



A COMPLETE NUMERACY PROGRAMME FOR PRIMARY SCHOOLS

6th Class Textbook Answers

Let's Look Back Page 5

- A.**
- 47·65, 86·438, 467·8, 468·7, 468·96, 476·5
 - (a) (i) 784,590 (ii) 784,600
(b) (i) 2,690 (ii) 2,700
(c) (i) 206,720 (ii) 206,700
(d) (i) 3,950 (ii) 3,900
 - (a) 85 (b) 97 (c) 26 (d) 48
(e) 79 (f) 84
 - (a) 60, Sixty
(b) 6,000, Six thousand
(c) $\frac{6}{100}$, Six hundredths
(d) $\frac{2}{10}$, Two tenths
(e) 7, Seven
(f) 400, Four hundred
 - (a) H T U (b) H T U

8	6	5

7	0	1

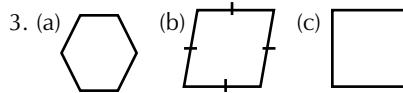
- B.**
- (a) $3\frac{1}{4}$ (b) $3\frac{1}{8}$ (c) $3\frac{1}{5}$ (d) $3\frac{2}{7}$
(e) $5\frac{5}{6}$ (f) $5\frac{1}{8}$
 - (a) $\frac{14}{3}$ (b) $\frac{39}{5}$ (c) $\frac{23}{4}$ (d) $\frac{7}{3}$
(e) $\frac{21}{4}$ (f) $\frac{25}{8}$
 - (a) $\frac{3}{4}$ (b) $\frac{6}{9}$ (c) $\frac{2}{8}$ (d) $\frac{15}{18}$
(e) $\frac{12}{16}$

Challenge Yourself!

- €45·00
- Grace €15, Maria €30

Let's Look Back Page 6

- A.**
- (a) $1\frac{1}{4}$ (b) 1 (c) $1\frac{1}{2}$
 - (a) $\frac{3}{8}$ (b) $\frac{5}{9}$ (c) $\frac{3}{10}$
 - (a) $1\frac{5}{12}$ (b) $1\frac{2}{5}$ (c) $\frac{7}{9}$
 - (a) $5\frac{5}{8}$ (b) $6\frac{5}{6}$ (c) $9\frac{11}{12}$ (d) $3\frac{7}{12}$
 - (a) $5\frac{3}{10}$ (b) $3\frac{2}{3}$ (c) $2\frac{1}{2}$ (d) $3\frac{2}{3}$
- B.**
- (a) 392 (b) 72
 - (a) $\frac{4}{5}$ (b) $\frac{3}{4}$ (c) $\frac{3}{4}$ (d) $\frac{2}{3}$
(e) $\frac{3}{7}$ (f) $\frac{1}{10}$
- C.**
- (a) 9 (b) €26·10
(c) 40 (d) 27
(e) 1,352 (f) €16·35
(g) €81·42
 - (a) €48 (b) 25%
 - (a) €19 (b) €45
(c) €8·75 (d) €9·60
- D.**
- (a) 180° (b) 360°
(c) 360°
 - 90°



Let's Look Back Page 7

- A.**
- (a) 10 (b) 243 (c) 27 (d) 13
(e) $\frac{1}{64}$
 - €20
 - (a) $1\frac{2}{3}$ (b) $\frac{1}{3}$ (c) $\frac{1}{4}$ (d) $\frac{35}{96}$
(e) $\frac{14}{27}$
 - 4·0·3, $\frac{2}{5}$, 45%
- B.**
- Teacher Check
 - (a) none (b) 2 (c) 3
 - (a) 135° (b) 25° (c) 270°
 - (a) pentagon (b) quadrilateral
(c) octagon (d) hexagon
 - 14·5cm
 - (a) (b) (c)

- C.** €15
- D.**
- Brian 16
Aoife 15
Kate 18
Evan 18
Mary 20
 - (a) 41 (b) 46

Let's Look Back Page 8

- A.**
- €65
 - (a) 16:20 (b) 00:55
(c) 18:30
 - (a) $\frac{1}{5}$ (b) $\frac{2}{3}$ (c) $\frac{1}{3}$
 - 8 pens for €1·76
- B.**
- (a) 2hr 5min (b) 1hr 26min
(c) 3hr 32min (d) 4hr 5min
(e) 2hr 10min
 - (a) 6hr 33min (b) 8hr 27min
(c) 6hr 1min (d) 8hr 16min
(e) 9hr 5min (f) 8hr 44min
 - (a) 4hr 11min (b) 2hr 54min
(c) 2hr 58min (d) 0hr 51min
(e) 2hr 54min (f) 2hr 49min
- C.**
- (a) 12 (b) €1·50
(c) 1kg 950g
 - (a) 510 (b) 111
 - (a) 9 (b) 6 (c) 48 (d) 3·865
(e) 10 (f) 6 (g) 20% (h) 15
- D.**
- Fiction 864
Non-fiction 252
Dictionaries 432
Biographies 288

- Fiction 12
Non-fiction 4
Dictionaries 8
Biographies 16
- 10

Let's Look Back Page 9

- A.**
- Donal – 1
Rita – 5
James – 4
Maria – 2
Grace – 3
- B.**
- (a) Area – 126cm²
Perimeter – 46cm
(b) Area – 840cm²
Perimeter – 118cm

2.

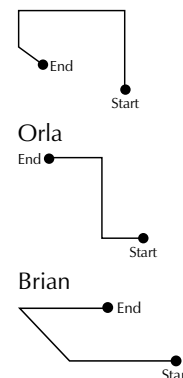
Fraction	$\frac{7}{100}$	$\frac{4}{5}$	$\frac{1}{4}$	$\frac{47}{100}$
Decimal	0·07	0·8	0·25	0·47
Percentage	7%	80%	25%	47%

- 6
 - €16
- C.**
- 309·76
 - 178·53
 - 1,249·71
 - 790·97
 - 355·12
 - 35,136
 - 25
 - 253·94
 - 568·75
 - 1·8
 - 0·14
 - 1·142
- D.** 900m²

Let's Look Back Page 10

- A.**
- Paula's route: Left, Obtuse, 1
Orla's route: Monk St, Right, 41
Brian's route: Cedar Walk, Maywood Ave, 10

- Paula 1, Orla 41, Brian 10
- Paula



Topic 1: Place Value Page 11

- B.**
- 530,794
105,328

C.

	H th	T th	Th	H	T	U
(a)	•	•••	••••	••••	••••	
(b)	•	•••	••••	••••	••••	•••
(c)	•••	••••	•	••••	•••	••••
(d)	•••	••••	•	••••	•	•
(e)	•••	•••	••••	••••	•••	••••
(f)	•••	••••	••••	••••	•••	•••
(g)	••••	••••	••••	••••	•••	
(h)	••••		•••	•••		••••
(i)	•••		•	••••		
(j)	•	••••		••••		

- (a) $100,000 + 40,000 + 2,000 + 300 + 60 + 4$
 (b) $200,000 + 50,000 + 7,000 + 600 + 90 + 4$
 (c) $300,000 + 50,000 + 2,000 + 700 + 20 + 1$
 (d) $400,000 + 50,000 + 3,000 + 500 + 4$
 (e) $500,000 + 10,000 + 6,000 + 800 + 90 + 3$
 (f) $600,000 + 70,000 + 2,000 + 90 + 3$
 (g) $700,000 + 40,000 + 9,000 + 500 + 90 + 8$
 (h) $800,000 + 70,000 + 400 + 50 + 3$
 (i) $900,000 + 8,000 + 100 + 70 + 6$
 (j) $600,000 + 40,000 + 3,000 + 100 + 50 + 4$
- (a) 656,332 (b) 270,211

Topic 1: Place Value Page 12

A.

- (a) €625,516 (b) €349,728
 (c) €789,631 (d) €928,003
 (e) €819,506
- (a) Five hundred and sixty-seven thousand, nine hundred and forty-three euro
 (b) Thirty-four thousand, nine hundred and eighty-six euro
 (c) Twenty-three thousand, nine hundred and eighty-seven euro
 (d) Seven hundred and twenty-eight thousand, nine hundred and fifty-three euro
 (e) Nine hundred and twenty thousand, five hundred and sixty-three euro
 (f) Eight hundred and nine thousand, six hundred and seventy-three euro
 (g) Six hundred and five thousand, four hundred and eighty-three euro
 (h) Four hundred and eighty thousand, six hundred and fifty-two euro
 (i) Five hundred and seven thousand, five hundred and forty euro
 (j) Six hundred and sixty-nine thousand, three hundred and twenty-eight euro

B.

- (a) 237,889 (b) 988,732
 (a) 335,799 (b) 997,533
 (a) 35,689 (b) 986,530
 (a) 334,688 (b) 886,433
 (a) 23,458 (b) 854,320

C.

- Baytown, City Lane, Páirc Siar, Ratham, Benton, Dundree, Naomh Pól
- Baytown, City Lane, Naomh Pól, Ratham, Páirc Siar, Benton, Dundree
- City Lane, Naomh Pól, Benton, Ratham, Baytown, Dundree, Páirc Siar

Challenge Yourself!

- Shane – Mystery, Sport, Historical
 Conor – Mystery, Historical, Adventure
 Lorna – Mystery, Biography, Classic
 Ciara – Mystery, Classic, Series
- Science Fiction and Vampires

Topic 1: Place Value Page 13

A.

- (a) 700 (b) 70
 (c) 7 (d) 700,000
 (e) 7,000,000 (f) 70,000
 (g) 700,000 (h) 70
- (a) 80 (b) 40,000
 (c) 500 (d) 4,000,000
 (e) 700,000 (f) 7,000,000
 (g) 590,000 (h) 4,300
 (i) 520,000 (j) 50
 (k) 70,000 (l) 530,000

B.

- 2,679,053 (b) 4,739,965
 2,680,053 (b) 4,740,965
 2,678,753 (b) 4,739,665
 2,676,753 (b) 4,737,665
 3,867,008 (b) 1,766,080
 3,858,008 (b) 1,767,080
 3,856,708 (b) 1,765,780
 3,854,708 (b) 1,763,780
- 2,639,100
 2,640,100
 2,638,800
 2,636,800

C.

- 2,465,918

Topic 1: Place Value Page 14

A.

- 50 (b) 740
 1,370 (b) 65,750
 345,890 (b) 3,763,970
 2,642,730 (b) 3,204,660
 6,538,720 (b) 2,683,410

B.

- 600 (b) 900
 8,700 (b) 85,300
 454,000 (b) 7,653,900
 2,494,600 (b) 3,728,500
 67,500 (b) 428,700

C.

- 6,000 (b) 10,000

- 898,000 (b) 757,000
 335,000 (b) 7,000
 348,000 (b) 9,000
 5,000 (b) 79,000

D.

- 1,148,210 (b) 1,148,200
 1,148,000
- 808,470 (b) 808,500
 808,000
- 595,970 (b) 596,000
 596,000

Topic 1: Place Value Page 15

A.

Place value – the value of each digit depends on its place in the number, e.g. look at the difference in the value of the 6 in the following amounts of money: €60 compared with €600 or €6,000 or €2,416

B.

- (a) 248,800 (b) 738,600
 (c) 56,800 (d) 59,400
 (e) 8,100 (f) 400
- (a) 680 (b) 40
 (c) 7,490 (d) 946,330
 (e) 847,380 (f) 46,740
- (a) 7,000 (b) 85,000
 (c) 67,000 (d) 95,000
 (e) 857,000 (f) 64,000

4.

	M	H th	T th	Th	H	T	U
(a)	•	•••	••••	•••	••••	•••	••••
(b)	••••	•••	••••	•••	••••	••••	•
(c)	••••	•••	•	••••	••••	•••	•••

- (a) 50 (b) 500
 (c) 50,000 (d) 500,000

C.

- Least – 0 2 4 6 7 9
 Greatest – 9 7 6 4 2 0
- 9,345,274
- Four million, seven hundred and eighty-three thousand, six hundred and one
- $300,000 + 60,000 + 7,000 + 900 + 80 + 2$

D.

- Place value
- For security reasons.
 The recipient of the cheque could add a few zeros, e.g. €6 could become €6,000 unless the words 'six euro even' were written on the cheque!
- football matches, concerts, populations, sports events, music festivals, volume of vehicles on the road
- Board where each place value has its own column, e.g., millions, hundred thousands, tens of thousands, thousands, hundreds, tens and units
- 60,000

E.

- 463,752

**Topic 2: Addition and Subtraction
Page 16**

- B.**
1. 943,793 2. 394,741
 3. 1,007,190 4. 850,518
 5. 1,145,371 6. 676,827
 7. 700,143 8. 983,406
 9. 96,256 10. 842,303
 11. 759,339 12. 38,974
 13. 474,598 14. 48,897
 15. 428,544

- C.**
1. Edel 95,525 Cyril 9,792
Fran 73,583 Stephen 48,987
Katie 72,495
 2. Edel
 3. Cyril
 4. Edel Fran
Katie
Stephen
Cyril

**Topic 2: Addition and Subtraction
Page 17**

- A.**
1. 753,937 2. 778,592
 3. 238,811 4. 738,830
 5. 1,628,368

- B.**
1. Toyota €2,297
Mercedes €6,153
Mazda €2,847
Volkswagen €1,585
SUV €6,164
 2. €40,609
 3. €59,655
 - €40,609

 €19,046 profit

4. SUV – €6,164
5. Volkswagen – €1,585
6. €4,579
7. €6,153
 + €6,164

 €12,317

- C.**
1. 1,201,524 2. 1,404,487
 3. 774,399 4. 535,590
 5. 64,730 6. 745,715
- D.**
1. 259,249 2. 11,102
 3. 166,551 4. 233,091
 5. 807,980 6. 371,903

- E.**
1. False 2. True
 3. False 4. False
 5. True 6. False

**Topic 2: Addition and Subtraction
Page 18**

- A.**
1. 9,493km (LA – NY – London)

2. 5,902km 3. 6,789km
4. Oslo – London – Paris – Prague – Hong Kong: 10,956km
5. LA – NY – Dublin – Paris: 9,839km
6. Prague – Hong Kong – Sydney – Athens: 31,411km
7. 1,344km 8. 1,135km

- B.**
1. 23,282 2. 651,295
 3. 59,370 4. 22,229
 5. 4,690 6. 7,222
 7. 267,500 8. 76,707
 9. 358,000 10. 34,655

**Topic 2: Addition and Subtraction
Page 19**

- A.**
1. 40,751 2. 153,616
 3. 27,751 4. 221,825
 5. 230,089 6. 39,069
 7. 326,145 8. €550,800
 9. (a) €507,545 (b) €949,193

- B.**
1. 742,894 2. 628
 3. 675 4. 6,847
 5. 87 6. 279,568
 7. 9,537 8. 365

- C.**
1. 54 2. 27 3. 23 4. 59

**Topic 2: Addition and Subtraction
Page 20**

- A.**
- Increase by** – get larger in size or number/add
- Decrease by** – get smaller in size or number/subtract
- Find the difference between** – subtract

- B.**
1. (a) 48,307 (b) 17,191
 2. 871,232 3. 836,901
 4. 269,640; 269,600; 270,000
 5. 191,010

- C.**
1. 117 2. 16,700
 3. €7,889 4. 507

- D.**
1. subtract 2. difference
 3. sum 4. decreased
 5. greater

- E.**
- Donal 2.93kg
Barbara 1.94kg
Aoife 2.56kg
John 2.12kg

Topic 3: Data 1 Page 21

- B.**
1. (a) 16 (b) €23.05
 (c) 55.75kg (d) 48km

- (e) 7.3m (f) 4.815L
2. 26 3. €9.62 4. 21.62km

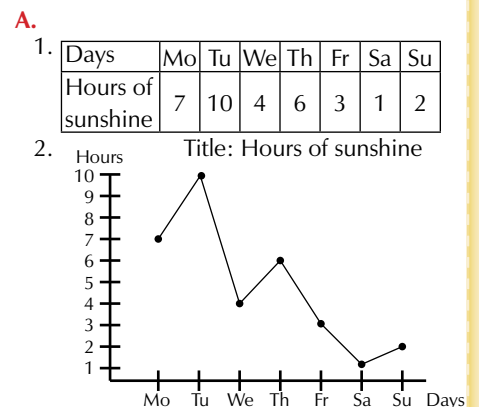
Challenge Yourself!

1. 7 2. 10

Topic 3: Data 1 Page 22

- A.**
1. (a) Sat (b) Mon + Tues
 2. 550 3. Mon, Tues, Sun
 4. 2,250 5. Wed, Fri, Sat
 6. Thurs, Sun
 7. Wed, Thurs, Fri, Sat
 8. Tues 9. Wed & Fri
 10. Sun 11. 280
 12. People are working/in school or college/early morning the following day/lack of money after the weekend.
 13. The attendance peaks at the weekend when people have time off. The highest peak is on Sat when most people are off work/school that day and are also off the following day. The attendance increases from Thurs-Sat i.e. at the end of the week. The attendance drops for Sun, Mon and Tues which traditionally would be quiet nights for those in the entertainment industry. Another slight peak on Wed – the traditional mid-week night for going out.
 14. Less staff would be needed for Sun, Mon and Tues as they have fewer patrons (customers) in the cinema on those nights. Extra staff may be needed for Wed, Fri and Sat which are the most popular nights for the cinema.

Topic 3: Data 1 Page 23



- B.**
- Class work

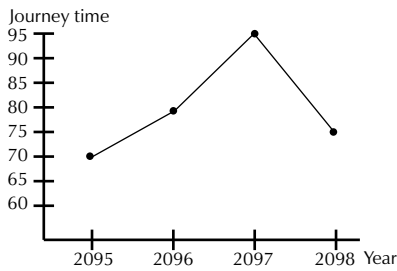
Topic 3: Data 1 Page 24

A.

1.

Year	2095	2096	2097	2098
Average journey time	70	80	95	75

2. Asteroid Town



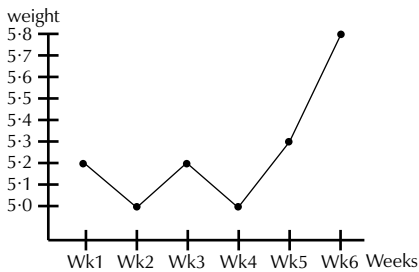
- 10min longer
- 2096 – economy boomed and new factories opened which put extra cars, lorries etc. on the road so journey time was increased.
- 2097 – intergalactic highway repairs so journey time increased on account of the road works.
- 2097
- 2095
- When the unemployment level rose, more people were out of work so they did not need to travel by car to work. Therefore there were also less cars on the road so journey times would have been quicker.
- 80min

B.

Baby Kevin's Weight

1. (a)

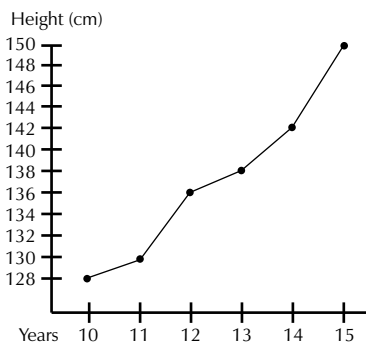
Week	1	2	3	4	5	6
Weight (kg)	5.2	5	5.2	5	5.3	5.8



Marie's height

(b)

Age	10	11	12	13	14	15
Height (cm)	128	130	136	138	142	150

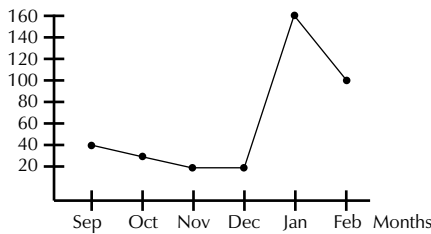


Cars sold in Gary's Garage

(c)

Month	Sept	Oct	Nov	Dec	Jan	Feb
Cars sold	40	30	20	20	160	100

Car sales

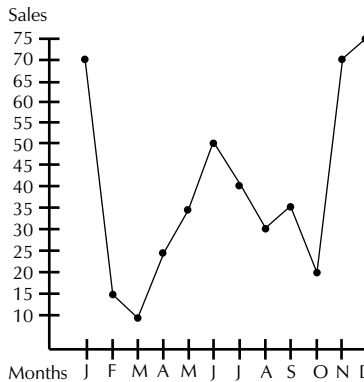


Bea's Bike Shop Sales

(d)

Month	Jan	Feb	Mar	Apr	May	Jun
Sales	70	15	10	25	35	50

Month	Jul	Aug	Sep	Oct	Nov	Dec
Sales	40	30	35	20	70	75



2. Class work

Topic 3: Data 1 Page 25

A.

