 703ml d) 5l 140ml  
e) 8l 957ml f) 1l 800ml
45. a) 1.572l b) 4.170l c) 7.009l  
d) 3.074l e) 0.683l f) 0.008l
46. a) 8.96m b) 6.518km  
c) 9.894kg d) 13.593kg  
e) 14.698l f) 15.022l
47. a) 1.4cm b) 4.33m  
c) 4.381km d) 3.395l  
e) 1.724kg f) 3.841kg
48. a) 27.126km b) 41.418l  
c) 57.472kg d) 69.48l  
e) 162.26m f) 24.534kg

**Page 9**

49. a) 1.219l b) 0.384kg  
c) 0.196km d) 0.68l  
e) 0.58 f) 0.047km
50. a) km b) g c) ml  
d) mm e) kg f) l  
g) m h) cm

**2. Place Value****Page 10****Talk About**

1. Teacher check  
2. a) 3244 b) 21237 c) 23  
d) 418 e) 395 f) 1724

**Page 11**

3. a) XLVII b) XCV c) VIII  
d) CXXIX  
e) CCLXXIII f) CDXI  
g) DL h) DCLXXXVIII  
i) CCCXCIX j) DCCXXIII  
k) DCCXLIII l) CMXXX  
m) DCCCLXV n) MCCCXXVII  
o) MMMCMLXXX p) MMIV
4. a) 12, 81, 358, 733, 1517  
b) 3, 68, 83, 1515, 2330  
c) 8, 88, 662, 812, 3235

**The Value of Numbers**

1. a) 6 b) 60 c) 600  
d) 6 e) 6000 f) 60  
g) 60000 h) 600 i) 6  
j) 6 k) 600 l) 6  
m) 60000 n) 600 o) 6

**Page 12**

2. Teacher check

3. Teacher check

**Puzzler: 2316km****Page 13****Hundred Thousands**

1. Teacher check  
2. Teacher check  
3. a) 5 b) 40 c) 500  
d) 1000 e) 60000 f) 800  
g) 70 h) 0 i) 100000  
j) 50 k) 300000  
l) 200 m) 7000 n) 2  
o) 10 p) 90

4. a) 754210 b) 012457  
c) Teacher check  
d) Teacher check  
e) Teacher check  
f) 012574 g) 754201  
h) Teacher check

**Page 14**

5. a) 10000 + 5000 + 400 + 20 + 5  
b) 60000 + 1000 + 200 + 2  
c) 90000 + 7000 + 50 + 5  
d) 100000 + 10000 + 7000 + 800 + 90  
e) 200000 + 30000 + 5000 + 4  
f) 400000 + 30000 + 8000 + 600 + 90 + 3  
g) 600000 + 50000 + 400 + 30 + 1
6. Teacher check
7. a) €175086 b) €185910  
c) €210400 d) €260500  
e) €298007 f) €330605  
g) €403120  
h) Teacher check
8. €495000, €450000, €395000, €350000

**Page 15**

9. Teacher check
10. a) 141 L 112635  
b) 141 W 7082  
c) 141 MO 4962  
d) 141 G 26337  
e) 141 C 80407  
f) 141 DL 17158  
g) 141 D 112636  
h) 141 WW 11723
11. Teacher check
12. a) 964321, 123469  
b) 875321, 123578  
c) 764321, 123467

- d) 965422, 224569  
e) 776432, 234677  
f) 988661, 166889  
g) 876542, 245678  
h) 997652, 256799  
i) 876532, 235678

### Page 16

13. a) < b) > c) >  
d) < e) > f) >  
g) < h) > i) >  
j) >  
14. a) 109 b) 1000 c) 99  
d) 9 e) 30 f) 5  
g) 100 h) 5000 i) 100  
j) 69000  
15. a) 85, 110, 135  
b) 296, 306, 316  
c) 5340, 5240, 5140  
d) 10500, 11500, 12500  
e) 6160, 5160, 4160  
f) 18220, 19220, 20220  
g) 16300, 15200, 14100  
h) 688100, 788100, 888100  
16. 2458 2485 2548  
2584 2845 2854  
4258 4285 4528  
4582 4825 4852  
5248 5284 5428  
5482 5824 5842  
8245 8254 8425  
8452 8524 8542  
17. 8425  
18. a) 305, 507, 3507, 3705,  
5037, 35300, 37500,  
350700, 375300  
b) 1980, 8090, 9080, 18090,  
81900, 189000, 198000,  
819800  
c) 2450, 4522, 5024, 42500,  
45240, 54200, 240500,  
425400  
d) 6023, 20060, 26003,  
30060, 62003, 66350,  
332500, 632000  
e) 4659, 5996, 9465, 46599,  
96450, 97465, 455900,  
555900  
f) 2108, 7180, 7810, 78310,  
82100, 210378, 210387,  
310780  
19. a) 1560, 1670, 1780, 1890,  
2000, 2110, 2220, 2330,  
2440  
b) 8755, 8630, 8505, 8380,  
8255, 8130, 8005, 7880,

- 7755, 7630  
c) 32100, 33300, 34500,  
35700, 36900, 38100,  
39300, 40500  
d) 80300, 65300, 50300,  
35300, 20300, 5300  
e) 12850, 13000, 13150,  
13300, 13450, 13600,  
13750, 13900, 14050

### Page 17

Puzzler: 240603

### Multiplying and Dividing Whole Numbers by 10, 100 or 1000

1. a) 480, 4800, 48000  
b) 920, 9200, 92000  
c) 60, 600, 6000  
d) 170, 1700, 17000  
e) 250, 2500, 25000  
f) 1760, 17600, 176000  
g) 990, 9900, 99000  
h) 2340, 23400, 234000  
i) 5410, 54100, 541000  
j) 8730, 87300, 873000  
2. a) 32 b) 150 c) 756  
d) 608 e) 255 f) 820  
g) 571 h) 1245 i) 36702  
j) 75423  
3. a) 12 b) 37 c) 189  
d) 633 e) 1591  
4. a) 16570, 18670, 20970,  
23070, 25170, 27270  
b) 36360, 34940, 33520,  
32100, 30680, 29260  
c) 48506, 49195, 49884,  
50573, 51262, 51951  
d) 99200, 109700, 120200,  
130700, 141200, 151700  
e) 148300, 144300, 140300,  
136300, 132300, 128300  
f) 700700, 590700, 480700,  
370700, 260700, 150700

### Page 18

### Place Value and Decimals

1. Tom  
2. Lisa  
3. Aidan

### Page 19

4. Teacher check  
5. Teacher check  
6. a)  $\frac{7}{10}$  b) 600 c)  $\frac{7}{1000}$   
d) 0 e)  $\frac{6}{100}$   
f)  $\frac{2}{1000}$  g) 1 h)  $\frac{4}{10}$   
i)  $\frac{9}{100}$  j) 10 k) 200  
l)  $\frac{9}{10}$  m) 9 n)  $\frac{7}{100}$   
o)  $\frac{4}{1000}$   
7. a) 70 b)  $\frac{7}{100}$  c)  $\frac{7}{1000}$   
d) 700  
e) 7 f)  $\frac{7}{10}$  g)  $\frac{7}{100}$   
h)  $\frac{7}{1000}$   
8. a) 3.792 b) 25.684  
c) 90.242 d) 106.049  
e) 472.03 f) 800.791  
g) 56312.82 h) 235508.05  
9. a) 254.1 b) 0.245  
Page 20  
10. a) 6.1, 6.2, 6.3, 6.4, 6.5, 6.6,  
6.7, 6.8, 6.9, 7.0, 7.1  
b) 19.7, 19.6, 19.5, 19.4,  
19.3, 19.2, 19.1, 19, 18.9,  
18.8, 18.7  
c) 11.52, 11.53, 11.54,  
11.55, 11.56, 11.57, 11.58,  
11.59, 11.6, 11.61  
d) 33.61, 33.63, 33.65,  
33.67, 33.69, 33.71, 33.73,  
33.75, 33.77, 33.79  
e) 52.98, 52.88, 52.78,  
52.68, 52.58, 52.48, 52.38,  
52.28, 52.18, 52.08  
f) 220.12, 220.16, 220.2,  
220.24, 220.28, 220.32,  
220.36, 220.4  
g) 76.874, 76.875, 76.876,  
76.877, 76.878, 76.879,  
76.88, 76.881  
h) 3.159, 3.158, 3.157,  
3.156, 3.155, 3.154, 3.153,  
3.152  
i) 64.202, 64.204, 64.206,  
64.208, 64.21, 64.212,  
64.214, 64.216  
j) 148.356, 148.456,  
148.556, 148.656, 148.756,  
148.856, 148.956, 149.056



k) 51.350, 51.348, 51.346,  
51.344, 51.342, 51.34,  
51.338, 51.386

11. 7.81kg, 6.1kg, 6.046kg,  
5.97kg, 5.907kg, 5.662kg,  
4.947kg, 3.782kg

12. 209.45km, 209.5km,  
253.15km, 253.218km,  
308.517km, 308.526km,  
316.02km, 410.62km

13. a) 31.512, 31.5, 31.45,  
31.215, 31.1  
b) 7.0, 6.974, 6.984, 6.9,  
6.891, 6.879  
c) 87.621, 87.62, 87.601,  
87.6, 86.62,  
d) 156.3, 156.22, 156.2,  
156.12, 156.02  
e) 5.92, 5.913, 5.902, 5.89,  
5.82  
f) 75.2, 74.82, 74.8, 74.72,  
74.71, 74.7

14. €27.99, €29.00, €29.90,  
€29.99, €30.20, €31.90,  
€31.99, €32.50

### Page 21

15. a) 8 b) 87 c) 4  
d) 48

16. a) 9cm b) 15cm c) 28cm  
d) 47cm e) 86cm f) 70cm

### Page 22

#### Rounding Numbers to 1 Decimal Place

1. a) 5.3 b) 6.8 c) 9.6  
d) 11.3 e) 27.6 f) 32.5  
g) 20.0 h) 74.6 i) 40.3  
j) 100.0 k) 467.9 l) 515.6  
m) 790.3 n) 836.2 o) 820.6  
p) 941.0 q) 550.0 r) 1675.4  
s) 1789.9 t) 3000.0

### Page 23

#### Rounding Numbers to 2 Decimal Places

1. a) 2.52 b) 5.72 c) 4.23  
d) 3.76 e) 8.44 f) 11.64  
g) 15.73 h) 13.01 i) 19.11  
j) 25.61 k) 38.44 l) 65.06  
m) 59.56 n) 70.11 o) 47.94  
p) 174.12 q) 286.30 r) 193.86  
s) 300.87 t) 402.79  
2. a) 1.55kg b) 0.86kg c) 2.79kg  
d) 1.95kg e) 2.14kg

### Page 24

#### Rounding Numbers to 3 Decimal Places

1. a) 3.447 b) 4.902  
c) 7.127 d) 1.894  
e) 14.338 f) 23.489  
g) 37.034 h) 40.946  
i) 83.584 j) 71.286  
k) 69.058 l) 75.501  
m) 89.633 n) 90.401  
o) 97.160 p) 156.138  
q) 170.037 r) 273.123  
s) 428.144 t) 500.765

### Page 25

#### Homework

1. a) 20 b) 200 c) 2  
d) 20000 e) 2000 f) 200  
g) 2000 h) 2 i) 200000  
j) 2000  
2. Teacher check  
3. a) 97321, 12379  
b) 85420, 02458  
c) 987532, 235789  
4. a) 20000 + 7000 + 100 +  
80 + 6  
b) 30000 + 9000 + 500 +  
40  
c) 60000 + 1000 + 800 +  
20 + 3  
d) 500000 + 40000 + 1000  
+ 300 + 60 + 7  
e) 800000 + 4000 + 600 +  
20 + 4  
f) 700000 + 20000 + 500 +  
80 + 2

5. Teacher check  
6. a) < b) < c) >  
d) < e) > f) <  
g) < h) < i) >  
j) <

7. a) 2090, 2240  
b) 6420, 6330  
c) 27400, 27900  
d) 76700, 77900  
e) 132450, 136450

8. a) 740, 7400, 74000  
b) 860, 8600, 86000  
c) 1230, 12300, 123000  
d) 50, 500, 5000  
e) 1820, 18200, 182000  
f) 3200, 32000, 320000  
g) 2180, 21800, 218000  
h) 470, 4700, 47000  
i) 7360, 73600, 736000  
j) 9240, 92400, 924000

### Page 26

9. a) 380, 38 b) 2900, 290  
c) 23870, 2378 d) 370, 37  
e) 1000, 100 f) 6100, 610  
g) 21540, 2154 h) 800, 80  
i) 72800, 7280 j) 9420, 942

10. Teacher check

11. a) 10 b)  $\frac{1}{100}$  c)  $\frac{2}{10}$   
d) 6 e) 400 f)  $\frac{1}{1000}$   
g) 9 h)  $\frac{8}{10}$  i) 900  
j)  $\frac{4}{100}$

12. a) 1.286, 2.681, 6.281, 8.261  
b) 45.92, 52.94, 54.29, 59.24  
c) 1.023, 1.203, 1.302, 1032  
d) 21.458, 21.584, 21.854,  
24.158

13. a) 6.3 b) 8.2 c) 2.3  
d) 36.8 e) 80.3 f) 73.1  
g) 9.5 h) 98.4 i) 51.5  
j) 127.9

14. a) 5.16 b) 2.33 c) 8.71  
d) 9.12 e) 6.57 f) 14.63  
g) 29.76 h) 38.13 i) 50.27  
j) 66.98

## 3. Operations 1

### Page 27

#### Talk About

1. Teacher check  
2. Teacher check

### Page 28

#### Estimating and Calculating Sums

1. a) 16330 b) 8367 c) 14995  
d) 23997 e) 4696 f) 2001  
2. a) 14748 b) 29989 c) 30718  
d) 59222 e) 51881 f) 83699  
g) 97343 h) 75394 i) 105700  
j) 104331 k) 128149  
l) 127957

3. 27127

4. 8224km

Puzzler: Teacher check

## Page 29

5.

| Account Holder    | Total Savings |
|-------------------|---------------|
| Mr Eric Euro      | €10492        |
| Ms Penny Rich     | €17350        |
| Mr Sid Cent       | €17276        |
| Ms Mary Moola     | €33693        |
| Mr Des Dosh       | €46021        |
| Ms Delia Dollar   | €63146        |
| Mr Peter Shilling | €83050        |
| Ms Elsie Tanner   | €102482       |

6. 36528

## Estimating and Calculating Differences

1. Teacher check

2. a) 3119 b) 7585 c) 7221  
d) 3433 e) 6896 f) 3524  
g) 4903 h) 12940 i) 3387  
j) 1465 k) 6008 l) 4588

## Page 30

3. 2875  
4. €4821  
5. 9535  
6. 15338  
7.

| Film Title                            | Difference |
|---------------------------------------|------------|
| <i>Ninja Hedgehogs 3</i>              | 1749       |
| <i>The Loneliest Cow in the World</i> | 5339       |
| <i>The Cave of Secrets</i>            | 6375       |
| <i>Damien the Wonder Duck</i>         | 2114       |
| <i>A Warlock's Tale</i>               | 614        |
| <i>Who Shot Wally?</i>                | 15092      |

- a) See above  
b) *The Loneliest Cow in the World*  
c) *Who Shot Wally?*  
d) *A Warlock's Tale*  
e) 1680 f) Yes

## Page 31

### Homework

1. a) 8995 b) 7983 c) 6122  
d) 18988 e) 10595 f) 4004

2. a) 14217 b) 21548 c) 35281  
d) 65976 e) 63097 f) 89922  
3. a) 3381 b) 4519 c) 3714  
d) 4524 e) 7298 f) 7458  
g) 1216 h) 5005 i) 4589  
j) 3875 k) 3015 l) 7603  
4. 14207  
5. 6817

## 4. Number Theory 1

### Page 32

#### Looking Back at 5th Class

1. a) 1, 3, 9  
b) 1, 3, 5, 15  
c) 1, 2, 4, 5, 10, 20  
d) 1, 2, 3, 4, 6, 8, 12, 24  
e) 1, 2, 3, 4, 6, 9, 12, 18, 36  
f) 1, 2, 3, 4, 6, 8, 12, 16, 24, 48  
2. a) True b) True c) False  
d) False e) True f) False  
g) True h) False i) False

### Page 33

3. a) 35, 37, 39, 41, 43, 45, 47, 49  
b) 37, 39, 41, 43, 47  
c) 58, 60, 62, 64, 66, 68  
d) 125  
e) Even numbers will have no remainder; odd numbers will have a remainder of 1  
4. 23, 17, 41, 37, 67, 59  
5. 128  
6. 33, 27, 51, 77, 25, 121, 63  
7. 177  
8. a) 1, 2, 7, 14  
b) 1, 2, 4, 5, 10, 20  
c) 1, 2, 4, 8, 16  
d) 1, 2, 3, 4, 6, 8, 12, 24  
e) 1, 2, 4, 8, 16, 32  
f) 1, 2, 4, 5, 8, 10, 20, 40

### Highest Common Factors

9. a) 12 = 1, 2, 3, 4, 6, 12  
18 = 1, 2, 3, 6, 9, 18  
b) 21 = 1, 3, 7, 21  
28 = 1, 2, 4, 7, 14, 28  
c) 24 = 1, 2, 3, 4, 6, 8, 12, 24  
36 = 1, 2, 3, 4, 6, 9, 12, 18, 36  
d) 6, 7, 12

Puzzler: a) 7 bouquets  
b) 8 tulips and 9 roses

## Page 34

10. a) 6 b) 16 c) 9  
d) 12 e) 14 f) 8

### Multiples

1. 4 = 4, 8, 12, 16, 20, 24  
7 = 7, 14, 21, 28, 35, 42  
9 = 9, 18, 27, 36, 45, 54  
12 = 12, 24, 36, 48, 60, 72  
15 = 15, 30, 45, 60, 75, 90  
20 = 20, 40, 60, 80, 100, 120  
2. a) 11, 22, 33, 44  
b) 8, 16, 24, 32, 40, 48  
c) 13, 26, 39  
d) 3, 6, 9, 12, 15, 18, 21, 24, 27  
e) 5, 10, 15, 20, 25, 30, 35  
f) 14, 28, 42, 56, 70  
3. a) 72 – not a multiple of 7  
b) 30 – not a multiple of 8  
c) 35 – not a multiple of 3  
d) 42 – not a multiple of 9  
4. a) Yes b) Yes c) No  
d) Yes e) No f) No  
5. a) 198, 2181 b) 605, 4323  
c) 854, 1001 d) 648, 2352

## Page 35

### Lowest Common Multiples

6. a) 30 b) 12 c) 24  
d) 40 e) 18 f) 36  
g) 35 h) 60 i) 72  
7. a) No b) No c) Yes  
d) No e) No f) Yes

### Homework

1. Prime numbers: 59, 67, 91  
Composite numbers: 33, 49, 81  
2. a) 1, 2, 4, 8, 16  
b) 1, 3, 7, 21  
c) 1, 3, 9, 27  
d) 1, 2, 3, 5, 6, 10, 15, 30  
e) 1, 2, 3, 4, 6, 9, 12, 18, 36  
f) 1, 2, 3, 4, 6, 8, 12, 16, 24, 48  
3. a) 8 b) 10 c) 9  
d) 12 e) 8 f) 6



## Page 36

4. a) 3, 6, 9, 12, 15, 18, 21  
b) 6, 12, 18, 24, 30, 36, 42  
c) 10, 20, 30, 40, 50, 60, 70  
d) 13, 26, 39, 52, 65, 78, 91  
e) 18, 36, 54, 72, 90, 108, 126  
f) 21, 42, 63, 84, 105, 126, 147  
5. a) 28      b) 30      c) 56

## 5. Lines and Angles

### Page 37

#### Talk About

1. a) Parallel b) Oblique  
c) Perpendicular  
d) Vertical  
e) Horizontal  
2. Teacher check  
3. a) Horizontal line  
b) Vertical line  
c) Oblique line  
d) Parallel lines  
e) Perpendicular lines  
4. Teacher check  
5. a) A spirit level  
b) Teacher check  
c) Teacher check

## Page 38

### Different Types of Angle

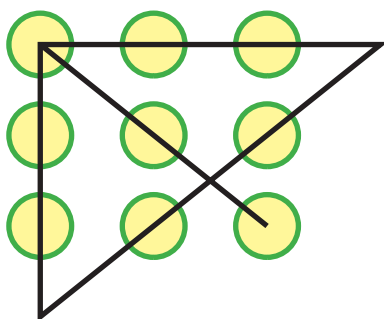
1. A right angle  
2. Acute angle measuring between  $0^\circ$  and  $90^\circ$   
Right angle measuring  $90^\circ$   
Obtuse angle measuring between  $90^\circ$  and  $180^\circ$   
Straight angle measuring  $180^\circ$   
Reflex angle measuring between  $180^\circ$  and  $360^\circ$   
3. a) Acute b) Right  
c) Obtuse d) Acute  
e) Reflex f) Straight  
g) Full rotation h) Obtuse  
i) Obtuse j) Reflex k) Acute  
l) Obtuse m) Teacher check  
4. Teacher check  
5. Teacher check  
6. Teacher check  
7. a) 4 right angles  
b) 5 obtuse angles  
c) 2 acute and 2 obtuse angles

- d) 3 acute angles  
e) 4 right angles  
f) 6 obtuse angles  
g) 1 right and 2 acute angles  
h) 8 obtuse angles i) 2 acute and 2 obtuse angles

## Page 39

8. Teacher check  
9. Teacher check

#### Puzzler:



### Making Shapes

10. Teacher check  
11. Teacher check

## Page 40

12. Teacher check

### Angles as Rotations

1. a) degrees b) 360,  $360^\circ$   
2. Teacher check  
3. a) 2 straight angles  
b) 1 acute and 1 reflex angle  
c) 1 obtuse and 1 reflex angle  
d) 1 full rotation  
e) 1 right and 1 reflex angle  
f) 1 obtuse and 1 reflex angle  
4. a)  $360^\circ$  b)  $180^\circ$  c)  $90^\circ$   
d)  $270^\circ$   
5.  $30^\circ$

## Page 41

6. a)  $60^\circ$  b)  $150^\circ$   
c)  $270^\circ$  d)  $210^\circ$   
7. a)  $180^\circ$  b)  $360^\circ$   
c)  $150^\circ$  d)  $240^\circ$

### Measuring Angles with a Protractor

1.  $110^\circ$ ,  $40^\circ$ ,  $10^\circ$ ,  $200^\circ$   
2. Teacher check

## Page 42

### Constructing Angles with a Protractor

1. Teacher check  
2. Teacher check  
3. Teacher check

### The Sum of the Angles of a Triangle

4.  $180^\circ$ ,  $180^\circ$   
5.  $50^\circ$ ,  $62^\circ$ ,  $40^\circ$   
6. a)  $48^\circ$  b)  $30^\circ$  c)  $60^\circ$   
d)  $90^\circ$  e)  $55^\circ$

## Page 43

7. a)  $160^\circ$  b)  $155^\circ$  c)  $119^\circ$   
8. The angles make a full rotation, or  $360^\circ$

## Page 44

### The Sum of the Angles of a Quadrilateral

1. The angles make a full rotation, or  $360^\circ$   
2. Teacher check  
3.  $360^\circ$   
4. a)  $110^\circ$  b)  $68^\circ$  c)  $125^\circ$

## Page 45

### Homework

1. a) Parallel  
b) Horizontal  
c) Perpendicular  
d) Oblique  
e) Vertical  
f) Teacher check  
2. a) Right b) Obtuse  
c) Reflex d) Straight  
e) Acute  
f) Teacher check  
3. a) Obtuse b) Acute  
c) Straight d) Reflex  
e) Obtuse f) Acute  
g) Reflex h) Right  
4. a) Acute and reflex  
b) Obtuse and reflex  
c) Obtuse and reflex  
d) Right and reflex  
e) Acute and reflex  
f) Acute and reflex

**Page 46**

5. a)  $\frac{1}{4}$  b)  $\frac{1}{2}$  c)  $\frac{1}{8}$   
d) 1 e)  $\frac{1}{6}$
6. a)  $40^\circ$  b)  $125^\circ$  c)  $335^\circ$
7. Teacher check
8. a)  $82^\circ$  b)  $123^\circ$  c)  $90^\circ$
9. a)  $59^\circ$  b)  $44^\circ$  c)  $87^\circ$   
d)  $48^\circ$

**Page 47**

10. a)  $31^\circ$  b)  $99^\circ$  c)  $105^\circ$

## 6. Representing and Interpreting Data 1

**Page 48****Talk About**

1. Teacher check
2. Teacher check

**Page 49**

3. a) 3rd and 4th  
b) 1st, 2nd, 6th  
c) 5th d) 90 e) 0  
f) Teacher check

**Looking at Trend Graphs**

1. a) Tuesday b) Saturday  
c) i) Increased: Wednesday, Thursday and Saturday  
ii) Decreased: Tuesday and Friday  
d) €3150 e) €525

**Page 50**

**Puzzler:** I love to eat sweets and chocolate

2. Teacher check

**Drawing Trend Graphs**

1. a) December b) February  
c) December and March  
d) 80mm e) 200mm  
f) December and January

**Page 51**

2. Teacher check
3. Teacher check
4. Teacher check

**Homework**

1. Teacher check

**Page 52**

2. a) Spring b) Autumn  
c) 30 days d) 165 e) 41.25
3. Teacher check

## 7. Fractions 1

**Page 53****Talk About**

1. Parts b, e and f are equivalent
2. They are all members of the family of 1

**Page 54****Making Equivalent Fractions**

1. a)  $\frac{4}{10}$  b)  $\frac{16}{24}$  c)  $\frac{4}{24}$   
d)  $\frac{35}{63}$  e)  $\frac{84}{96}$  f)  $\frac{18}{33}$
2. a)  $\frac{3}{3}$  b)  $\frac{5}{5}$  c)  $\frac{9}{9}$   
d)  $\frac{7}{7}$  e)  $\frac{11}{11}$  f)  $\frac{8}{8}$
3. a)  $\frac{1}{3}$  b)  $\frac{2}{3}$  c)  $\frac{3}{4}$   
d)  $\frac{3}{8}$  e)  $\frac{3}{4}$  f)  $\frac{5}{8}$

**Page 55**

4. a)  $\frac{3}{14}$  b)  $\frac{12}{18}$  c)  $\frac{3}{5}$   
d)  $\frac{5}{6}$  e)  $\frac{63}{81}$  f)  $\frac{9}{11}$   
g)  $\frac{48}{56}$  h)  $\frac{5}{7}$  i)  $\frac{28}{48}$   
j)  $\frac{36}{63}$  k)  $\frac{3}{10}$  l)  $\frac{54}{99}$

### Changing Mixed Numbers to Improper Fractions

1. 14
2.  $\frac{14}{5}$
3. a)  $\frac{7}{4}$  b)  $\frac{7}{3}$   
c)  $\frac{19}{7}$  d)  $\frac{17}{5}$

**Page 56**

4. a)  $\frac{17}{9}$  b)  $\frac{21}{10}$  c)  $\frac{19}{4}$   
d)  $\frac{17}{3}$  e)  $\frac{29}{7}$  f)  $\frac{27}{8}$   
g)  $\frac{38}{5}$  h)  $\frac{48}{7}$  i)  $\frac{86}{9}$

### Changing Improper Fractions into Mixed Numbers

1. a) 1 bar and 7 pieces  
b) 2 bars and 4 pieces  
c) 2 bars and 5 pieces  
d) 3 bars and 3 pieces  
e) 8 bars and 2 pieces  
f) 6 bars and 3 pieces

**Page 57**

2. a)  $5\frac{1}{5}$  b)  $2\frac{7}{8}$  c)  $3\frac{1}{10}$   
d)  $8\frac{1}{2}$  e)  $4\frac{3}{4}$  f)  $3\frac{5}{12}$   
g)  $7\frac{5}{7}$  h)  $8\frac{8}{11}$  i)  $5\frac{5}{8}$   
j)  $9\frac{2}{3}$  k)  $6\frac{7}{9}$  l)  $7\frac{5}{6}$

**Puzzler:**  $\frac{1}{4}$

**Page 58****Finding Common Denominators**

1. a)  $\frac{4}{7}$  b)  $\frac{2}{5}$  c)  $\frac{3}{4}$   
d)  $\frac{9}{10}$  e)  $\frac{7}{10}$  f)  $\frac{5}{12}$
2. a)  $\frac{3}{10}$  b)  $\frac{5}{8}$  c)  $\frac{1}{2}$   
d)  $\frac{7}{12}$  e)  $\frac{1}{4}$  f)  $\frac{5}{6}$

**Page 59****Adding Fractions**

1. a)  $\frac{9}{14}$  b)  $\frac{7}{10}$  c)  $\frac{7}{12}$   
d)  $\frac{5}{18}$  e)  $\frac{13}{24}$  f)  $\frac{13}{20}$   
g)  $\frac{9}{12}$  h)  $\frac{17}{20}$  i)  $\frac{9}{10}$
2. a)  $1\frac{5}{12}$  b)  $1\frac{7}{20}$  c)  $1\frac{7}{12}$   
d)  $1\frac{7}{24}$  e)  $1\frac{11}{18}$  f)  $1\frac{5}{24}$   
g)  $1\frac{5}{10}$  h)  $1\frac{3}{40}$  i)  $1\frac{11}{24}$



**Page 60**

3.  $1\frac{17}{40}$  litres

4.  $\frac{19}{20}$

5. a)  $\frac{9}{12}$       b)  $\frac{21}{30}$       c)  $\frac{19}{24}$   
 d)  $1\frac{14}{36}$       e)  $1\frac{35}{40}$       f)  $1\frac{39}{60}$   
 g)  $\frac{9}{24}$       h)  $2\frac{3}{12}$       i)  $2\frac{9}{30}$

**Subtracting Fractions**

1. a)  $\frac{1}{8}$       b)  $\frac{7}{30}$       c)  $\frac{11}{18}$   
 d)  $\frac{13}{24}$       e)  $\frac{1}{18}$       f)  $\frac{7}{20}$   
 g)  $\frac{9}{20}$       h)  $\frac{1}{24}$       i)  $\frac{2}{21}$

2.  $\frac{19}{40}$  m

**Page 61**

3.  $\frac{23}{72}$  km

4.  $\frac{7}{30}$  kg

**Adding Mixed Numbers**

1. a)  $3\frac{5}{12}$       b)  $4\frac{35}{36}$   
 c)  $5\frac{7}{10}$       d)  $8\frac{1}{8}$   
 e)  $6\frac{7}{18}$       f)  $8\frac{11}{30}$   
 g)  $12\frac{2}{21}$       h)  $9\frac{23}{72}$   
 i)  $14\frac{3}{20}$

**Page 62**

2.

| Contestant   | Total              |
|--------------|--------------------|
| Bob Bellows  | $4\frac{17}{30}$ m |
| Gail Forsyth | $4\frac{5}{12}$ m  |
| Don Puffin   | $4\frac{11}{20}$ m |
| Wendy Knight | $5\frac{2}{36}$ m  |
| C. Breeze    | $4\frac{11}{40}$ m |

**Page 63****Subtracting Mixed Numbers**

1. a)  $\frac{7}{30}$       b)  $1\frac{7}{12}$       c)  $2\frac{11}{24}$   
 d)  $3\frac{2}{15}$       e)  $1\frac{1}{18}$       f)  $4\frac{3}{40}$   
 g)  $2\frac{4}{12}$       h)  $2\frac{1}{6}$       i)  $7\frac{1}{18}$   
 2. a)  $\frac{11}{12}$       b)  $1\frac{17}{18}$       c)  $1\frac{19}{20}$   
 d)  $5\frac{17}{30}$       e)  $2\frac{17}{24}$       f)  $1\frac{11}{20}$

**Page 64**

3.  $\frac{11}{18}$  m

4.  $2\frac{9}{14}$  kg

**Homework**

1. Teacher check  
 2. Teacher check  
 3. a)  $\frac{9}{36}$       b)  $\frac{21}{35}$       c)  $\frac{4}{7}$   
 d)  $\frac{5}{8}$       e)  $\frac{14}{63}$       f)  $\frac{9}{10}$   
 g)  $\frac{54}{63}$       h)  $\frac{11}{12}$       i)  $\frac{48}{60}$   
 j)  $\frac{64}{72}$   
 4. a)  $\frac{11}{6}$       b)  $\frac{11}{4}$       c)  $\frac{16}{5}$   
 d)  $\frac{22}{9}$       e)  $\frac{35}{8}$       f)  $\frac{41}{7}$   
 g)  $\frac{69}{10}$       h)  $\frac{53}{12}$       i)  $\frac{80}{11}$   
 5. a)  $7\frac{1}{4}$       b)  $6\frac{5}{6}$       c)  $6\frac{5}{8}$   
 d)  $9\frac{3}{10}$       e)  $6\frac{7}{12}$       f)  $8\frac{2}{3}$   
 g)  $9\frac{3}{5}$       h)  $8\frac{3}{7}$       i)  $9\frac{4}{9}$   
 j)  $8\frac{7}{11}$   
 6. a)  $\frac{5}{9}$       b)  $\frac{2}{3}$       c)  $\frac{5}{6}$   
 d)  $\frac{7}{8}$       e)  $\frac{2}{5}$       f)  $\frac{5}{8}$

**Page 65**

7. a)  $\frac{1}{4}$       b)  $\frac{2}{3}$       c)  $\frac{7}{10}$   
 d)  $\frac{5}{12}$       e)  $\frac{2}{3}$       f)  $\frac{3}{8}$   
 8. a)  $1\frac{2}{6}$       b)  $1\frac{4}{9}$       c)  $1\frac{1}{18}$   
 d)  $1\frac{1}{24}$       e)  $1\frac{1}{24}$       f)  $1\frac{5}{8}$   
 9. a)  $\frac{7}{12}$       b)  $\frac{5}{24}$       c)  $\frac{1}{10}$   
 d)  $\frac{13}{18}$       e)  $\frac{5}{24}$       f)  $\frac{1}{20}$   
 10. a)  $3\frac{3}{6}$       b)  $6\frac{1}{8}$       c)  $5\frac{7}{10}$   
 d)  $8\frac{7}{12}$       e)  $6\frac{5}{12}$       f)  $8\frac{1}{24}$   
 11. a)  $2\frac{1}{8}$       b)  $1\frac{3}{6}$       c)  $3\frac{5}{10}$   
 d)  $1\frac{11}{12}$       e)  $4\frac{14}{20}$       f)  $2\frac{1}{18}$

**9. 2-D Shapes 1****Page 66****Properties of 2-D Shapes**

1. Teacher check  
 2. Teacher check  
 3. Teacher check

**Page 67**

4. Teacher check  
 5. a) Equilateral, isosceles, scalene  
 b) Equilateral  
 6. a) Hexagon  
 b) Hexagon  
 c) Square  
 d) Scalene triangle  
 e) Pentagon  
 f) Trapezium  
 g) Teacher check

**Puzzler: Sir Square**

## Page 68

7. a, b, d and e
- 8.

| Shape                | Equal sides | Equal angles | Pairs of parallel lines |
|----------------------|-------------|--------------|-------------------------|
| Square               | 4           | 4            | 2                       |
| Rhombus              | 4           | 2 pairs      | 2                       |
| Isosceles triangle   | 2           | 2            | 0                       |
| Rectangle            | 2 pairs     | 4            | 2                       |
| Equilateral triangle | 3           | 3            | 0                       |
| Trapezium            | 0           | 0            | 1                       |

9.  $45^\circ$ ,  $60^\circ$ ,  $40^\circ$ ,  $30^\circ$

## Page 69

### Constructing a Triangle

1. a) Teacher check    b) 3cm    c)  $60^\circ$     d) Equilateral
2. Teacher check
3. Teacher check
4. Teacher check

## Page 70

5. Teacher check
6. Teacher check

### Tessellating Shapes

1. Teacher check
2. Teacher check

## Page 71

### Homework

- 1.

| Shape              | Number of sides | Number of angles | Are all sides equal? | Are opposite sides equal? | Number of right angles |
|--------------------|-----------------|------------------|----------------------|---------------------------|------------------------|
| Rectangle          | 4               | 4                | No                   | Yes                       | 4                      |
| Isosceles triangle | 3               | 3                | No                   | N/A                       | 0                      |
| Hexagon            | 6               | 6                | Yes                  | Yes                       | 0                      |
| Circle             | 0               | 0                | N/A                  | N/A                       | 0                      |
| Square             | 4               | 4                | Yes                  | Yes                       | 4                      |
| Pentagon           | 5               | 5                | Yes                  | N/A                       | 0                      |
| Trapezium          | 4               | 4                | No                   | No                        | 0                      |
| Rhombus            | 4               | 4                | Yes                  | Yes                       | 0                      |
| Parallelogram      | 4               | 4                | No                   | No                        | 0                      |

2. a)  $47^\circ$     b)  $49^\circ$     c)  $19^\circ$     d)  $18^\circ$     e)  $18^\circ$     f)  $104^\circ$
3. Teacher check
4. Teacher check
5. Teacher check



## 10. Operations 2

### Page 72

#### Talk About

- a) 40 b) 70 c) 100  
d) 30 e) 90 f) 120  
g) 180 h) 210 i) 290  
j) 340 k) 410 l) 1000

#### Estimating and Calculating Products

- Teacher check

### Page 73

**Puzzler: 213 white tiles will be needed**

- a) 3136 b) 4588 c) 8022  
d) 12354 e) 13107 f) 13248  
g) 10728 h) 25320 i) 41474
- Teacher check
- a) 31204 b) 42226  
c) 51744 d) 101384  
e) 140709 f) 213462

### Page 74

- a) 75390 b) 37584  
c) 43884 d) 197026  
e) 85080 f) 93456  
g) 75240 h) 365220  
i) 263952 j) 235348  
k) 630672 l) 511632
- €48350 6. 123168
- 124450 8. 34398
- 406264

### Page 75

#### Estimating and Calculating Quotients

- a) 17 b) 59 c) 36  
d) 69 e) 140 f) 495
- a) 195 b) 484 R 4  
c) 507 d) 432  
e) 634 R 7 f) 2199  
g) 676 R 5 h) 959  
i) 894
- 226
- Teacher check

### Page 76

- a) 6 b) 7 c) 8  
d) 4 e) 8 f) 3
- a) 6 R 17 b) 3 R 31 c) 6 R 3  
d) 7 R 15 e) 6 R 44 f) 3 R 54

### Page 77

- a) 15 b) 26 c) 32  
d) 28 e) 25 f) 18

- 17
- 28 times, €15 left over
- €17
- 21

### Page 78

- a) 134 b) 152 c) 126  
d) 215 e) 183 f) 154  
g) 326 h) 254 i) 178
- 128
- €175

### Homework

- a) 33945 b) 37848  
c) 43355 d) 110832  
e) 202696 f) 249678
- a) 40208 b) 99968  
c) 69958 d) 42456  
e) 92330 f) 151996  
g) 81488 h) 311621  
i) 189360 j) 121160  
k) 251104 l) 235838
- a) 967 b) 438 c) 529  
d) 836 e) 257 f) 1499

### Page 79

- Teacher check
- a) 7 b) 7 c) 8  
d) 9 e) 6 f) 8
- a) 17 b) 26 c) 18  
d) 38 e) 27 f) 26
- a) 135 b) 159 c) 243  
d) 168 e) 137 f) 218
- 79776
- 72 boxes and 12 rolls left over

## 11. Chance

### Page 80

#### Exploring Outcomes of Random Processes

1.

| Total | Combinations of dice that give this total |
|-------|-------------------------------------------|
| 2     | 1 + 1                                     |
| 3     | 2 + 1                                     |
| 4     | 1 + 3 2 + 2                               |
| 5     | 1 + 4 3 + 2                               |
| 6     | 1 + 5 2 + 4 3 + 3                         |
| 7     | 1 + 6 2 + 5 3 + 4                         |
| 8     | 2 + 6 3 + 5 4 + 4                         |
| 9     | 3 + 6 4 + 5                               |
| 10    | 5 + 5 6 + 4                               |
| 11    | 5 + 6                                     |
| 12    | 6 + 6                                     |

- 21
- 6, 7 and 8
- 2, 3, 11 and 12
- Teacher check
- 1 in 21 f) 2 in 21 g) 3 in 21

### Page 81

- a) 1, 3; 1, 5; 1, 7; 1, 9; 3, 5;  
3, 7; 3, 9; 5, 7; 5, 9; 7, 9  
b) 10 c) 1 in 10  
d) There is a 4 in 10 chance of one of the numbers chosen being a 3  
e) There is a 0 in 10 chance of one of the numbers chosen being a 6

#### Estimating the Likelihood of Certain Outcomes

- a) 36 possible combinations:  
11, 12, 13, 14, 15, 16, 21, 22, 23, 24, 25, 26, 31, 32, 33, 34, 35, 36, 41, 42, 43, 44, 45, 46, 51, 52, 53, 54, 55, 56, 61, 62, 63, 64, 65, 66  
b) 1 in 36 c) 11 in 36  
d) 30

### Page 82

- a) 2 b) 1 in 2  
c)  $\frac{1}{2}$  d) 50%
- a) Blue b) 2 in 5  
c)  $\frac{2}{5} = 40\%$   
d) 3 in 5  
e)  $\frac{3}{5} = 60\%$   
f) 20  
g) 48  
h) 4 in 6 and 2 in 6  
i)  $\frac{4}{6}$  and  $\frac{2}{6}$   
j)  $\frac{2}{3}$  and  $\frac{1}{3}$   
k)  $66\frac{2}{3}\%$  and  $33\frac{1}{3}\%$
- a)  $\frac{3}{6}$  chance = 50% chance  
b)  $\frac{2}{6}$  chance =  $33\frac{1}{3}\%$  chance  
c)  $\frac{1}{4}$  chance = 25% chance  
d)  $\frac{3}{12}$  chance = 25% chance  
e)  $\frac{6}{12}$  chance = 50% chance  
f)  $\frac{8}{12}$  chance =  $66\frac{2}{3}\%$  chance

## Page 83

### Looking at Frequency Tables

- Teacher check
- a) Yellow = 44%,  
Pink = 18%, White = 38%  
b) 2 yellow, 1 pink, 2 white

## 12. Fractions 2

### Page 86

#### Multiplying Fractions by Fractions

- a)  $\frac{1}{8}$  b)  $\frac{1}{18}$  c)  $\frac{2}{12}$   
d)  $\frac{6}{12}$  e)  $\frac{2}{25}$  f)  $\frac{1}{16}$
- a)  $\frac{1}{5}$  b)  $\frac{1}{4}$  c)  $\frac{1}{6}$   
d)  $\frac{1}{3}$  e)  $\frac{1}{2}$  f)  $\frac{1}{2}$   
g)  $\frac{1}{4}$  h)  $\frac{3}{5}$  i)  $\frac{1}{3}$   
j)  $\frac{3}{8}$

### Page 87

- a)  $\frac{7}{10}$  b)  $\frac{1}{4}$  c)  $\frac{2}{3}$   
d)  $\frac{9}{28}$  e)  $\frac{10}{33}$  f)  $\frac{3}{5}$   
g)  $\frac{1}{2}$  h)  $\frac{3}{40}$  i)  $\frac{2}{3}$

#### Dividing a Whole Number by a Fraction

- a) 28 b) 16 c) 44  
d) 36 e) 48 f) 72
- a) 8 b) 32 c) 75  
d) 18

### Page 88

#### Ratios

- Graham = 8 Gavin = 4
- Jill = €12 Jack = €8

**Puzzler: Mr Skinflint = €2785, Teachers = €8355 each**

### Page 89

- a) €18 : €6 b) €12 : €18  
c) €32 : €24 d) €18 : €9  
e) €18 : €30 f) €40 : €32
- a) 2 : 1 b) 3 : 2  
c) 3 : 5 d) 6 : 5

## Homework

- a)  $\frac{1}{15}$  b)  $\frac{2}{6}$  c)  $\frac{1}{24}$   
d)  $\frac{8}{15}$  e)  $\frac{6}{20}$  f)  $\frac{3}{16}$
- a)  $\frac{1}{9}$  b)  $\frac{5}{8}$  c)  $\frac{1}{10}$   
d)  $\frac{5}{12}$  e)  $\frac{5}{8}$  f)  $\frac{16}{21}$   
g)  $\frac{3}{20}$  h)  $\frac{2}{15}$  i)  $\frac{1}{4}$

### Page 90

- a)  $\frac{9}{14}$  b)  $\frac{4}{15}$  c)  $\frac{7}{16}$   
d)  $\frac{3}{4}$  e)  $\frac{1}{2}$  f)  $\frac{1}{12}$
- a) €42 : €84  
b) €123 : €41  
c) €98 : €147  
d) €236 : €177  
e) €57 : €285  
f) €380 : €228
- 2 : 3

## 13. 2-D Shapes 2

### Page 91

#### Talk About

- Teacher check
- Teacher check

#### The Properties of a Circle

- a) diameter  
b) radius c) circumference
- a) centre  
b) centre, circumference  
c) perimeter
- Teacher check

### Page 92

- a) 8cm b) 18cm  
c) 7cm d) 14cm  
e) 24.4cm f) 13.6cm
- a) 10cm b) 7.5cm  
c) 7.1cm d) 14.5cm  
e) 9.2cm f) 8.5cm
- Teacher check
- 7cm<sup>2</sup>
- Teacher check

#### Circle Challenge

- a) 2 b) Radius  
c) Circumference

## Page 93

### 12.

| Circle | Circumference | Diameter |
|--------|---------------|----------|
| A      | 12.5cm        | 4cm      |
| B      | 23.2cm        | 7.5cm    |
| C      | 3.1cm         | 1cm      |
| D      | 9.5cm         | 3cm      |

- Teacher check
- Circumference is slightly more than 3 times the diameter
- a) 18.6cm  
b) 31cm  
c) 28cm
- Teacher check
- Teacher check

### Page 94

#### Symmetry

- Teacher check
- Teacher check
- 1, 8, 0
- Teacher check

### Page 95

- Teacher check
- Teacher check

### Page 96

#### Tangrams

- Teacher check
- Teacher check
- Teacher check

### Page 97

#### Co-ordinates

- a) B3 b) C1 c) C5  
d) E4 e) D2 f) A2
- Teacher check

### Page 98

- a) B5 b) D5 c) A3  
d) D2 e) E1 f) C3
- a) (6, 7) b) (1, 8) c) (4, 3)  
d) (9, 4)

### Page 99

- Teacher check
- 4
- a) Square  
b) Rectangle  
c) Parallelogram



## Homework

1. A = circumference;  
B = diameter; C = radius
2. Teacher check
3. Teacher check
4. Teacher check
5. Teacher check
6. The word MUM is symmetrical

## Page 100

7. Teacher check
8. (4, 7), (7, 2), (9, 6)

## 14. Number Theory 2

### Page 101

#### Talk About

Puzzler: 1, 4, 9, 16, 25, 36.  
The pattern is that they are all square numbers.