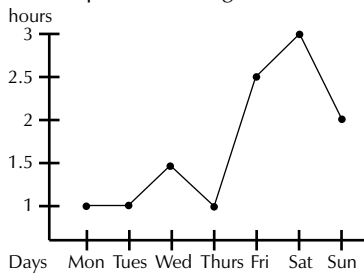
Trend graph – a graph which is plotted as a series of points joined together by straight lines.
Data – collection of information gathered by questioning or observation.

B.

- 4-6
- 50
- 8
- 28°
- 8

C.

Time Spent Watching TV



- Sat
- Mon, Tues, Thurs
- 84min
- 2hr/120min
- Least – school night/homework
Most – no school/weekend/more free time

D.

- trend graph
- x-axis
- organise
- y-axis
- table

E.

Class work

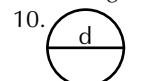
The Paradise Amusement Park Pages 26 and 27

- 10, 10, 1, 10, 100, 1,000, 10,000
 - $718 = 700 + 10 + 8$
 $3,215 = 3,000 + 200 + 10 + 5$
 $29,821 = 20,000 + 9,000 + 800 + 20 + 1$
 $382,714 = 300,000 + 80,000 + 2,000 + 700 + 10 + 4$
 $479,122 = 400,000 + 70,000 + 9,000 + 100 + 20 + 2$
 $81,767 = 80,000 + 1,000 + 700 + 60 + 7$
 $17,584 = 10,000 + 7,000 + 500 + 80 + 4$
- Seven hundred and eighteen
Three thousand two hundred and fifteen
Twenty-nine thousand eight hundred and twenty-one
Three hundred and eighty-two thousand seven hundred and fourteen
Four hundred and seventy-nine thousand one hundred and twenty-two
Eighty-one thousand seven hundred and sixty-seven
Seventeen thousand five hundred and eighty-four
- 718, 3,215, 17,584, 29,821, 81,767, 382,714, 479,122
 - 720, 3,220, 29,820, 382,710, 479,120, 81,770, 17,580
 - 700, 3,200, 29,800, 382,700, 479,100, 81,800, 17,600
- 1,000, 3,000, 30,000, 383,000, 479,000, 82,000, 18,000
- 895,590 (b) 578,473
 - 415,750 (d) 16,866
 - 544,719
- 48,000, 181,000, 485,000, 249,000, 25,000, 9,000, 1,000
 - 3 (c) 7 (d) 25%
- Dream Disposable Camera Sales
 - 1,020 (c) 85
 - July. It is the summer holiday season.
 - November. It is winter time and not the holiday season.
 - Sales rise during the summer holidays and fall in the winter months.

Mental Maths 1
Pages 28 and 29

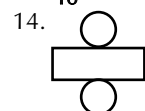
- A.**
4. 602,854 2. 4,698,320
3. 7,442,210 4. 764,407
5. 0.4 6. 1, 2, 3, 6, 12

7. $33\frac{1}{3}\%$ 8. 5
9. Hexagon




11.  12. Right angle

13. $\frac{1}{10}$ km or 0.1km



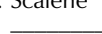
15. Cuboid

- B.**
1. 3,000,000 + 800,000 + 90,000 + 5,000 + 300 + 7
2. x-axis 3. 2,585,400
4. 826,700
5. 5, 10, 15, 20, 25, 30, 35, 40, 45, 50
6. 25% 7. 6
8. Equilateral 9. Decagon

10. 

11. 

12. Obtuse 13. 2.378km
14. Trapezium 15. 1,000g

- C.**
1. 12,378 2. 6,494,000
3. 40,000 4. 548,004
5. 6 6. 11, 13, 17, 19
7. 75% 8. 8
9. Scalene 10. Rhombus
11.  12. Reflex
13. 1cm 14. Cone
15. 20:00

- D.**
1. 300,000 2. 407,518
3. Trend graph 4. Isosceles
5. Parallelogram 6. 20%
7. 1.2m 8. 18°
9. €10 10. $\frac{7}{10}$

Topic 4: Multiplication 1
Page 30

- B.**
1. 2,865 2. 2,702
3. 2,376 4. 7,434
5. 2,524 6. 3,424
7. 5,742

- C.**
1. (a) 6,790 (b) 13,992
(c) 25,830 (d) 18,216
(e) 44,467 (f) 46,498
(g) 80,997
2. (a) 336,881 (b) 218,078
(c) 467,760 (d) 172,620
(e) 377,712 (f) 441,652
(g) 558,377

- D.**
1. 9,882 2. €61,132
3. 14,784 4. 103,240

Topic 4: Multiplication 1
Page 31

- B.**
1. (a) 1,299.5 (b) 3,165.5
(c) 6,037.8 (d) 2,217.2
(e) 2,782.4 (f) 2,267.3
(g) 5,025.92 (h) 7,816.65
2. (a) 4,261.56 (b) 3,156.48
(c) 8,306.76 (d) 3,607.68
(e) 2,683.8 (f) 2,671.2
(g) 6,325.2 (h) 5,961.6

Topic 4: Multiplication 1
Page 32

- A.**
1. €6,095.60 2. €6,560
3. €7,623.50 4. €20,279.10
5. €4,032 6. €3,055
7. €1,311.60 8. €850.40
- B.**
1. (a) 233.604 (b) 321.442
(c) 203.352 (d) 417.838
(e) 587.896 (f) 463.42
(g) 657.696 (h) 440.504
(i) 10,315.2
2. 89.26km 3. 639.73m

- C.**
1. (a) 397.995 (b) 1,338.669
2. (a) 891.52 (b) 172.292
3. (a) 38,980.5 (b) 8,376
4. €673.68
5. €30.80
6. €70.50

Topic 4: Multiplication 1
Page 33

- A.**
1. (a) 80 (b) 270
(c) 5,630 (d) 46,270
2. (a) 800 (b) 2,700
(c) 56,300 (d) 462,700
3. (a) 8,000 (b) 27,000
(c) 563,000 (d) 4,627,000
4. (a) 80,000 (b) 270,000
(c) 5,630,000 (d) 46,270,000

- B.**
1. (a) 4,800 (b) 8,350,000
(c) 37,240
2. (a) 230,000 (b) 6,494,000
(c) 6,700
3. (a) 73,000 (b) 64,500
(c) 9,573,000

- C.**
1. (a) 756.2 (b) 96.25
(c) 5,925
2. (a) 562.3 (b) 23,850
(c) 4,186
3. (a) 364,200 (b) 9,254
(c) 59,260

- D.**
1. (a) 25.38 (b) 784
(c) 963.2
2. (a) 4,558.4 (b) 48,572
(c) 947.5
3. (a) 745,357 (b) 6,794
(c) 59,470

- E.**
1. Nina – €19,793.28
Jack – €15,384.72
Mary – €18,951.40
Kathleen – €19,572.28
Peter – €20,577.96
Betty – €22,231.56
2. €6,846.84

Topic 4: Multiplication 1
Page 34

- A.**
Long multiplication – multiplying by more than one digit.

- B.**
1. (a) 662.2 (b) 58,072
(c) 14.34 (d) 20.744
2. (a) 44,838 (b) 45,936
(c) 444.62 (d) 561.535
3. (a) 394.638 (b) 25,561.2
(c) 4,612.74 (d) 6,722.625
4. (a) 5,546.366 (b) 86,400
(c) 965.30 (d) 85,730

- C.**
1. €8,225.04 2. 106.152km
3. 669.2kg 4. €4,427.40
5. €2,675

- D.**
1. decimal 2. vertically
3. round 4. calculator
5. one

- E.**
1. (a) Roast beef + Chocolate fudge cake
(b) Roast beef + Profiteroles
(c) Chicken + Chocolate fudge cake
(d) Chicken + Profiteroles
(e) Salmon + Chocolate fudge cake
(f) Salmon + Profiteroles
2. (a) €20.70 (b) €21.00
(c) €14.20 (d) €14.50
(e) €18.45 (f) €18.75

Topic 5: Lines and Angles
Page 35

- B.**
1. (a) Straight (b) Obtuse
(c) Reflex (d) Right
(e) Acute
2. (a) False (b) False
(c) False (d) True
(e) True (f) True

- C.**
1. (a) Obtuse/reflex (b) Acute/reflex
(c) Acute/reflex (d) Obtuse/reflex
(e) Acute/reflex
2. (a) Obtuse/reflex (b) Obtuse/reflex

- (c) Obtuse/reflex (d) Acute/reflex
(e) Obtuse/reflex

Topic 5: Lines and Angles Page 36

- A.**
1.(a) 60° (b) 50° (c) 30° (d) 120°
(e) 75° (f) 110° (g) 145° (h) 15°
- B.**
1. Teacher Check
2. Teacher Check
3. Teacher Check
- C.**
Class work

Topic 5: Lines and Angles Page 37

- A.**
1. Teacher Check
2. Teacher Check
3. Teacher Check
- B.**
1. All angles in a triangle add up to 180°
2.(a) 45° (b) 60° (c) 75° (d) 60°
(e) 65° (f) 50° (g) 30° (h) 35°
(i) 45° (j) 60°
- C.**
1. 75° 2. 120° 3. 135° 4. 125°
5. 107°

Topic 5: Lines and Angles Page 38

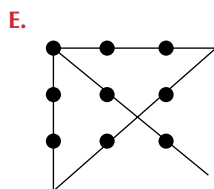
- A.**
1.(a) 62° (b) 128° (c) 110° (d) 15°
(e) 20°
2.(a) 175° (b) 40° (c) 75° (d) 230°
(e) 63°
- B.**
1.(a) 180° (b) 270° (c) 72° (d) 36°
(e) 30° (f) 90°
2.(a) $\frac{1}{2}$ (b) $\frac{1}{4}$ (c) $\frac{1}{12}$ (d) $\frac{1}{6}$
(e) $\frac{1}{8}$ (f) $\frac{1}{5}$
3.(a) 360° (b) 180° (c) 90° (d) 30°
(e) 60° (f) 120° (g) 150° (h) 210°
- C.**
(a) 90° (b) 45° (c) 135° (d) 270°
(e) 135° (f) 225°

Topic 5: Lines and Angles Page 39

- A.**
Obtuse angle – any angle between 90° and 180°
Reflex angle – any angle between 180° and 360°
Acute angle – any angle measuring less than 90°
Straight angle – an angle that equals 180°
- B.**
1.(a) obtuse 110° (b) acute 30°
(c) reflex 220° (d) obtuse 140°

- (e) obtuse 120°
2.(a) 300° (b) 120° (c) 240°
3. Teacher Check
4. Teacher Check

- C.**
1.(a) 70° (b) 80° (c) 90° (d) 75°
(e) 125°
2. South
3. $360 \times 8 = 2,880$ degrees
4. 24°
5. 30min
- D.**
1. True 2. False 3. True 4. True
5. False



Topic 6: Division 1 Page 40

- B.**
1.(a) 16 (b) 16 (c) 22 (d) 24
(e) 26 (f) 35
2.(a) 236 (b) 254 (c) 254 (d) 624
(e) 249
- C.**
1. €96 2. 325g 3. €28 4. €2,250
- D.**
1.(a) 8 (b) 15 (c) 15 (d) 21
(e) 8
2.(a) 23 (b) 18 (c) 19 (d) 13
(e) 11
3.(a) 8 R 39 (b) 20 R 12
(c) 13 R 32 (d) 9 R 19
(e) 9 R 36
4.(a) 13 R 1 (b) 7 R 59
(c) 9 R 61 (d) 9 R 15
(e) 9 R 70

Topic 6: Division 1 Page 41

- A.**
1.(a) 23 (b) 57 (c) 87 (d) 23
2.(a) 78 (b) 23 (c) 78 (d) 71
3.(a) 116 R 71 (b) 108 R 27
(c) 99 R 53 (d) 113 R 23
4.(a) 41 R 15 (b) 77 R 36
(c) 89 R 76 (d) 115 R 68

- B.**
1. 243 R 33 2. 283 R 22
3. 80 4. 73

- C.**
1. (a) €3.30 (90 day)
(b) €4.00 (30 day)
(c) €5.00 (10 day)
(d) €5.71 (7 day)
(e) €8.00 (1 day)
2. 90-day ticket
3. (a) 26.4 cent (90 day)
(b) 32 cent (30 day)
(c) 40 cent (10 day)
(d) 45.7 cent (7 day)
(e) 64 cent (1 day)

Topic 6: Division 1 Page 42

- A.**
1.(a) 0.83 (b) 2.7 (c) 2.2 (d) 0.246
2.(a) 0.57 (b) 0.93 (c) 7.4 (d) 0.259
3.(a) 0.42 (b) 0.29 (c) 0.298 (d) 2.6
- B.**
1. €18.53 2. €4.85 3. €4.65
- C.**
1.(a) 0.19 (b) 0.32 (c) 0.37 (d) 0.382
2.(a) 0.82 (b) 0.44 (c) 2.7 (d) 1.9
3.(a) 0.37 (b) 4.2 (c) 0.33 (d) 0.582
- D.**
1. €32.80 2. 146.52 l
3. €23.47 4. 2.34
- E.**
1. $((4 + 4 + 4) \times 4) - 4$
2. $((5 + 5) \times 5) + 5$
3. $((6 + 6) \times 6) - 6$

Topic 6: Division 1 Page 43

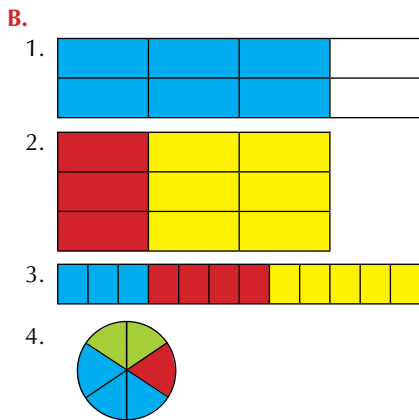
1. Meal A – €30
Meal B – €26.67
Meal C – €24
Meal D – €23
2. Meal D
3. Meal A
4. 42 Meal As
34 Meal Bs
22 Meal Cs
13 Meal Ds
5. (a) Meal D (b) Meal A
6. 18 – for 2 14 – for 3
10 – for 4 10 – for 5
- B.**
1.(a) 27.9 (b) 6.843
(c) 5.942
2. (a) 0.0385 (b) 0.02739
(c) 7.58
3. (a) 0.05853 (b) 4.98
(c) 0.843
4. (a) 0.26m (b) 6.94km
(c) 0.004846m
5. (a) 0.000375 (b) 0.5084
(c) 0.06

Topic 6: Division 1 Page 44

- A.**
Whole number – a counting number from zero to infinity.
Decimal number – a number containing a decimal point.
- B.**
1.(a) 159 (b) 24 (c) 18.5 (d) 2.7
2.(a) 3.6 (b) 0.62 (c) 1.95 (d) 9.5
3.(a) 34.8 (b) 17.2 (c) 0.8 (d) 8.5
4.(a) 22.5 (b) 3.4 (c) 127 (d) 6.6
- C.**
1. 62.55km 2. €7.45
3. 0.25l 4. 3 for €29.85
5. €10.07
- D.**
1. right 2. long division
3. to share 4. whole number
5. a decimal point

- E. (a) €8,426.20 (b) €146.30
 (c) €112.04 (d) €238.65
 (e) €452.36

Topic 7: Fractions 1 Page 45



- C.
1. (a) 6 (b) 4 (c) 9 (d) 8
 (e) 15 (f) 30
2. (a) 10 (b) 6 (c) 9 (d) 12
 (e) 12 (f) 12

- D.
1. (a) $\frac{3}{4}$ (b) $\frac{4}{5}$ (c) $\frac{2}{3}$ (d) $\frac{2}{3}$
 (e) $\frac{1}{4}$ (f) $\frac{1}{3}$
2. (a) $\frac{1}{2}$ (b) $\frac{3}{5}$ (c) $\frac{3}{7}$ (d) $\frac{4}{5}$
 (e) $\frac{7}{10}$ (f) $\frac{3}{8}$

Topic 7: Fractions 1 Page 46

- A.
1. Mixed number 2. Proper fraction
 3. Proper fraction 4. Improper fraction
 5. Mixed number 6. Whole number
 7. Mixed number 8. Proper fraction
 9. Mixed number 10. Whole number
 11. Proper fraction

- B.
1. (a) $1\frac{3}{4}$ (b) $1\frac{4}{5}$ (c) $9\frac{1}{2}$ (d) $5\frac{1}{4}$
 (e) $2\frac{1}{5}$ (f) $4\frac{1}{2}$ (g) $1\frac{2}{7}$
2. (a) $4\frac{1}{4}$ (b) $5\frac{3}{4}$ (c) $2\frac{4}{7}$ (d) $4\frac{1}{6}$
 (e) $3\frac{5}{6}$ (f) $7\frac{3}{4}$ (g) $6\frac{2}{3}$

- C.
1. (a) $\frac{3}{2}$ (b) $\frac{9}{4}$ (c) $\frac{17}{5}$ (d) $\frac{11}{4}$
 2. (a) $\frac{23}{6}$ (b) $\frac{19}{4}$ (c) $\frac{13}{5}$ (d) $\frac{45}{8}$
 3. (a) $\frac{71}{8}$ (b) $\frac{48}{5}$ (c) $\frac{35}{8}$ (d) $\frac{57}{6}$
 4. (a) $\frac{107}{10}$ (b) $\frac{52}{6}$ (c) $\frac{45}{6}$ (d) $\frac{14}{3}$

- D.
1. 30 2. $\frac{30}{3}$ 3. 7

- E.
1. $0, \frac{1}{2}, 1\frac{1}{2}, 2, 2\frac{1}{2}, 3, 3\frac{1}{2}, 4, 4\frac{1}{2}, 5, 5\frac{1}{2}$
2. Top: $\frac{1}{4}, \frac{2}{4}, \frac{3}{4}, \frac{4}{4}, \frac{5}{4}, \frac{6}{4}, \frac{7}{4}, \frac{8}{4}, \frac{9}{4}, \frac{10}{4}, \frac{11}{4}$
 Bottom: $\frac{1}{4}, \frac{2}{4}, \frac{3}{4}, \frac{4}{4}, 1\frac{1}{4}, 1\frac{2}{4}, 1\frac{3}{4}, 2, 2\frac{1}{4}, 2\frac{1}{2}, 2\frac{3}{4}$

Topic 7: Fractions 1 Page 47

- A.
1. 100 2. $\frac{1}{2} = \frac{50}{100}$
 3. $\frac{1}{4} = \frac{25}{100}$ 4. $\frac{1}{5} = \frac{20}{100}$

- B.
1. (a) $\frac{4}{10} = \frac{40}{100}$ (b) $\frac{7}{10} = \frac{70}{100}$
 (c) $\frac{10}{10} = \frac{100}{100}$ (d) $\frac{9}{10} = \frac{90}{100}$
 (e) $\frac{1}{20} = \frac{5}{100}$ (f) $\frac{3}{20} = \frac{15}{100}$
2. (a) $\frac{6}{20} = \frac{30}{100}$ (b) $\frac{12}{20} = \frac{60}{100}$
 (c) $\frac{17}{20} = \frac{85}{100}$ (d) $\frac{19}{20} = \frac{95}{100}$
 (e) $\frac{3}{50} = \frac{6}{100}$ (f) $\frac{25}{50} = \frac{50}{100}$

- C.
1. (a) $\frac{2}{10} = \frac{20}{100} = \frac{200}{1000}$
 (b) $\frac{4}{10} = \frac{40}{100} = \frac{400}{1000}$
 (c) $\frac{8}{10} = \frac{80}{100} = \frac{800}{1000}$
2. (a) $\frac{8}{10} = \frac{80}{100} = \frac{800}{1000}$
 (b) $\frac{200}{1000} = \frac{20}{100} = \frac{2}{10}$
 (c) $\frac{100}{1000} = \frac{10}{100} = \frac{1}{10}$
3. (a) $\frac{400}{1000} = \frac{40}{100} = \frac{4}{10}$
 (b) $\frac{700}{1000} = \frac{70}{100} = \frac{7}{10}$
 (c) $\frac{2}{100} = \frac{20}{1000}$
4. (a) $\frac{5}{100} = \frac{50}{1000}$ (b) $\frac{15}{100} = \frac{150}{1000}$
 (c) $\frac{58}{100} = \frac{580}{1000}$
5. (a) $\frac{67}{100} = \frac{670}{1000}$ (b) $\frac{80}{1000} = \frac{8}{100}$
 (c) $\frac{382}{100} = \frac{3820}{1000}$

- D.
1. Orange $2\frac{1}{2}$ litres
 Water $2\frac{1}{4}$ litres
 Cranberry $1\frac{3}{4}$ litres
2. $6\frac{1}{2}$ litres 3. $3\frac{1}{4}$

Topic 7: Fractions 1 Page 48

- A.
1. (a) $\frac{3}{4}$ (b) $\frac{3}{8}$ (c) $\frac{5}{9}$ (d) $\frac{5}{8}$
 (e) $\frac{7}{10}$
2. (a) $\frac{4}{6}$ (b) $\frac{7}{6}$ (c) $\frac{9}{8}$ (d) $\frac{10}{9}$
 (e) $\frac{15}{10}$
3. (a) $\frac{17}{12}$ (b) $\frac{15}{12}$ (c) $\frac{19}{12}$ (d) $\frac{14}{9}$
 (e) $\frac{21}{12}$
4. (a) $\frac{15}{12}$ (b) $\frac{11}{8}$ (c) $\frac{17}{12}$ (d) $\frac{19}{12}$
 (e) $\frac{10}{12}$

- B.
1. Gave away $\frac{11}{30}$, left $\frac{19}{30}$
2. (a) $\frac{13}{21}$ (b) $\frac{8}{21}$
3. $\frac{40}{63}$

- C.
1. (a) $4\frac{8}{15}$ (b) $8\frac{2}{3}$ (c) $6\frac{5}{21}$
 2. (a) $7\frac{1}{10}$ (b) $5\frac{11}{18}$ (c) $5\frac{1}{8}$
 3. (a) $\frac{3}{4}$ (b) $1\frac{9}{10}$ (c) $1\frac{1}{2}$
 4. $6\frac{5}{6}$ 5. $2\frac{2}{9}$

Topic 7: Fractions 1 Page 49

1. **Numerator** – number above the line in a fraction.
Denominator – number below the line in a fraction.
Improper Fraction – the numerator is larger than the denominator.
Mixed number – number written as a whole number with a fraction.