#### Square Numbers

1. 9, 25, 36, 16

### Page 102

2. a)  $7^2$  b)  $5^2$  c)  $10^2$   
d)  $8^2$  e)  $6^2$  f)  $11^2$
3. a) 9 b) 81 c) 16  
d) 144 e) 196 f) 324  
g) 529 h) 729 i) 1156  
j) 289 k) 841 l) 1600
4. No
5. 484

#### Square Roots

6. a) 6 b) 9 c) 12  
d) 8 e) 5 f) 3
7. a) 16 b) 100 c) 4  
d) 121

### Page 103

#### Numbers Written in Exponential Form

1. a) 27 b) 64 c) 32  
d) 144 e) 125 f) 81  
g) 216 h) 64 i) 256  
j) 1000 k) 343 l) 625
2. a) 729 b) 256 c) 243  
d) 3375 e) 1024 f) 1331
3. €3.60
4. 3125
5. €160000

## Page 104

### Homework

1. a) 25 b) 49 c) 36  
d) 100 e) 144 f) 225  
g) 324 h) 484 i) 676  
j) 961 k) 1225 l) 1764
2. a) 81 b) 9 c) 169  
d) 256 e) 400 f) 576
3. a) 512 b) 729 c) 243  
d) 729 e) 1 f) 10000

## 15. Equations

### Page 105

#### Talk About

1. a) 462 b) 562 c) 112  
d) 9 e) 21 f) 532

### Page 106

#### Word Problems as Equations

1. a)  $45 \div 5 = 9\text{cm}$   
b)  $14 + 7 = 21$   
c)  $\text{€}25 - \text{€}6.50 = \text{€}14.50$   
d)  $240 \div 3 = 80$   
e)  $\text{€}4.40 \div 8 = \text{€}0.55$   
f)  $105 \times 52 = 5460\text{m}^2$
2. Teacher check
3. a) 48 b) 3 c) 84
4. a)  $16 \div 2 = 8$   
b)  $5.8 \div 4 = 1.45\text{m}$   
c)  $1.5 \times 2.5 = 3.75$   
d)  $6 \times 2 = 12$

### Page 107

5. 900m
6. Teacher check
7.  $\text{€} \times 1.5 = \text{£}$

| Euro | Sterling |
|------|----------|
| 10   | 15       |
| 50   | 75       |
| 75   | 112.50   |
| 110  | 165      |
| 130  | 195      |
| 215  | 322.50   |

Puzzler: 7km; 4km

## Page 108

8. a)  $a \times 2 = A$

|     |     |
|-----|-----|
| 1   | 2   |
| 2   | 4   |
| 3   | 6   |
| 4   | 8   |
| 5   | 10  |
| 10  | 20  |
| 12  | 24  |
| 15  | 30  |
| 20  | 40  |
| 100 | 200 |

- b)  $b \times 5 = B$

|    |     |
|----|-----|
| 1  | 5   |
| 2  | 10  |
| 3  | 15  |
| 4  | 20  |
| 10 | 50  |
| 13 | 65  |
| 18 | 90  |
| 20 | 100 |
| 35 | 175 |
| 50 | 250 |

- c)  $c + 15 = C$

|     |     |
|-----|-----|
| 1   | 16  |
| 2   | 17  |
| 3   | 18  |
| 4   | 19  |
| 5   | 20  |
| 20  | 35  |
| 25  | 40  |
| 40  | 55  |
| 60  | 75  |
| 100 | 115 |

- d)  $d + 75 = D$

|     |     |
|-----|-----|
| 1   | 76  |
| 2   | 77  |
| 3   | 78  |
| 4   | 79  |
| 5   | 80  |
| 15  | 90  |
| 35  | 110 |
| 50  | 125 |
| 75  | 150 |
| 150 | 225 |

## Solving One-step Equations

1. a)  $a = 76$  b)  $x = 85$   
c)  $b = 208$
2. a)  $A + 7 = 42$ ;  $A = 35$   
b)  $B - 12 = 61$ ;  $B = 73$   
c)  $C \times 2 = 86$ ;  $C = 43$   
d)  $D \div 2 = 34$ ;  $D = 68$

## Page 109

3. a)  $7 + x = 12$  b)  $6 \times y = 30$   
c)  $18 - z = 5$  d)  $56 \div y = 7$   
e)  $x = 5$ ;  $y = 5$ ;  $z = 13$ ;  $y = 8$
4. a)  $a + 39 = 421$ ;  $a = 382$   
b)  $b \div 9 = 91$ ;  $b = 819$   
c) Teacher check
5. a) 14 b) 7 c) 17  
d) 4 e) Hounds

## Page 110

6. a)  $x = 5557$  b)  $y = 13927$   
c)  $a = 15$  d)  $z = 14$   
e)  $y = \text{€}566.10$  f)  $b = 85.5$
7. a)

| x  | 9  | 12  | 7  | 15  | 8  |
|----|----|-----|----|-----|----|
| 5  | 45 | 60  | 35 | 75  | 40 |
| 11 | 99 | 132 | 77 | 165 | 88 |
| 6  | 54 | 72  | 42 | 90  | 48 |
| 3  | 27 | 36  | 21 | 45  | 24 |
| 4  | 36 | 48  | 28 | 60  | 32 |

b)

| x | 2  | 5  | 10 | 11 | 9  |
|---|----|----|----|----|----|
| 8 | 16 | 40 | 80 | 88 | 72 |
| 3 | 6  | 15 | 30 | 33 | 27 |
| 7 | 14 | 35 | 70 | 77 | 63 |
| 6 | 12 | 30 | 60 | 66 | 54 |
| 1 | 2  | 5  | 10 | 11 | 9  |

## Homework

1. a)  $x = 59$  b)  $a = 8$   
c)  $b = 275$  d)  $c = 203$   
e)  $y = 149$  f)  $b = 272$
2. a)  $75 \times 3 = \text{€}2.25$   
b)  $136 \div 4 = 34$   
c)  $13426 - 7689 = 5737$   
d)  $\text{€}19024 - \text{€}19 = \text{€}19005$   
e) Teacher check
3. a)  $a = 944$  b)  $b = 269$   
c)  $c = 495$  d)  $d = 174$   
e)  $e = 183$  f)  $f = 96$

## Page 111

4. a)  $a = 16605$  b)  $b = 13829$   
c)  $c = 125$  d)  $d = 72292$

## 17. Decimals

### Page 112

#### Talk About

1. a) True b) True c) True  
d) True e) True f) True

### Comparing Fractions and Decimals

2. a) 0.6 b) 0.03  
c) 0.29 d) 0.008  
e) 0.087 f) 0.941  
g) 4.3 h) 1.89

### Page 113

3. a) 0.5 b) 0.4 c) 0.25  
d) 0.8 e) 0.75 f) 0.6  
g) 0.35 h) 0.125
4. a)  $\frac{4}{5}$  b)  $\frac{1}{4}$  c)  $\frac{3}{20}$   
d)  $\frac{23}{50}$  e)  $\frac{17}{20}$  f)  $\frac{24}{25}$   
g)  $\frac{3}{8}$  h)  $\frac{5}{8}$
5. a) 1.48, 4.81, 8.14, 8.41  
b) 21.59, 21.95, 25.19, 25.91  
c) 6.222, 6.224, 6.242, 6.422  
d) 1.576, 1.6, 1.657, 1.756  
e) 204.9, 209.4, 240.9, 249

### Adding and Subtracting Decimals

1. a) 40.057 b) 204.337  
c) 232.406 d) 66.054  
e) 66.676 f) 73.049

### Page 114

2. a) 21.52 b) 18.54  
c) 0.885 d) 63.638  
e) 2.722 f) 350.825
3. 16.85m
4. 1.66m

### Multiplying Decimals

5. a) 65 b) 215.2 c) 176.9  
d) 4623 e) 306.5 f) 51.9  
g) Teacher check  
h) Teacher check
6. a) 6.8 b) 225.4 c) 7095  
d) 4379 e) 349.6 f) 604

## Page 115

7. a) 11.13 b) 492  
c) 31.116 d) 376.32  
e) 3902.8 f) 25.749  
g) 98.76 h) 2.607  
i) 381.15
8. a) 712.8 b) 27.74  
c) 303.05 d) 151.914  
e) 46.44 f) 5841.2
9. 43.07m
10. 98.672 litres
11. €113.10
12. 56.664km

## Page 116

### Dividing Decimals

1. a) 2.34 b) 3.097 c) 38.69  
d) 0.4761 e) 0.383 f) 0.572  
g) 7.1926 h) 0.2943 i) 0.012
2. a) 0.16 b) 8.9 c) 0.947  
d) 3.18 e) 0.128 f) 26.8  
g) 1.95 h) 0.568 i) 46.3
3. a) 36.7 b) 0.174 c) 2.82  
d) 14.8 e) 3.89 f) 0.697

## Page 117

4. €6.47
5. 0.185 litres
6. 0.185kg
7. 3.6km

### Multiplying Decimals by Decimals

1. a) 3.332 b) 13.752 c) 160.31  
d) 2.784 e) 28.595 f) 15.582  
g) 46.332 h) 6.004 i) 93.906

## Page 118

### Dividing Decimals by Decimals

1. a) 1.74 b) 36.2 c) 1.65  
d) 23.9 e) 43.7 f) 1.86

Puzzler: 3 hours 20 minutes

## Page 119

2. 28 markers
3. 12.15kg
4. 150.92 square metres
5. 35 bags



## Homework

- 0.5
  - 0.19
  - 0.063
  - 0.07
  - 0.198
  - 0.4
  - 0.75
  - 0.65
- $\frac{4}{25}$
  - $\frac{4}{5}$
  - $\frac{1}{4}$
  - $\frac{4}{5}$
  - $\frac{11}{50}$
  - $\frac{11}{20}$
  - $\frac{11}{50}$
  - $\frac{1}{8}$
- 3.62, 3.26, 2.63, 2.36
  - 1.853, 1.583, 1.538, 1.385
  - 87.41, 87.14, 84.71, 84.17
  - 6.763, 6.637, 6.376, 6.367

## Page 120

- 73.114
  - 339.329
  - 81.445
  - 392.496
  - 70.928
  - 520.557
- 1.65
  - 10.644
  - 211.33
  - 0.601
  - 2.822
  - 328.645
- 7.84
  - 22.02
  - 521.4
  - 505.71
  - 128.604
  - 4.524
- 47.52
  - 1182.6
  - 51.306
  - 2134.4
  - 31.426
  - 2623.5
- 2.59
  - 0.285
  - 49.6
  - 3.69
  - 76.9
  - 0.084
- 1.25
  - 0.347
  - 28.4
  - 0.462
  - 6.08
  - 52.7
- 10.304
  - 46.494
  - 19.527
  - 128.296
  - 17.672
  - 78.493
- 2.16
  - 53.7
  - 93.4
  - 2.85
  - 3.07
  - 43.7
- 673.362km
- 59 lollipops
- 2.47m

## 18. Money

### Page 121

#### Talk About

- €0.85
  - €1.74
  - €0.03
  - €9.25
  - €15.60
  - €39.99
  - €104.82
  - €655.30
  - €2698.49
- €1.35
  - €0.92
  - €2.50
  - €4.81
  - €7.99
  - €9.11
- €5.70
  - €8.80
  - €5.71
  - €0.05
  - €9.76
  - €3.20
  - €3.80
  - €2.05
  - €5.10

## Getting Value for Money

- 5 for €59.50

## Page 122

- Train = €147,  
Bus = €110, Plane = €300
  - Bus

## Think About

10 games

## Page 123

### Calculating Bills

- €39
  - €24.60
  - €46.80
  - €56.25
  - €112.86
  - €43.80
  - €6.20
  - Teacher check

## Money in Different Countries

- Euro
  - 18
  - Teacher check
  - Teacher check
- Pound sterling
  - Euro
  - US dollar
  - Japanese yen
- Bank or post office
  - Banks, post office, currency exchanges, internet, newspapers
- Teacher check

## Page 124

5.

|                       | a) €10  | b) €100  |
|-----------------------|---------|----------|
| US dollar             | 13.40   | 134.00   |
| Japanese yen          | 1030.20 | 10302.00 |
| Pound sterling        | 8.60    | 86.00    |
| Swiss franc           | 12.30   | 123.00   |
| Russian rouble        | 433.2   | 4332.00  |
| Australian dollar     | 13.70   | 137.00   |
| Canadian dollar       | 13.90   | 139.00   |
| Chinese yuan renminbi | 85.40   | 854.00   |
| New Zealand dollar    | 17.30   | 173.00   |
| South African rand    | 107.00  | 1070.00  |

- \$268
  - 5151 yen
  - 307.50 Swiss francs
  - AUD\$1370
  - Teacher check

7.

|                       |        |
|-----------------------|--------|
| US dollar             | USD \$ |
| Japanese yen          | ¥      |
| Pound sterling        | GBP £  |
| Swiss franc           | CHF    |
| Russian rouble        | RUB    |
| Australian dollar     | AUD \$ |
| Canadian dollar       | CAD \$ |
| Chinese yuan renminbi | CNY ¥  |
| New Zealand dollar    | NZD \$ |
| South African rand    | ZAR R  |

- GBP£215
  - ¥61812
  - USD\$737
  - CAD\$2780
  - AUD\$4658

## Page 125

- €500
  - €900
  - €300
  - €400
  - €750
  - €1811.63
- AUD\$863.10
- €29,968.60
- €16,311.31
- CAD\$1,042,500.00
- €886,194.30

## Homework

- Teacher check
- AUD\$2055
- AUD\$64
  - €46.72

### Page 126

4. €746.27  
5. a) €5.22  
b) USD\$35, €26.12  
c) USD\$111, €82.84  
d) Teacher check

## 19. Rules and Properties

### Page 129

#### Using Brackets

1. a) 7 b) 108 c) 56  
d) 40 e) 48 f) 8  
g) 7 h) 16 i) 88  
2. a) 186 b) 3168 c) 90  
d) 21 e) 3356 f) 1781  
g) 2892 h) 9633 i) 9581  
j) 8570 k) 17955 l) 6150

#### When There Are No Brackets

3. a) 4530 b) 80 c) 2488  
d) 2985 e) 23598 f) 595  
4. a) 10527 b) 15664 c) 2654  
d) 19387

### Page 130

#### Missing Operators

1. a) + b) x c) +  
d) ÷ e) x f) +  
g) - h) x i) -  
2. a)  $7 \times (4 + 5) = 63$   
b)  $9 + (3 + 6) = 18$   
c)  $32 \div (4 + 2) = 4$   
d)  $6 \times (2 \times 5) = 60$   
e)  $7 \times (9 \div 3) = 21$   
f)  $21 - (15 - 6) = 12$   
g)  $45 \div (5 + 4) = 5$   
h)  $6 \times (14 - 5) = 54$   
i)  $11 \times (84 \div 7) = 132$   
3. a)  $19 + (24 + 35) = 78$   
b)  $83 + (76 - 38) = 121$   
c)  $14 \times (8 - 3) = 70$   
d)  $56 \div (24 \div 6) = 14$   
e)  $143 - (36 \times 3) = 35$   
f)  $24 \times (76 \times 19) = 34656$

### Page 131

4. a)  $(7 + 2) \times 3 = 27$   
b)  $(10 \div 5) \times 6 = 12$   
c)  $(11 - 4) \times 5 = 35$   
d)  $(8 \times 6) \div 12 = 4$   
e)  $12 \times (3 + 5) = 96$   
f)  $(14 - 7) \times 7 = 49$

- g)  $40 \div (11 - 3) = 5$   
h)  $56 + (7 + 9) = 72$   
i)  $6 + (108 \div 12) = 15$   
5. a)  $(37 \times 21) + 23 = 800$   
b)  $27 \times (36 - 11) = 675$   
c)  $(125 \div 25) \times 94 = 470$

**Puzzler: T = 2, E = 1, N = 3, S = 4, so TENTS = 12**

### Page 132

#### Number Patterns and Sequences

1. a) Up 5, down 2  
b) Down 7, 6, 5, etc.  
c) Up 2, 4, 6, 8 etc  
d) Down 11, 9, 7, etc.  
e) Up  $\frac{3}{4}$  f) Up  $\frac{1}{6}$   
g) Up 0.4 h) Down 0.3  
2. a) 41, 47 b) 27, 18  
c) 80, 160 d) 21, 28  
e) 5.7, 6.4 f)  $0.9, 1\frac{1}{10}$   
3. Teacher check

### Page 133

4. 7, 16, 25, 34, 43  
5. a) 10, 11, 13, 16, 20, 25, 31  
b) 68, 60, 53, 47, 42  
c) 4, 12, 36, 108, 324, 972  
d) 3, 8, 6, 11, 9, 14, 12, 17, 15  
6. 27  
7. a) 21 b) 15 c) 34  
d) 62 e) 42 f) 620

### Page 134

#### Cracking the Code

8. a) 9 b) 49 c) 25  
d) 30 e) 27 f) 61

**Puzzler: cat = 24, ale = 18, map = 30, oat = 36, gun = 42, bead = 12**  
**The correct order should be: bead, ale, cat, map, oat, gun**

#### Homework

1. a) 1275 b) 3942 c) 79  
d) 21 e) 3356 f) 1535  
2. a) 2791 b) 111 c) 2355  
d) 2968 e) 14625 f) 706

### Page 135

3. a)  $7 + (8 + 3) = 18$   
b)  $(3 \times 3) \times 4 = 36$   
c)  $(12 - 7) + 8 = 13$   
d)  $72 \div (64 \div 8) = 9$   
e)  $(6 \times 8) - 9 = 39$   
f)  $96 \div (3 \times 4) = 8$   
4. a)  $7 \times (4 + 3) = 49$   
b)  $(18 \div 3) - 6 = 12$   
c)  $(12 - 9) \times 9 = 27$   
d)  $(5 \times 8) \div 4 = 10$   
e)  $11 \times (4 \times 3) = 77$   
f)  $(12 - 5) \times 6 = 42$   
5. a) Up 6, up 3  
b) Down 1, 2, 3, etc.  
c) Double the term  
d) Halve the term  
e) Up 0.7 f) Down 1.2  
6. a) 41, 50 b) 40, 32  
c) 81, 243 d) 5, 1  
e) 3.6, 2.5 f) 10.9, 13.3

## 20. Length

### Page 136

#### Talk About

1. a) km and m b) m and cm  
c) cm and mm d) km and m  
e) m and cm f) cm and mm  
2. a) 10 b) centimetre  
c) metres d) 1000  
e) centimetres

### Page 137

#### Millimetres and Centimetres

1. a)  $\frac{3}{10}$  b)  $\frac{1}{2}$  c)  $\frac{1}{5}$   
d)  $\frac{7}{10}$  e)  $\frac{4}{5}$  f)  $\frac{9}{10}$   
g)  $1\frac{1}{10}$  h)  $1\frac{2}{5}$  i)  $2\frac{3}{5}$   
j)  $3\frac{1}{2}$  k)  $4\frac{4}{5}$  l)  $6\frac{3}{10}$   
2. a) 6mm b) 0.4cm  
c) 8mm d) 1.7cm  
e) 22mm f) 3.9cm  
g) 50mm h) 8.4cm

## Centimetres, Metres and Kilometres

3.

| Measurement | Fraction               | Decimal |
|-------------|------------------------|---------|
| 17cm        | $\frac{17}{100}$ m     | 0.17m   |
| 8cm         | $\frac{8}{100}$ m      | 0.08m   |
| 39cm        | $\frac{39}{100}$ m     | 0.39m   |
| 151cm       | $1\frac{51}{100}$ m    | 1.51m   |
| 275cm       | $2\frac{3}{4}$ m       | 2.75m   |
| 340cm       | $3\frac{40}{100}$ m    | 3.4m    |
| 328m        | $\frac{328}{1000}$ km  | 0.328km |
| 1023m       | $1\frac{23}{1000}$ km  | 1.023km |
| 2125m       | $2\frac{125}{1000}$ km | 2.125km |
| 1005m       | $1\frac{5}{1000}$ km   | 1.005km |
| 80m         | $\frac{80}{1000}$ km   | 0.08km  |
| 2200m       | $2\frac{1}{5}$ km      | 2.2km   |