- B.
1. (a) $\frac{8}{3}$ (b) $\frac{23}{5}$ (c) $\frac{19}{2}$ (d) $\frac{25}{4}$
 (e) $\frac{20}{3}$ (f) $\frac{19}{7}$
2. (a) $2\frac{3}{4}$ (b) $4\frac{3}{8}$ (c) $9\frac{4}{7}$ (d) $9\frac{2}{5}$
 (e) $7\frac{1}{7}$ (f) $8\frac{1}{2}$
3. (a) $\frac{4}{5}$ (b) $\frac{3}{5}$ (c) $\frac{1}{3}$ (d) $\frac{2}{3}$
 (e) $\frac{3}{14}$ (f) $\frac{1}{2}$
4. (a) $\frac{1}{2} = \frac{5}{10}$ (b) $\frac{3}{5} = \frac{9}{15}$
 (c) $\frac{7}{8} = \frac{42}{48}$ (d) $\frac{5}{7} = \frac{20}{28}$
 (e) $\frac{3}{7} = \frac{30}{70}$
5. $\frac{5}{6}, \frac{2}{3}, \frac{7}{12}$
6. (a) $1\frac{1}{5}$ (b) $\frac{7}{18}$ (c) $\frac{13}{20}$ (d) $7\frac{5}{6}$
 (e) $3\frac{7}{12}$ (f) $7\frac{3}{4}$

- C.
1. $\frac{5}{8}$ 2. $\frac{1}{2}$ m 3. $\frac{7}{10}$ 4. $2\frac{3}{4}$
 5. $7\frac{3}{4}$ km
- D.
1. whole number
 2. multiplying
 3. less
 4. proper fraction
 5. improper fraction

- E.
- €64

At the Airport Pages 50 and 51


1. (a) New York $150^\circ - 180^\circ$
 Hong Kong $180^\circ - 200^\circ$
 Dublin $50^\circ - 70^\circ$
 Berlin $20^\circ - 40^\circ$
 (b) New York – Obtuse
 Hong Kong – Straight
 Dublin – Acute
 Berlin – Acute
 (c) New York – Internal angle is an obtuse angle. External angle is a reflex angle.
 Hong Kong – Internal angle is a straight angle. External angle is a straight angle.

Dublin – Internal angle is an acute angle. External angle is a reflex angle.

Berlin – Internal angle is an acute angle. External angle is a reflex angle.

2. (a) 618-88kg
(b) 16-74kg
(c) 79-06kg
3. (a) 171
(b) 18,126
(c) 81,514
4. (a) 16
(b) 24
(c) 14
5. (a) (i) €12.14
(ii) €194.24
(b) (i) €13.74
(ii) €329.76
(c) $\frac{1}{6}$ (d) $\frac{13}{30}$ (e) $5\frac{31}{40}$ kg
(f) $9\frac{1}{2}$ kg
6. LHR – London Heathrow
JFK – J F Kennedy, New York
CDG – Charles de Gaulle, Paris
LAX – Los Angeles International Airport

Mental Maths 2 Page 52 and 53

- A.
1. 28.8 2. 180° 3. 3,865
4. Right-angle and reflex angle
5. 54° 6. €6.72 7. $\frac{3}{20}$ 8. $\frac{1}{2}$
9. $\frac{1}{64}$
10. 
11. $\frac{6}{8}$ 12. 5 13. €32 14. $\frac{47}{5}$
15. 32,800
- B.
1. 55.52 2. 49° 3. 589 4. 360°
5. 35° 6. 110° 7. 1,400 8. $\frac{7}{20}$
9. $2\frac{1}{2}$ 10. Teacher Check 11. $\frac{1}{12}$
12. $9\frac{1}{3}$ 13. 8 14. 2 15. 90°
- C.
1. 670 2. 25,760 3. 245° 4. 57°
5. €6.24 6. $\frac{8}{15}$ 7. 5
8. $(4 \times 4) + 3 = 19$
9. 4 10. $\frac{2}{3}$ 11. $\frac{31}{4}$ 12. 10c
13. Six million, eight hundred and four thousand, five hundred and twenty-seven
14. $4\frac{5}{6}$ 15. 240°
- D.
1. 0.084 2. 9,745
3. €28.80 4. €160
5. 6 6. 360°
7. 25 8. €21
9. obtuse 10. 780km

Topic 8: 2D Shapes Page 54

- B.
1. (a) Triangle (b) Quadrilateral
(c) Heptagon (d) Hexagon
(e) Decagon (f) Nonagon
(g) Octagon
2. (a) No – not all sides are straight
(b) Yes – irregular pentagon
(c) Yes – it is a closed shape
(d) Yes – irregular octagon
(e) Yes – irregular pentagon
(f) Yes – this is a star-shaped polygon
- C.
1. **Triangle** – equilateral, isosceles, scalene, right-angled
2. **Quadrilateral** – polygon with 4 sides, e.g. square, rhombus, rectangle, parallelogram, diamond, trapezium
3. **Polygon** – plane (flat) shape having 3 or more sides.
Regular Polygons – triangle, square, rhombus, diamond, rectangle, trapezium, pentagon, hexagon, heptagon, octagon, nonagon, decagon
- D.

Name	No. of sides	No. of angles	No. of acute angles
Pentagon	5	5	0
Hexagon	6	6	0
Heptagon	7	7	0
Octagon	8	8	0
Nonagon	9	9	0
Decagon	10	10	0

Name	No. of obtuse angle	No. of right angles
Pentagon	5	0
Hexagon	6	0
Heptagon	7	0
Octagon	8	0
Nonagon	9	0
Decagon	10	0

Topic 8: 2D Shapes Page 55

- A.
1. True 2. False 3. True 4. False
- B.
1. no equal sides and no equal angles
2. equal/parallel
3. 2, 2
4. square
5. rhombus
- C.
- Teacher Check
- D.
- Teacher Check

Topic 8: 2D Shapes Page 56

- A.
- Teacher Check
- B.
1. Teacher Check
2. 3

- C.
1. (a) Square – 4
(b) Rectangle – 2
(c) Rhombus – 2
(d) Circle: Infinite number
(e) Isosceles triangle – 1
2. (a) Scalene triangle – None
(b) Semi-circle – 1
(c) Regular pentagon – 5
(d) Regular hexagon – 6
(e) Trapezium – 1 if it is an isosceles trapezium
3. (a) Equilateral triangle – 3
(b) Parallelogram – None
(c) Kite – 1
(d) Octagon – 8
(e) Decagon – 10
4. A circle has infinite lines of symmetry.
- D.
- Copybook work
- E.
1. Copybook work
2. Copybook work

Topic 8: 2D Shapes Page 57

- A.
- | | Tessellate? |
|-----------------------|-------------|
| Square | Yes |
| Rectangle | Yes |
| Rhombus | Yes |
| Parallelogram | Yes |
| Trapezium | Yes |
| Circle | No |
| Semi-circle | No |
| Equilateral triangle | Yes |
| Isosceles triangle | Yes |
| Scalene triangle | Yes |
| Right-angled triangle | Yes |
| Regular pentagon | No |
| Regular hexagon | Yes |
| Regular heptagon | No |
| Regular octagon | No |
| Regular nonagon | No |
| Regular decagon | No |
| Oval | No |

- B.
- Honeycomb
Roman mosaic tiling
Stained glass windows
Floor/wall tiles
- C.
1. Hexagons and equilateral triangles
2. Octagons and squares
3. Triangles, octagons, hexagons, squares
4. Octagons, squares, hexagons
- D.
- Teacher Check
- E.
- Teacher Check

Topic 8: 2D Shapes Page 58

- A.
- Line of symmetry** – an imaginary

line which divides a shape into two perfect halves which fit exactly on top of one another when folded.

B.

1. Triangles

- Equilateral triangle
- Isosceles triangle
- Scalene triangle
- Right-angled triangle

2. Polygons

- Trapezium
- Hexagon
- Pentagon
- Heptagon
- Octagon
- Rhombus
- Square
- Triangle

Rectangle

3. Quadrilaterals – polygons with 4 sides

- Rectangle
- Square
- Rhombus
- Parallelogram
- Trapezium

4. Rectangle

5. Rhombus

C.

1. creative (making tessellations)
2. Teacher Check
3. (a) Teacher Check
(b) Teacher Check
4. Teacher Check
5. Teacher Check

D.

1. Closed/straight
2. Isosceles
3. Nonagon
4. Line of symmetry
5. 4

E.

Class work

Topic 9: Fractions 2 Page 59

B.

1. (a) $\frac{1}{4}$ (b) $\frac{1}{3}$ (c) $\frac{8}{15}$ (d) $\frac{9}{28}$
(e) $\frac{4}{15}$
2. (a) $\frac{9}{16}$ (b) $\frac{35}{66}$ (c) $\frac{2}{3}$ (d) $\frac{35}{72}$
(e) $\frac{63}{88}$
3. (a) $\frac{5}{21}$ (b) $\frac{33}{48}$ (c) $\frac{5}{8}$ (d) $\frac{56}{99}$
(e) $\frac{5}{22}$

C.

1. $\frac{1}{6}$ 2. $\frac{10}{27}$ 3. $\frac{4}{21}$ 4. $\frac{9}{14}$
5. $\frac{8}{77}$

D.

1. (a) $\frac{4}{9}$ (b) $\frac{3}{7}$ (c) $\frac{5}{7}$ (d) $\frac{2}{5}$
(e) $\frac{2}{11}$

2. (a) $\frac{4}{9}$ (b) $\frac{5}{7}$ (c) $\frac{3}{8}$ (d) $\frac{8}{11}$
(e) $\frac{1}{4}$

3. (a) $\frac{5}{18}$ (b) $\frac{2}{9}$ (c) $\frac{5}{14}$ (d) $\frac{2}{13}$
(e) $\frac{3}{11}$

Topic 9: Fractions 2 Page 60

A.

1. (a) 18 minutes (b) 48m
(c) 95kg (d) 162
(e) 87
2. (a) 114 (b) 212
(c) 1,092 (d) 1,761

B.

1. €1,630, €4,890 2. 72
3. €210

C.

1. (a) 56 (b) 72 (c) 99 (d) 65
(e) 48
2. (a) 1,210 (b) 260
(c) 192 (d) 1,680
(e) 1,460
3. (a) 378 (b) 1,113 (c) 240 (d) 572
(e) 732

D.

1. €18 2. 32 3. 864
4. Mary collected 126
Martin collected 98

Topic 9: Fractions 2 Page 61

A.

1. (a) 4 (b) 8 (c) 12
2. (a) 9 (b) 12 (c) 15
3. (a) 16 (b) 20 (c) 24

B.

1. (a) 24 (b) 21 (c) 20 (d) 16
(e) 30
2. (a) 12 (b) 15 (c) 20 (d) 24
(e) 27
3. (a) 20 (b) 18 (c) 10 (d) 28
(e) 55

C.

1. 12 2. 9 3. 48

D.

1. (a) $\frac{1}{2}$ (b) $\frac{1}{3}$ (c) $\frac{2}{3}$
2. (a) $\frac{1}{2}$ (b) $\frac{1}{5}$ (c) $\frac{1}{10}$
3. (a) $\frac{1}{2}$ (b) $\frac{1}{10}$ (c) $\frac{1}{4}$

E.

1. Both equal 2. $1\frac{1}{2}$ hours

Topic 9: Fractions 2 Page 62

A.

1. €31.50 2. 80
3. 54 4. 1,325
5. €70.40 6. €12.50
7. €4.50 8. €110
9. €36

B.

1. 12 apples for €2.64
2. 9 batteries for €10.62
3. 18 packs of popcorn for €4.32

4. 1.5kg of ice cream for €5.50
5. 1.25 litres of orange for €2.20

C.

1. 70 2. 80

Topic 9: Fractions 2 Page 63

A.

Divide the numerator and denominator by the highest number that can divide into both numbers evenly.

B.

1. (a) $\frac{1}{3}$ (b) $\frac{2}{7}$ (c) $\frac{1}{2}$ (d) $\frac{2}{3}$
2. (a) $7\frac{7}{12}$ (b) $14\frac{7}{15}$ (c) $3\frac{1}{3}$ (d) $\frac{1}{28}$
3. (a) $\frac{7}{27}$ (b) $\frac{4}{35}$
(c) 2,268 (d) 1,904km
4. (a) 60 (b) 1,080 (c) $\frac{5}{36}$ (d) $\frac{1}{6}$

C.

1. €40 2. €5 3. 21 4. 30
5. 16

D.

1. Numerator 2. Invert
3. Divide 4. Denominator
5. Top

E.

1. 60 2. €90 3. €30

Topic 10: Decimals Page 64

B.

- 1st Chloe
- 2nd Grace
- 3rd Aidan
- 4th Kate
- 5th Shane

C.

1. (a) 0.46cm, 0.5cm, 2cm
(b) 0.128, 0.5, 0.87
(c) 0.649, 2, 2.72
2. (a) 4.361, 4.86, 5.9
(b) 4.83, 4.869, 4.89
(c) 5, 5.64, 5.853
3. (a) 4.281kg, 4.468kg, 4.5kg
(b) 9.35, 9.4, 9.853
(c) 7.512m, 7.65m, 8m

D.

1. (a) (i) 6.8, 6, 0.68 (ii) 6.12
(b) (i) 5, 4.72, 4.7 (ii) 0.30
(c) (i) 3.824, 3.82, 3 (ii) 0.824
(d) (i) 5.69, 3.85, 3.678 (ii) 2.012
(e) (i) 34.89, 3.489, 3.4 (ii) 31.49
(f) (i) 6,342, 634.2, 63.42 (ii) 6,278.58

E.

1. (a) 3 (b) $\frac{7}{100}$ (c) $\frac{9}{10}$ (d) $\frac{8}{1000}$
(e) $\frac{4}{10}$
2. (a) $\frac{49}{1000}$ (b) $\frac{38}{100}$ (c) $\frac{93}{1000}$ (d) 4
(e) $\frac{92}{100}$

Topic 10: Decimals Page 65

A.

1. (a) $\frac{1}{10}$ (b) $\frac{7}{10}$ (c) $\frac{16}{100}$ or $\frac{4}{25}$

- (d) $\frac{78}{100}$ or $\frac{39}{50}$ (e) $\frac{749}{1000}$
 2.(a) $\frac{602}{1000}$ or $\frac{301}{500}$ (b) $6\frac{3}{5}$ or $6\frac{6}{10}$ or $\frac{33}{5}$
 (c) $5\frac{3}{100}$ or $\frac{503}{100}$
 (d) $4\frac{5}{1000}$ or $4\frac{1}{200}$ or $\frac{801}{200}$ or $\frac{4005}{1000}$
 (e) $3\frac{266}{1000}$ or $3\frac{133}{500}$ or $\frac{1633}{500}$ or $\frac{3266}{1000}$

B.

- 1.(a) $\frac{3}{5}$ (b) $\frac{2}{5}$ (c) $\frac{3}{20}$
 (d) $1\frac{1}{10}$ or $\frac{11}{10}$ (e) $3\frac{1}{4}$ or $\frac{13}{4}$
 2.(a) $\frac{1}{40}$ (b) $\frac{5}{8}$ (c) $\frac{71}{200}$
 (d) $2\frac{7}{8}$ or $\frac{23}{8}$ (e) $3\frac{19}{40}$ or $\frac{139}{40}$
 3. (a) $2\frac{13}{20}$ or $\frac{53}{20}$ (b) $3\frac{9}{50}$ or $\frac{159}{50}$
 (c) $6\frac{17}{200}$ or $\frac{1217}{200}$ (d) $2\frac{6}{25}$ or $\frac{56}{25}$
 (e) $6\frac{21}{25}$ or $\frac{171}{25}$

C.

- 1.(a) 0.3 (b) 0.06
 (c) 0.009 (d) 0.67
 (e) 0.034 (f) 0.127
 (g) 0.742
 2.(a) 2.799 (b) 6.642
 (c) 8.74 (d) 5.082
 (e) 6.9 (f) 7.46
 (g) 2.089

D.

- 1.(a) 0.5 (b) 0.25 (c) 0.2 (d) 0.75
 (e) 0.4 (f) 0.6 (g) 0.3
 2.(a) 0.15 (b) 0.05 (c) 0.08 (d) 0.35
 (e) 0.12 (f) 0.375 (g) 0.80

E.

1. $\frac{3}{25} \rightarrow 0.12$
 $\frac{1}{5} \rightarrow 0.2$
 $\frac{2}{100} \rightarrow 0.02$
 $\frac{1}{20} \rightarrow 0.05$
 $\frac{9}{50} \rightarrow 0.18$
 $\frac{7}{20} \rightarrow 0.35$
 2. 0.8
 0.744
 0.45
 0.4
 3.(a) $\frac{744}{100}$ (b) $\frac{2}{100}$ (c) 0.8 (d) 0.02

Topic 10: Decimals Page 66

A.

1. (a) Three Units
 (b) Three Tenths
 (c) Eight Thousandths
 (d) Four Hundredths
 (e) One Unit
 2. (a) Nine Thousandths
 (b) Three Tenths
 (c) Nine Hundredths and Three Thousandths
 (d) Seven Tenths
 (e) Nine Tenths and Two Hundredths

3. (a) Five Hundredths and Nine Thousandths
 (b) Three Tenths and Eight Hundredths
 (c) Nine Tenths and Two Hundredths
 (d) Five Hundredths
 (e) Six Hundredths and Four Thousandths

B.

1. (a) Three Units
 (b) Three Hundred
 (c) Three Tenths
 (d) Three Units
 (e) Three Hundredths
 2. (a) Three Thousandths
 (b) Three Hundredths
 (c) Three Tenths
 (d) Three Hundredths
 (e) Three Thousandths

C.

- 1.(a) 20.24 (b) 17.59
 (c) 25.24
 2.(a) 29.89 (b) 533.067
 (c) 40.844
 3.(a) 50.614 (b) 409.36
 (c) 399.947

D.

1. (a) 2.35 (b) 13.06
 (c) 14.18
 2. (a) 213.93 (b) 794.255
 (c) 608.92
 3. (a) 25.161 (b) 520.829
 (c) 144.48

E.

1. 3.32m
 2. 1.935kg
 3. 28.3°C

F.

Magic Squares

31.16	36.64	32.20
3.76	48.64	47.60
65.08	14.72	20.20

Topic 10: Decimals Page 67

A.

- 1.(a) 5 (b) 5 (c) 10 (d) 6
 (e) 77
 2.(a) 4 (b) 895 (c) 833 (d) 68
 (e) 457

B.