## Page 138

### Adding and Subtracting Lengths

- 15.1cm
  - 30.2cm
  - 13.72m
  - 12.09m
  - 4.895km
  - 9.108km
  - 5.5cm
  - 0.9cm
  - 2.27m
  - 1.68m
  - 4.513km
  - 0.633km
- 54.243km
- 7.5cm

Puzzler: 5.9cm, 23.6cm

## Page 139

### Multiplying and Dividing Lengths

- | Distance run by each runner | Number of runners | Total length run |
|-----------------------------|-------------------|------------------|
| 1074m                       | 7                 | <b>7.518km</b>   |
| 2km 47m                     | 9                 | <b>18.423km</b>  |
| 35.72m                      | 12                | <b>428.64m</b>   |
| 1.836km                     | 17                | <b>31.212km</b>  |
| $28\frac{3}{4}$ m           | 29                | <b>833.75km</b>  |
| 2.039km                     | 36                | <b>73.404km</b>  |

- | Distance run by the team | Number of runners | Distance run by each runner |
|--------------------------|-------------------|-----------------------------|
| 1km 835m                 | 5                 | <b>0.367km</b>              |
| 0.756km                  | 9                 | <b>0.084km</b>              |
| 5670m                    | 6                 | <b>0.945km</b>              |
| 1.566km                  | 27                | <b>0.058km</b>              |
| $1\frac{7}{8}$ km        | 25                | <b>0.075km</b>              |
| 2km 90m                  | 38                | <b>0.055km</b>              |
- 64.3cm
- 20.16m
- 0.76m

## Page 140

### Perimeter

- Correct answer: c)
- 80cm, 86cm, 68cm

**Puzzler: A shape whose sides are of equal length**

3.

| Shape                | Length of side | Number of sides | Perimeter |
|----------------------|----------------|-----------------|-----------|
| Square               | 28.6cm         | 4               | 114.4cm   |
| Octagon              | 7.37m          | 8               | 58.96m    |
| Pentagon             | 35.2cm         | 5               | 176cm     |
| Decagon              | 4m 6cm         | 10              | 40.6m     |
| Equilateral triangle | 436mm          | 3               | 130.8cm   |
| Heptagon             | 9cm 8mm        | 7               | 68.6cm    |
| Nonagon              | 2.83m          | 9               | 25.47m    |
| Hexagon              | 8m 24cm        | 6               | 49.44m    |

## Page 141

### Scale

- Teacher check

## Page 142

- Teacher check

## Page 143

- a) 76.8m and 48m                      b) 70.2m and 15.6m                      c) 46.9m and 26.6m  
 d) 442.8m and 319.8m                  e) 498.1m and 468.8m
- a) 196.2m and 87.2m                  b) 206.8m and 150.4m

## Page 144

### Calculating Perimeter Using Scale

- a) 12.4cm and 6.8cm                  7.9cm and 5cm  
 b) 391.84m and 214.88m              304.15m and 192.5m  
 c) 1213.44m and 993.3m  
 d) Teacher check

## Page 146

2.

| Room           | Length | Width | Scale      | Perimeter |
|----------------|--------|-------|------------|-----------|
| Junior Infants | 3cm    | 4cm   | 1cm : 3.9m | 54.6m     |
| Senior Infants | 3.7cm  | 3.3cm | 1cm : 3.9m | 54.6m     |
| 1st Class      | 2.8cm  | 4.5cm | 1cm : 3.9m | 56.94m    |
| 2nd Class      | 3.4cm  | 4.2cm | 1cm : 3.9m | 59.28m    |
| 3rd Class      | 3.9cm  | 4.4cm | 1cm : 3.9m | 64.74m    |
| 4th Class      | 4.1cm  | 4.1cm | 1cm : 3.9m | 63.96m    |
| 5th Class      | 4.2cm  | 3.8cm | 1cm : 3.9m | 62.4m     |
| 6th Class      | 4cm    | 4.6cm | 1cm : 3.9m | 67.08m    |
| Office         | 1.8cm  | 2.3cm | 1cm : 3.9m | 31.98m    |

- 76.48m

## Page 147

### Homework

1. a) 11.3cm      b) 28.9cm      c) 8.28m      d) 13.88m      e) 16.757km      f) 13.553km
2. a) 8.6cm      b) 3.6cm      c) 4.32m      d) 3.51m      e) 6.394km      f) 1.851km
3. a) 124.2cm      b) 259.2cm      c) 38.64m      d) 155.72m      e) 127.566km      f) 191.084km
4. a) 7.9cm      b) 3.7cm      c) 0.68m      d) 0.42m      e) 0.241km      f) 0.253km
5. a) 72cm      b) 174cm      c) 141cm      d) 288cm
6. Teacher check

## Page 148

7. Teacher check
8. Rectangle 1: 154cm      Rectangle 2: 532cm      Rectangle 3: 55.48m  
Rectangle 4: 59.28m      Rectangle 5: 365.4m      Rectangle 6: 457.8m

## 21. 3-D Shapes

### Page 150

#### Talk About

1. a) Sphere and cylinder      b) Teacher check

#### Nets of 3-D Shapes

2. a) Pyramid, cylinder, triangular prism, cuboid, tetrahedron, cube  
b) Teacher check

#### Puzzler: Sphere

## Page 151

### Properties of 3-D Shapes

1.

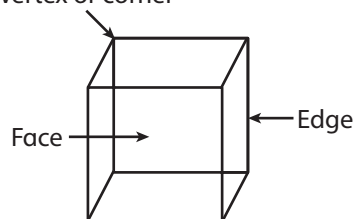
| 3-D shapes with flat surfaces only                           | 3-D shapes with curved surfaces |
|--------------------------------------------------------------|---------------------------------|
| Pyramid<br>Cuboid<br>Cube<br>Triangular prism<br>Tetrahedron | Cylinder                        |

2. a) polyhedron      b) regular polyhedron

3.

| Polyhedrons                           | Regular polyhedrons |
|---------------------------------------|---------------------|
| Pyramid<br>Triangular prism<br>Cuboid | Cube<br>Tetrahedron |

4. Vertex or corner



- a) 6      b) Yes      c) A polyhedron      d) Yes      e) A regular polyhedron      f) 12      g) 8

## Page 152

5.

|                  | No. of Faces | Edges | Vertices | Polyhedron | Regular polyhedron |
|------------------|--------------|-------|----------|------------|--------------------|
| Cuboid           | 6            | 12    | 8        | Yes        | No                 |
| Cylinder         | 3            | 0     | 0        | No         | No                 |
| Pyramid          | 5            | 8     | 5        | Yes        | No                 |
| Cone             | 2            | 0     | 0        | No         | No                 |
| Tetrahedron      | 4            | 6     | 4        | Yes        | Yes                |
| Sphere           | 0            | 0     | 0        | No         | No                 |
| Triangular prism | 5            | 9     | 6        | Yes        | No                 |
| Cube             | 6            | 12    | 8        | Yes        | Yes                |
| Pentagonal prism | 7            | 15    | 10       | Yes        | No                 |

6. Because it is a polyhedron made up of 8 equilateral triangles

7. a) Equilateral triangles      b) 8 faces      c) 12 edges      d) 6 vertices      e) Yes

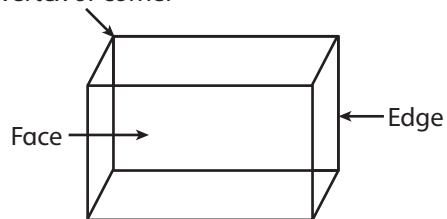
## Homework

1. Teacher check

## Page 153

2. Teacher check

3. Vertex or corner



4. a) Cube      b) Cylinder      c) Pyramid      d) Triangular prism      e) Tetrahedron

5. 12

## 22. Percentages

### Page 154

#### Talk About

1. Teacher check

2. Teacher check

3. 30% = Green      15% = Pink      55% = White  
 44% = Green      22% = Pink      34% = White  
 61% = Green      10% = Pink      29% = White  
 10% = Green      45% = Pink      45% = White  
 44% = Green      6% = Pink      50% = White

## Page 155

### Fractions, Decimals and Percentages

1. a) 27%    b) 3%    c) 42%    d) 16%    e) 31%    f) 9%  
 g) 88%    h) 65%    i) 71%    j) 94%    k) 12%    l) 100%



2.

| Number of girls | Fraction of girls | Percentage of girls | Number of boys | Fraction of boys | Percentage of boys | Total children |
|-----------------|-------------------|---------------------|----------------|------------------|--------------------|----------------|
| 62              | $\frac{62}{100}$  | 62%                 | 38             | $\frac{38}{100}$ | 38%                | 100            |
| 76              | $\frac{76}{100}$  | 76%                 | 24             | $\frac{24}{100}$ | 24%                | 100            |
| 38              | $\frac{38}{100}$  | 38%                 | 62             | $\frac{62}{100}$ | 62%                | 100            |
| 29              | $\frac{29}{100}$  | 29%                 | 71             | $\frac{71}{100}$ | 71%                | 100            |
| 56              | $\frac{56}{100}$  | 56%                 | 44             | $\frac{44}{100}$ | 44%                | 100            |

3. a)  $\frac{50}{100} = 50\%$  b)  $\frac{70}{100} = 70\%$

c)  $\frac{40}{100} = 40\%$  d)  $\frac{25}{100} = 25\%$

e)  $\frac{75}{100} = 75\%$  f)  $\frac{30}{100} = 30\%$

4. 20%, 80% 50%, 50%  
30%, 70% 25%, 75%  
60%, 40%

### Page 156

5. a)  $33\frac{1}{3}\%$  b)  $37\frac{1}{2}\%$

c)  $66\frac{2}{3}\%$  d)  $62\frac{1}{2}\%$

6. a)  $\frac{1}{4}$  b)  $\frac{1}{10}$  c)  $\frac{1}{2}$

d)  $\frac{7}{20}$  e)  $\frac{41}{50}$  f)  $\frac{63}{100}$

g)  $\frac{9}{10}$  h)  $\frac{3}{20}$  i)  $\frac{1}{50}$

7. a)  $\frac{61}{100} = 61\%$  b)  $\frac{39}{100} = 39\%$

c)  $\frac{4}{100} = 4\%$  d)  $\frac{92}{100} = 92\%$

e)  $\frac{15}{100} = 15\%$  f)  $\frac{56}{100} = 56\%$

g)  $\frac{28}{100} = 28\%$  h)  $\frac{64}{100} = 64\%$

i)  $\frac{1}{100} = 1\%$

8.

| Decimal | Fraction         | Percentage |
|---------|------------------|------------|
| 0.5     | $\frac{1}{2}$    | 50%        |
| 0.17    | $\frac{17}{100}$ | 17%        |
| 0.9     | $\frac{9}{10}$   | 90%        |
| 0.48    | $\frac{12}{25}$  | 48%        |
| 0.25    | $\frac{1}{4}$    | 25%        |
| 0.41    | $\frac{41}{100}$ | 41%        |
| 0.26    | $\frac{13}{50}$  | 26%        |
| 0.4     | $\frac{2}{5}$    | 40%        |
| 0.8     | $\frac{4}{5}$    | 80%        |
| 0.85    | $\frac{17}{20}$  | 85%        |

### Page 157

#### Calculating Percentages

1. James

2. Leanne

3. Liam

4. a) 62% b) 44%

5. a) 54 b) 128 c) 160

d) 64 e) 270 f) 85

g) 10 h) 112 i) 3

j) 684 k) 20 l) 91

### Page 158

6. a) 250g margarine  
350g brown sugar  
50g cocoa powder  
275g self-raising flour  
75g chocolate chips  
b) Teacher check

7. Alison 63km Alan 58.5km  
Philip 80km Lucy 73.5km  
Mary 93.5km Damien 81km

8. €1.68

9. 646 seats occupied and 204 empty

10. 17

11. Teacher check

12. a) 34 b) 55.2 c) 76  
d) 288 e) 456.5 f) 1547  
g) 97.5 h) 5640 i) 6690.3  
j) 21 k) 17.4 l) 906.5

### Page 159

#### Writing One Number as a Percentage of Another

1. a) 20% b) 25% c) 60%  
d) 64% e) 75% f) 42%  
g) 70% h) 77% i)  $12\frac{1}{2}\%$   
j)  $43\frac{3}{4}\%$  k) 80% l) 25%  
2. Red = 20% Yellow = 25%  
Blue = 55%  
Red = 44% Yellow = 32%  
Blue = 24%  
Red = 25% Yellow = 25%  
Blue = 50%

3.  $12\frac{1}{2}\%$

4. 60%

5. a) 30% b) 70%

### Page 160

6. Teacher check

**Puzzler: No. Percentage increase in year 1 is 25%. Percentage decrease in year 2 is 20%.**

7. a) 64.3% b) 35.7%

8.  $12\frac{1}{2}\%$

9. Teacher check

10. Teacher check

11. a)

| Subject   | Result | Out of | Percentage |
|-----------|--------|--------|------------|
| English   | 42     | 50     | 84         |
| Gaeilge   | 60     | 75     | 80         |
| Maths     | 18     | 20     | 90         |
| Geography | 132    | 150    | 88         |

b) Teacher check

## Page 161

### Increasing an Amount by a Percentage

1. a) 500g    b) 2.5 litres    c) 50g    d) 325g    e) 125g    f) 212.5g
2. a) €1039.50    b) €1674.75    c) €1155    d) €1102.50    e) €1722
3. a) 130m    b) 80.6m    c) 200m    d) 15.6m    e) 676m    f) 1016.6m  
g) 153.4m    h) 2.08km    i) 3.614km
4. €36400

## Page 162

### Decreasing an Amount by a Percentage

1. €165.75    €76.50    €101.25    €24    €48.65
2. a) 1.275kg    b) 2.278kg    c) 61.625kg    d) 0.51kg    e) 13.532kg    f) 17.068kg  
g) 39.44kg    h) 2.941kg    i) 108.97kg

### VAT

3. Fone4U =  $12\frac{1}{2}\%$  VAT    The Prickly Pear = 21% VAT

## Page 163

4. €139.50
5. €1631.25
6. €453.75    €78.65    €605    €54.45

## Page 164

### Making a Profit

1.

|            | Cost price | Selling price | Profit | Percentage profit |
|------------|------------|---------------|--------|-------------------|
| Television | €200       | €250          | €50    | 25%               |
| Stereo     | €125       | €155          | €30    | 24%               |
| DVD player | €160       | €220          | €60    | $37\frac{1}{2}\%$ |
| MP3 player | €95        | €133          | €38    | 40%               |
| CD         | €9         | €13.50        | €4.50  | 50%               |
| DVD        | €15        | €24           | €9     | 60%               |

2. €33.60    €54  
€26.40    €74.40
3. 25%
4. 81c (80.5c)

## Page 165

### Percentage Loss

1.

|                 | Bicycle           | Motorbike | Scooter | Car   | Van   |
|-----------------|-------------------|-----------|---------|-------|-------|
| Loss            | €80               | €700      | €870    | €3750 | €9600 |
| Percentage loss | $33\frac{1}{3}\%$ | 20%       | 30%     | 25%   | 40%   |



2. a) €20    b) €405    c) €189    d) €102  
 3. €25%  
 4. a) 20%    b) 22%    c) 30%    d) 26%

### Homework

1. a) 49%    b) 8%    c) 27%    d) 13%    e) 38%    f) 73%    g) 89%    h) 67%    i) 55%  
 2. a)  $\frac{60}{100} = 60\%$     b)  $\frac{90}{100} = 90\%$     c)  $\frac{75}{100} = 75\%$     d)  $\frac{80}{100} = 80\%$     e)  $\frac{60}{100} = 60\%$     f)  $\frac{35}{100} = 35\%$

### Page 166

3. a)  $\frac{2}{5}$     b)  $\frac{7}{10}$     c)  $\frac{3}{20}$     d)  $\frac{9}{25}$     e)  $\frac{17}{20}$     f)  $\frac{14}{25}$   
 g)  $\frac{37}{50}$     h)  $\frac{19}{20}$     i)  $\frac{7}{50}$   
 4. a)  $\frac{59}{100} = 59\%$     b)  $\frac{23}{100} = 23\%$     c)  $\frac{84}{100} = 84\%$     d)  $\frac{5}{100} = 5\%$     e)  $\frac{37}{100} = 37\%$     f)  $\frac{18}{100} = 18\%$   
 g)  $\frac{44}{100} = 44\%$     h)  $\frac{65}{100} = 65\%$     i)  $\frac{99}{100} = 99\%$   
 5. a) 19    b) 46    c) 45    d) 138    e) 222    f) 234    g) 51    h) 833    i) 20  
 6. a) 70%    b) 40%    c) 45%    d) 90%    e) 70%    f) 75%    g) 75%    h) 60%    i) 25%  
 7. a) €224    b) €259    c) €308    d) €371    e) €434    f) €1407  
 8. a) €143    b) €247    c) €299    d) €351    e) €455    f) €689

9.

|                | Cost price | Selling price | Profit | Percentage profit |
|----------------|------------|---------------|--------|-------------------|
| Laptop         | €400       | €440          | €40    | 10%               |
| Printer        | €140       | €182          | €42    | 30%               |
| Football boots | €48        | €60           | €12    | 25%               |
| Fridge         | €300       | €420          | €120   | 40%               |
| Microwave      | €64        | €80           | €16    | 25%               |
| Toaster        | €15        | €22.50        | €7.50  | 50%               |

### Page 167

10.

|               | Cost price | Selling price | Loss | Percentage loss |
|---------------|------------|---------------|------|-----------------|
| Bicycle       | €160       | €120          | €40  | 25%             |
| Scooter       | €70        | €56           | €14  | 20%             |
| Games console | €240       | €192          | €48  | 20%             |
| Rollerblades  | €68        | €51           | €17  | 25%             |
| Cooker        | €1080      | €972          | €108 | 10%             |
| Mobile phone  | €60        | €48           | €12  | 20%             |

11. a) 20%    b) 25%    c) 30%    d) 40%

## 23. Averages

### Page 168

#### Talk About

Puzzler: 12

### Page 169

#### Estimating and Calculating Averages

1. a) 9      b) 68c      c) 350m  
d) 1855    e) 143g    f) €2.27
2. a) €12.25  
b) €9.95 and €10.25 below average, €12.95 and €15.85 above average
3. 81 pages
4. a) 85%  
b) 84% closest, 72% furthest
5. 304
6. Teacher check
7. Teacher check

### Page 170

8. a) 260      b) 52  
c) Monday, Tuesday and Thursday below average, Wednesday and Friday above average  
d) Teacher check
9. a) Pam = 30km/h,  
Sam = 60km/h,  
Bill = 90km/h,  
Jill = 180km/h  
b) Teacher check

### Page 171

- 10.84  
11.97  
12.9  
13.27  
14. a) 20.075  
b) Bolt = 37.31km/h  
Crawford = 36.07km/h  
Dix = 36.04km/h  
Dzingai = 35.61km/h  
Malcolm = 35.29km/h  
Collins = 34.97km/h  
c) Teacher check

#### Homework

1. 46
2. 96

### Page 172

3. 93mm
4. 78
5. 19
6. a) 63      b) 70      c) 65

## 25. Directed Numbers

### Page 173

#### Talk About

1. a) Thermometer. We use it to measure temperature.  
b) 17°C    c) Warm
2. 0°C, boiling
3. Above freezing: +8°C, +2°C, +10°C  
Below freezing: -5°C, -9°C, -3°C  
Freezing: 0°C
4. a) 12°C      b) 6°C  
c) 1°C      d) -2°C
5. a) 5°C      b) 0°C  
c) -10°C    d) -7°C
6. Teacher check
7. a) +2      b) -2
8. +3, or 3 over par

### Page 174

9. -€5
10. -900 metres, or 900m below sea level

#### Directed Numbers on the Number Line

1. a) +4      b) +11      c) -2  
d) +15    e) -8      f) -12  
g) +9      h) -20
2. a) -6, -4, -2, 2, 6  
b) -5, -3, 0, 3, 5

### Page 175

3. a) 4      b) 5      c) 7  
d) 11      e) Teacher check

#### Puzzler: 15 wrong answers

4. a) 6      b) 14      c) 2  
d) 0      e) 1      f) -1  
g) -2      h) 1
5. Teacher check

## Ordering and Sequencing Directed Numbers

1. a) 0, -1, -2, -3, -4, -5  
b) -7, -5, -3, -1, 1  
c) 0, -5, -10, -15, -20  
d) -15, -18, -21, -24, -27  
e) 10, 0, -10, -20, -30, -40  
f) 8, 12, 16, 20, 24  
g) 0, -50, -100, -150, -200, -250

### Page 176

2. a) +32      b) -15      c) -€25  
d) -1      e) +850
3. a) 20, 12, 9, 8, 3, 1, -3, -4, -6, -15  
b) 25, 10, 8, 6, 5, 1, 0, -5, -9, -10, -20  
c) 18, 11, 8, 3, 2, 0, -1, -2, -7, -11, -19  
d) 60, 55, 37, 29, 21, 0 -25, -30, -32, -45, -50  
e) Because it is neither

## Adding Positive and Negative Numbers

1. Bantry: 4:52  
Castletownbere: 4:37  
Dingle: 4:32  
Schull: 4:55  
Tralee: 4:45  
Cahirciveen: 4:07

### Page 177

2. a) +3      b) +11      c) +3  
d) +5      e) -7      f) -2  
g) -4      h) -6      i) -11



3.

| City     | Morning temperature | Rise/fall in °C | Afternoon temperature |
|----------|---------------------|-----------------|-----------------------|
| Boston   | +4°C                | Fall: -5°C      | -1°C                  |
| Chicago  | -3°C                | Rise: +8°C      | 5°C                   |
| New York | +8°C                | Fall: -7°C      | 1°C                   |
| Florida  | -1°C                | Rise: +6°C      | 5°C                   |
| Dallas   | +10°C               | Fall: -13°C     | -3°C                  |

## Page 178

4.

| Date   | Details    | Debit € | Credit € | Balance € |
|--------|------------|---------|----------|-----------|
| 1 Jan  | Balance    |         |          | 20.00     |
| 6 Jan  | Withdrawal | 10.00   |          | 10.00     |
| 8 Jan  | Withdrawal | 15.00   |          | -5.00     |
| 12 Jan | Deposit    |         | 20.00    | 15.00     |
| 17 Jan | Withdrawal | 5.00    |          | 10.00     |
| 21 Jan | Withdrawal | 30.00   |          | -20.00    |
| 22 Jan | Deposit    |         | 15.00    | -5.00     |
| 25 Jan | Deposit    |         | 10.00    | 5.00      |
| 27 Jan | Withdrawal | 5.00    |          | 0.00      |
| 1 Feb  | Deposit    |         | 20.00    | 20.00     |

5. Teacher check

6. - €10

7. €20.00

8. €30.00

9. -7m

10. 30000m

11. +3

## Page 179

12. Ryan: +2, Byrne: -2, Fleming: +4, Flanagan: +1, O'Connor: -3

13. Ryan: -4, Byrne: -1, Fleming: 0, Flanagan: -4, O'Connor: -6

## Homework

1. a) -€23.63    b) -€11.49    c) -€31.93    d) -€39.42    e) -€68.06    f) -€47.21

## Page 180

2. Pair e), because it is more than her overdraft allows.

3.

| Player         | a) 1st round score | b) 2nd round score | c) Total |
|----------------|--------------------|--------------------|----------|
| Harry Hacker   | +9                 | 0                  | +9       |
| Sally Slice    | -9                 | +11                | +2       |
| Wally Driver   | +3                 | +5                 | +8       |
| Sharon Shanks  | +17                | -6                 | +11      |
| Sandy Lie      | -4                 | +3                 | -1       |
| Panther Forest | -1                 | +6                 | +5       |

d) Sandy Lie

## 26. Weight

### Page 181

#### Talk About

1. a) Weighing scale      b) Kitchen scale      c) Balance      d) Spring scale
2. Teacher check
3. Teacher check
4. Teacher check

### Page 182

#### Grams and Kilograms

1. a) 450 grams  
b) 2500 kilograms  
c) 10 kilograms  
d) 40 grams
2. a) 2kg 670g      b) 1kg 265g      c) 9kg 62g      d) 4932g      e) 6009g  
f) 8020g      g) 6kg 50g      h) 3754g      i) 4kg 30g
- 3.

|           |        |          |
|-----------|--------|----------|
| 2kg 250g  | 2250g  | 2.25kg   |
| 1kg 378g  | 1378g  | 1.378kg  |
| 3kg 860g  | 3860g  | 3.86kg   |
| 28kg 375g | 28375g | 28.375kg |
| 19kg 6g   | 19006g | 19.006kg |
| 7kg 100g  | 7100g  | 7.1kg    |
| 12kg 005g | 12005g | 12.005kg |
| 82kg 79g  | 82079g | 82.079kg |

### Page 183

4.

| Measurement | Fraction               | Decimal |
|-------------|------------------------|---------|
| 1593g       | $1\frac{593}{1000}$ kg | 1.593kg |
| 7150g       | $7\frac{150}{1000}$ kg | 7.15kg  |
| 8158g       | $8\frac{158}{1000}$ kg | 8.158kg |
| 346g        | $\frac{346}{1000}$ kg  | 0.346kg |
| 2750g       | $2\frac{3}{4}$ kg      | 2.75kg  |
| 3700g       | $3\frac{7}{10}$ kg     | 3.7kg   |
| 6008g       | $6\frac{8}{1000}$ kg   | 6.008kg |
| 4017g       | $4\frac{18}{1000}$ kg  | 4.017kg |
| 9045g       | $9\frac{45}{1000}$ kg  | 9.045kg |

5. a) 1kg      b) 160g      c) 90g      d) 300g      e) 245g      f) 60g

### Page 184

#### Adding and Subtracting Weights

6. a) 18.167kg      b) 32.633kg      c) 143.762kg      d) 39.737kg      e) 39.022kg      f) 39.043kg
7. 1.988kg
8. a) 3.94kg      b) 5.343kg      c) 21.13kg      d) 6.693kg      e) 10.958kg      f) 82.198kg

## Kilograms and Tonnes

- a) Hefty b) 1650.809kg  
c) 1900.522kg  
d) Hefty and Teeny  
e) 3551.331kg  
f) 193.026kg
- 269.01kg

## Page 185

Puzzler: Lion = 67kg,  
tiger = 59kg, fox = 15kg

## Multiplying and Dividing Weights

- a) 34.325kg b) 49.722kg  
c) 23.22kg d) 798.248kg  
e) 444kg f) 151.696kg  
g) 10561.2kg h) 1960.2kg  
i) 182.622kg
- 31.74kg
- 139480kg
- a) 3.65kg b) 62.48kg  
c) 25.412kg d) 0.36kg  
e) 45.3kg f) 0.241kg  
g) 0.956kg h) 0.12kg  
i) 0.213kg
- a) 789.074kg b) 0.121kg  
c) 3361.637kg d) 452.617kg

## Page 186

### Homework

- a) 1kg 6g b) 2kg 674g  
c) 9kg 603g d) 2kg 600g  
e) 1kg 768g f) 7kg 80g  
g) 290g h) 5kg 100g  
i) 8kg 36g

2.

| g     | kg g     | kg      |
|-------|----------|---------|
| 2508g | 2kg 508g | 2.508kg |
| 693g  | 693g     | 0.693kg |
| 7268g | 7kg 268g | 7.268kg |
| 9004g | 9kg 4g   | 9.004kg |
| 6010g | 6kg 10g  | 6.01kg  |

- a) 9.907kg b) 9.397kg  
c) 6.088kg d) 14.864kg  
e) 16.698kg f) 13.933kg
- a) 2.197kg b) 3.938kg  
c) 2.504kg d) 2.417kg  
e) 4.196kg f) 7.322kg
- a) 5.823kg b) 22.295kg  
c) 42.24kg d) 73.062kg  
e) 172.704kg f) 113.183kg

- a) 0.648kg b) 0.716kg  
c) 0.286kg d) 1.58kg  
e) 0.318kg f) 2.63kg
- 57.993kg

## Page 187

- 14.489kg
- 7.642kg

## 27. Representing and Interpreting Data 2

### Page 188

#### Talk About

Puzzler: Average temperature  
or hours of sunshine for the  
12 months of the year

### Page 189

#### Reading and Interpreting Pie Charts

- a) Walking  
b) Walking = 24, Car = 12,  
Bus = 6, Cycling = 6  
c) Walking = 180°, Car =  
90°, Bus = 45°, Cycling = 45°
- a) 72° b) 270° c) 36°  
d) 300°
- a) 600 b) Ireland  
c) Other d) 25%  
e) Ireland = 144°,  
England = 36°, France = 72°,  
Spain = 90°, Other = 18°
- Sinead = €80, Cliona = €60,  
Cian = €40, Dara = €20

### Page 190

#### Constructing a Pie Chart

- Teacher check
- Teacher check

#### Compiling and Interpreting Data Sets

- Teacher check

### Page 191

- Teacher check
- Teacher check

#### Homework

- a) 90° b) 60°  
c) 45° d) 135°
- Games console = 56,  
Clothes = 42, Bike = 28,  
MP3 player = 14

## 28. Area 1

### Page 192

#### Talk About

- a) True b) False c) True  
d) True e) False f) True  
g) False
- a) Area b) Perimeter  
c) Perimeter d) Area  
e) Area

#### Calculating Area

- Length multiplied by width  
equals area; Length x Width  
= Area

### Page 193

- Rectangle 1: 468cm<sup>2</sup>  
Rectangle 2: 89.7cm<sup>2</sup>  
Rectangle 3: 27.36m<sup>2</sup>  
Rectangle 4: 114.75m<sup>2</sup>  
Rectangle 5: 97.37cm<sup>2</sup>  
Rectangle 6: 133.84m<sup>2</sup>
  - a) 504.4m<sup>2</sup> b) €9583.60
  - 3 tins of paint
- Puzzler: 40cm<sup>2</sup>

### Page 194

- Garden 1: 19m  
Garden 2: 24m  
Garden 3: 36m  
Garden 4: 47m  
Garden 5: 27m  
Garden 6: 30m
- 14m
- a) 783cm<sup>2</sup> b) 897cm<sup>2</sup>  
c) Teacher check

### Page 195

#### Area and Perimeter

- a) No b) A  
c) 104cm<sup>2</sup>, 98cm<sup>2</sup>
- Rectangle A**  
Perimeter – 158cm  
Length – 48cm  
Width – 31cm  
Area – 1488cm<sup>2</sup>

#### Rectangle B

Perimeter – 158cm  
Length – 52cm  
Width – 27cm  
Area – 1404cm<sup>2</sup>

**Rectangle C**

Perimeter – 206cm  
 Length – 64cm  
 Width – 39cm  
 Area – 2496cm<sup>2</sup>

**Rectangle D**

Perimeter – 206cm  
 Length – 48cm  
 Width – 55cm  
 Area – 2640cm<sup>2</sup>

**Rectangle E**

Perimeter – 232cm  
 Length – 58cm  
 Width – 58cm  
 Area – 3364cm<sup>2</sup>

**Rectangle F**

Perimeter – 232cm  
 Length – 73cm  
 Width – 43cm  
 Area – 3139cm<sup>2</sup>

**Page 196****Calculating the Area of Irregular Shapes**

- 1196cm<sup>2</sup>, 676cm<sup>2</sup>, 714cm<sup>2</sup>
- 1070cm<sup>2</sup>, 507cm<sup>2</sup>, 602cm<sup>2</sup>

**Page 197****Surface Area**

- 486cm<sup>2</sup>
- Parcel 1: 294cm<sup>2</sup>  
 Parcel 2: 864cm<sup>2</sup>  
 Parcel 3: 1176cm<sup>2</sup>  
 Parcel 4: 3174cm<sup>2</sup>  
 Parcel 5: 5046cm<sup>2</sup>  
 Parcel 6: 7350cm<sup>2</sup>
- Cuboid 1: 176cm<sup>2</sup>  
 Cuboid 2: 320cm<sup>2</sup>  
 Cuboid 3: 770cm<sup>2</sup>  
 Cuboid 4: 784cm<sup>2</sup>  
 Cuboid 5: 1326cm<sup>2</sup>  
 Cuboid 6: 2950cm<sup>2</sup>

**Page 198**

- a) 946cm<sup>2</sup> b) 704cm<sup>2</sup>

**Page 199**

5.

| Cuboid | 1st dimension | 2nd dimension | 3rd dimension | Surface area       |
|--------|---------------|---------------|---------------|--------------------|
| A      | 6cm           | 4cm           | 3cm           | 108cm <sup>2</sup> |
| B      | 9cm           | 7cm           | 5cm           | 286cm <sup>2</sup> |
| C      | 12cm          | 8cm           | 2cm           | 272cm <sup>2</sup> |
| D      | 15cm          | 5cm           | 6cm           | 390cm <sup>2</sup> |
| E      | 11cm          | 18cm          | 8cm           | 860cm <sup>2</sup> |
| F      | 22cm          | 14cm          | 4cm           | 904cm <sup>2</sup> |

**Homework**

- Rectangle 1: 391cm<sup>2</sup>      Rectangle 2: 962cm<sup>2</sup>  
 Rectangle 3: 23.25m<sup>2</sup>      Rectangle 4: 88.32m<sup>2</sup>  
 Rectangle 5: 110.94cm<sup>2</sup>      Rectangle 6: 140.22m<sup>2</sup>
- Field 1: 23m      Field 2: 26m      Field 3: 18m      Field 4: 35m  
 Field 5: 46m      Field 6: 34m

**Page 200**

3.

| Poster | Perimeter | Area                | Length | Width |
|--------|-----------|---------------------|--------|-------|
| 1      | 156cm     | 1505cm <sup>2</sup> | 43cm   | 35cm  |
| 2      | 156cm     | 1421cm <sup>2</sup> | 49cm   | 29cm  |
| 3      | 244cm     | 3696cm <sup>2</sup> | 66cm   | 56cm  |
| 4      | 244cm     | 3552cm <sup>2</sup> | 74cm   | 48cm  |
| 5      | 272cm     | 4588cm <sup>2</sup> | 62cm   | 74cm  |
| 6      | 272cm     | 4300cm <sup>2</sup> | 50cm   | 86cm  |

- Area = 369cm<sup>2</sup>      Perimeter = 110cm  
 Area = 493cm<sup>2</sup>      Perimeter = 100cm
- Cube 1: 486cm<sup>2</sup>      Cube 2: 726cm<sup>2</sup>      Cube 3: 1350cm<sup>2</sup>  
 Cube 4: 1944cm<sup>2</sup>      Cube 5: 4056cm<sup>2</sup>      Cube 6: 6936cm<sup>2</sup>

**Page 201**

- Cuboid 1: 190cm<sup>2</sup>      Cuboid 2: 306cm<sup>2</sup>      Cuboid 3: 672cm<sup>2</sup>  
 Cuboid 4: 960cm<sup>2</sup>      Cuboid 5: 1400cm<sup>2</sup>      Cuboid 6: 3510cm<sup>2</sup>

**29. Capacity****Page 202****Talk About**

- Teacher check
- Teacher check
- Teacher check
- Watering can, jug, vase, glass, spoon

**Page 203****Millilitres and Litres**

- Teacher check
- a) 1 litre    b) 5 millilitres    c) 40 litres    d) 10 litres    e) 25 millilitres
- 200ml, 550ml, 1000ml, 100ml

4. a) 250ml      b) 500ml  
c) 750ml
5. a) 1l 129ml      b) 6l 042ml  
c) 2l 105ml      d) 1l 9ml  
e) 5l 228ml      f) 3l 785ml  
g) 7l 960ml      h) 1l 500ml  
i) 9l 600ml

### Page 204

6. Cough syrup, conditioner, cola, soap, apple juice, paint
- 7.

| ml     | l ml     | l      |
|--------|----------|--------|
| 4200ml | 4l 200ml | 4.2l   |
| 2500ml | 2l 500ml | 2.5l   |
| 6482ml | 6l 482ml | 6.482l |
| 9820ml | 9l 820ml | 9.82l  |

8.

| Measurement | Fraction             | Decimal |
|-------------|----------------------|---------|
| 2987ml      | $2\frac{987}{1000}l$ | 2.987l  |
| 4350ml      | $4\frac{350}{1000}l$ | 4.35l   |
| 5239ml      | $5\frac{239}{1000}l$ | 5.239l  |
| 7001ml      | $7\frac{1}{1000}l$   | 7.001l  |
| 5250ml      | $5\frac{1}{4}l$      | 5.25l   |
| 8900ml      | $8\frac{9}{10}l$     | 8.9l    |
| 692ml       | $\frac{692}{1000}l$  | 0.692l  |
| 1023ml      | $1\frac{23}{1000}l$  | 1.023l  |
| 5027ml      | $5\frac{27}{1000}l$  | 5.027l  |

### Page 205

9. Look at what the same quantity of liquid costs and then compare
10. Teacher check
11. a) 6      b) Teacher check
- Puzzler:** First fill the 5l bottle and pour it into the 7l bottle. Fill the 5l bottle again and pour it into the 7l bottle. Now there are 3l left in the 5l bottle. Empty the 7l bottle and pour the 3l into it.

Fill the 5l bottle again and pour it into the 7l bottle. Now the 7l bottle is full and 1l is left in the 5l bottle.

### Page 206

#### Volume

1. Teacher check
2. Teacher check
3. a) 1 litre  
b) 1000  
c)  $1l = 1000cm^3$

#### Adding and Subtracting Capacity

4. a) 12.046l      b) 5.542l  
c) 12.828l      d) 8.303l  
e) 11.841l      f) 6.461l

10. Tomato juice: 10.625l  
Orange juice: 27.45l  
Grapefruit juice: 4.5l  
Apple juice: 15.2l  
Blackcurrant juice: 2.084l  
Lemonade: 67.8l  
Cola: 109.75l  
Orangeade: 123.68l

### Page 208

11. a) 1.72l      b) 1.425l  
c) 1.3l      d) 2.13l  
e) 3.295l      f) 1.569l  
g) 5.6l      h) 0.569l  
i) 6.1l
12. a) €2.55      b) €4.65  
c) €30      d) €1.60  
e) €2      f) €0.40

### Homework

1. a) 2l 098ml      b) 1l 754ml  
c) 4l 201ml      d) 1l 700ml  
e) 3l 852ml      f) 6l 50ml  
g) 0l 560ml      h) 4l 900ml  
i) 7l 248ml

2.

| ml     | l ml     | l      |
|--------|----------|--------|
| 3098ml | 3l 98ml  | 3.098l |
| 5036ml | 5l 36ml  | 5.036l |
| 4195ml | 4l 195ml | 4.195l |
| 8010ml | 8l 10ml  | 8.01l  |
| 7437ml | 7l 437ml | 7.437l |

3. a) 17.819l      b) 18.266l  
c) 850.709l      d) 12.195l  
e) 14.651l      f) 13.492l

### Page 209

4. a) 5.384l      b) 4.917l      c) 5.285l  
d) 4.197l      e) 1.046l      f) 2.15l
5. a) 6.344l      b) 32.874l  
c) 32.76l      d) 170.218l  
e) 123.177l      f) 88.638l
6. a) 0.82l      b) 0.546l      c) 1.292l  
d) 5.9l      e) 0.397l      f) 1.86l
7. 30 litres
8. 60.484l
9. 3.047l

### Page 207

5. 4.29l
6. 1.087l
7. a) 8.315l      b) 4.574l  
c) 5.962l      d) 7.982l  
e) 1.154l      f) 0.863l
8. 420.21l
9. a) 958.378l      b) 263.978l  
c) 152.78l      d) 131.406l  
e) 58.857l      f) 20.594l

## 30. Time

### Page 210

#### Talk About

1. a)

|       |                                  |
|-------|----------------------------------|
| 07:45 | Get up                           |
| 08:10 | Eat breakfast                    |
| 08:35 | Leave the house                  |
| 10:25 | Get stamps in post office        |
| 13:15 | Meet Rebecca for lunch           |
| 15:45 | Buy groceries in the supermarket |
| 17:05 | Eat dinner                       |
| 17:50 | Read 3 chapters of latest book   |
| 19:45 | Watch some TV                    |
| 21:30 | Go to bed                        |

b) 1 hr 45 mins c) 50 mins

d) 1 hr 5 mins

e) 13 hrs 45 mins

2. a) 7:42pm b) 6:08am  
c) 11:13am d) 11:25pm  
e) 5:10pm f) 9:45am  
g) 1:00pm h) 12:15pm  
i) 8:20pm j) 7:50am  
k) 12:34am l) 3:48pm  
m) Teacher check

### Page 211

3. a) 1 min 26 secs  
b) Teacher check

4. 4 hrs 31 mins

**Puzzler: 9pm**

### Page 212

#### Time Zones

1. a) 13:00, 11:00  
b) ahead, behind  
c) Places beside each other would have different times  
d) There are different times within one country

### Page 213

2. a) New York = 07:00  
b) San Francisco = 04:00  
c) Moscow = 15:00  
d) Berlin = 13:00  
e) Sydney = 21:00  
f) Bangkok = 18:00  
g) London = 12:00  
h) Rio de Janeiro = 08:00  
3. a) 17:30 b) 16:40  
c) 13:34 d) 12:52  
4. 15:00  
5. 22:00

6. Teacher check  
7. a) You would arrive the day (24 hours) before you left.  
b) You lose a day (24 hours).  
8. Teacher check

### Page 214

#### Average Speed

1. a) Frank: 7m/s, Ben: 5m/s, Judy: 9m/s, Natalie: 7.6m/s  
b) Judy's average speed was the quickest  
c) Ben's average speed was the slowest

### Page 215

2. a) Tony: 60km/h, Alice: 60km/h, Denise: 50km/h, Andrew: 55km/h, Jenny: 433.33km/h  
b) By plane  
3. 37.58km/h  
4. a) 37.52km/h  
b) He managed to maintain almost the same average speed over the longer distance.  
5. Teacher check

#### Homework

1. a) 14:46 b) 09:23 c) 11:13  
d) 20:15 e) 00:10 f) 23:45  
g) 12:01 h) 16:52 i) 07:30  
j) 21:22 k) 17:29 l) 01:17

### Page 216

2. a) 8, 16 b) 9, 15 c) 7, 17  
d) 7, 17 e) 6, 18 f) 5, 19  
3. You can travel east or west.  
4.

| Name   | Average speed | Time travelling | Distance travelled |
|--------|---------------|-----------------|--------------------|
| Sarah  | 89 km/h       | 4.5 hours       | 400.5km            |
| John   | 57 km/h       | 6 hours         | 342km              |
| Debbie | 94 km/h       | 2.5 hours       | 235km              |
| Rachel | 76 km/h       | 5.5 hours       | 418km              |
| Martha | 118 km/h      | 3 hours         | 354km              |

## 31. Area 2

### Page 218

#### Ares and Hectares

1. 3.5 ares  
2. a) 7 ares b) 13 ares  
c) 2.5 ares d) 3.75 ares  
e) 14.96 ares f) 0.87 ares  
3. Playing field 1: 5 ares

Playing field 2: 14.4 ares  
Playing field 3: 32.25 ares  
Playing field 4: 35.64 ares  
Playing field 5: 57.12 ares  
Playing field 6: 74.88 ares

**Puzzler: A square of 4cm or 4m in length**

### Page 219

4. a) 12000m<sup>2</sup> b) 1.2 hectares  
5. Field 1: 1.05 hectares  
Field 2: 1.17 hectares  
Field 3: 1.4525 hectares  
Field 4: 1.534 hectares  
Field 5: 1.6758 hectares  
Field 6: 1.3158 hectares  
6. a) Field 5 b) 0.6258 hectares

#### Area of Irregular Shapes

1. Teacher check

### Page 220

2. No straight edges  
3. Teacher check  
4. 112cm<sup>2</sup>  
5. 313.6m<sup>2</sup>, 3.136 ares

### Page 221

#### Homework

1. a) 9 ares b) 14 ares  
c) 3.6 ares d) 4.85 ares  
e) 17.28 ares f) 0.56 ares  
2. Playground 1: 6.75 ares  
Playground 2: 11.4 ares  
Playground 3: 33.28 ares  
Playground 4: 30.68 ares  
Playground 5: 44.46 ares  
Playground 6: 62.1 ares

3. Park 1: 1.0875 hectares  
Park 2: 0.945 hectares  
Park 3: 1.4196 hectares  
Park 4: 1.3053 hectares  
Park 5: 1.3064 hectares  
Park 6: 1.9716 hectares  
4. Teacher check