- 1.(a) 7.9 (b) 9.4 (c) 8.6 (d) 2.8
 (e) 8.4
 2.(a) 7.5 (b) 2.7 (c) 95.6 (d) 83.5
 (e) 28.4

C.

- 1.(a) 3.78 (b) 5.44 (c) 9.38 (d) 7.95
 (e) 4.64
 2.(a) 7.36 (b) 7.43 (c) 4.87 (d) 3.68
 (e) 4.38

D.

1. €568.88 2. €765.95
 3. €463.85 4. €853.90
 5. €874.37

E.

- 1.(a) 0.83 (b) 0.43 (c) 0.67 (d) 0.58
 (e) 0.22
 2.(a) 0.86 (b) 0.73 (c) 0.17 (d) 0.17
 (e) 0.04
 3.(a) 0.36 (b) 0.16 (c) 0.21 (d) 0.27
 (e) 0.15

Topic 10: Decimals Page 68

A.

Look at any numbers after the decimal point. Working from right to left, change any number from 5 to 9 to the next number up. Change any number from 0 to 4 to the next number down. Continue changing the number up or down until you get to a single number after the decimal point. That number is the "one decimal place".

B.

1. 648.1, 262.827, 242.32, 39.040, 18.309
 2. (a) (i) 74.6
 (ii) 74.63
 (b) (i) 386.7
 (ii) 386.71
 (c) (i) 673.9
 (ii) 673.90
 (d) (i) 936.7
 (ii) 936.73
 3. (a) 879.54 (b) 40.5
 4. (a) Seven Hundredths
 (b) One Thousandth
 (c) Six Tenths

5.

- (a) $\frac{3}{5}$ (b) $\frac{2}{5}$ (c) $\frac{56}{100}$ or $\frac{14}{25}$
 (d) $\frac{19}{40}$ (e) $\frac{8539}{1000}$ or $8\frac{539}{1000}$
 (f) $\frac{4603}{1000}$ or $4\frac{603}{1000}$ (g) $\frac{5}{1}$

C.

1. €11.56
 2. 21.32km
 3. 9.45m
 4. 162.342m

D.

1. two decimal 2. line
 3. zero 4. tenths
 hundredths
 thousandths

E.

Teacher Check

Topic 11: Numbers Page 69

B.

1. 19, 7, 11, 23, 37
 2. (a) 2, 3, 5, 7
 (b) 23, 29
 (c) 47, 49, 53
 (d) 11, 13, 17, 19
 3. 2 is the only even prime number as no number can be divided evenly into 2. All other even numbers are divisible by 2.
 4. (a) 8 trays of 6 yoghurts = 48
 6 trays of 8 yoghurts = 48
 (b) 48 strawberry and 48 toffee yoghurts = 96 altogether

- C.**
 1. $23 (2 + 3 = 5)$
 2. 67
 3. $73 / 37$

- D.**
 1. (a) 33 – composite
 (b) 67 – prime
 (c) 13 – prime
 (d) 45 – composite
 (e) 97 – prime
 (f) 5 – prime
 (g) 2 – prime
 (h) 28 – composite
 (i) 38 – composite
 (j) 69 – composite
 (k) 84 – composite
 (l) 147 – composite
 (m) 268 – composite
 2. Yes

Topic 11: Numbers Page 70

- A.**
 1.(a) 49 (b) 81 (c) 4 (d) 36
 (e) 144 (f) 100 (g) 16 (h) 121
 (i) 64 (j) 25 (k) 9
 2.(a) Yes (b) No (c) Yes (d) Yes
 (e) No (f) Yes (g) Yes (h) No
 (i) No (j) Yes (k) Yes

- B.**
 1.(a) 85 (b) 13 (c) 100
 2.(a) 576 (b) 1,225 (c) 1,521 (d) 2,116
 (e) 3,364 (f) 5,329 (g) 7,056 (h) 5,776

- C.**
 All angles must add up to 180° :
 $8^2 = 64$
 $10^2 = 100$
 $4^2 = 16$

- D.**
 1.(a) 8 (b) 7 (c) 1 (d) 2
 (e) 5 (f) 10 (g) 9 (h) 6
 (i) 5 (j) 4 (k) 3 (l) 2
 2.(a) 18 (b) 17 (c) 16 (d) 19
 (e) 24 (f) 23

Challenge Yourself!

1. $36 + 25$
 2. $15 (64 - 49)$

Topic 11: Numbers Page 71

- A.**
 1.(a) 16 (b) 32 (c) 64 (d) 216
 (e) 125 (f) 81 (g) 343
 2.(a) 36 (b) 48 (c) 16

- B.**
 $10^2 = 100$
 $10^3 = 1,000$
 $10^4 = 10,000$
 $10^5 = 100,000$
 $10^6 = 1,000,000$
 $10^7 = 10,000,000$
 $10^8 = 100,000,000$
 $10^9 = 1,000,000,000$
 $10^{10} = 10,000,000,000$
 The number of zeros in the answer

is exactly the same number as the exponent
 $10^2 = 100$
 $10^3 = 1,000$

- C.**
 1. 6
 2.(a) 12 (b) 18 (c) 24
 3. (a) 12

(b)

1	2	3	4	5
12	24	36	48	60

- (c) Counting up in jumps of 12
 (d) 48
 4. (a) 3, 6, 9, 12, 15, 18
 (b) 4, 8, 12, 16, 20, 24
 (c) 5, 10, 15, 20, 25, 30
 (d) 7, 14, 21, 28, 35, 42
 (e) 8, 16, 24, 32, 40, 48
 (f) 9, 18, 27, 36, 45, 54
 (g) 10, 20, 30, 40, 50, 60
 (h) 100, 200, 300, 400, 500, 600
 (i) 25, 50, 75, 100, 125, 150
 (j) 20, 40, 60, 80, 100, 120

- D.**
 1. 100 square – shade in the following boxes:
 3, 6, 9, 12, 15, 18, 21, 24, 27, 30,
 33, 36, 39, 42, 45, 48, 51, 54, 57,
 60, 63, 66, 69, 72, 75, 78, 81, 84,
 87, 90, 93, 96, 99
 2. 4, 8, 12, 16, 20, 24, 28, 32, 36, 40,
 44, 48, 52, 56, 60, 64, 68, 72, 76,
 80, 84, 88, 92, 96, 100
 3. 12, 24, 36, 48, 60, 72, 84, 96
 4. 12

- E.**
 1. 5, 10, 15, 20, 25, 30, 35, 40, 45, 50
 10, 20, 30, 40, 50, 60, 70, 80, 90, 100
 Common multiples: 10, 20, 30, 40, 50
 LCM: 10
 2. 8, 16, 24, 32, 40, 48, 56, 64, 72, 80
 6, 12, 18, 24, 30, 36, 42, 48, 54, 60
 Common Multiples: 24, 48
 LCM: 16
 3. 7, 14, 21, 28, 35, 42, 49, 56, 63, 70
 8, 16, 24, 32, 40, 48, 56, 64, 72, 80
 Common multiples: 56
 LCM: 56
 4. 5, 10, 15, 20, 25, 30, 35, 40, 45, 50
 6, 12, 18, 24, 30, 36, 42, 48, 54, 60
 Common multiples: 30
 LCM: 30
 5. 7, 14, 21, 28, 35, 42, 49, 56, 63, 70
 5, 10, 15, 20, 25, 30, 35, 40, 45, 50
 Common Multiples: 35
 LCM: 35

Topic 11: Numbers Page 72

- A.**
 1. (a) 1, 2, 3, 4, 5, 6, 12
 (b) 1, 2, 11, 22
 (c) 1, 2, 4, 8, 16
 (d) 1, 2, 4, 5, 10, 20

- (e) 1, 2, 3, 4, 6, 8, 12, 24
 2. (a) 1, 2, 13, 26
 (b) 1, 2, 4, 7, 14, 28
 (c) 1, 2, 3, 4, 6, 9, 12, 18, 36
 (d) 1, 2, 4, 5, 8, 10, 20, 40
 (e) 1, 2, 7, 8, 14, 28, 56

- B.**
 1. 1, 2, 3, 4, 6, 8, 12, 16, 24, 48
 2. (a) $(1 \times 10), (2 \times 5)$
 (b) $(1 \times 20), (2 \times 10), (4 \times 5)$
 (c) $(1 \times 8), (2 \times 4)$
 (d) $(1 \times 12), (2 \times 6), (3 \times 4)$
 (e) $(1 \times 16), (2 \times 8), (4 \times 4)$
 (f) $(1 \times 24), (2 \times 12), (3 \times 8), (4 \times 6)$
 (g) $(1 \times 28), (2 \times 14), (4 \times 7)$
 (h) $(1 \times 32), (2 \times 16), (4 \times 8)$

- C.**
 1. False 2. True 3. False 4. False

- D.**
 1. 1, 2, 3, 6
 1, 2, 4, 8
 Common factors: 1, 2

2. 1, 7
 1, 3, 9
 Common factors: 1

3. 1, 2, 5, 10
 1, 3, 5, 15
 Common factors: 1, 5

4. 1, 2, 4, 5, 10, 20
 1, 2, 3, 4, 6, 8, 12, 24
 Common factors: 1, 2, 4

5. 1, 2, 4, 6, 12
 1, 2, 3, 6, 9, 18
 Common factors: 1, 2, 6

6. 1, 2, 4, 7, 14, 28
 1, 29
 Common factors: 1

7. 1, 2, 3, 4, 6, 8, 12, 16, 24, 48
 1, 2, 31, 62
 Common factors: 1, 2

- E.**
 1.(a) 4 (b) 2 (c) 5 (d) 12
 (e) 2 (f) 6 (g) 9
 2.(a) 7 (b) 7 (c) 2 (d) 6
 (e) 1 (f) 9 (g) 4

Topic 11: Numbers Page 73

- A.**
Prime number – a number that can only be divided by itself and one
Composite number – a number with more than two factors
Square number – a number that results from multiplying another number by itself, e.g. $25 = 5 \times 5$
Square root – a number that, when multiplied by itself, equals the number.

- B.**
 1. 50
 2. 2
 3. (1, 56), (2, 28), (4, 14), (7, 8)
 4. 7

5. 10,000
 6. 1
 7. 2, 3, 5, 7
 8. 15, 16, 18
 9. (a) 4 (b) 64
 10. 12, 14, 15, 16, 18
 11. 4, 8, 12, 16, 20, 24, 28, 32, 36, 40
 12. 61

C.

1. 3, 6, 9, 12, 15, 18, 21, 24, 27, 30
 7, 14, 21, 28, 35, 42, 49, 56, 63, 70
 LCM: 21
 2. 10^8 3. 12m 4. 10^7

D.

1. True 2. False 3. True 4. True
 5. False 6. True 7. True

E.

1. $2 + 3$
 2. $61 = 5^2 + 6^2$

Sam's Mini-Market Service Station
Pages 74 and 75

1. (a) Pump 1 €907.20
 Pump 2 €1,044.32
 Pump 3 €926.10
 (b) €12.20
 (c) €1.20
 (d) Pump 1 – 155.073 litres
 Pump 2 – 2,294.662 litres
 Pump 3 – 1,751.21 litres
 (e) Pump 1 – 155.07 litres
 Pump 2 – 2,294.66 litres
 2. (a) $\frac{1}{9}$ (b) (i) $\frac{2}{5}$ (ii) $\frac{3}{5}$
 (c) $\frac{3}{8}, \frac{3}{20}, \frac{1}{5}$ (d) $\frac{1}{20}$
 (e) Firewood – $\frac{1}{9}$
 Peat – $\frac{1}{8}$
 Coal – $\frac{1}{6}$
 3. (a) $4 (4 \times \frac{3}{4})$
 (b) $6 (\frac{1}{4} + \frac{1}{3} + \frac{1}{2} + \frac{3}{4}) = 1\frac{5}{6} (+ \frac{1}{2} + \frac{3}{4})$
 = 3.08 litres
 (c) $\frac{3}{4}$ litres $\times 4$
 (d) 8 packs of forks and 3 packs of plates to give 120 of each.
 (e) 16 packs of forks and 6 packs of plates to give 240 of each.

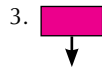
Mental Maths 3
Pages 76 and 77

A.

1. 1.44 2. 6.629 3. 4 4. No
 5. 12, 14, 15, 16, 18
 6. €36 7. $4\frac{5}{8}$
 8. 7 9. Obtuse 10. 95°
 11. Scalene 12. 11, 13, 17, 19
 13. 48 14. 14 15. Parallelogram

B.

1. 53 2. 0.067



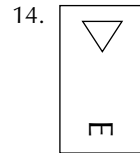
3. 0.4, 0.35, 0.2, 0.15
 5. Yes 6. 0.48 7. $\frac{8}{100}$ 8. 31, 37
 9. Kite 10. 25, 16, 9 11. 9
 12. 20 13. True 14. 32
 15.



C.

1. No 2. 4.65 3. 480mm
 4. $+$ \times 5. 2 6. 60% 7. 0.375
 8. 64 9. 3^5 10. 9 11. 27

12. 2.1 or 2.10 13. $\frac{5}{10}, \frac{2}{6}, \frac{1}{4}, \frac{1}{6}$



15. Scalene triangle

D.

1. Parallel 2. 7.34 3. 1.965 4. 6
 5. 125 6. 41 7. $\frac{3}{8}$ 8. 36
 9. 0.57 10. 8

Topic 12: Multiplication 2
Page 78

B.

1. (a) 2.80 (b) 0.15
 (c) 3.50 (d) 0.48
 2. (a) 22.40 (b) 21.60
 (c) 13.50 (d) 1.44
 3. (a) 33.50 (b) 34.30
 (c) 5.84 (d) 2.67
 4. (a) 6.44 (b) 68.40
 (c) 44.80 (d) 2.16
 5. (a) 3.44 (b) 41.60
 (c) 8.70 (d) 13.40

C.

1. €23.85 2. 10.35m
 3. 1.38m 4. €224.55
 5. 11.25m 6. 49.44sec

D.

Challenge Yourself!

106.20 sec

Topic 12: Multiplication 2
Page 79

A.

1. (a) 38.86 (b) 44.52
 (c) 23.04 (d) 43.71
 2. (a) 555.90 (b) 344.96
 (c) 624.00 (d) 689.12
 3. (a) 4,968.25 (b) 5,359.66
 (c) 4,642.56 (d) 2,328.50

B.

1. €535.05 2. 396.72
 3. 373.87 4. €1,236.75
 5. 1,560km

C.

1. Cars €147.00
 4 Axle Lorries €117.60
 6 Axle Lorries €136.80
 Vans €109.20
 2. €510.60
 3. An extra 100 cars. Reasons: 100 extra cars earns the most money for toll bridges.
 4. €536.13

Topic 12: Multiplication 2
Page 80

A.

1. (a) 67.32 (b) 36.27
 (c) 18.85 (d) 17.045
 2. (a) 35.722 (b) 61.07
 (c) 39.79 (d) 2.0025
 3. (a) 28.925 (b) 69.112
 (c) 63.232 (d) 21.528
 4. (a) 24.408 (b) 66.156
 (c) 45.234 (d) 48.195

B.

1. 3,060 metres 2. $\frac{1}{2}$
 3. 39.37kg 4. 210 metres
 5. 61.275km/hr 6. 3,427.71kg

C.

1. (a) 54.72 (b) 311.32
 (c) 8,374.20
 2. (a) 0.441 (b) 1.20
 (c) 16.2222
 3. (a) 6,215.28 (b) 6.30
 (c) 72.30

D.

Answer: $8 (119 \div 0.50) \div 7 \div 4.25$

Topic 12: Multiplication 2
Page 81

A.

1. 133.4m
 2. $535.31m^2$
 3. 96.4m
 4. (a) 597m (b) 2,985m
 5. 12,217.50m or 12.2175km
 6. 878.13m

B.

Answer: 6

Topic 12: Multiplication 2
Page 82

A.

Product means to multiply
 Example: the product of 8 and 4 = $8 \times 4 = 32$

B.

1. (a) 204.624 (b) 367.50
 (c) 317.52
 2. (a) 40.232 (b) 571.404
 (c) 36.162
 3. (a) 423.90 (b) 208.98
 (c) 214.20
 4. (a) 40.80 (b) 552.00
 (c) 547.95

C.

- 201.92 litres
- 850km
- 84.37kg
- €559.50
- (a) 30.08m (b) €45.12

D.

- point (b) right
- zero (b) times
- perimeter

E.

	Kg of Apples	Kg of Bananas
Sales for the day	8.69	7.66
Total sales in €	€43.45	€22.98

	Kg of Oranges	Kg of Grapes
Sales for the day	3.08	12.28
Total sales in €	€18.48	€98.24

- Grapes brought in the most money
- Oranges brought in the least money

Topic 13: Length Page 83

B.

- (a) km (b) metres (c) cm
- (a) millimetres (b) centimetres (c) centimetres
- (a) km (b) metres (c) km (d) centimetres

C.

- Teacher Check
- (a) 3 (b) 5 (c) 15 (d) 12 (e) 6 (f) 7 (g) 14 (h) 9

D.

- 5cm 9mm (b) 12cm 5mm
- 41cm 4mm (b) 5cm 2mm
- 20cm 8mm (b) 22cm 8mm

Topic 13: Length Page 84

A.

- (a) 114m (b) 15m 20cm (c) 410m (d) 27m 40cm
- 14.4m
- (a) 45m (b) 2m 34cm 5mm
- 90m (b) 10.05km
- 90m (b) €840

B.

- 10cm (b) 7.5cm
- 11cm (b) 11cm
- 10cm (b) 11.5cm

Challenge Yourself!

- 34m (b) 105m

Topic 13: Length Page 85

A.

- (a) 3.8cm (b) 1.8cm (c) 6.8cm (d) 1.7cm (e) 5.6cm (f) 2.7cm
- (a) 30mm (b) 7 mm (c) 25mm (d) 74mm (e) 380mm (f) 480mm
- (a) 1.14m (b) 1.48m

- 1.56m (d) 7.42m (e) 8.03m (f) 9.14m

B.

- (a) 116cm (b) 283cm (c) 309cm (d) 1,138cm (e) 2,968cm (f) 7,823cm
- (a) 0.085km (b) 0.156km (c) 0.562km (d) 1.584km (e) 5.853km (f) 10.126km
- (a) 256m (b) 458m (c) 1,247m (d) 10,254m (e) 17,554m (f) 704,554m

C.

- (a) $\frac{19}{100}$ m, 0.19m (b) $\frac{29}{100}$ m, 0.29m (c) $\frac{95}{100}$ m, 0.95m (d) $\frac{145}{100}$ m, 1.45m (e) $\frac{157}{100}$ m, 1.57m (f) $\frac{752}{100}$ m, 7.52m
- (a) $\frac{1058}{100}$ m, 10.58m (b) $\frac{5545}{100}$ m, 55.45m (c) $\frac{2}{100}$ m, 0.02m (d) $\frac{39}{100}$ m, 0.39m (e) $\frac{78}{100}$ m, 0.78m (f) $\frac{9}{100}$ m, 0.09m

D.

- (a) $\frac{125}{1000}$ km, 0.125km (b) $\frac{265}{1000}$ km, 0.265km (c) $\frac{354}{1000}$ km, 0.354km (d) $\frac{555}{1000}$ km, 0.555km (e) $\frac{854}{1000}$ km, 0.854km (f) $\frac{1065}{1000}$ km, 1.065km
- (a) $\frac{3569}{1000}$ km, 3.569km (b) $\frac{5549}{1000}$ km, 5.549km (c) $\frac{7854}{1000}$ km, 7.854km (d) $\frac{8652}{1000}$ km, 8.652km (e) $\frac{528}{1000}$ km, 0.528km (f) $\frac{491}{1000}$ km, 0.491km

E.

- 700m (b) 50m (c) 4m (d) 3,005m (e) 6,065m

F.

- 73cm 6mm, $73\frac{6}{10}$ cm, 73.6cm
- 638mm, $63\frac{8}{10}$ cm, 63.8cm

G.

- (a) 2.7cm (b) 7.4cm (c) 7.6cm (d) 12.6cm
- (a) 0.84cm (b) 12.3cm

Topic 13: Length Page 86

A.