### Page 222

5. 141cm<sup>2</sup>



# Check-up Units Answers

## 9. Check-up 1

1. a) 70 b) 7 c) 7000  
d) 700 e) 70000 f) 700000  
g) 7000 h) 7 i) 700  
j) 70
2. Teacher check
3. a) 87521, 12578  
b) 97643, 34679  
c) 986320, 023689
4. Teacher check
5. a) < b) > c) >  
d) < e) < f) <
6. a) 1950, 2200  
b) 4870, 4730  
c) 22800, 24100  
d) 63000, 48000
7. a) 530, 5300, 53000  
b) 790, 7900, 79000  
c) 1430, 14300, 143000  
d) 90, 900, 9000  
e) 2080, 20800, 208000  
f) 3150, 31500, 315000  
g) 3670, 36700, 367000  
h) 810, 8100, 81000  
i) 5290, 52900, 529000  
j) 8340, 83400, 834000
8. a) 230, 23 b) 4700, 470  
c) 19600, 1960 d) 580, 58  
e) 6000, 600 f) 9500, 950  
g) 17810, 1781 h) 400, 40  
i) 46800, 4680 j) 2650, 265
9. Teacher check
10. a)  $\frac{8}{10}$  b) 70 c)  $\frac{1}{100}$   
d) 3 e) 700 f)  $\frac{6}{1000}$   
g) 7 h)  $\frac{1}{10}$  i) 300  
j)  $\frac{2}{100}$
11. a) 6.819, 6.189, 1.986, 1.896  
b) 27.63, 27.36, 26.37, 23.76  
c) 2.843, 2.834, 2.483, 2.384  
d) 17.916, 17.691, 17.196, 17.169
12. a) 5.4 b) 7.9 c) 1.9  
d) 27.6 e) 60.7 f) 85.1  
g) 8.6 h) 86.4 i) 54.9  
j) 245.6
13. a) 1.24 b) 3.11 c) 9.49  
d) 8.01 e) 6.68 f) 16.86  
g) 29.91 h) 35.28 i) 43.41  
j) 82.37

14. a) 9996 b) 10002 c) 8983  
d) 17996 e) 10887 f) 9992  
g) Teacher check
15. a) 10062 b) 12856 c) 26863  
d) 42994 e) 71052 f) 94569
16. a) 4407 b) 3793 c) 5326  
d) 7209 e) 4919 f) 11014  
g) 4509 h) 4817 i) 8612  
j) 4904 k) 5112 l) 1897  
m) Teacher check
17. €1007
18. €43442
19. Prime numbers: 47, 31, 89  
Composite numbers: 27, 69, 57
20. a) 1, 2, 3, 6, 9, 18  
b) 1, 2, 4, 7, 14, 28  
c) 1, 2, 4, 8, 16, 32  
d) 1, 2, 4, 5, 8, 10, 20, 40  
e) 1, 2, 3, 6, 9, 18, 27, 54  
f) 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60
21. a) 12 b) 5 c) 7  
d) 9 e) 12 f) 6
22. a) 4, 8, 12, 16, 20, 24  
b) 7, 14, 21, 28, 35, 42  
c) 9, 18, 27, 36, 45, 54  
d) 15, 30, 45, 60, 75, 90  
e) 19, 38, 57, 76, 95, 114  
f) 25, 50, 75, 100, 125, 150
23. a) 12 b) 35 c) 18
24. a) Oblique b) Parallel  
c) Horizontal d) Vertical  
e) Perpendicular
25. a) Straight b) Reflex  
c) Obtuse d) Right  
e) Acute
26. a) Right b) Obtuse  
c) Obtuse d) Acute  
e) Straight f) Obtuse  
g) Acute h) Reflex
27. a) 90° b) 60° c) 45°  
d) 30° e) 540°
28. Teacher check
29. a) 67° b) 69° c) 57°  
d) 55°
30. a) 90° b) 75° c) 38°
31. Teacher check
32. a) Tuesday b) 16  
c) 16 d) Teacher check
33. a) False b) True c) True  
d) False e) False f) False  
g) True h) True i) True  
j) True k) False l) True

## 16. Check-up 2

1.
 

| Shape                   |
|-------------------------|
| Equilateral triangle    |
| Rhombus                 |
| Circle                  |
| Hexagon                 |
| Trapezium/Quadrilateral |
| Rectangle               |
| Parallelogram           |
| Square                  |
2. Teacher check
3. Teacher check
4. Teacher check
5. Teacher check
6. Teacher check
7. Teacher check
8. a) 219565 b) 29087  
c) 61783 d) 129740  
e) 152047 f) 254794
9. a) 24264 b) 61824  
c) 51975 d) 129924  
e) 114352 f) 112402  
g) 57105 h) 285376  
i) 321386 j) 425024  
k) 523968 l) 516423
10. a) 267 b) 597 c) 389  
d) 1279 e) 518 f) 468
11. a) 13 R 11 b) 8 R 13  
c) 7 R 25 d) 6 R 42  
e) 4 R 10 f) 6 R 8
12. a) 6 b) 8 c) 9  
d) 8 e) 6 f) 8
13. a) 15 b) 36 c) 37  
d) 59 e) 48 f) 36
14. a) 136 b) 157 c) 306  
d) 143 e) 216 f) 372
15. 79
16. 114 packets and 15 left over
17. a) 8 in 20 b) 4 in 7  
c) 1 in 12
18. a)  $\frac{2}{5}$  b)  $\frac{4}{7}$  c)  $\frac{1}{12}$
19. Teacher check
20. a) 9 b) 64 c) 121  
d) 16 e) 196 f) 289  
g) 361 h) 576 i) 729  
j) 1089 k) 1296 l) 1681

21. a) 4 b) 36 c) 100  
d) 225 e) 484 f) 676
22. a) 8 b) 125 c) 81  
d) 324 e) 729 f) 14641
23. a) 47 b) 7 c) 265  
d) 296 e) 158 f) 193
24. a)  $1080 \div 8 = 135$   
b)  $16 \times 9 = 144$   
c)  $1080 - 379 = 701$   
d)  $1080 + 968 = 2048$
25. a) 258 b) 649 c) 537  
d) 138 e) 246 f) 276

## 24. Check-up 3

1. a) 0.9 b) 0.13 c) 0.079  
d) 0.03 e) 0.364 f) 0.8  
g) 0.25 h) 0.45
2. a)  $\frac{3}{4}$  b)  $\frac{3}{5}$  c)  $\frac{7}{10}$   
d)  $\frac{3}{20}$  e)  $\frac{16}{25}$  f)  $\frac{39}{50}$   
g)  $\frac{3}{8}$  h)  $\frac{5}{8}$
3. a) 22.936 b) 294.14  
c) 85.727 d) 437.173  
e) 544.176 f) 573.517
4. a) 2.61 b) 15.304 c) 83.91  
d) 1.862 e) 51.72 f) 28.487
5. a) 15.84 b) 7.08 c) 476.8  
d) 28.842 e) 124.54 f) 1851.8
6. a) 1.86 b) 0.347 c) 77.9  
d) 1.68 e) 32.8 f) 19.4
7. a) 53.77 b) 43.1 c) 16.252  
d) 73.278 e) 1.3621 f) 38.612
8. a) 25.7 b) 34.9 c) 3.76  
d) 28.6 e) 2.97 f) 13.8
9. 156
10. €40.37
11. a) \$84.42, 6819.26, Yen,  
£55.61, 79.73 Fr, 3047.16  
Roubles, AUD\$93.13,  
b) \$119.70, 9669.10 Yen,  
£78.85, 113.05 Fr, 4320.60  
Roubles, AUD\$132.05
12. a) 2214 b) 1824 c) 41  
d) 8 e) 3337 f) 3702
13. a) 2988 b) 103 c) 2338  
d) 4226 e) 14625 f) 986
14. a)  $23 - (5 \times 3) = 8$   
b)  $(6 \times 3) + 27 = 45$   
c)  $(21 - 9) \times 8 = 96$   
d)  $108 \div (60 \div 5) = 9$   
e)  $(9 \times 6) - 17 = 37$   
f)  $88 \div (23 - 15) = 11$
15. a) Add 9  
b) Subtract 9, 8, 7, 6...

- c) Square numbers  
d) Subtract 6, add 3, repeat  
e) Add 0.14  
f) Subtract 2.6

16. a) 45, 53 b) 20, 7  
c) 112, 224 d) 34, 46  
e) 2.8, 1.3 f) 1.26, 1.54
17. a) 15.2cm b) 21.6cm  
c) 9.37m d) 17.42m  
e) 11.955km f) 14.602km
18. a) 1.4cm b) 2.7cm  
c) 2.36m d) 2.16m  
e) 2.04km f) 1.753km
19. a) 39.2cm b) 165.3cm  
c) 49.92m d) 142.5m  
e) 232.841km f) 272.992km
20. a) 4.7cm b) 3.7cm  
c) 1.45m d) 2.59m  
e) 0.241km f) 0.253km
21. a) 36cm b) 78cm  
c) 102cm d) 190cm
22. Teacher check
23. Teacher check
24. Rectangle 1: 168cm  
Rectangle 2: 270cm  
Rectangle 3: 580m  
Rectangle 4: 37.6m  
Rectangle 5: 248.4m  
Rectangle 6: 603.42m
25. a) Tetrahedron b) Cuboid  
c) Cube d) Cylinder  
e) Pyramid
26. a) 5 b) 6 c) 8
27. 160
28. a) 71% b) 9% c) 28%  
d) 16% e) 37% f) 51%  
g) 98% h) 83% i) 65%
29. a)  $\frac{30}{100} = 30\%$  b)  $\frac{70}{100} = 70\%$   
c)  $\frac{40}{100} = 40\%$  d)  $\frac{85}{100} = 85\%$   
e)  $\frac{56}{100} = 56\%$  f)  $\frac{25}{100} = 25\%$
30. a)  $\frac{3}{5}$  b)  $\frac{9}{10}$  c)  $\frac{3}{4}$   
d)  $\frac{7}{20}$  e)  $\frac{12}{25}$  f)  $\frac{47}{50}$
31. a) 80% b) 17% c) 93%  
d) 3% e) 30% f) 39%
32. a) 132 b) 44 c) 177  
d) 546 e) 254 f) 752  
g) 301 h) 209 i) 120
33. a) 90% b) 60% c) 55%  
d) 90% e) 75% f) 52%  
g) 75% h) 40% i) 30%
34. a) €288 b) €264 c) €376  
d) €464 e) €600 f) €1728

35. a) €102 b) €238 c) €289  
d) €391 e) €928 f) €2112

36.

|                | Profit | Percentage profit |
|----------------|--------|-------------------|
| MP3 player     | €14    | 20%               |
| Mobile phone   | €36    | 30%               |
| Digital camera | €45    | 25%               |
| Home cinema    | €336   | 35%               |

37.

|              | Loss  | Percentage loss |
|--------------|-------|-----------------|
| Doll's house | €36   | 40%             |
| Tent         | €45   | 30%             |
| Golf clubs   | €220  | 25%             |
| Car          | €1620 | 45%             |

38. a) 18°C b) 5.4°C

39. a) 158 minutes b) Friday

40. 679 minutes

41. 4929

42. 1

## 32. Check-up 4

1. a) 1kg 297g b) 0kg 785g  
c) 8kg 97g d) 3kg 200g  
e) 4kg 63g f) 8kg 120g  
g) 0kg 17g h) 19kg 230g  
i) 7kg 90kg

2.

| g     | kg g     | kg      |
|-------|----------|---------|
| 1045g | 1kg 45g  | 1.045kg |
| 1850g | 1kg 850g | 1.85kg  |
| 6043g | 6kg 43g  | 6.043kg |
| 4096g | 4kg 96g  | 4.096kg |
| 529g  | 0kg 529g | 0.529kg |

3. a) 8.134kg b) 7.355kg  
c) 34.296kg d) 19.47kg  
e) 18.19kg f) 11.666kg
4. a) 5.681kg b) 8.175kg  
c) 4.532kg d) 2.319kg  
e) 1.325kg f) 0.182kg
5. a) 9.657kg b) 7.049kg  
c) 29.12kg d) 144.432kg  
e) 178.892kg f) 268.702kg



6. a) 0.246kg b) 0.6165kg  
c) 0.609kg d) 0.238kg  
e) 0.592kg f) 0.162kg

7. 60.819kg

8. 415.224kg

9. 40.224kg

10. 69.204kg

11. a)  $108^\circ$  b)  $216^\circ$   
c)  $30^\circ$  d)  $300^\circ$

12. Cannelloni = 370  
Spaghetti = 370  
Lasagne = 555  
Pizza = 925

13. Teacher check

14. a) 2 hrs 37 mins b) €5.85  
c) €7.80 d) 2:26pm  
e) 18 mins 4 secs f) 49 secs  
g) 1 min 38 secs h) €39.49  
i) €118.47 j) €74.24  
k) €21.24 l) €3.74  
m) 988 n) 29  
o) 5968 p) 25229  
q) *The Cuckoo Conspiracy, A Time Best Forgotten, The Secret Attic, The Adventures of Harry the Hare, The Joy of Maths*

15. a) hectare  
b) are  
c)  $\text{cm}^2$   
d)  $\text{m}^2$

16.  $1344\text{m}^2$

17.  $346.56\text{cm}$

18.  $120\text{cm}^2$

19. a) 0.9 b) 0.3 c) 0.45 d) 0.76 e) 0.88 f) 0.73

20. a) 0.03 b) 0.076 c) 0.021 d) 0.0513 e) 0.0785 f) 0.0819

21. a) 1l 695ml b) 2l 068ml c) 4l 201ml  
d) 1l 400ml e) 6l 275ml f) 4l 90ml  
g) 0l 708ml h) 3l 700ml i) 9l 154ml

22.

| ml     | l ml     | l      |
|--------|----------|--------|
| 6047ml | 6l 47ml  | 6.047l |
| 5095ml | 5l 95ml  | 5.095l |
| 697ml  | 697ml    | 0.697l |
| 2790ml | 2l 790ml | 2.79l  |
| 5263ml | 5l 263ml | 5.263l |

23. a) 10.183l b) 10.772l c) 11.596l d) 21.818l

e) 16.686l f) 14.452l

24. a) 4.686l b) 3.936l c) 7.068l d) 4.665l

e) 7.666l f) 3.709l

25. a) 3.766l b) 26.208l c) 38.43l d) 73.026l

e) 92.481l f) 194.688l

26. a) 1.97l b) 0.248l c) 0.837l d) 0.186l

e) 0.529l f) 3.45l

27.  $346.675\text{l}$

28.  $3.386\text{l}$

# Enrichment Book Answers

**Note: Teacher's Notes and Support Sheets for the Investigations are available on the *Cracking Maths* website, [www.crackingmaths.ie](http://www.crackingmaths.ie)**

## 2. Place Value

### Practise!

1. a) 70      b) 70      c) 7  
d) 70000   e) 7000   f) 700  
g) 700      h) 7      i) 700000  
j) 7000
2. Teacher check
3. a) 86430, 03468  
b) 97521, 12579  
c) 987641, 146789
4. Teacher check
5. a) >      b) >      c) <  
d) <      e) >      f) <  
g) <      h) >
6. a) 1050, 1110   b) 1630, 1550  
c) 20100, 20800  
d) 42800, 44700  
e) 99700, 87700
7. a) 260, 2600, 26000  
b) 480, 4800, 48000  
c) 1750, 17500, 175000  
d) 30, 3000, 30000  
e) 2090, 20900, 209000  
f) 4300, 43000, 430000  
g) 6470, 64700, 647000  
h) 830, 8300, 83000  
i) 9170, 91700, 917000  
j) 6510, 65100, 651000
8. a) 470, 47      b) 3800, 380  
c) 31690, 3169   d) 980, 98  
e) 6000, 600      f) 4900, 490  
g) 18630, 1863   h) 300, 30  
i) 59200, 5920   j) 8370, 837
9. Teacher check
10. a)  $\frac{9}{10}$       b) 70      c) 0.08  
d) 5      e)  $\frac{7}{1000}$       f) 90  
g) 100      h)  $\frac{6}{100}$       i)  $\frac{4}{10}$   
j) 2
11. a) 3.476, 4.736, 6.347, 7.643  
b) 23.94, 24.93, 29.34, 29.43  
c) 1.049, 1.409, 1.49, 1.904  
d) 25.268, 25.286, 25.682, 25.826
12. a) 3.5      b) 6.9      c) 1.4  
d) 42.3      e) 79.2      f) 8.9  
g) 15.4      h) 61.8      i) 59.3  
j) 165.6

13. a) 1.15      b) 2.87      c) 3.59  
d) 4.22      e) 5.74      f) 6.95  
g) 7.25      h) 8.64      i) 9.68  
j) 28.33

### Solve!

Palindromic pals: a) 20   b) 884, 488  
(Hint: 1001, 1111, 1221 ... 2772, 2882, 2992)  
Extension: a) 23232 (3462 + 2643 = 6105; 6105 + 5016 = 11121; 11121 + 12111 = 23232)  
b) Answers will vary.

## 3. Operations 1

### Practise!

1. Teacher check
2. a) 9001      b) 10007      c) 7496  
d) 23001      e) 9999      f) 5015
3. a) 9467      b) 7970      c) 36409  
d) 58283      e) 53698      f) 91148
4. Teacher check
5. a) 2376      b) 3527      c) 3456  
d) 2827      e) 4776      f) 2675  
g) 3415      h) 5672      i) 9508  
j) 1645      k) 3108      l) 3367
6. 120030
7. 5355
8. 12506

### Solve!

Snakes and ladders: 39  
(Hint: 41 + 21 - 23 = 39)  
Extension: 15 moves

## 4. Number Theory 1

### Practise!

1. 19, 37, 79
2. 21, 33, 99
3. a) 1, 2, 3, 4, 6, 12  
b) 1, 2, 3, 6, 9, 18  
c) 1, 2, 3, 4, 6, 8, 12, 24  
d) 1, 5, 7, 35

- e) 1, 2, 4, 5, 8, 10, 20, 40  
f) 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60

4. a) 7      b) 8      c) 8  
d) 6      e) 14      f) 12
5. a) 4, 8, 12, 16, 20, 24  
b) 7, 14, 21, 28, 35, 42  
c) 9, 18, 27, 36, 45, 54  
d) 12, 24, 36, 48, 60, 72  
e) 15, 30, 45, 60, 75, 90  
f) 23, 46, 69, 92, 115, 138
6. a) 15      b) 24      c) 18

### Solve!

Computer rules: a) 139   b) 220  
(Hint: The rule is to multiply the number by itself and then take away 5.)  
Extension: Divide by 2, then add 4

Computer virus: a) 12 seconds  
b) 2.25 bytes  
(Hint: a) 3, 6, 12, 24, 48, 96, 192, 384, 768, 1536  
b)  $0.75 + 1.5 = 2.25$ )  
Extension: 364 bytes ( $1 + 3 + 9 + 27 + 81 + 243 = 364$ )

## 5. Lines and Angles

### Practise!

1. a) True      b) False      c) False  
d) True      e) True      f) False
2. a) Obtuse   b) Reflex   c) Acute  
d) Right      e) Acute      f) Obtuse  
g) Straight      h) Reflex
3. a)  $80^\circ$       b)  $50^\circ$       c)  $295^\circ$
4. Teacher check
5. a)  $74^\circ$       b)  $106^\circ$       c)  $33^\circ$
6. a)  $41^\circ$       b)  $57^\circ$       c)  $67^\circ$   
d)  $60^\circ$
7. a)  $100^\circ$       b)  $120^\circ$       c)  $113^\circ$



### Solve!

Divided rectangle: a) 8 right angles b) 18 smaller angles (Hint: Look at the centre top, bottom left and right.)

Extension: a) 14 triangles b) Rhombus c) 14 triangles

## 6. Data 1

### Practise!

- Teacher check
- a) Friday b) Monday  
c) 30 d) 265 e) 53
- Teacher check

### Solve!

Hair and shoes:

- The fraction of students whose shoe colours and hair colours either were the same or different
- The fraction of students who were in the survey

## 7. Fractions 1

### Practise!

- Teacher check
- a)  $\frac{3}{4}$  b)  $\frac{4}{5}$  c)  $\frac{2}{3}$   
d)  $\frac{3}{5}$  e)  $\frac{6}{7}$  f)  $\frac{7}{8}$
- a)  $\frac{19}{12}$  b)  $\frac{21}{8}$  c)  $\frac{23}{6}$   
d)  $\frac{34}{7}$  e)  $\frac{23}{3}$  f)  $\frac{62}{9}$
- a)  $7\frac{2}{5}$  b)  $8\frac{1}{4}$  c)  $9\frac{1}{2}$   
d)  $5\frac{6}{11}$  e)  $9\frac{4}{7}$  f)  $7\frac{5}{6}$   
g)  $6\frac{5}{8}$  h)  $8\frac{7}{10}$  i)  $3\frac{5}{12}$   
j)  $7\frac{8}{9}$
- a)  $\frac{7}{10}$  b)  $\frac{2}{3}$  c)  $\frac{5}{6}$   
d)  $\frac{4}{5}$  e)  $\frac{3}{4}$  f)  $\frac{11}{12}$
- a)  $\frac{14}{15}$  b)  $\frac{11}{12}$  c)  $1\frac{5}{24}$   
d)  $\frac{17}{18}$  e)  $1\frac{1}{24}$  f)  $1\frac{1}{24}$
- a)  $\frac{17}{24}$  b)  $\frac{1}{12}$  c)  $\frac{7}{30}$   
d)  $\frac{1}{18}$  e)  $\frac{7}{20}$  f)  $\frac{7}{24}$

- a)  $2\frac{11}{12}$  b)  $3\frac{9}{10}$  c)  $3\frac{9}{10}$   
d)  $8\frac{11}{20}$  e)  $9\frac{1}{24}$  f)  $8\frac{5}{18}$
- a)  $2\frac{5}{8}$  b)  $2\frac{8}{15}$  c)  $4\frac{23}{24}$   
d)  $1\frac{5}{12}$  e)  $2\frac{5}{10}$  f)  $5\frac{5}{18}$

### Solve!

Generous Gran:

- €240
  - Grandson  $\frac{1}{2}$ , son  $\frac{1}{4}$ ,  
cousin  $\frac{1}{12}$ , niece  $\frac{1}{24}$
- (Hint: Grandson €120, son €60, cousin €20, niece €10.)
- Extension: 10 people (divide by 2 each time)

## 9. 2-D Shapes 1

### Practise!

- Teacher check
- a)  $51^\circ$  b)  $46^\circ$  c)  $47^\circ$   
d)  $19^\circ$  e)  $13^\circ$  f)  $98^\circ$
- Teacher check
- Teacher check
- Teacher check

### Solve!

Split hexagon:

- Any 2 adjoining sections, such as 1 and 2, 2 and 3, and so on
  - Any 3 adjoining sections, such as 1, 2 and 3
  - Each individual section is an equilateral triangle
- (Hint: Try colouring in the sections to see the individual shapes.)
- Extension: a) 8 right angles  
b) 20 angles less than a right angle

## 10. Operations 2

### Practise!

- a) 33684 b) 31093  
c) 97578 d) 145496  
e) 177327 f) 299008
- a) 42768 b) 64844  
c) 91104 d) 69445  
e) 47554 f) 91086  
g) 62396 h) 233280  
i) 144942 j) 142128  
k) 118197 l) 186825

- a) 476 b) 1477  
c) 759 d) 968  
e) 1738 f) 574

### 4. Teacher check

- a)  $17 \times 6 = 102$   
b)  $24 \times 8 = 192$   
c)  $28 \times 5 = 140$   
d)  $19 \times 7 = 133$   
e)  $25 \times 9 = 225$   
f)  $36 \times 4 = 144$
- a) 16 b) 26 c) 35  
d) 17 e) 28 f) 19
- a) 164 b) 149 c) 273  
d) 187 e) 158 f) 236
- 176 packets and 4 biscuits left over
- 7896 seats

### Solve!

Shortcut: a) 12 b) 30

(Hint:  $81 \times 6 - 79 \times 6$  is the same as  $2 \times 6$ .)