- (a) 3cm (b) 5cm 4mm (c) 4cm (d) 23cm 8mm (e) 33cm 5mm (f) 16cm
- (a) 12 km 870m (b) 2 km 880m (c) 272m (d) 4 km 886m (e) 4 km 887m (f) 360m
- (a) 1m 12cm (b) 6m 02cm (c) 1m 29cm (d) 2m 6cm (e) 6m 54cm (f) 2m 6cm
- (a) 2 km 452m (b) 3 km 484m (c) 3 km 983m (d) 3cm 6mm (e) 2cm 6mm (f) 5cm 5mm

B.

Kitchen

- 5cm – 5 metres (b) 4cm – 4 metres
- 4cm – 4 metres (b) 1cm – 1 metre
- 3 metres – $\frac{1}{2}$ metre

B.

- 30cm so model railway engine is 600cm in real length.
- 25cm so model railway carriage is 500cm in real length.
- 70cm so model railway track is 1,400cm in real length.

C.

Teacher Check

Topic 13: Length Page 87

A.

Scale

The ratio of the length in a drawing to the length of the real thing. Scales are used for:

- maps
- architect drawings
- atlas
- house plans
- auctioneer drawings

B.

- (a) 4m (b) 2m 80cm
- (a) 45m 98cm (b) 15km 200m
- (a) 2km 27m (b) 44.832m (c) 14.4km
- (a) 54m 22cm (b) 83.6km
- (a) 29m 70cm (b) 38km 700m
- 86.54585km
- (a) 2.9cm (b) 4.1cm (c) 3.5cm

C.

- 24 metres (b) 20 metres
- 4m 5cm (b) 255m
- 30km (b) 3m 75cm

D.

- millimetres (b) perimeter
- measuring tape (b) metre
- kilometres

E.

- Yes – 1.4cm
- Measuring the straight line with a ruler

Topic 14: Division 2 Page 88

- B.**
 1.(a) 23 (b) 26 (c) 42 (d) 126
 2. (a) 5-02 (b) 1-03
 (c) 0-59 (d) 1-25
 3.(a) 14 (b) 19 (c) 29 (d) 15
 4.(a) 47 (b) 26 (c) 18 (d) 32

- C.**
 1. 27 weeks
 2. 13 buses
 3. 18 muffins

- D.**
 1.(a) 5-20 (b) 5-20 (c) 4-90
 2.(a) 8-90 (b) 5-50 (c) 4-70
 3. (a) 24-50 (b) 28-40
 (c) 17-60

- E.**
 1. €2-23 per set 2. 7-74g
 3. 1-60kg 4. 26-60 times
 5. 52-60 6. 15
 7. 180 copies 8. 14 swimmers
 9. 82

Topic 14: Division 2 Page 89

- A.**
 1.(a) 9 (b) 7 (c) 14 (d) 14
 2.(a) 3-9 (b) 6-23 (c) 5-6 (d) 4-6
 3.(a) 1-5 (b) 56-2 (c) 14-3 (d) 156-3
 4.(a) 50-0 (b) 50-0 (c) 60-0 (d) 120-0

- B.**
 1. 157 2. 323 3. 422

- C.**
 1.(a) 5-40 (b) 5-0 (c) 4-0 (d) 4
 2.(a) 15 (b) 14 (c) 16 (d) 13
 3.(a) 9 (b) 10-375
 (c) 9-0 (d) 9-0
 4.(a) 8-5 (b) 13-20 (c) 8-6 (d) 152-2
 5. 44

Topic 14: Division 2 Page 90

- A.**
 1.(a) 52-50 (b) 22-60
 (c) 25-60 (d) 6-90
 2.(a) 11-65 (b) 41-0
 (c) 74-00 (d) 98-00
 3.(a) 98-00 (b) 85-00
 (c) 84-00 (d) 92-00
 4.(a) 78-00 (b) 95-50
 (c) 95-00 (d) 76-50

- B.**
 1. 26
 2. 113 bottles
 3. 89 bags

- C.**
 $8,500 \div 25 = 340 \div 8-5 = 40 \div 0-25 = 160$

$$\begin{array}{r} \div \\ 125 \\ = \\ 68 \\ \div \\ 2-125 \\ = \\ 32 \div 0-80 = 40 \div 0-50 = 80 \div 1-25 = 64 \\ \div \\ 0-20 \\ = \\ 160 \div 3-2 = 50 \div 1-25 = 40 \div 0-80 = 50 \end{array}$$

Topic 14: Division 2 Page 91

- A.**
 1. Germany-5-676, Russia-5-696,
 Great Britain-5-698, France 5-722,
 Ireland 5-758
 2. Judge 1-5-85, Judge 2-5-69,
 Judge 3-5-59, Judge 4-5-94,
 Judge 5-5-48
 3. Ireland - Gold
 France - Silver
 Great Britain - Bronze
 4. Yes
 Ireland - Gold
 France - Silver
 Russia - Bronze
 5. Germany 4-43
 Russia 4-38
 Great Britain - 4-60
 France - 4-54
 Ireland - 4-50

- B.**
 Across
 2. 148 hours
 4. 185-60 seconds
 5. 22-6
 Down
 1. 28
 2. 1-6kg
 3. €987-75
 5. 24

Topic 14: Division 2 Page 92

- A.**
Divisor – the number that is doing the dividing
Dividend – the number being divided

- B.**
 1. (a) 15-86 (b) 2
 (c) 82 (d) 52
 2. (a) 8 (b) 52
 (c) 16-70 (d) 28-40

- C.**
 1. 285 batteries 2. 316 games
 3. 80 patients 4. 255 hours
 5. €2,450-00

- D.**
 1. False 2. False 3. True 4. True
 5. True

- E.**
 $\frac{1}{5}$

Topic 15: Percentages 1 Page 93

- B.**
 1. 3% / 97% 2. 9% / 91%
 3. 13% / 87% 4. 37% / 63%
 5. 59% / 41% 6. 61% / 39%
 7. 83% / 17% 8. 99% / 1%

- C.**
 1. (a) $\frac{19}{100}$ (b) $\frac{23}{100}$ (c) $\frac{9}{100}$ (d) $\frac{83}{100}$
 (e) $\frac{99}{100}$

- 2.(a) $\frac{71}{100}$ (b) $\frac{37}{100}$ (c) $\frac{43}{100}$ (d) $\frac{1}{4}$
 (e) $\frac{3}{4}$
 3.(a) $\frac{1}{10}$ (b) $\frac{3}{10}$ (c) $\frac{9}{10}$ (d) $\frac{2}{5}$
 (e) $\frac{4}{5}$

- D.**
 1.(a) 30% (b) 75% (c) 70% (d) 40%
 (e) 90%
 2.(a) 58% (b) 44% (c) 12% (d) 67%
 (e) 93%
 3.(a) 81% (b) 98% (c) 50% (d) 95%
 (e) 99-5%

Topic 15: Percentages 1 Page 94

- A.**
 1.(a) $\frac{9}{20}$ (b) $\frac{17}{20}$ (c) $\frac{3}{20}$ (d) $\frac{19}{20}$
 (e) $\frac{1}{20}$
 2.(a) $\frac{4}{5}$ (b) $\frac{1}{5}$ (c) $\frac{1}{10}$ (d) $\frac{3}{10}$
 (e) $\frac{9}{10}$
 3.(a) $\frac{1}{50}$ (b) $\frac{1}{25}$ (c) $\frac{3}{50}$ (d) $\frac{2}{25}$
 (e) $\frac{3}{25}$

- B.**
 1.(a) 19% (b) 63% (c) 93% (d) 7%
 (e) 4%
 2.(a) 36% (b) 52% (c) 84% (d) 2%
 (e) 14%
 3.(a) 22% (b) 46% (c) 98% (d) 5%
 (e) 15%
 4.(a) 55% (b) 85% (c) 95% (d) 30%
 (e) 70%

- C.**
 1.(a) $16\frac{2}{3}\%$ (b) $33\frac{1}{3}\%$
 (c) $66\frac{2}{3}\%$ (d) $14\frac{2}{7}\%$
 2. (a) $42\frac{6}{7}\%$ (b) $57\frac{1}{7}\%$
 (c) $85\frac{5}{7}\%$ (d) $12\frac{1}{2}\%$
 3. (a) $37\frac{1}{2}\%$ (b) $62\frac{1}{2}\%$
 (c) $87\frac{1}{2}\%$ (d) $11\frac{1}{5}\%$
 4. (a) $22\frac{2}{9}\%$ (b) $55\frac{5}{9}\%$
 (c) $88\frac{8}{9}\%$ (d) $9\frac{1}{11}\%$

- D.**
 1. 68% 2. $28\frac{4}{7}\%$ 3. 26% 4. $36\frac{4}{11}\%$
 5. 2-5% 6. 0-1%

- E.**
 1.(a) $\frac{1}{5}$ (b) $\frac{1}{10}$ (c) $\frac{1}{2}$ (d) $\frac{3}{4}$
 (e) $\frac{1}{20}$
 2.(a) 20% (b) 10% (c) 50% (d) 75%
 (e) 5%
 3.(a) 50% (b) $66\frac{2}{3}\%$
 (c) 75% (d) $16\frac{2}{3}\%$
 (e) $8\frac{1}{3}\%$

Topic 15: Percentages 1
Page 95

- A.**
1. (a) 24 (b) 9 (c) 9 (d) 9
(e) 12 (f) 9 (g) 6 (h) 7
2. (a) 14 (b) 33 (c) 28 (d) 22
(e) 27 (f) 28
3. (a) 231 (b) 285 (c) 123 (d) 124
(e) 17.3 (f) 169 (g) 114 (h) 242
(i) 125 (j) 782.25

- B.**
1. 1,602 standard models
2. 2,751 people

- C.**
1. (a) 260 (b) 354 (c) 609
2. (a) 43 (b) 149 (c) 267
3. (a) 112 (b) 53 (c) 119

- D.**
1. 18 (not 17 – more than 5% must be faulty)
2. 2,151 people

Topic 15: Percentages 1
Page 96

- A.**
1. (a) 66 (b) 88 (c) 143 (d) 308
(e) 495 (f) 1,650 (g) 1,782 (h) 5,016
(i) 8.8 (j) 28.6
2. (a) 25 (b) 35 (c) 55 (d) 100
(e) 125 (f) 475 (g) 915 (h) 1,680
(i) 8,885 (j) 26.25

- B.**
1. (a) 72 (b) 128 (c) 171 (d) 530
(e) 1,902 (f) 3,682
2. €6,420
3. (a) 27 (b) 54 (c) 99 (d) 144
(e) 180 (f) 243 (g) 342
4. 600g

- C.**
1. (a) 28 (b) 68 (c) 100 (d) 212
(e) 1,136 (f) 3,116
(g) 25.6
2. (a) 35 (b) 80 (c) 110 (d) 445
(e) 675 (f) 3,770
(g) 6,670
3. 2 hours 32 minutes

Topic 15: Percentages 1
Page 97

- A.**
Per cent = per one hundred

- B.**
1. (a) $\frac{7}{20}$ (b) $\frac{4}{25}$ (c) $\frac{13}{20}$ (d) $\frac{7}{25}$
(e) $\frac{49}{50}$ (f) $\frac{11}{50}$ (g) $\frac{8}{25}$
2. (a) 618 (b) 308 (c) $5\frac{1}{2}$ (d) 819
(e) $74\frac{1}{4}$ (f) 561
3. (a) 22 (b) 99 (c) 132 (d) 176
(e) 264 (f) 352 (g) 429
4. (a) 28 (b) 63 (c) 105 (d) 259
(e) 553 (f) 868 (g) 3,451

- C.**
1. 15.6km² 2. $\frac{42}{50}$ 84%

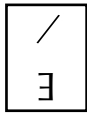
- D.**
1. True 2. False 3. False 4. True
- E.**
1. 24.2m 2. 10 litres

The Championship Games
Pages 98 and 99

1. (a) (i) $\frac{3}{10}$, 30%
 $\frac{1}{4}$, 25%
 $\frac{1}{5}$, 20%
(ii) $\frac{1}{4}$, 25%
(b) Soccer 15,000, $\frac{1}{10}$
Hockey 25%, $\frac{1}{4}$
Long Jump 22,500, $\frac{3}{20}$
High Jump 30,000, 20%
2. (a) 54km 408m 96cm
(b) 18km 136m 32cm
(c) 793m 80cm
3. (a) 28,252
(b) €24.45
(c) 42
(d) 8.16 metres
4. (a) Adult €105,765
Family €112,964.90
Children €3,861.20
(b) 14,850
(c) 6,500
(d) 62.764 minutes
(e) 57.624 litres

Mental Maths 4
Pages 100 and 101

- A.**
1. 2 2. Width
3. 0.03 4. 0.375
5. 38% 6. $\frac{60}{100} = \frac{6}{10} = \frac{3}{5}$
7. $\frac{1}{10}$ 8. 36.8cm
9. €4.14 10. €76
11. 28cm 12. 7
13. 5,060m 14. €64 and €32
15. 4

- B.**
1. 0.7 2. 42m
3. 0.08259 4. 18%
5. $\frac{24}{100}$ 6. $\frac{67}{10}$
7. 3.056km 8. 3,850m
9. €40 10. €50
11. 9,002mm
12. 
13. 168 14. 90 cent

- C.**
1. 1.18% 2. 76 3. 25% 4. 6.032
5. €17.30 6. 7
7. 60 8. 305 9. 6 10. 6/6-0
11. €62.50 12. 2.7cm

13. €5.70 14. 8,500m
15. $\frac{2}{100} = \frac{1}{50}$

- D.**
1. 55% 2. 6,000mm
3. 6 4. €2.83
5. kg 6. 68
7. 1.35m 8. m
9. €90 10. 1,000,000

Topic 16: Time **Page 102**

- B.**
1. (a) 90kph (b) 200kph
(c) 80kph
2. (a) pedestrian (b) runner
(c) car (d) high speed train
(e) aircraft
3. (a) 120km (b) 180km
(c) 240km (d) 300km
(e) 360km (f) 600km
(g) 30km (h) 15km
(i) 45km (j) 90km
(k) 225km (l) 255km

- C.**
100km / 200km / 3hr / 400km / 5hr /
600km / 8hr / 1,000km
50km / 25km / $\frac{3}{4}$ hr / 20km / 40km /
 $\frac{3}{5}$ hour / $16\frac{2}{3}$ km / $\frac{1}{10}$ hour

- D.**
1. (a) 90km (b) 45km
(c) 135km (d) 30km
2. (a) 36km (b) 72km
(c) 108km (d) 15km

- E.**
1. (a) 1hr (b) 2hr (c) 3hr (d) 4hr
2. (a) $\frac{3}{4}$ hr (b) 10min
(c) 12min (d) 20min

Topic 16: Time **Page 103**

- A.**
Teacher Check
- B.**
1. (a) 174km (b) 151km
(c) 208km (d) 198km
(e) 219km (f) 241km
2. (a) Waterford and Killarney or
Killarney and Galway
(b) Athlone and Galway
(c) Dublin and Killarney or Kilkenny
and Donegal
(d) Rosslare and Roscommon
3. Athlone and Roscommon
4. Killarney
5. 423km
6. 850km

Topic 16: Time **Page 104**

- A.**
1. (a) 40kph (b) 50kph
(c) 20kph (d) 60kph
(e) 89kph (f) 154kph
2. (a) 120kph (b) 320kph

- (c) 180kph (d) 300kph
 (e) 54kph (f) 69kph
 (g) 180kph (h) 120kph
 (i) 125kph

3.55kph 4. 25.5kph
 5.3:20pm

B.

- Boat 12kph
 Sprinter 36kph
 Sound waves 1,200kph
 Snail 0.05kph
 Falcon 300kph
 Rocket 28,800kph
 Cheetah 120kph
 Bullet 3,600kph

Topic 16: Time Page 105

A.

- Teacher Check
- GMT 10:15pm / Eastern European 12:15am / Moscow 1:15am
- 9:00pm, 10:00pm and 11:00pm
- 9:00pm

B.

- Teacher Check
- 6:30pm 3.10:00pm

Topic 16: Time Page 106

A.

Because most of Europe is East of Ireland

B.

- | | |
|----------|-----------|
| A 7kph | B 8kph |
| C 6kph | D 4kph |
| E 120km | F 6 hrs |
| G 160kph | H 180kph |
| I 200kph | J 240kph |
| K 20km | L 10 mins |
- (a) 2 hours (b) 9 hours
(c) 5 hours (d) 9 hours
(e) 2 hours (f) 8 hours

C.

- 10:35am
- (a) 32kph (b) 36kph
(c) 36kph (d) 104kph
(e) 80kph (f) 88kph

D.

- True
- False

E.

Class work

Topic 17: Percentages 2 Page 107

B.

- (a) $\frac{3}{10}$ (b) $\frac{1}{4}$ (c) $\frac{3}{5}$ (d) $\frac{3}{8}$
(e) $\frac{3}{20}$ (f) $\frac{7}{20}$
- (a) 0.3 (b) 0.25 (c) 0.6 (d) 0.375
(e) 0.15 (f) 0.35
- (a) 30% (b) 25% (c) 60% (d) $37\frac{1}{2}\%$
(e) 15% (f) 35%

- (a) 70% (b) 75% (c) 40% (d) $62\frac{1}{2}\%$
(e) 85% (f) 65%

C.

- (a) 0.75 (b) 0.83
(c) 0.19 (d) 0.72
(e) 0.91
- (a) 0.6 (b) 0.06
(c) 0.01 (d) 1
(e) 0.5
- (a) 0.05 (b) 0.005
(c) 0.8 (d) 0.08
(e) 0.008

D.

- (a) 89% (b) 63% (c) 54% (d) 22%
(e) 20%
- (a) 2% (b) 99% (c) 9% (d) 90%
(e) 100%
- (a) 10% (b) 1% (c) 0.1% (d) 30%
(e) 300%

E.

- (a) 80% and 0.8 (b) 0.3 and 30%
(c) 0.07 and 7% (d) 100% and 1
(e) 0.026 and 2.6%
(f) 600% and 6
- 60%

Topic 17: Percentages 2 Page 108

A.

- (a) 34.96 (b) 57.27
(c) 95.91
- (a) 168.96 (b) 424.21
(c) 519.75
- (a) 98.23 (b) 162.01
(c) 8.96

B.

- Rainbow 63
Clouds 108
Sky 144
Sun 135
- €499.20
- 48 questions

C.

- (a) 486.16 (b) 745.76
(c) 415.40 (d) 1,295.64
(e) 1,393.20 (f) 1,880.55
- 92 beats per minute
- (a) 147.84 (b) 100.62
(c) 147.84 (d) 659.75
(e) 474.10 (f) 4,878.09
(g) 3,325.16 (h) 8,872.38

D.

- (a) 2,861.76 (b) 1,325
(c) 3,838.77
- (a) 36,795.76 (b) 101,793.99
(c) 76,248.84

E.

Sales:

- Baseball caps 4,410
 Woolly hats 2,478
 Party hats 8,549

Costs:

- Material €7,296
 Dye €2,136
 Accessories €3,059

Topic 17: Percentages 2 Page 109

A.

- (a) fraction method 1,276
(b) decimal method 194.31
(c) decimal method 7,213.14
(e) fraction method 1,523
(f) fraction method 20,251
(g) decimal method 6,552.34

B.

- (a) Gráinne 14,490 votes
Pete 5,796 votes
Claudia 13,041 votes
Seán 12,075 votes
Nicole 24,150 votes
Zach 2,898 votes
(b) Not necessarily. Some people may have voted more than once.

2.(a) C is most efficient

- (b) B 126watts C 117.6watts

C.

- (a) 2,547.49 (b) 463,304.27
(c) 59,032 (d) 134,957.88
- (a) 135,378 (b) 49,185.53
(c) 94,653 (d) 55.982

D.

- (a) Spain (i) €49.90, (ii) €449.10
France (i) €59.90, (ii) €539.10
Austria (i) €55, (ii) €495
Portugal (i) €48, (ii) €432
Switzerland (i) 64, (ii) €576
Italy (i) €52.50, (ii) €472.50
(b) West Cork (i) €12, (ii) €228
Donegal (i) €13, (ii) €247
(c) USA (i) €120, (ii) €880
Canada (i) €138, (ii) €1,012
South America (i) €150, (ii) €1,100
Australia (i) €180, (ii) €1,320
Thailand (i) €189.60, (ii) €1,390.40
South Africa (i) 122.40, (ii) €897.60
(d) Antarctica (i) €426, (ii) €2,414
Everest (i) €402, (ii) €2,278
- 'pps' stands for per person sharing (a room)

Topic 17: Percentages 2 Page 110

A.