Extension: a) 707 b) 100

## 11. Chance

### Solve!

Spinning wheel: a)  $\frac{1}{6}$  b)  $\frac{1}{8}$

(Hint: 3 tickets still left out of 18.)

Extension: 11

Dice roll: a) 36 b)  $\frac{1}{6}$  c)  $\frac{1}{6}$  d)  $\frac{1}{3}$

Extension: a)  $\frac{5}{12}$  b)  $\frac{4}{9}$

Deck of cards:  $\frac{1}{26}$

(Hint: 104 cards. 2 are aces of spades and 2 are aces of clubs.)

$$\frac{4}{104} = \frac{2}{52} = \frac{1}{26}$$

Extension: a)  $\frac{7}{100}$  b)  $\frac{39}{100}$

c)  $\frac{20}{100}$  or  $\frac{1}{5}$

## 12. Fractions 2

### Practise!

- a)  $\frac{1}{12}$  b)  $\frac{1}{12}$  c)  $\frac{1}{16}$   
d)  $\frac{2}{15}$  e)  $\frac{15}{24}$  f)  $\frac{10}{24}$
- a)  $\frac{1}{2}$  b)  $\frac{2}{3}$  c)  $\frac{1}{2}$   
d)  $\frac{5}{8}$  e)  $\frac{2}{3}$  f)  $\frac{2}{3}$   
g)  $\frac{2}{3}$  h)  $\frac{4}{15}$  i)  $\frac{1}{3}$

3. a)  $\frac{3}{4}$  b)  $\frac{1}{6}$  c)  $\frac{1}{4}$   
 d)  $\frac{2}{3}$  e)  $\frac{10}{27}$  f)  $\frac{3}{5}$
4. a)  $\frac{3}{8}$  b)  $\frac{3}{5}$  c)  $\frac{7}{25}$   
 d)  $\frac{39}{50}$  e)  $\frac{11}{20}$  f)  $\frac{1}{5}$
5.  $\frac{2}{5}$
6. a) 42 : 84 b) 123 : 41  
 c) 98 : 147 d) 236 : 177  
 e) 57 : 285 f) 380 : 228
7. 2 : 3

### Solve!

Number line: B, D, C, E, A  
 (Hint: Change all the fractions to twelfths.)  
 Extension: a) I, G, J, F, H b)  $2\frac{3}{10}$

## 13. 2-D Shapes 2

### Practice!

- Teacher check
- Teacher check
- Teacher check
- Teacher check
- Teacher check
- Teacher check
- (1, 2), (4, 7), (7, 3)

### Solve!

Noughts and crosses: B3  
 (Hint: This guarantees a win both in C3 and in B1.)  
 Extension: C3 or A2

## 14. Number Theory 2

### Practice!

- a) 16 b) 81 c) 64  
 d) 121 e) 169 f) 256  
 g) 361 h) 576 i) 729  
 j) 1024 k) 1521 l) 2025
- a) 25 b) 49 c) 144  
 d) 225 e) 529 f) 900
- a) 216 b) 64 c) 32  
 d) 324 e) 125 f) 81

### Solve!

Who am I?: 86042  
 (Hint: 86420, then 86402, then 86240, then 86204.)  
 Extension: 15379  
 Busy pool: 16

(Hint: Lanes = 64, 32, 16, 8, 4, 2.)  
 Extension: 10 people ( $21 + 3 - 10 = 14$ ; 14 is  $\frac{2}{3}$  of 21)

## 15. Equations

### Practice!

- a) 74 b) 224 c) 157  
 d) 147 e) 24 f) 514
- a)  $75 \times 3 = \text{€}2.25$   
 b)  $136 \div 4 = 34$   
 c)  $13426 - 7689 = 5737$   
 d)  $\text{€}19,024 - \text{€}19 = \text{€}19,005$   
 e) Teacher check
- a) 859 b) 628 c) 387  
 d) 196 e) 79 f) 156
- a) 5429 b) 7755 c) 1.47  
 d) 9792

### Solve!

Letters and numbers:  
 a)  $Y = 3$  and  $Z = 8$   
 b)  $P = 8$  and  $Q = 4$   
 (Hint: a)  $3 + 8 = 11$  and  $3 \times 8 = 24$   
 b)  $8 + 4 = 12$  and  $8 \times 4 = 32$ )  
 Extension: 5 (the numbers are 4, 7 and 9)

Number code: a) 27 b) 45  
 (Hint:  $27 + 27 + 2 = 56$ )  
 Extension: 7 and 6

## 17. Decimals

### Practice!

- a) 0.9 b) 0.23 c) 0.538  
 d) 0.03 e) 0.067 f) 0.8  
 g) 0.25 h) 0.95
- a)  $\frac{3}{25}$  b)  $\frac{2}{5}$  c)  $\frac{3}{4}$   
 d)  $\frac{7}{50}$  e)  $\frac{12}{25}$  f)  $\frac{7}{20}$   
 g)  $\frac{51}{100}$  h)  $\frac{5}{8}$
- a) 5.74, 5.47, 4.75, 4.57  
 b) 7.586, 6.875, 6.785, 6.578  
 c) 83.62, 83.26, 82.63, 82.36  
 d) 3.269, 2.963, 2.936, 2.693
- a) 63.829 b) 407.826  
 c) 46.69 d) 807.197  
 e) 507.413 f) 241.963
- a) 1.81 b) 6.724  
 c) 42.28 d) 0.646  
 e) 4.792 f) 457.912

- a) 3.43 b) 14.88  
 c) 328.5 d) 234.88  
 e) 566.76 f) 3.436
- a) 24.92 b) 639.2  
 c) 38.428 d) 2637.2  
 e) 20.941 f) 4111.1
- a) 0.627 b) 7.59  
 c) 58.6 d) 13.85  
 e) 3.79 f) 0.067
- a) 2.46 b) 0.357  
 c) 31.6 d) 0.624  
 e) 1.37 f) 34.1
- a) 5.712 b) 45.402  
 c) 9.936 d) 102.999  
 e) 12.656 f) 76.832
- a) 2.4 b) 58.1  
 c) 7.6 d) 0.59  
 e) 1.45 f) 28.3
- 0.356km
- 573.92kg
- 139 strides

### Solve!

Read all about it:  
 a) 20 pages b)  $\frac{1}{12}$   
 (Hint:  $120 - 48 - 40 - 12 = 20$ )  
 Extension: 64 pages  
 ( $16 \times 4 = 64$ )

## 18. Money

### Practice!

- a) €285.60 b) €255.20  
 c) €328.44 d) €21.56  
 e) \$423.68

### Solve!

Exchange rate: a) €200 b) €50  
 (Hint:  $12000 \div 60 = 200$  and  $12000 \div 80 = 150$ )  
 Extension: €40.50 ( $3600 \div 80 = 45$ ;  $45 \div 10 = 4.5$ ;  $45 - 4.5 = \text{€}40.50$ )

## 19. Rules and Properties

### Practice!

- a) 1105 b) 4650 c) 49  
 d) 12 e) 3832 f) 2439
- a) 2561 b) 188 c) 610  
 d) 2014 e) 19197 f) 732
- a)  $9 + (9 - 4) = 14$   
 b)  $(6 \times 2) + 4 = 16$   
 c)  $(15 - 9) \times 7 = 42$   
 d)  $63 \div (84 \div 12) = 9$



- e)  $(9 \times 5) - 18 = 27$   
 f)  $108 \div (4 + 5) = 12$
4. a)  $6 \times 3 - 5 = 13$   
 b)  $28 \div 7 \times 9 = 36$   
 c)  $14 \div 7 + 11 = 13$   
 d)  $8 \times 6 \div 12 = 4$   
 e)  $9 \times 7 + 2 = 81$   
 f)  $13 - 7 \times 9 = 54$
5. a) Up 8, 7, 6, 4...  
 b) Down 2, 4, 6, 8...  
 c) Down 11, 9, 7, 5...  
 d) Up 15, 10, 5, 10, 15  
 e) Up 0.4, 0.6, 0.8...  
 f) Down 1.1, 1.0, 0.9...
6. a) 75, 89      b) 30, 13  
 c) 144, 288    d) 48, 63  
 e) 7.1, 8.4    f) 5.4, 5.7

### Solve!

Christmas lights: a) 24th place  
 b) 7 places  
 (Hint: 24 is in both the 6 times and 8 times tables.)  
 Extension: 120 seconds, or 2 minutes

## 20. Length

### Practise!

1. a) 7.9cm      b) 19cm  
 c) 7.71m      d) 9.04m  
 e) 11.191km    f) 14.489km
2. a) 12.7cm      b) 3.8cm  
 c) 3.65m      d) 4.25m  
 e) 3.662km      f) 4.655km
3. a) 114.8cm      b) 124.8cm  
 c) 38.16m      d) 102.12m  
 e) 41.382km      f) 97.328km
4. a) 8.5cm      b) 3.6cm  
 c) 3.28m      d) 0.84m  
 e) 0.258km      f) 0.417km
5. a) 112cm      b) 102cm  
 c) 108cm      d) 152cm
6. Teacher check
7. a) 280cm      b) 204m  
 c) 135.36m      d) 26.52m  
 e) 227.04m      f) 552m

### Solve!

Scale trail: a) About 13cm  
 b) 4mm  
 (Hint: a)  $325 \div 25 = 13$  b) 1mm shows 2.5km on the map.)  
 Extension: 1cm = 325km

## 21. 3-D Shapes

### Practise!

1. a) Pyramid      b) Cuboid  
 c) Cylinder      d) Cube

2.

| 3-D Shape        | No. of Faces | No. of Edges | No. of Vertices |
|------------------|--------------|--------------|-----------------|
| Pyramid          | 5            | 8            | 5               |
| Cuboid           | 6            | 12           | 8               |
| Tetrahedron      | 4            | 6            | 4               |
| Cube             | 6            | 12           | 8               |
| Triangular prism | 5            | 9            | 6               |

3. Teacher check
4. a) A polyhedron is a 3-D shape with flat faces.  
 b) A regular polyhedron is a 3-D shape whose flat faces are all the same.

### Solve!

Curious ant: a) 9 edges b) 49.5cm  
 (Hint: Complete the 4 base edges first.)  
 Extension: 15.5cm

## 22. Percentages

### Practise!

1. a) 62%      b) 9%      c) 11%  
 d) 26%      e) 33%      f) 75%  
 g) 98%      h) 87%      i) 44%
2. a)  $\frac{25}{100} = 25\%$   
 b)  $\frac{30}{100} = 30\%$   
 c)  $\frac{40}{100} = 40\%$   
 d)  $\frac{70}{100} = 70\%$   
 e)  $\frac{45}{100} = 45\%$   
 f)  $\frac{68}{100} = 68\%$
3. a)  $\frac{3}{5}$       b)  $\frac{9}{10}$       c)  $\frac{7}{20}$   
 d)  $\frac{7}{25}$       e)  $\frac{19}{50}$       f)  $\frac{16}{25}$   
 g)  $\frac{7}{50}$       h)  $\frac{13}{20}$       i)  $\frac{13}{25}$
4. a)  $\frac{13}{100} = 13\%$     b)  $\frac{27}{100} = 27\%$   
 c)  $\frac{39}{100} = 39\%$     d)  $\frac{45}{100} = 45\%$   
 e)  $\frac{3}{100} = 3\%$       f)  $\frac{61}{100} = 61\%$   
 g)  $\frac{78}{100} = 78\%$     h)  $\frac{92}{100} = 92\%$   
 i)  $\frac{56}{100} = 56\%$

5. a) 35      b) 63      c) 177  
 d) 189      e) 171      f) 513  
 g) 273      h) 104      i) 143

6. a) 30%      b) 80%      c) 55%  
 d) 40%      e) 90%      f) 60%  
 g) 75%      h)  $33\frac{1}{3}\%$       i) 75%
7. a) €161      b) €207      c) €299  
 d) €368      e) €506      f) €1173
8. a) €112      b) €144      c) €158  
 d) €170      e) €262      f) €434
9. a) 25% loss      b) 30% loss  
 c) 60% profit      d) 45% profit

### Solve!

Plumber's bill: €560  
 (Hint:  $(7 \times €60) + (1 \times €50) + (1 \times €40) + (2 \times €25) = €560$ )  
 Extension: a) €1100 ( $€1210 \div 11 = €110$ ;  $€1210 - €110 = €1100$ )  
 b) €220 ( $€1100 - €110 = €990$ ;  $€1210 - €990 = €220$ )

## 23. Averages

### Practise!

1. €294  
 2. 221  
 3. 90  
 4. 33  
 5. a) 75km      b) 61km      c) 71km

### Solve!

Basketball blitz: a) 39 goals  
 b) 17 goals  
 (Hint: a)  $10 \times 6 = 60$ ;  $60 - 4 - 12 - 5 = 39$ ; b) To average 11 goals per game, Miranda must have a total of 77 goals for all 7 games.)  
 Extension: 3 ( $9.75 \times 4 = 39$ ).  
 Hannah must have scored three 10s and one 9 to have an average of 9.75 out of 10.)  
 Average performance: 22  
 (Hint:  $40 - 5 - 11 = 24.22$ , 1, 1)  
 Extension: 26

## 25. Directed Numbers

### Practise!

1.

| Name of Account Holder | Account Balance |
|------------------------|-----------------|
| Bob Broke              | €30.57          |
| Sid Smashed            | €25.94          |
| Billy Brassick         | €41.81          |
| Sally Skint            | €13.72          |
| Sam Spendsmore         | €35.29          |

2.

| Total Height of the Iceberg | Height Above Sea Level | Depth Below Sea Level |
|-----------------------------|------------------------|-----------------------|
| 138m                        | 38m                    | –100m                 |
| 141m                        | 54m                    | –87m                  |
| 115m                        | 46m                    | –69m                  |
| 103m                        | 19m                    | –84m                  |
| 126m                        | 51m                    | –75m                  |
| 140m                        | 49m                    | –94m                  |

### Solve!

James Frond: a) PLEASE HELP! b) ON THE WAY

(Hint: a) Each number is 1 before its letter place in the alphabet.

b) Each number is 1 after its letter place in the alphabet.)

Extension: Answers will vary.

## 26. Weight

### Practise!

1. a) 2kg 47g   b) 1kg 980g   c) 7kg 1g   d) 1kg 800g   e) 3kg 519g   f) 8kg 40g  
g) 0kg 645g   h) 9kg 200g   i) 7kg 46g

2.

| g     | kg g     | kg      |
|-------|----------|---------|
| 8120g | 8kg 120g | 8.12kg  |
| 2073g | 2kg 73g  | 2.073kg |
| 186g  | 0kg 186g | 0.186kg |
| 4078g | 4kg 78g  | 4.078kg |
| 2007g | 2kg 7g   | 2.007kg |

3. a) 7.667kg   b) 12.557kg   c) 6.816kg   d) 16.146kg   e) 8.033kg   f) 10.1kg  
4. a) 2.555kg   b) 4.147kg   c) 1.449kg   d) 2.579kg   e) 2.476kg   f) 5.669kg  
5. a) 3.176kg   b) 23.067kg   c) 33.18kg   d) 84.952kg   e) 151.736kg   f) 283.815kg  
6. a) 0.839kg   b) 0.796kg   c) 0.247kg   d) 1.34kg   e) 0.381kg   f) 1.95kg  
7. 0.958kg  
8. 182.591kg  
9. 0.276kg

### Solve!

Baby elephants: a) Zazu weighs 405kg and Bazeri weighs 595kg b) 12 years old

(Hint: If they differ by 190kg, they must both be 95kg away from 500kg.)

Extension: 815kg, 830kg, 845kg

(3290kg – 800kg = 2490kg; 2490kg ÷ 3 = 830kg. 815 is halfway between 800 and 830, so they must all differ by 15kg.)



## 27. Representing and Interpreting Data 2

### Practise!

- $72^\circ$
  - $240^\circ$
  - $300^\circ$
  - $315^\circ$
- $\frac{1}{9}$
  - $\frac{3}{4}$
  - $\frac{5}{8}$
  - $\frac{8}{9}$
- Ready salted: 30  
Salt and vinegar: 40  
Cheese and onion: 40  
Smoky bacon: 10
- Teacher check

### Solve!

Trainspotting champions: 45

(Hint:  $30 + 15$ )

Extension:  $\frac{9}{110}$  (After 6 people from Flynn win an award of excellence, 3 are 9 left out of a total 110 who could win the Choo Choo Cup.)

## 28. Area 1

### Practise!

- $468\text{cm}^2$
  - $986\text{cm}^2$
  - $752\text{m}^2$
  - $132.3\text{m}^2$
  - $146.68\text{cm}^2$
  - $98.46\text{m}^2$
- 26m
  - 35m
  - 19m
  - 24m
  - 36m
  - 28m
- 

| Rectangle | Perimeter | Area               | Length | Width |
|-----------|-----------|--------------------|--------|-------|
| 1         | 176cm     | $1900\text{cm}^2$  | 38cm   | 50cm  |
| 2         | 198cm     | $2444\text{cm}^2$  | 52cm   | 47cm  |
| 3         | 166cm     | $1512\text{cm}^2$  | 27cm   | 56cm  |
| 4         | 128cm     | $1015\text{cm}^2$  | 29cm   | 35cm  |
| 5         | 324cm     | $5777\text{cm}^2$  | 53cm   | 109cm |
| 6         | 492cm     | $14288\text{cm}^2$ | 152cm  | 94cm  |

- $1176\text{cm}^2$
  - $1734\text{cm}^2$
  - $3174\text{cm}^2$
  - $5046\text{cm}^2$
  - $7350\text{cm}^2$
  - $8664\text{cm}^2$
- $288\text{cm}^2$
  - $322\text{cm}^2$
  - $814\text{cm}^2$
  - $1104\text{cm}^2$
  - $1728\text{cm}^2$
  - $2520\text{cm}^2$

### Solve!

Veggie patch: a) 36 square metres b) 35 square metres

(Hint: a)  $6\text{m} \times 6\text{m}$  square b)  $7\text{m} \times 5\text{m}$  rectangle)

Extension: a) 100 square metres (80 pieces that are 50cm long is the same as 40 pieces that are 1m long.)

b) 4 square metres (40 pieces that are 20cm long is the same as 8 pieces that are 1m long.)

## 29. Capacity

### Practise!

- 1l 470ml
  - 2l 090ml
  - 786ml
  - 3l 400ml
  - 2l 985ml
  - 9l 30ml
- 0l 587ml
  - 4l 700ml
  - 6l 218ml

| ml     | l ml     | l      |
|--------|----------|--------|
| 1240ml | 1l 240ml | 1.24l  |
| 7002ml | 7l 2ml   | 7.002l |
| 3207ml | 3l 207ml | 3.207l |
| 348ml  | 348ml    | 0.348l |
| 4192ml | 4l 192ml | 4.192l |

3. a) 14.29l      b) 13.899l  
c) 7.635l      d) 9.726l  
e) 15.519l      f) 9.738l
4. a) 5.533l      b) 1.943l  
c) 1.774l      d) 4.544l  
e) 2.629l      f) 7.167l
5. a) 4.046l      b) 33.705l  
c) 59.44l      d) 86.598l  
e) 194.558l      f) 38.08l
6. a) 1.59l      b) 0.264l  
c) 0.476l      d) 5.9l  
e) 0.357l      f) 0.163l
7. 1.791l
8. 10.488l

### Solve!

Washing day: a) 42.5l    b) 100l  
(Hint: As the machine loses 5l, it fills with 2.5l.)

Extension:  $2.35\text{kg} (4.7\text{kg} - 1.5\text{kg} - 0.85\text{kg} = 2.35\text{kg})$

## 30. Time

### Practise!

1. a) 01:57    b) 19:38    c) 00:05  
d) 23:46    e) 09:25    f) 18:21  
g) 12:38    h) 21:17    i) 05:55  
j) 15:15    k) 03:53    l) 22:26
2. a) 8:25pm    b) 5:20am  
c) 1:35pm    d) 2:30pm  
e) 5:05pm
- 3.

| Name  | Average Speed |
|-------|---------------|
| Amy   | 49 km/h       |
| James | 76 km/h       |
| Eva   | 68 km/h       |
| Jack  | 56 km/h       |
| Ruth  | 74 km/h       |

### Solve!

Travel times: a) 110.1m    b) 6606m  
(Hint: Divide each by 10.)  
Extension: 60km

## 31. Area 2

### Practise!

1. a) 7 ares      b) 19 ares  
c) 4.8 ares      d) 3.75 ares  
e) 16.49 ares    f) 0.93 ares
2. a) 10.5 ares    b) 20.25 ares  
c) 26.68 ares    d) 48.36 ares  
e) 41.28 ares    f) 82.36 ares
3. a) 0.8125 hectares  
b) 0.986 hectares  
c) 0.8924 hectares  
d) 1.1772 hectares  
e) 0.9633 hectares  
f) 2.2032 hectares
4. Teacher check

### Solve!

Dogs and cats:

a) 3 more cat steps    b) 36 steps

(Hint: 1 dog step covers  $1\frac{1}{6}$  cat steps.)

Extension: 80m

# Revision Tests Answers

## 2. Place Value

1. a) 80    b) 8000    c) 8    d) 800  
e) 80000    f) 80    g) 80000    h) 880  
i) 800000    j) 8
2. Teacher check
3. a) 87521, 12578  
b) 965430, 034569
4. a) 1270, 1390  
b) 1140, 960  
c) 58800, 61700  
d) 154500, 143900
5. a) 470, 4700, 47000  
b) 350, 3500, 35000  
c) 2340, 23400, 234000  
d) 90, 900, 9000  
e) 1060, 10600, 106000
6. a) 710, 71    b) 9600, 960    c) 34290, 3429  
d) 850, 85    e) 5000, 500
7. Teacher check
8. a) 20    b)  $\frac{3}{1000}$     c) 9    d)  $\frac{1}{10}$     e) 200  
f)  $\frac{4}{100}$     g)  $\frac{3}{10}$     h)  $\frac{5}{1000}$     i) 100    j)  $\frac{5}{100}$
9. a) 5.932, 5.392, 5.329, 5.293  
b) 49.71, 47.19, 41.97, 41.79
10. a) 7.9    b) 2.6    c) 8.2    d) 57.8    e) 92.1
11. a) 6.25    b) 8.17    c) 0.79    d) 3.39    e) 4.25

## 3. Operations 1

1. Teacher check
2. a) 33620    b) 62218    c) 61648    d) 90829
3. Teacher check
4. a) 6254    b) 3558    c) 6777    d) 1753
5. 2918KB
6. 114711

## 4. Number Theory 1

1. 37, 2, 91
2. 9, 27, 25, 81
3. a) 1, 2, 5, 10    b) 1, 3, 5, 15  
c) 1, 2, 13, 26    d) 1, 2, 3, 4, 6, 9, 12, 18, 36  
e) 1, 2, 3, 4, 6, 8, 12, 16, 24, 48  
f) 1, 2, 4, 5, 10, 20, 25, 50, 100
4. a) 6    b) 12    c) 6
5. a) 8, 16, 24, 32, 40, 48, 56  
b) 4, 8, 12, 16, 20, 24, 28  
c) 7, 14, 21, 28, 35, 42, 49  
d) 11, 22, 33, 44, 55, 66, 77  
e) 14, 28, 42, 56, 70, 84, 98  
f) 26, 52, 78, 104, 130, 156, 182
6. a) 12    b) 40    c) 36

## 5. Lines and Angles

1. Teacher check
2. a) Reflex    b) Right    c) Acute    d) Straight  
e) Obtuse
3. a)  $130^\circ$     b)  $30^\circ$     c)  $280^\circ$
4. Teacher check
5. a)  $46^\circ$     b)  $93^\circ$     c)  $59^\circ$
6. a)  $55^\circ$     b)  $39^\circ$     c)  $58^\circ$     d)  $37^\circ$
7. a)  $90^\circ$     b)  $101^\circ$     c)  $125^\circ$

## 6. Representing and Interpreting Data 1

1. Teacher check
2. a) Autumn    b) 28    c) 120
3. Teacher check

## 7. Fractions 1

1. Teacher check
2. a)  $\frac{4}{5}$     b)  $\frac{3}{5}$     c)  $\frac{3}{4}$   
d)  $\frac{2}{3}$     e)  $\frac{5}{8}$     f)  $\frac{4}{5}$
3. a)  $\frac{14}{9}$     b)  $\frac{17}{6}$     c)  $\frac{35}{8}$   
d)  $\frac{39}{4}$     e)  $\frac{25}{2}$     f)  $\frac{40}{7}$
4. a)  $10\frac{1}{3}$     b)  $7\frac{1}{4}$     c)  $8\frac{1}{2}$   
d)  $6\frac{5}{6}$     e)  $7\frac{9}{10}$     f)  $10\frac{3}{5}$   
g)  $6\frac{1}{8}$     h)  $4\frac{2}{11}$     i)  $6\frac{5}{9}$   
j)  $8\frac{1}{12}$
5. a)  $\frac{2}{3}$     b)  $\frac{5}{6}$     c)  $\frac{7}{8}$
6. a)  $\frac{11}{12}$     b)  $1\frac{3}{10}$     c)  $1\frac{7}{18}$
7. a)  $\frac{11}{24}$     b)  $\frac{3}{28}$     c)  $\frac{2}{30}$
8. a)  $3\frac{1}{6}$     b)  $4\frac{11}{20}$     c)  $7\frac{17}{24}$
9. a)  $5\frac{7}{15}$     b)  $2\frac{5}{12}$     c)  $4\frac{17}{24}$

## 9. 2-D Shapes 1

1.

| Shape                | Number of Sides | Number of Angles | Number of Right Angles | Pairs of Parallel Sides |
|----------------------|-----------------|------------------|------------------------|-------------------------|
| Rectangle            | 4               | 4                | 4                      | 2                       |
| Pentagon             | 5               | 5                | 0                      | 0                       |
| Isosceles triangle   | 3               | 3                | 0                      | 0                       |
| Trapezium            | 4               | 4                | 0                      | 1                       |
| Square               | 4               | 4                | 4                      | 2                       |
| Equilateral triangle | 3               | 3                | 0                      | 0                       |
| Hexagon              | 6               | 6                | 0                      | 3                       |
| Parallelogram        | 4               | 4                | 0                      | 2                       |
| Rhombus              | 4               | 4                | 0                      | 2                       |

2. a)  $25^\circ$  b)  $27^\circ$  c)  $47^\circ$   
d)  $18^\circ$  e)  $7^\circ$  f)  $61^\circ$   
3. Teacher check  
4. Teacher check

## 10. Operations 2

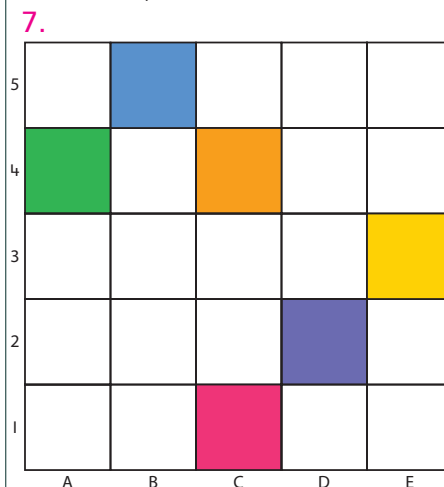
1. a) 17512 b) 28410  
c) 34146  
2. a) 28548 b) 75313  
c) 108290  
3. a) 1279 b) 685 c) 943  
4. a) 38 b) 29 c) 43  
5. a) 245 b) 183 c) 276  
6. 157  
7. 13152

## 12. Fractions 2

1. a)  $\frac{1}{8}$  b)  $\frac{1}{15}$  c)  $\frac{1}{24}$   
d)  $\frac{2}{15}$  e)  $\frac{15}{28}$  f)  $\frac{14}{27}$   
2. a)  $\frac{4}{10} = \frac{2}{5}$  b)  $\frac{6}{21} = \frac{2}{7}$   
c)  $\frac{6}{36} = \frac{1}{6}$  d)  $\frac{20}{40} = \frac{1}{2}$   
e)  $\frac{42}{70} = \frac{3}{5}$  f)  $\frac{12}{72} = \frac{1}{6}$   
3. a)  $\frac{7}{10}$  b)  $\frac{5}{9}$  c)  $\frac{9}{25}$   
d)  $\frac{21}{50}$   
4.  $\frac{1}{8}$   
5. a) €108 : €27  
b) €47 : €141  
c) €152 : €114  
d) €252 : €126

## 13. 2-D Shapes 2

1. Teacher check  
2. a) 26cm b) 48cm c) 30cm  
3. a) 21cm b) 28cm c) 15.5cm  
4. Teacher check  
5. a) 12.5cm b) 25cm c) 41cm  
6. Teacher check (A = 1; S = 0;  
T = 1; M = 1; N = 0; W = 1;  
O = 4)



8. Teacher check

## 14. Number Theory 2

1. a) 9 b) 49 c) 25  
d) 144 e) 225 f) 324  
g) 529 h) 676 i) 841  
j) 961 k) 1444 l) 1764  
2. a) 16 b) 64 c) 100  
d) 169 e) 576 f) 1225  
3. a) 8 b) 125 c) 243  
d) 1000

## 15. Equations

1. a) 113 b) 306 c) 227  
d) 282 e) 27 f) 617  
2. a)  $€2.94 \div 7 = €0.42$   
b)  $1106 \div 14 = 79$   
c)  $€12350 - €9478 = €2872$   
3. a) 648 b) 1146 c) 543  
d) 257 e) 189 f) 253

## 17. Decimals

1. a) 0.7 b) 0.37 c) 0.247  
d) 0.09 e) 0.049 f) 0.6  
g) 0.75 h) 0.85  
2. a)  $\frac{4}{25}$  b)  $\frac{4}{5}$  c)  $\frac{1}{4}$  d)  $\frac{27}{50}$   
3. a) 3.81, 3.18, 1.83, 1.38  
b) 5.446, 4.654, 4.564, 4.456  
4. 37.228  
5. 4.55  
6. 29.12  
7. 46.55  
8. 0.468  
9. 1.36  
10. 3.888  
11. 6.9

## 19. Rules and Properties

1. a) 1188 b) 5247 c) 58  
2. a) 1893 b) 272 c) 1866  
3. a)  $8 + (7 - 2) = 13$   
b)  $(4 \times 7) - 9 = 19$   
c)  $(17 - 8) \times 6 = 54$   
4. a)  $9 \times 2 - 4 = 14$   
b)  $36 \div 9 \times 8 = 32$   
c)  $21 \div 3 + 6 = 13$

5. a) Multiply by 3      b) Subtract 14  
6. a) 76, 91              b) 21, 3

## 20. Length

1. a) 11.9m      b) 12.381km  
2. a) 21.6cm    b) 5.09m  
3. a) 148.8cm   b) 72.42km  
4. a) 0.72m     b) 2.9cm  
5. a) 108cm     b) 102cm  
6. Teacher check  
7. a) 230.4m    b) 576m

## 21. 3-D Shapes

1. Teacher check  
2.

| 3-D Shape   | No. of Faces | No. of Edges | No. of Vertices |
|-------------|--------------|--------------|-----------------|
| Sphere      | 0            | 0            | 0               |
| Cuboid      | 6            | 12           | 8               |
| Tetrahedron | 4            | 6            | 4               |
| Cube        | 6            | 12           | 8               |
| Pyramid     | 5            | 8            | 5               |

3. A regular polyhedron is a 3-D shapes whose faces are all identical

## 22. Percentages

1. a) 57%    b) 7%    c) 18%    d) 29%    e) 35%    f) 79%  
2. a)  $\frac{70}{100} = 70\%$     b)  $\frac{75}{100} = 75\%$     c)  $\frac{60}{100} = 60\%$     d)  $\frac{45}{100} = 45\%$   
3. a)  $\frac{3}{10}$               b)  $\frac{4}{5}$               c)  $\frac{11}{20}$               d)  $\frac{23}{50}$   
4. a) 177    b) 567    c) 369  
5. a) €243   b) €297   c) €486  
6. a) €159   b) €189   c) €243  
7. a) 25% loss    b) 30% profit

## 23. Averages

1. a) 28      b) 194g    c) €1.79  
2. 83  
3. 68  
4. a) 77      b) 105      c) 85

## 25. Directed Numbers

- 1.

| Name of Account Holder | Amount Overdrawn |
|------------------------|------------------|
| Sean                   | −€42.15          |
| Kevin                  | −€30.93          |
| Ian                    | −€53.62          |
| Niall                  | −€20.16          |
| Tony                   | −€13.74          |

2.

| Total Height of the Iceberg | Height Above Sea Level | Depth Below Sea Level |
|-----------------------------|------------------------|-----------------------|
| 127m                        | 29m                    | -98m                  |
| 131m                        | 55m                    | -76m                  |
| 115m                        | 47m                    | -68m                  |
| 105m                        | 18m                    | -87m                  |

## 26. Weight

1. a) 1kg 983g   b) 2kg 6g   c) 4kg 83g   d) 3kg 600g   e) 2kg 853g   f) 6kg 50g  
2.

| g     | kg g     | kg      |
|-------|----------|---------|
| 3640g | 3kg 640g | 3.64kg  |
| 5081g | 5kg 81g  | 5.081kg |
| 739g  | 0kg 739g | 0.739kg |
| 1098g | 1kg 98g  | 1.098kg |
| 4005g | 4kg 5g   | 4.005kg |

3. a) 13.34kg   b) 13.738kg  
4. a) 4.154kg   b) 3.262kg  
5. a) 3.066kg   b) 62.16kg  
6. a) 0.787kg   b) 0.158kg

## 27. Representing and Interpreting Data 2

1. a)  $90^\circ$    b)  $120^\circ$    c)  $135^\circ$    d)  $300^\circ$   
2. a)  $\frac{1}{8}$    b)  $\frac{1}{2}$    c)  $\frac{2}{3}$    d)  $\frac{7}{9}$   
3. Teacher check

## 28. Area 1

1. a)  $406\text{cm}^2$    b)  $972\text{cm}^2$    c)  $798\text{m}^2$   
2. a) 28m   b) 18m   c) 25 m  
3.

| Rectangle | Perimeter | Area              | Length | Width |
|-----------|-----------|-------------------|--------|-------|
| 1         | 138cm     | $1008\text{cm}^2$ | 48cm   | 21cm  |
| 2         | 186cm     | $2006\text{cm}^2$ | 59cm   | 34cm  |
| 3         | 154cm     | $1392\text{cm}^2$ | 48cm   | 29cm  |
| 4         | 142cm     | $1248\text{cm}^2$ | 39cm   | 32cm  |

4. a)  $1536\text{cm}^2$    b)  $1944\text{cm}^2$    c)  $4374\text{cm}^2$   
5. a)  $160\text{cm}^2$    b)  $230\text{cm}^2$

## 29. Capacity

1. a) 1l 590ml    b) 2l 67ml    c) 458ml    d) 2l 600ml    e) 3l 264ml    f) 5l 80ml  
2.

| ml     | l ml     | l      |
|--------|----------|--------|
| 6510ml | 6l 510ml | 6.51l  |
| 4003ml | 4l 3ml   | 4.003l |
| 2437ml | 2l 437ml | 2.437l |
| 739ml  | 0l 739ml | 0.739l |

3. a) 10.589l    b) 10.928l  
4. a) 2.284l    b) 2.916l  
5. a) 3.968l    b) 9.513l    c) 47.52l  
6. a) 2.47l    b) 0.257l    c) 0.376l

## 30. Time

1. a) 04:26    b) 21:17    c) 00:30    d) 22:25    e) 11:47    f) 19:03  
2. a) 4pm    b) 1pm  
3.

| Name  | Average Speed |
|-------|---------------|
| Sam   | 55 km/h       |
| Dawn  | 68 km/h       |
| Ciara | 59 km/h       |

## 31. Area 2

1. a) 6 ares    b) 13 ares    c) 5.7 ares  
2. a) 10 ares    b) 16.5 ares    c) 12.22 ares  
3. a) 0.531 hectares  
b) 0.576 hectares  
c) 0.9776 hectares

# Term Assessments Answers

## Christmas

1. a) 7000 b) 70
2. Teacher check
3. a) 98641 b) 14689
4. Teacher check
5. a) < b) >
6. 1580, 1730
7. a) 760, 7600, 76000  
b) 2400, 24000, 240000
8. a) 750, 75 b) 3400, 340
9. Teacher check
10. a)  $\frac{4}{10}$  b) 20
11. a) 6.819, 6.189, 1.986, 1.896  
b) 27.63, 27.36, 26.37, 23.76
12. a) 6.8 b) 3.4
13. a) 1.55 b) 3.98
14. a) 10250 b) 10305
15. a) 9921 b) 15586
16. a) 3656 b) 3568
17. Prime numbers: 43, 59  
Composite numbers: 28, 33
18. a) 1, 2, 3, 4, 6, 8, 12, 24  
b) 1, 2, 3, 4, 6, 9, 12, 18, 36
19. a) 8 b) 6
20. a) 7, 14, 21, 28, 35  
b) 12, 24, 36, 48, 60
21. a) 24 b) 18
22. a) Oblique b) Perpendicular
23. a) Straight b) Obtuse
24. a) Obtuse b) Reflex
25. a) 90° b) 30°
26. Teacher check
27. a) 48° b) 19°
28. a) 123° b) 48°
29. Teacher check
30. a) Monday b) 12 c) 120
31. a) True b) False
32. Teacher check
33. a) 28° b) 26°
34. Teacher check
35. a) 29116 b) 20874
36. a) 23883 b) 61048
37. a) 538 b) 846
38. a) 7 x 18 b) 6 x 144
39. a) 39 b) 49
40. a) 158 b) 249
41. Teacher check
42. Teacher check
43. a)  $\frac{8}{32}$  b)  $\frac{27}{45}$
44. a)  $\frac{15}{8}$  b)  $\frac{14}{5}$

45. a)  $8\frac{2}{3}$  b)  $5\frac{3}{7}$
46. a)  $\frac{5}{9}$  b)  $\frac{2}{3}$
47. a)  $1\frac{3}{10}$  b)  $1\frac{1}{24}$
48. a)  $\frac{1}{12}$  b)  $\frac{17}{24}$
49. a)  $3\frac{7}{12}$  b)  $6\frac{11}{24}$
50. a)  $2\frac{5}{12}$  b)  $1\frac{7}{10}$

## Easter

1. a) 4 in 7 b) 3 in 6
2. a)  $\frac{4}{7}$  b)  $\frac{1}{2}$
3. a) 9 b) 64
4. a) 4 b) 36
5. a) 8 b) 125
6. a) 47 b) 7
7. a) 258 b) 649
8. Teacher check
9. Teacher check
10. Teacher check
11. Teacher check
12. a)  $\frac{1}{12}$  b)  $\frac{2}{15}$
13. a)  $\frac{5}{9}$  b)  $\frac{2}{3}$
14. a)  $\frac{1}{4}$  b)  $\frac{10}{27}$
15. a) €68 : €102  
b) €148 : €37
16. a) 0.19 b) 0.047
17. a)  $\frac{3}{4}$  b)  $\frac{7}{20}$
18. a) 22.936 b) 294.14
19. a) 2.61 b) 15.304
20. a) 15.84 b) 7.08
21. a) 1.86 b) 0.347
22. a) 53.77 b) 43.1
23. a) 25.7 b) 34.9
24. a) \$109.65 b) £73.95
25. a) 2185 b) 4096
26. a) 2565 b) 9
27. a)  $29 - (6 \times 4) = 5$   
b)  $(7 \times 4) + 29 = 47$
28. a) Add 9  
b) Subtract 9, 8, 7...
29. 45, 53
30. a) 15.54m b) 9.738km
31. a) 2.9cm b) 3.04m
32. a) 52.2cm b) 119.025km

33. a) 3.9m b) 3.42km
34. a) 76cm b) 84cm
35. Teacher check
36. a) 280cm b) 432cm
37. a) Tetrahedron b) Cylinder
38. a) 5 b) 4
39. a) 71% b) 9%
40. a)  $\frac{1}{10} = \frac{10}{100} = 100\%$   
b)  $\frac{60}{100} = 60\%$
41. a)  $\frac{1}{4}$  b)  $\frac{11}{20}$
42. a) 70% b) 26%
43. a) 74 b) 292
44. a) 80% b) 65%
45. a) €168 b) €234
46. a) €120 b) €180
- 47.

| Profit | Percentage Profit |
|--------|-------------------|
| €27    | 30%               |

48.

| Loss | Percentage Loss |
|------|-----------------|
| €16  | 20%             |

49. 21°C
50. 103m

## Summer

1. a) 5000 b) 50
2. a) 97542 b) 24579
3. a) 2 b)  $\frac{9}{1000}$
4. a) 1.63 b) 3.75
5. a) 9720 b) 10321
6. a) 3775 b) 6206
7. a) 10 b) 12
8. a) 12 b) 24
9. a) 60° b) 270°
10. a) 37° b) 35°
11. a) 24282 b) 50301
12. a) 136 b) 157
13. a)  $1\frac{5}{8} = \frac{13}{8}$  b)  $3\frac{3}{5} = \frac{18}{5}$
14. a)  $7\frac{1}{4}$  b)  $4\frac{3}{8}$
15. a)  $1\frac{2}{6}$  b)  $1\frac{4}{9}$
16. a)  $\frac{7}{12}$  b)  $\frac{5}{24}$
17. a)  $3 = \frac{3}{1}$  b)  $6\frac{1}{8}$

18. a)  $2\frac{1}{8}$       b)  $1\frac{3}{6}$   
 19. a) 9      b) 25  
 20. a) 27      b) 64  
 21. a)  $a = 66$       b)  $b = 8$   
 22. a)  $a = 286$       b)  $b = 575$   
 23. Teacher check  
 24. Teacher check  
 25. a)  $\frac{1}{2}$       b)  $\frac{2}{3}$   
 26. €120 : €72  
 27. a) 17.55      b) 223.9  
 28. a) 4.62      b) 7.805  
 29. a) 40.12      b) 36.888

30. a) 32.6      b) 17.3  
 31. a) \$120.65      b) £81.70  
 32. a) 2625      b) 8  
 33. a)  $31 - (8 \times 3) = 7$   
       b)  $(9 \times 4) + 29 = 65$   
 34. a) 43.2cm      b) 81.7km  
 35. a) 2.9m      b) 1.36  
 36. a) 92cm      b) 48cm  
 37. Teacher check  
 38. a) 1kg 89g      b) 785g  
 39. a) 18.441kg      b) 14.378kg  
 40. a) 0.276kg      b) 0.184kg  
 41. a) 108      b) 81  
       c) 216      d) 135

42. a) hectare      b) are  
       c)  $\text{cm}^2$       d)  $\text{m}^2$   
 43.  $1672 \text{ m}^2$   
 44.  $486 \text{ cm}^2$   
 45.  $80 \text{ cm}^2$   
 46. a) 4 ares      b) 13 ares  
 47. a) 1.23 hectares  
       b) 1.076 hectares  
 48. a) 1l 5ml      b) 4l 90ml  
 49. a) 4.473l      b) 30.45l  
 50. a) 5.39l      b) 0.274l