- (a) 450 (b) 72 (c) 81 (d) 245
(e) 180 (f) 288
- 210 people
- (a) 1,278 (b) 1,744
(c) 861 (d) 3,180
(e) 1,296 (f) 1,090
- 672 people

B.

- (a) 1,400 (b) 8,400
(c) 1,600 (d) 4,400
(e) 3,700 (f) 4,300
(g) 3,400 (h) 3,400
- 2,500 people

C.

1. (a) $\frac{12}{25}$ (b) $\frac{19}{20}$ (c) $\frac{17}{20}$ (d) $\frac{19}{20}$
 (e) $\frac{41}{50}$
 2. Hilda 76%, Matilda 78%, Mildred 74%

Topic 17: Percentages 2
Page 111

A.

Yes

B.

1. (a) 150.66 (b) 347.77
 (c) 26.67
 2. (a) 1,077.67 (b) 1,250
 (c) 95.4

C.

1. 2,100 lumens
 2. 4 minutes 5 seconds

D.

1. (a) $\frac{1}{4}$ of 78 is not a whole number
 (b) The three percentages do not total 100%
 (c) 101% in this context is impossible
 2. (a) Yes
 Discussion Point: imagine that there are 20 people in the group. 10 of them may be golfers regardless of their gender or occupation / 10 of them may be men regardless of whether they are male or play golf / 10 of them may play golf . . .
 (b) Yes. Alice may have got 20 right out of 25 and Aoife may have scored 15/15

Topic 18: Area **Page 112**

B.

1. (a) 14cm (b) 14cm (c) 14cm
 2. (a) 6cm² (b) 12cm² (c) 10cm²

C.

1. (a) A = 32cm² P = 24cm
 (b) A = 11cm² P = 24cm
 (c) A = 27cm² P = 24cm
 2. (a) A = 24cm² P = 28cm
 (b) A = 40cm² P = 28cm
 (c) A = 49cm² P = 28cm
 3. (a) A = 50cm² P = 30cm
 (b) A = 56cm² P = 30cm
 (c) A = 36cm² P = 30cm

D.

1. (a) A 20cm² P 18cm
 (b) A 8cm² P 18cm
 2. (a) A 16cm² P 20cm
 (b) A 21cm² P 20cm
 3. (a) A 800cm² P 120cm
 (b) A 416cm² P 120cm
 4. (a) A 15.36cm² P 16cm
 (b) A 13.75cm² P 16cm

Challenge Yourself!

1. square : 5cm x 5cm
 2. 24cm x 1cm (P 50cm)

Topic 18: Area **Page 113**

A.

1. 24cm² 2. 30cm² 3. 32cm²

B.

NB Approximations only
 Discussion Points: Should everyone's approximations be the same?
 If there are lots of 'almost full' squares and not so many 'almost empty' squares (or vice-versa) should we compensate? After all, we want the closest approximation possible.

- Yellow 10cm² Green 4cm²
 Blue 14cm² Red 10cm²
 Large green 18cm² Orange 4cm²

Topic 18: Area **Page 114**

A.

1. (a) 9.3m² (b) 7.1m²
 (c) 6.2m² (d) 5.9m²
 (e) 4.37m² (f) 3.85m²
 2. (a) 81,000cm² (b) 18,000cm²
 (c) 23,000cm² (d) 33,000cm²
 (e) 42,300cm² (f) 51,700cm²
 (g) 90,600cm² (h) 82,160cm²
 (i) 70,020cm²

B.

1. (a) 4.9 ares (b) 2.1 ares
 (c) 8 ares (d) 1.23 ares
 (e) 7.19 ares (f) 5.05 ares
 2. (a) 700 (b) 1200
 (c) 120 (d) 450
 (e) 405 (f) 810
 3. 10,000m² in one hectare
 100 ares in one hectare

C.

Note: All by process of elimination and basic geography
 (a) Bathroom 8m² Car park 4.3 ares
 Farm 32 hectares
 (b) Roscommon 246,276 hectares
 Galway 593,966 hectares
 Connaught 1.7 million hectares
 (c) Louth 82,334 hectares
 Kildare 169,425 hectares
 Leinster 1.9 million hectares
 Ireland 6.9 million hectares
 (d) Limerick 266,676 hectares
 Kerry 470,142 hectares
 Cork 745,988 hectares
 Munster 2.4 million hectares
 (a) Hall m²
 (b) Postage stamp cm² or mm²
 (c) Forest hectares
 (d) Shopping centre ares
 (e) Floor of house m²
 (f) Page cm²
 (g) School yard m² or ares
 (h) Basketball court m²

Topic 18: Area **Page 115**

A.

1. (a) 20m² (b) 27m²
 (c) 20m² (d) 10m²
 (e) 19m² (f) 6m²
 (g) 5m²
 2. €539.73

3. Sitting room 22m
 Dining room 18m
 Kitchen 18m
 Playroom 20m
 Bathroom 10m
 4. Presence of stairs
 5. In the northern hemisphere, south-facing aspects receive most sun.

B.

1. 294cm² 2. 600cm²
 3. 304m² 4. 517.2m²
 5. 233m² 6. 4cm²

Topic 18: Area **Page 116**

A.

Area is the measure of the space inside a figure; perimeter is the distance around the figure.

B.

1. (a) A 126m² P 46m
 (b) A 253m² P 68m
 (c) A 2,394m² P 198m
 (d) A 46.8m² P 27.6m
 (e) A 8.85m² P 14.8m
 (f) A 0.208m² P 3.46m
 2. (a) 9m (b) 10m (c) 5.5m (d) 23.5m
 (e) 37.4m (f) 31.9m

C.

1. 69m² 2. 25m 3. 36m 4. 121m²
 5. 98m² (L is 14m and W is 7m)

D.

1. False – 12m² wouldn't take many cars
 2. True – if a typical field measures one hectare, a farm with 32 such fields seems likely
 3. False – you can't have an area of 300cm
 4. True
 5. False – 5 metres square is 25m²
 6. False – a cube has 6 faces

E.

Teacher Check

Topic 19: Problem Solving 1
Page 117

A.

1. (a) 60 days (b) 30 April
 2. 300
 3. 03:35

Topic 19: Problem Solving 1
Page 118

A.

1. 6 : 5 2. 4 : 3
 3. 7 : 10 4. 2 : 5
 5. 4 : 5 6. 3 : 5

B.

1. (a) 3 : 4 (b) 3 : 1
 (c) 2 : 1 (d) 3 : 1
 (e) 1 : 4
 2. (a) 4 : 1 (b) 1 : 4
 (c) 3 : 2 (d) 1 : 1
 (e) 5 : 1

- C.**
- (a) 1g : 2g (b) 1cm : 4cm
(c) 4ml : 1ml (d) 1m : 10m
 - (a) 1ml : 5ml
(b) 1m : 6m
(c) 1 cent : 6 cent
(d) 1L : 10L
 - (a) 3kg : 1kg (b) 1g : 6g
(c) 1ml : 3ml (d) 1g : 8g

- D.**
- (a) $\frac{26}{55}$ (b) 26 : 29
(c) 29 : 26
 - (a) 6 : 4 : 8 (b) 3 : 2 : 4
(c) $\frac{4}{8}$ or $\frac{1}{2}$

Topic 19: Problem Solving 1
Page 119

- A.**
- 12 : 8 (b) 8 : 4
3 : 8 : 4 (d) 12 : 8
5 : 12 : 8 : 8 : 4 (g) 3 : 2 : 2 : 1
7 : 1 : 1 (h) 2 : 2 : 1

- B.**
- 5km : 1.25km
 - €20 : €80
 - 64 : 80
 - 53 : 106 : 265
 - 2 : 3
 - Grace 9, Maria 9, James 18
 - Car 90 kph. Tractor 30 kph

Topic 19: Problem Solving 1
Page 120

- A.**
- €80
 - (a) €100 (b) €160
(c) €30-00
 - (a) 30 (b) 75
(c) 20

- B.**
- Pair work.
Teacher Check

Topic 19: Problem Solving 1
Page 121

- A.**
- Ratio** – the relationship of one number to another

- B.**
- (a) 1 : 3 (b) 8 : 11
(c) 1 : 4 (d) 7 : 36
 - €1,200 : €400 : €800
 - 1 : 5
 - 7 : 10
 - 7 : 9

- C.**
- €500
 - Ronan €16
Róisín €32
Ciara €64

- (a) 16 girls (b) 36 pupils
4.(a) 48 (b) 56 (c) 8

- D.**
- Ratio
 - Same number
 - Estimate
 - Underline

- E.**
- Bay School €20,000
Blue Lake School €30,000
Green Tree School €50,000

Deep Space Pages 122 and 123

- grey (b) cream (c) green (d) purple
(e) pink (f) black (g) green (h) yellow
(i) blue or orange (j) purple

Code 6.62
ASTEROIDS AHEAD

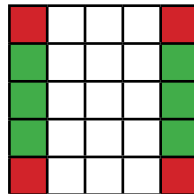
- SOS**
- The order X-LNT – Hoyt – Z-52 is shortest
 - 6.62 million km
 - 4,760,000,000,000km² (not 4.76 million square km)

Planet Hopping

- (a) 76kg (b) 47.5kg
(c) 83.6kg (d) 57kg
(e) 79.8kg (f) 60.325kg
- (a) 3:30pm (b) 7:30pm
(c) 9:20pm (d) 12:32, 5am
(e) 2hr 32min

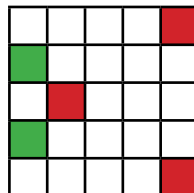
Mental Maths 5
Pages 124 and 125

- A.**
- $8\% \neq \frac{1}{8}$
 - 20
 - Mon
 - hectare
 - n/a
 - True (ref. excluded)
 - 0.01
 - approx. 235°
 - 0.15
 - $\frac{1}{25}$ or 0.04
 - 48kph
 - e.g. 1.36
 - 4,023,908

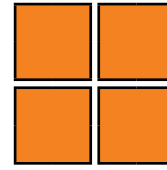


15. units

- B.**
- 111,222 and 11,133
 - 27c
 - 101,099
 - 16kph
 - 75
 - 1.004
 -



- $\frac{1}{5}$
- n/a
- 5 square metres
- 21 people
- 100m²
- m

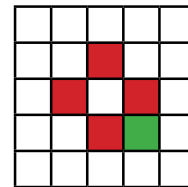


15. Turn left or right at traffic lights?

- C.**
- €60
 - am / pm
 - 59
 - $\frac{8}{11}$
 - 5 turns x 4 wheels = 20 turns
 - 180°
 - 7
 - 4
 - n/a

10. It is not mathematically sound to reason from the particular to the general.

- $\frac{8}{9}$
- two million and twenty
-



- 0.25
- reflex

- D.**
- 12 and 6
 - 4
 - 160kph
 - $4\frac{3}{5}$
 - 135°
 - 18
 - none of these
 - 299.997
 - 0.06
 - 1:10

Topic 20: Chance Page 126

- B.**
- n/a
 - n/a
- C.**
- 3 (1+3, 3+1, 2+2)
 - 4 (1+4, 4+1, 2+3, 3+2)
 - 5 (1+5, 5+1, 2+4, 4+2, 3+3)
 - 6 (1+6, 6+1, 2+5, 5+2, 3+4, 4+3)
 - 5 (2+6, 6+2, 3+5, 5+3, 4+4)
 - 4 (3+6, 6+3, 4+5, 5+4)
 - 3 (4+6, 6+4, 5+5)
 - 2 (5+6, 6+5)
 - 1 (6+6)

Topic 20: Chance Page 127

- A.**
- Probability is 20%
 - Combined results should be close to 20 out of 100 trials.
Discussion Point: Whose results were closest to 20%? Why might you not get exactly the probability that was predicted?

- B.**
- 60%
 - $33\frac{1}{3}\%$
 - 25%

- C.
1. $16\frac{2}{3}\%$ 2. $37\frac{1}{2}\%$

- D.
1. 25% 2. 50% 3. $12\frac{1}{2}\%$

Topic 20: Chance Page 128

- A.
1. (a) green / red / green and yellow are equally likely
(b) yellow and blue are equally unlikely / yellow / blue
2. A green 36, red 18, blue 9, yellow 9
B green 18, red 27, blue 18, yellow 9
C green $33\frac{1}{3}$, red 22%,
blue 11%, yellow $33\frac{1}{3}$
3. $12\frac{1}{2}\%$ / 25% / 11%

- B.
He put the basket into one of the corners of the room making the task much easier!

Topic 20: Chance Page 129

- A.
1. 50 would be a reasonable prediction
2. Yes – number > 97
B.
1. 72 would be a reasonable prediction
2. Yes
C.
1. 52 minutes would be a reasonable prediction.
2. As sailing boats depend on the wind, a calm day will slow the boat.
3. Predictions are very useful provided (a) sound mathematical data is relied on and (b) all possible variables are taken into consideration. It is this last one that makes predicting scores etc. notoriously difficult as there are too many variables to consider.
D.
n/a

Topic 20: Chance Page 130

- A.
Probable – means likely – higher than 50-50; **improbable** – means unlikely – a lot worse than 50-50
B.
1. 30% 2. 25% 3. 1% 4. 20%
C.
Emerald ice-cream sales are likely to rise as summer comes.
Ozzie Ices sales are likely to drop as the Australian winter comes along.
However – two things to bear in mind. 1. Winter in parts of Australia can be a lot warmer than summer in Ireland. 2. Because of the higher population of Australia, Emerald sales

(even in summer) are unlikely to approach those of Ozzie Ices.

- D. & E.
Teacher Check

Topic 21: Money Page 131

- B.
1. (a) €8 (b) €2
(c) €7.95 (d) €2.05
2. (a) €19 (b) €1
(c) €19.15 (d) 85c
3. (a) €169.00 (b) €6.00
(c) €168.47 (d) €6.53

- C.
1. €21.85
2. (a) €34.53 (b) €5.47
3. €8.16 4. 11
5. €28.24 6. €21.76

- D.
1. (a) €41,979 (b) €13,983
(c) €20,465
2. (a) €335.62 (b) €312,528
(c) €78,931
3. (a) €13,495 (b) €2,981,964
(c) €254,355.75
4. (a) €326.45 (b) €5,253.25

- E.
Class work

Topic 21: Money Page 132

- A.
1. 30c 2. 90c
16c 7c
3. €2.10 4. 73c
20c 12c
5. €6.50 6. 75c
49c 5c

- B.
1. (a) 2 cent
(b) 6 packs of 10 copies
2. (a) 50 cent
(b) €15
3. (a) €1.50 (€6 – €4.50)
(b) 6c per day

Topic 21: Money Page 133

- A.
1. (a) €300.00 (b) €1,800.00
2. (a) €24.00 (b) €184.00
3. (a) €68.00 (b) €408.00
4. (a) €240.00 (b) €1,440.00
5. (a) 70c (b) €4.20
6. (a) 50c (b) €3.00

- B.
1. (a) €42.00 (b) €322.00
2. (a) €138.00 (b) €120.00
(c) €258.00
3. (a) €228.00 (b) €78.20
(c) €306.20

- C.
1. €1,152.00 2. €105.60
3. €208.80 4. €97.20
5. €126.00 6. €62.40

Topic 21: Money Page 134

A.

Currency	€10	€50	€100	€300	€500
£	£8	£40	£80	£240	£400
US\$	\$12.50	\$62.50	\$125	\$375	\$625
Can\$	\$13	\$65	\$130	\$390	\$650
Aus\$	\$16	\$80	\$160	\$480	\$800
¥	¥1,150	¥5,750	¥11,500	¥34,500	¥57,500

2. €1,562.50
B.
1. (a) €8 (b) €185
(c) €12.50 (d) €376
2. (a) €600 (b) €200
(c) €20 (d) €4

C.

City	Strawberry Smoothie	Fruit Juice
New York	€2.00	€1.40
Tokyo	€3.00	€4.00
Vancouver	€2.50	€2.20
London	€3.75	€5.00
Sydney	€2.30	€1.20

City	Ice-cream	Fizzy Drink
New York	€2.48	€1.20
Tokyo	€5.00	€2.00
Vancouver	€3.50	€1.80
London	€6.40	€3.25
Sydney	€2.45	€1.30

Topic 21: Money Page 135

- A.
VAT – it stands for Valued Added Tax. It is a tax on goods and services. Goods mean anything you may wish to buy e.g. cars, newspapers, toys, magazines, clothes, sweets, etc. Services mean paying someone to do a job for you e.g. plumbing, car repairs, legal fees, paying for an electrician, a plumber, a mechanic, a house painter, etc.
The VAT money goes to the government to pay for schools, road building, hospitals, paying gardai, teachers, nurses, doctors, etc. – the government needs this money to run the country.
The tax is added to the price of the goods e.g. if a TV costs €500 there will be VAT to be paid also by the customer. If the VAT is 20% of the cost of the television, it means that the customer has to pay $\frac{1}{5}$ extra which will be given by the shopkeeper to the government. The customer will pay €600 for the TV – €100 of this will be VAT going to the government to run the country.

- B.**
- (a) €3,176.03 (b) €7,230.24
 - €50.24
 - €24.00
 - €1,000.00
 - (a) €200 (b) €12.50

- C.**
- €425.00
 - 5 sharpeners for €1.80
 - €76.25
 - €367.20
 - €304.75

- D.**
- Value Added Tax
 - Dollar
 - Added
 - Sterling
 - Divide

E.
Class work

Topic 22: Directed Numbers
Page 136

- B.**
- Teacher Check
 - (a) 3 (b) 7 (c) 5 (d) 6
(e) 6 (f) 6 (g) 10 (h) 9

- C.**
- (a) 11 (b) -1 (c) 23 (d) -3
(e) -13
 - Teacher Check

Topic 22: Directed Numbers
Page 137

- A.**
- 3 5 0 -1
 - 3 -3 -3

- B.**
- (a) -1 (b) 5 (c) 5 (d) 1
(e) 0 (f) 5
 - (a) -2 (b) -6 (c) -6 (d) -2
(e) -4 (f) -8
 - (a) 2 (b) 3 (c) 6 (d) 7
(e) -3 (f) -8

- C.**
- (a) 12 (b) 0 (c) 0 (d) -12
 - (a) 11 (b) -5 (c) 5 (d) -11
 - (a) 3 (b) 5 (c) 0 (d) 0
 - (a) -5 (b) 3 (c) -7 (d) -8

- D.**
- (a) > (b) > (c) < (d) >
(e) <
 - (a) > (b) > (c) < (d) >
(e) >

- E.**
- (a) -8, -5, +9 (b) -7, -2, +1
(c) -7, +1, +8 (d) -8, -2, +3
(e) -5, 0, +5 (f) -6, 0, +2
 - (a) -1, 0, +1 (b) -6, +4, +8
(c) -8, -4, +6 (d) -5, -2, +5
(e) -3, +3, +7 (f) -7, 0, +4

- F.**
- +2 ▲+10▲+12 ▼+11▲+18
 - 3▼-5▼-8▼-9▲-8
 - 3▲+5▼-1▲+2▼-2
 - +8▼-6▲+9▼-7▲+9
 - 8▲0▼-1▲+3▼-7▼-11
 - +2▼-4▲+4▼0▼-3▼-6

Topic 22: Directed Numbers
Page 138

- A.**
- Spur 2. Pool 3. 10m 4. 20m
 - 25m 6. 85m 7. +5m

- B.**
- April 2. August 3. €50 4. €200
 - €300 6. €250 7. November
 - €2,050 9. €800

Discussion Point: Often in business, graphs such as this indicate thousands of euro (or millions.) Is it realistic that a company might make a profit of €50?

Topic 22: Directed Numbers
Page 139

A.

€+60	€-50
€+100	€-150
€+150	€+50
0	€+30
€-20	€+110
€-90	€+190
€+10	0
€-20	€+60

B.

- 12m 2. 18m 3. -48m 4. $15\frac{1}{2}$ m
- 113° 6. 19,881m

Challenge Yourself!

- (a) 30 (b) -12 (c) -16 (d) -45
(e) 15 (f) 14
- (a) -16 (b) 25 (c) -36 (d) 49
(e) -64 (f) -81

Topic 22: Directed Numbers
Page 140

A.

Negative numbers – numbers with a value of less than 0

B.

- (a) < (b) > (c) < (d) >
(e) < (f) > (g) < (h) >
(i) > (j) < (k) > (l) >
- (a) +4 ▼-6▲+2▼-1▲+8▼0
(b) -3▲+3▼+2▼-2▼-8▲+8
(c) 0▼-1▲+3▼+1▼-5▲-2
(d) -1▲+5▼0▼-1▲+2▼-8
(e) -7▲+7▼-2▼-3▲+1▼0
(f) +1▼-4▲-1▲+5▼-1▲+3

C.

Evelyn			
Hole	Par	Score	=+-
1	4	6	+2
2	4	6	+2
3	4	5	+1
4	4	5	+1

5	5	5	=
6	5	5	=
7	3	4	+1
8	4	8	+4
9	4	5	+1
Result			12

David			
Hole	Par	Score	=+-
1	4	3	-1
2	4	3	-1
3	4	4	=
4	4	4	=
5	5	3	-2
6	5	4	-1
7	3	1	-2
8	4	3	-1
9	4	5	+1
Result			-7

Pól			
Hole	Par	Score	=+-
1	4	5	+1
2	4	3	-1
3	4	4	=
4	4	4	=
5	5	4	-1
6	5	9	+4
7	3	3	=
8	4	3	-1
9	4	4	=
Result			2

D.

- (a) false (b) true (c) false (d) false
(e) false (f) true (g) false (h) true
(i) true (j) true

E.

Class work

Topic 23: The Circle **Page 141**

B.

- (a) 24cm (b) 36cm
(c) 68cm (d) 118cm
(e) 15.2cm (f) 33.4cm

C.

- (a) 28m (b) 58m
(c) 72m (d) 312m
(e) 436m (f) 834m
- (a) 1,116m (b) 1,592m
(c) 47.6m (d) 83.4m
(e) 121.8m (f) 107.2m

D.

- (a) 10cm (b) 10.5cm
(c) 16.5cm (d) 49.5cm
(e) 106.5cm (f) 209cm
- (a) 283.5cm (b) 166cm
(c) 3.7cm (d) 4.15cm
(e) 4.575cm (f) 3.605cm

E. Teacher Check

Topic 23: The Circle Page 142

- A.
 (a) 12.56cm (b) 18.84cm
 (c) 47.1cm (d) 109.9cm
 (e) 21.666cm (f) 30.772cm

- B.
 1. (a) 9.42cm (b) 21.98cm
 (c) 34.54cm (d) 59.66cm
 2. (a) 87.92cm (b) 116.18cm
 (c) 166.42cm (d) 226.08cm
 3. (a) 14.444cm (b) 17.27cm
 (c) 2.6062m (d) 0.5024m

- C.
 1. (a) 6.28cm (b) 25.12cm
 (c) 31.4cm (d) 43.96cm
 2. (a) 62.8cm (b) 94.2cm
 (c) 157cm (d) 314cm
 3. (a) 16.328m (b) 23.864m
 (c) 1.4444m (d) 2.7632m

- D.
 1. (a) 9cm / 4.5cm
 (b) 13cm / 6.5cm
 (c) 21cm / 10.5cm
 (d) 36cm / 18cm
 2. (a) 58cm / 29cm
 (b) 85cm / 42.5cm
 (c) 93cm / 46.5cm
 (d) 99cm / 49.5cm
 3. (a) 2.5m / 1.25m
 (b) 8.1m / 4.05m
 (c) 0.46m / 0.23m
 (d) 0.72m / 0.36m

- E.
 1. 0.318m approx. 2. 25.12m

Topic 23: The Circle Page 143

- A.
 1. 33.12m 2. 37.26m
 3. 49.68m

- B.
 1. 64.26m 2. 53.55m
 3. 78.54m

- C.
 1. 205.6m 2. 154.2m
 3. 154.2m

Topic 23: The Circle Page 144

- A. Estimates only. Answers may vary.
 1. 4 squares 2. 9 squares
 3. 16 squares 4. 18 squares

B. – D. Teacher Check

Topic 23: The Circle Page 145

- A.
Centre – middle of a circle
Circumference – round line that forms the circle
Radius – line from centre to circumference

Diameter – line from one point on circumference to another point on circumference through the centre.

B.

	A	B	C
Radius	4m	14m	17m
Diameter	8m	28m	34m
Circumference	25.12m	87.92m	106.76m

	D	E	F
Radius	23m	24.5m	26.5m
Diameter	46m	49m	53m
Circumference	144.44m	153.86m	166.42m

	G	H	I
Radius	39m	4.5m	36.5m
Diameter	78m	9m	73m
Circumference	244.92m	28.26m	229.22m

- C.
 1. 131.88m 2. 197.82m
 3. 310.86m

- D.
 1. false 2. false 3. true 4. false

E. Teacher Check

The Virtual World of Quest Pages 146 and 147



- Test 1
 Solution D make a square, each side with 6 matchsticks
 Solution E make 2 squares each side with 3 matchsticks
 Solution F make 3 squares each side with 2 matchsticks

- Test 2
Portal 1
 1. blue 2. orange
 3. orange 4. 40%
Portal 2
 1. blue 2. orange 3. blue 4. 30%
Portal 3
 1. green 2. orange
 3. red and green 4. 40%

- Test 3
 1. (a) 400m (b) 500m
 (c) 667m
 2. Left Twin peak @ 900m
 3. Wrecker's Reef
 4. 200m
 5. (a) -100m (b) -900m
 (c) -800m (d) -200m
 (e) -800m (f) -400m
 6. Dolphin Deep
 7. (a) 400m (b) 200m
 (c) 1,300m (d) 400m
 (e) 700m (f) 1,700m

Mental Maths 6 Pages 148 and 149

- A.
 1. n/a 2. 8 for 96
 3. 12:55pm 4. 18
 5. 25 6. 3²
 7. 0.01
 8. added 0.1 instead of 1
 9.

10. 24 legs 11. 360°
 12. units 13. $\frac{8}{15}$
 14. 7.5cm 15. 10 and 30

- B.
 1. 3.14 2. units 3. 18 4. $\frac{1}{2}$
 5. -8 6. 7 taxis
 7. 30cm 8. $1\frac{1}{2}$ hours 9. n/a
 10. No, because the post office and shop might be in different directions from Lara.

11. $\frac{1}{25}$ 12. 0.04
 13.

14. 45 (or x 1)
 15. 111 (others are divisible by 11)

- C.
 1. 20:45
 2. need to double the radius (or double the answer)
 3. 2.136 4. n/a (+ 1 hour)
 5. 27 and 18
 6.

7. 16 8. 4.5l 9. $\frac{25}{36}$
 10. yes (450g and 550g)
 11. 2l for €2.38
 12. -13 13. 0.0015
 14. 12 15. 29

- D.
 1. $\frac{1}{16}$ 2. 77 3. 60 4. 0.15
 5. every $7\frac{1}{2}$ minutes 6. 135°
 7. 98 8. $\frac{23}{8}$ 9. 5 10. $\frac{5}{1}$

Topic 24: Using Percentages Page 150

- B.
 1. (a) €30 (b) €50 (c) chair
 2. (a) 25% (b) clock

- C.
 1. €8 and 10%
 €40 and $33\frac{1}{3}\%$
 €20 and $12\frac{1}{2}\%$
 €72 and 30%
 €300 and 20%
 €500 and $11\frac{1}{9}\%$
 2. car
 3. table

Topic 24: Using Percentages
Page 151

A.

	Bananas	Oranges	Apples
Cost Price	€4.80	€4.60	€3.90
Profit €	€3.00	€1.38	€0.65
Selling Price	€7.80	€5.98	€4.55
Profit %	$62\frac{1}{2}\%$	30%	$16\frac{2}{3}\%$

	Pears	Grapes	Raspberries
Cost Price	€5.50	€7.20	€8.38
Profit €	€2.20	€2.40	€4.19
Selling Price	€7.70	€9.60	€12.57
Profit %	40%	$33\frac{1}{3}\%$	50%

B.

Ring	Watch	Brooch	Earrings
€36	€84	€111	€231
€38.88	€90.72	€119.88	€249.48
€39	€91	€120	€249

Pendant	Bracelet	Diamond
€405	€560	€1,230
€437.40	€604.80	€1,328.40
€437	€605	€1,328

C.

1. (a) €3 (b) €2 (c) shirt

2. (a) $12\frac{1}{2}\%$ (b) shorts

D.

	Sun hat	Suncream	Flip-flops
Cost Price	€10	€15	€15
Selling Price	€9	€12	€5
Loss €	€1	€3	€10
Loss %	10%	20%	$66\frac{2}{3}\%$

	Sunglasses	Lip balm	Swimwear
Cost Price	€24.50	€7.50	€28.50
Selling Price	€23.52	€5.70	€21.09
Loss €	€0.98	€1.80	€7.41
Loss %	4%	24%	26%

2. swimwear

3. flip-flops

Topic 24: Using Percentages
Page 152

A.

1. (a) 6 (b) 4 (c) 18 (d) 6
2. (a) 15 (b) 15 (c) 36 (d) 48
3. (a) 30 (b) 80 (c) 50 (d) 22

B.

1. €28, €44, €64, €45, €110
2. €80, €120, €350, €276, €468

C.

€3,390 €6,930 €6,956

Topic 24: Using Percentages
Page 153

A.

1. (a) €2.50 (b) €4
(c) €6 (d) €9
(e) €12 (f) €19.50
(g) €37.50 (h) €41.60

- (i) €45.60 (j) €55.20
2. (a) €1 (b) €1.28
(c) €2.40 (d) €6
(e) €11.20 (f) €13.60
(g) €17.76 (h) €23.32
(i) €39.96 (j) €51.40
3. (a) €2 (b) €4.50
(c) €6 (d) €6.50
(e) €8

B.

1. (a) €3 (b) €7.20
(c) €9 (d) €10.80
(e) €14.40 (f) €21.60
(g) €27 (h) €39.12
(i) €46.98 (j) €128.94
2. (a) €15 (b) €22.50
(c) €30 (d) €31.50
(e) €42

C.

1. (a) €224 (b) €156.80
(c) €672 (d) €840
(e) €873.60 (f) €909.44
(g) €991.20 (h) €1,030.40
(i) €1,136.80 (j) €5,855.36
2. (a) €435 (b) €652.50
(c) €2,175 (d) €5,437.50
(e) €130.50 (f) €413.25
(g) €500.25 (h) €891.75
(i) €2,446.88 (j) €3,806.25

Topic 24: Using Percentages
Page 154

A.

Interest – money earned through depositing money or a charge on borrowed money.
People who borrow from a bank pay interest to the bank.

B.

1. €180 20%
€132 10%
€63 5%
€29 16%
€29 45%
€469 40%

C.

- (a) $+12\frac{1}{2}\%$
(b) $-33\frac{1}{3}\%$
(c) $+66\frac{2}{3}\%$
(d) -10%
(e) $+33\frac{1}{3}\%$
(f) $-16\frac{2}{3}\%$
(g) $+20\%$
(h) -25%

D.

1. increase 2. decrease
3. increase 4. increase
5. decrease

E.

Teacher Check

Topic 25: 3D Shapes Page 155

B.

Class work

C.

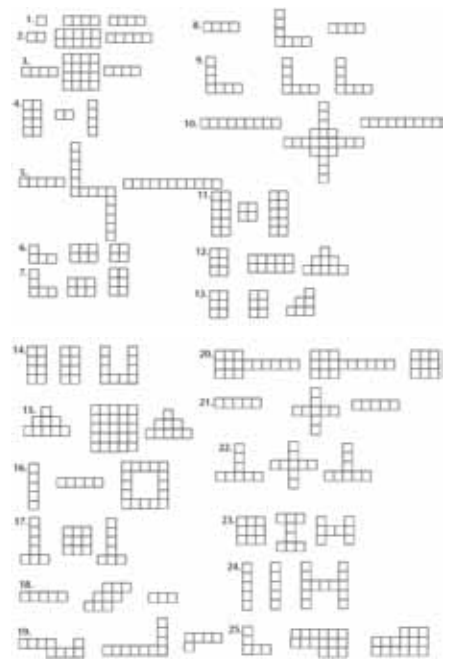
1. true 2. false
3. true 4. true
5. false 6. true

D.

1. cuboid 2. sphere
3. cylinder 4. cuboid
5. cube 6. cylinder

Discussion Point: Discuss the 'imperfections' on these items e.g. if the playing cards have rounded corners, then strictly speaking, the deck is not a cuboid.

Topic 25: 3D Shapes Page 156



4. 1: 4 2: 10 3: 16 4: 8
5: 15 6: 8 7: 10 8: 7
9: 10 10: 21 11: 20 12: 20
13: 12 14: 20 15: 35 16: 16
17: 13 18: 9 19: 12 20: 15
21: 9 22: 12 23: 20 24: 13
25: 27

Topic 25: 3D Shapes Page 157

A.

- Triangular prism 5 faces 9 edges 6 vertices
Cube 6 faces 12 edges 8 vertices
Pentagonal prism 7 faces 15 edges 10 vertices
Hexagonal prism 8 faces 18 edges 12 vertices
Octagonal prism 10 faces 24 edges 16 vertices
Octahedron 8 faces 12 edges 6 vertices
Triangular pyramid 4 faces 6 edges 4 vertices
Square pyramid 5 faces 8 edges 5 vertices
Pentagonal pyramid 6 faces 10 edges 6 vertices
Hexagonal pyramid 7 faces 12 edges 7 vertices
Octagonal pyramid 9 faces 16 edges 9 vertices

B.

True for each

C.		
Cube	square	square
Triangular pyramid	small triangle	medium triangle
	large triangle	
Octahedron	small square	medium square
	small square	
Hexagonal pyramid	small hexagon	medium
	hexagon	large hexagon
Triangular prism	small rectangle	medium
	rectangle	large rectangle
Hexagonal prism	small rectangle	medium
	rectangle	small rectangle
Cone	small circle	medium circle
	large circle	
Cylinder	circle	circle
	circle	circle

Topic 25: 3D Shapes Page 158

- A.** Class work
- B.** **Mobius Strip**
The Mobius Strip is unusual in that it consists of a single face (unlike the strip of paper from which it was formed which had 2 faces).
When a Mobius strip is cut as shown, it creates a Mobius strip that is twice as long as the original!

C. Teacher Check

Topic 25: 3D Shapes Page 159

- B.** 1, 8, 27, 64, 125, 216, 512, 729, 1,000
- C.** 1. (a) 12 blue (b) 21 red
(c) 21 green
- 2.(a) 6 (b) 12 (c) 8 (d) 1
- D.** 1. cone 2. octahedron
3. cylinder 4. (square) pyramid
5. cylinder 6. cubes
7. prism 8. cuboid

- E.** 1. Heptagonal prism
Heptagonal pyramid
2. R1C1, R1C2, R2C1, R2C3, R3C2, R3C3 other solutions exist

Topic 26: Weight Page 160

- B.** 1. e.g. some boxing events, some rugby positions
2. e.g. horse racing, long distance running

C. n/a

Topic 26: Weight Page 161

- A.** 1. (a) 4kg 238g (b) 2kg 117g
(c) 8kg 515g (d) 6kg 159g
2. (a) 3kg 450g (b) 3kg 45g
(c) 5kg 760g (d) 5kg 76g
3. (a) 7kg 800g (b) 7kg 80g
(c) 7kg 8g (d) 9kg 100g
- B.** 1. (a) 4-369kg (b) 1-775kg
(c) 8-115kg (d) 2-671kg
2. (a) 5-65kg (b) 5-065kg
(c) 8-049kg (d) 6-003kg
3. (a) 5-75kg (b) 3-7kg
(c) 8-09kg (d) 6-003kg
- C.** 1. (a) $\frac{1}{4}$ kg (b) $\frac{3}{4}$ kg (c) $\frac{9}{10}$ kg (d) $\frac{4}{5}$ kg
(e) $\frac{2}{5}$ kg (f) $\frac{1}{10}$ kg (g) $\frac{1}{8}$ kg (h) $\frac{3}{8}$ kg
(i) $\frac{1}{40}$ kg (j) $\frac{1}{25}$ kg (k) $\frac{3}{25}$ kg (l) $\frac{24}{25}$ kg
2. (a) $3\frac{1}{2}$ kg (b) $4\frac{1}{4}$ kg
(c) $8\frac{3}{10}$ kg (d) $2\frac{3}{50}$ kg
(e) $3\frac{2}{25}$ kg (f) $6\frac{6}{25}$ kg
(g) $8\frac{7}{20}$ kg (h) $1\frac{13}{20}$ kg
(i) $4\frac{2}{5}$ kg (j) $9\frac{5}{8}$ kg
(k) $4\frac{3}{40}$ kg (l) $6\frac{9}{40}$ kg
3. 4kg 700g/4-080kg/3kg 870g/8kg 75g
4. 70-009kg is the lightest (but not by much!)

Topic 26: Weight Page 162

- A.** 1. (a) 5-719kg (b) 8-791kg
(c) 6-655kg (d) 11-769kg
(e) 4-558kg (f) 16-802kg
2. (a) 6-2kg (b) 9-179kg
(c) 10-015kg (d) 6-45kg
(e) 4-979kg (f) 12-026kg
- B.** 1. yes
2. 16-44kg
3. (a) €30 (b) €10
4. 12 possibilities
55+35 / 55+35+10 / 55+30 /
55+30+10 / 55+20+10
50+35 / 50+35+10 / 50+30
/ 50+30+20 / 50+30+10 /
50+20+10
35+30+20
- C.** 1. 775g 2. 210g 3. 454g 4. 995g
5. 492g

Topic 26: Weight Page 163

- A.** 1. (a) 12-954kg (b) 25-56kg

- (c) 146-74kg (d) 196-93kg
(e) 16-874kg (f) 159-21kg
2. (a) 0-539kg (b) 0-716kg
(c) 0-675kg (d) 0-317kg
(e) 0-159kg
- B.** 100g for €1-50 / 500g for 40c / 250kg
for €90 / 10g for €295
- C.** 1. 3.5kg
2. n/a
3.(a) 500kg (b) 250kg
(c) 300kg (d) 30kg
(e) 3kg
4. 5 trips 5. 1,332kg
- D.** Trip A 400+350
Trip B 700+50
Trip C 250+250+250
Trip D 300+300+150

Topic 26: Weight Page 164

- B.** 1. 4-56kg 4-562kg 4-652kg
2. 4-008kg 4-09kg 4-7kg
3. 0-033kg 0-13kg 0-131kg
4. 1-055kg 1-15kg 1-51kg
5. $4\frac{7}{1000}$ kg $4\frac{7}{100}$ kg $4\frac{7}{10}$ kg
6. $3\frac{1}{5}$ kg $3\frac{6}{25}$ kg 3-25kg
- C.** 1. (a) yes (b) 250kg
(c) no
2. (a) no (b) 750g too heavy
(c) no (d) yes (e) yes
- D.** 1. lighter
2. lighter
3. heavier
4. equal (heavier if bottle is included)
- E.** 1.lower 2. 5g 3. 30g

Topic 27: Number Rules Page 165

- B.** 1. CCTV
2. wash your hands
3. no mobile phones
4. no entry
5. no bathing
6. disabled parking
7. no photography
8. radioactivity
9. recyclable
10. no dogs
11. exit
12. no camping
13. no smoking
14. attention
15. fire extinguisher
16. bio hazard
17. use ear protection

- C.**
- (a) 27 (b) 27 (c) 70 (d) 102
(e) 22 (f) 36
 - (a) 3 (b) 4 (c) 0 (d) 18
(e) 30 (f) 20
 - $(480 - 106) + (288 + 144) = 806$ trees
 - (a) $18 - (13 + 3) = 2$
(b) $(18 - 13) + 3 = 8$
(c) $(14 - 9) + 2 = 7$
(d) $14 - (9 + 2) = 3$
(e) $26 - (17 + 4) = 5$
(f) $(26 - 17) + 4 = 13$
 - (a) 8 (b) 2 (c) 3 (d) 60
(e) 2 (f) 26

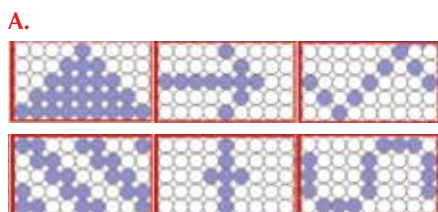
Topic 27: Number Rules
Page 166

- A.**
- 16 2. 8 3. 11 4. 17
5. 17 6. 23 7. 35 8. 65
- B.**
- 16 2. 4 3. 4 4. 36
5. 4 6. 64 7. 40 8. 10
- C.**
- (a) 38 (b) 31 (c) 19 (d) 42
2. (a) 6 (b) 2 (c) 1 (d) 10
- D.**
- (a) 15 (b) 17 (c) 20 (d) 25
2. (a) 21 (b) 21 (c) 47 (d) 46
- E.**
- (a) 42 (b) 52 (c) 38 (d) 74
2. (a) 24 (b) 25 (c) 58 (d) 41

Challenge Yourself!

- (a) 32 (b) 90 (c) 6 (d) 19
2. (a) 14 (b) 74 (c) 62 (d) 68

Topic 27: Number Rules
Page 167



- B.**
- (a) 25, 30, 35 (b) 55, 66, 77
(c) 30, 36, 42 (d) 21, 25, 29
(e) 56, 65, 74 (f) 51, 58, 65
(g) 44, 50, 56 (h) 106, 127, 148
 - (a) 80, 75, 70 (b) 36, 30, 24
(c) 70, 63, 56 (d) 50, 25, 0
(e) 108, 96, 84 (f) -20, -25, -30
(g) +7, 0, -7
 - (a) 17, 23, 30 (b) 18, 24, 31
(c) 19, 25, 32 (d) 20, 26, 33

- C.**
- $\frac{1}{10}, \frac{1}{12}, \frac{1}{14}$ 2. $\frac{1}{11}, \frac{1}{13}, \frac{1}{15}$
3. $\frac{6}{7}, \frac{7}{8}, \frac{8}{9}$ 4. $\frac{6}{7}, \frac{5}{6}, \frac{4}{5}$

- D.**
- 7, 16, 9, 20 2. 8, 15, 10, 19
3. 40, 44, 50, 55 4. 65, 60, 60, 50
5. 60, 25, 50, 0 6. 24, 18, 27, 9

- E.**
- (a) 9 (b) 25 (c) 64 (d) 100
(e) 144 (f) 196 (g) 400

Challenge Yourself!

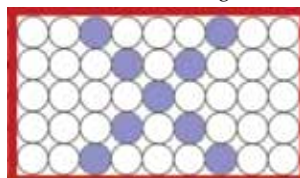
$(2 \times 5) - 3$ and then multiply your answer by 4

Topic 27: Number Rules
Page 168

- A.**
- Don't cry because it is over, smile because it happened.
- B.**
- Teacher Check
- C.**
- I don't think much of a person who is no wiser today than he was yesterday.
- D.**
- (a) $50 - 70$ (b) $50 - 150$
(c) $8 - 12$ (d) $400 - 600$
(e) $950 - 1,050$
 - (a) $4.7 - 4.9$ (b) $4.5 - 5.5$
(c) $0.9 - 1.1$ (d) $0.99 - 1.01$
(e) $0.999 - 1.001$
 - $1.9\text{m} - 2.1\text{m}$

Topic 27: Number Rules
Page 169

- B.**
- (a) 7 (b) 10 (c) 2 (d) 16
(e) 18 (f) 15
 - (a) 37 (b) 50 (c) 20 (d) 38
(e) 4 (f) 3
- C.**
- $(20 \times 350) + (25 \times 320) = 15,000$
 - Teacher Check
 - (a) I, K, M (b) N, Q, T
(c) R, P, N (d) EF, FG, GH
(e) EGE, FHF, GIG
(f) JJN, KKO, LLP
(g) J, J, A (June, July, August)
(h) T, W, T (Tuesday, Wednesday, Thursday)
(i) S, S, E (Six, Seven, Eight)



5. A smile is worth a hundred frowns.
- D.**
- Backslash, forward slash, pi, not equal to, club, diamond, heart, spade, musical notes, female, male, per cent, dollar, pound, degree, infinity, square brackets, curly braces, approximately, therefore
- E.**
- brackets, bomdás, symbol, 147731, codeword, pattern

Measuring Up!
Pages 170 and 171

Earthquakes

- daily
- weekly
- great
- n/a

Acidity

- Teacher Check
- Teacher Check
- (a) 6 (b) 9 (c) 7
- Teacher Check
- Teacher Check
- Acid rain occurs when pollution causes water vapour in clouds to become more acidic.

Sound

- 80db
- 130db

Altimeter

- metres
- 250m or 4,250m
- 4,000m

Voltmeter

- 6 volts
- Teacher Check

Mental Maths 7
Pages 172 and 173

- A.**
- 15 for 75c
 - halves are equal: ate the bigger piece
 - €3-40
 - 11
 - no because some of the teachers may be men
 - $1\frac{3}{5}$ 7. $\frac{16}{25}$ 8. $\frac{4}{9}$ 9. one
 - 95° 11. 100 12. 2 full stars
 - 28 14. 0.27 15. 10-003
- B.**
- telephone / spade / within / male / less than or equal to / approx / infinity
 - 80 3. Teacher Check
 4. 4.5% 5. 4m
 6. 850g - 950g 7. 52
 8. 12 for 40c 9. 4
 - 999,990
 - $3\frac{1}{5}$ (or in question - $1\frac{4}{5}$)
 - 17 13. 5 students
 - 2 (one regular) 15. 3

- C.**
- 50 and 10 2. $\frac{1}{3} + \frac{1}{3}$
 - $-2^\circ, -1^\circ, 0^\circ$ 4. 3-33
 - m 6. 21
 - Preference depends on the price of the item.
 - 90 days 9. 8⁶
 - 0.04 11. $\frac{9}{5}$
 - 15
 - Mental Arithmetic
 - 16 15. SP

D.

- Last lap. It is also reasonable that runners are fresh on their first lap and this answer may be acceptable if student can explain this!
- 12:50
- none of these 4. 4 more
- decagon 6. 70kph
- 45 and 18 8. €55
- 1 10. 60

Topic 28: Averages and Charts
Page 174
B.

- (a) 60 (b) 29 (c) 37 (d) 90
(e) 68 (f) 47 (g) 31 (h) 53
- (a) 53 (b) 34.5 (c) 35.75 (d) 4.7
(e) 3.24 (f) 4.27
- 85.6

C.

Long Jump	1.9m
High Jump	1.01m
200m	60.25s
Weights	26.375kg

D.

- 23 2. 57 3. 402 4. 100%

Topic 28: Averages and Charts
Page 175
A.

Smart Alecs:	102.75	favourites
Inquizators:	99.8	
Ceart Arís	100.2	

B.

Based on best 5 scores:

Larry	77.8
Harry	80.4
Halle	65
Sally	83.6 winner

Based on all scores:

Larry	76
Harry	79 would be winner
Halle	64
Sally	78

Discussion Point: How one bad score (Sally's 50) can drag an average right down

C.

Based on best 4

Whiz Kid	1m 41.5s	Position 4
Flash Gordon	1m 36.25s	Position 2
The Arrow	1m 47.25s	Position 6
Electron Eddy	1m 34.25s	Position 1
Missile Man	1m 39.25s	Position 3
Sonic Sonia	1m 42.75s	Position 5

Based on all results

Whiz Kid	1m 42.2s	Position 3
Flash Gordon	1m 36.6s	Position 1
The Arrow	1m 48.4s	Position 5
Electron Eddy	1m 50.4s	Position 6
Missile Man	1m 39.8s	Position 2

Sonic Sonia 1m 43.6s Position 4

Discussion Point: How one bad score (Electron Eddy) can drag an average right down.

Topic 28: Averages and Charts
Page 176
A.

- (a) 125 visitors (b) 103 visitors
(c) 1,392 visitors (d) 116 visitors
(e) school closed
- (a) 61 seconds (b) 58 seconds
(c) Perhaps the site had a timetable for Christmas plays, photos of the shows etc.

B.

- Oct, Nov, Dec
- Q1 and Q4 have fewer hours of daylight
- 1,856 Solar battery chargers
2,640 Eco-friendly paper reams
1,296 Solar lights
1,532 Compost bins
3,839 Recycled glass bottles
- 464 Solar battery chargers
660 Eco-friendly paper reams
324 Solar lights
383 Compost bins
959.75 Recycled glass bottles

Topic 28: Averages and Charts
Page 177
A.

- bicycle $\frac{1}{2}$ 180° skateboard $\frac{1}{4}$ 90°
walk $\frac{1}{12}$ 30° ski $\frac{1}{12}$ 30°
ice skate $\frac{1}{12}$ 30°
- stamp $\frac{1}{2}$ 180° tea bag $\frac{1}{8}$ 45°
match $\frac{1}{4}$ 90° fireworks $\frac{1}{8}$ 45°

B.

- door 18
stairs 12
knees 12
bed 6
floorboards 24
- whip 18
code 9
joke 36
glass 27
- wags tail 24
growls 16
rolls 16
licks 8
pants 24
barks 8

Topic 28: Averages and Charts
Page 178
B.

- 51 2. 68 3. 130 4. 499.5
- 444 6. 709.5

C.

- 310 2. 1,010
- (a) 29 (b) 85 (c) 68

D.

- true 2. true 3. false
- true (usually) 5. false

Topic 29: Variables **Page 179**
B.

Teacher Check

C.

- (a) $r = 8m$ (b) $r = 14m$
(c) $r = 16m$ (d) $r = 27m$
- (a) $r = 6.5m$ (b) $r = 12.5m$
(c) $r = 23.5m$ (d) $r = 39.5m$

D.

- (a) e.g. $l = 4m$, $w = 2m$
(b) e.g. $l = 5m$, $w = 2m$
(c) e.g. $l = 5m$, $w = 3m$
- (a) e.g. $l = 7m$, $w = 4m$
(b) e.g. $l = 7m$, $w = 6m$
(c) e.g. $l = 8.5m$, $w = 2m$
- (a) e.g. $l = 7m$, $w = 0.7m$
(b) e.g. $l = 0.7m$, $w = 0.7m$
(c) e.g. $l = 0.5m$, $w = 0.5m$

Topic 29: Variables **Page 180**
A.

- Mabel 72, 69
Tom 70, 71
Cynthia 76, 68
Fred 81, 97(g)
Alison 78, 105(g)
Kevin 75, 80(g)
- Tom
- Cynthia

B.

- Con €53.85
Eva €43.68
Tadhg €115.55
Gail €94.13
Henry €111.08
Deirdre €128.22

C.

- Peter 1,828
Megan 2,445
Josh 2,166
Leah 1,596
Alex 1,093

Topic 29: Variables **Page 181**
A.

- (a) $x = 14$ (b) $x = 35$
(c) $x = 92$ (d) $x = 0$
- (a) $x = 11$ (b) $x = 19$
(c) $x = 24$ (d) $x = 21$
- (a) $x = 3$ (b) $x = 8$
(c) $x = 9$ (d) $x = 23$

B.

- (a) $y = 7$ (b) $y = 4$
(c) $y = 6$ (d) $y = 8$
- (a) $y = 12$ (b) $y = 13$
(c) $y = 7$ (d) $y = 15$

3. (a) $y = 15.5$ (b) $y = 24.75$
(c) $y = 7.6$ (d) $y = 1.2$

- C.**
1. (a) $z = 10$ (b) $z = 2$
(c) $z = 3$
2. (a) $z = 3$ (b) $z = 3$
(c) $z = 12$
3. (a) $z = 25$ (b) $z = 44$
(c) $z = 14$

- D.**
1. (a) $y = 55$ (b) $y = 24$
(c) $y = 81$ (d) $y = 7$
2. (a) $y = 24$ (b) $y = 84$
(c) $y = 70$ (d) $y = 180$
3. (a) $y = 343$ (b) $y = 108$
(c) $y = 120$ (d) $y = 17$

- E.**
1. (a) 8 (b) -8 (c) 60 (d) 28

2. (a) 3 (b) $\frac{1}{3}$ (c) 144 (d) 16

- F.**
1. (a) 19 (b) 200 (c) 1 (d) 17
2. (a) 6 (b) 2 (c) 8 (d) $12\frac{1}{2}$

Topic 29: Variables Page 182

- A.**
1. (a) $y = 5$ (b) $y = 6$
(c) $y = 2$ (d) $y = 4$
2. (a) $x = 11$ (b) $x = 10$
(c) $x = 1$ (d) $x = 0$

- B.**
1. (a) $x = 6$ (b) $x = 7$
(c) $x = 4$ (d) $x = 9$
2. (a) $y = 7$ (b) $y = 11$
(c) $y = 4$ (d) $y = 1$

- C.**
1. Let $x =$ cost of 1 DVD
 $7x + 6 = 69$ $x = 9$
2. Let $x =$ cost of 1 apple
 $5x + 18 = 123$ $x = 21$
3. Let $x =$ the number
 $8x + 10 = 130$ $x = 15$
4. Let $x =$ number on a team
 $8x - 1 = 119$ $x = 15$

Topic 29: Variables Page 183

- A.**
Algebra is useful for working out answers to certain types of mathematical problems, especially those involving variables.

- B.**
1. (a) 11 (b) 36 (c) 1 (d) 4
(e) 1 (f) 4
2. (a) $x = 8$ (b) $x = 8$
(c) $x = 9$ (d) $x = 10$
(e) $x = 11$ (f) $x = 6$
(g) $x = 4$ (h) $x = 1$
3. (a) E1 (b) A2 (c) G (d) A1
(e) F (f) C1 (not C2)

- C.**
13c

- D.**
1. not constant, changing all the time
2. could not be relied upon
3. worth shopping around for best price

4. too many factors at play e.g. if it was a traffic accident the factors may have been weather, speed, carelessness, faulty brakes, inexperience, alcohol or a combination

Topic 30: Capacity and Volume Page 184

- B.**
1. Teacher Check
2. measuring jug, bottle, graduated cylinder, kettle / coffee maker with cup or $\frac{1}{4}$ litre markings, tablespoons & teaspoons (especially in baking), medicine spoons . . .

- C.**
1. (a) 3l 159ml 3.159l
(b) 7l 518ml 7.518l
(c) 2l 153ml 2.153l
(d) 9l 148ml 9.148l
2. (a) 2l 56ml 2.056l
(b) 4l 108ml 4.108l
(c) 8l 4ml 8.004l
(d) 12l 12ml 12.012l
3. (a) 2l 400ml 2.4l
(b) 3l 900ml 3.9l
(c) 7l 170ml 7.17l
(d) 6l 90ml 6.09l

- D.**
1. (a) 7,159ml (b) 9,208ml
(c) 3,118ml
2. (a) 1,023ml (b) 4,079ml
(c) 6,002ml
3. (a) 4,750ml (b) 3,800ml
(c) 9,625ml
4. (a) 2,850ml (b) 8,150ml
(c) 7,840ml
5. (a) 5,230ml (b) 11,413ml
(c) 6,063ml

Topic 30: Capacity and Volume Page 185

- A.**
1. Blue 450ml
Green 690ml
Purple 990ml
Orange 270ml
Yellow 380ml
Light Blue 650ml
2. Blue 550ml
Green 310ml
Purple 10ml
Orange 730ml
Yellow 620ml
Light Blue 350ml
3. (a) 1,140ml (b) 1,260ml
(c) 1,030ml (d) 1,790ml
(e) 1,640ml (f) 3,430ml
4. This is because these containers are wider in some places.
Discussion Point: When the containers are wider, are the marks closer together or further apart? Why?

- B.**
1. with a weighing scales
2. It is designed in such a way to measure the weight of these ingredients. This is possible because a certain quantity of flour (or sugar) will always weigh x grams.

3. no
4. yes, sugar

- C.**
1. (a) 9.918l (b) 5.305l
(c) 88.016l
2. (a) 6.993l (b) 1.151l
(c) 5.689l
3. (a) 24.954l (b) 173.352l
(c) 288.576l
4. (a) 392.392l (b) 544.929l
(c) 4.89l

Topic 30: Capacity and Volume Page 186

- A.**
1. 8.127l 2. 6.156l
3. 2.625l 4. 2.357l
5. 2.412l 6. 1.923l

- B.**
1. (a) 55.85l (b) 30.06l
(c) 12.35l (d) 2.65l
2. 100.91l

- C.**
1. 15l
2. Octopus Ink Inc.
Unit (ml) prices are €1, €0.90 and €1.10
3. (a) 3.6l (b) 86.4l
(c) attic tanks automatically refill as they empty using a ballcock & float mechanism

- D.**
1. (a) 24l (b) 14l
2. 12 bars (11 is insufficient) 11.2 bars is acceptable
3. (a) 1l 10ml (b) 505ml

Topic 30: Capacity and Volume Page 187

- A.**
Set 1
A 8cm^3 B 16cm^3
C 24cm^3 D 32cm^3
E 40cm^3

- Set 2**
A 15cm^3 B 30cm^3
C 45cm^3 D 60cm^3
E 75cm^3

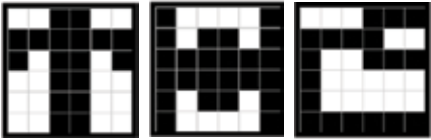
- Set 3**
A 16cm^3 B 32cm^3
C 48cm^3 D 64cm^3
E 80cm^3

- B.**
1. 40cm^3 2. 75cm^3
3. 80cm^3 4. 162cm^3
5. 150cm^3 6. 512cm^3
7. 900cm^3

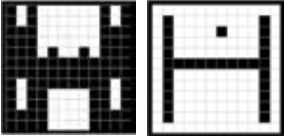
- C.**
1. 125ml 2. 125cm^3
3. Length of edge to the power of 3

Topic 32: Problem Solving 2
Page 197

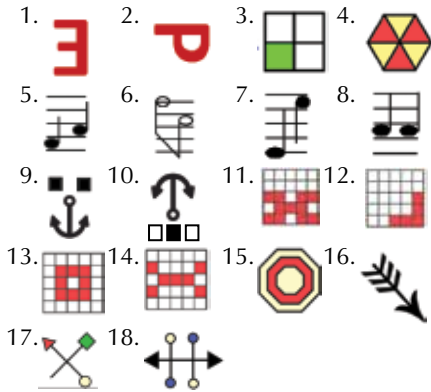
A.



B.



Topic 32: Problem Solving 2
Page 198



Let's Look Back Page 199

B.

1. (a) $\frac{19}{20}$ (b) $1\frac{5}{28}$ (c) $1\frac{7}{15}$ (d) $\frac{25}{72}$
 (e) $8\frac{1}{3}$ (f) $5\frac{13}{21}$ (g) $9\frac{1}{8}$ (h) $10\frac{1}{10}$
 2. (a) $\frac{1}{5}$ (b) $7\frac{3}{7}$ (c) $2\frac{1}{8}$ (d) $\frac{2}{9}$
 (e) $\frac{3}{10}$ (f) $\frac{11}{40}$ (g) $4\frac{1}{6}$ (h) $6\frac{5}{12}$
 3. (a) $\frac{6}{35}$ (b) $\frac{1}{12}$ (c) $\frac{3}{14}$ (d) $\frac{2}{9}$
 (e) $\frac{1}{4}$ (f) $\frac{7}{10}$ (g) $\frac{3}{10}$ (h) $\frac{5}{22}$
 4. (a) 10 (b) 8 (c) 15 (d) 24
 (e) 64 (f) 24 (g) 30 (h) 14

C.

2. 60min 3. 4min
 4. 20min 5. 6hr

Let's Look Back Page 200

A.

1. (a) 125 (b) 64 (c) 512 (d) 27
 (e) 8 (f) 81 (g) 225 (h) 400
 (i) 625 (j) 2,500
 2. (a) 12 and 3 (b) 16 and 4
 (c) 24 and 6 (d) 36 and 9
 (e) 80 and 20
 3. (a) 8, 6, 4 (b) 16, 12, 8
 (c) 28, 21, 14 (d) 44, 33, 22
 (e) 96, 72, 48
 4. (a) -3 (b) -4 (c) -4 (d) -5
 (e) -8 (f) -6

B.

1. 16-4cm 2. 5-5cm
 3. 18-84cm

C.

1. G G A R R R G G A
 2. G G G(+filter) A R R G G G(+filter)
 3. G G(+filter) A R R R G G(+filter) A R
 R R G G(+filter) A
 4. G A R G(+filter) A R G A R G(+filter)
 A R G A R

Let's Look Back Page 201

A.

- Puree 24
 Toothpaste 36
 Fluorescent light 12
 Glue 8
 Astronaut dinner 16

B.

1. (a) 8-28 (b) 0-476
 (c) 0-08 (d) 1-512
 (e) 0-2738 (f) 0-012
 2. (a) 4-9 (b) 3-46
 (c) 11-6 (d) 20
 (e) 500 (f) 250

C.

1. 2 for 16c 2. 5 for 65c
 3. 4 for 66c 4. equal

D.

- E-reader €50-40 €290-40
 Laptop €89-25 €514-25
 Phone €20-79 €119-79
 TV €136-29 €785-29

E.

1. (a) 41 (b) 67 (c) 78 (d) 65
 (e) 23 (f) 42 (g) 48 (h) 80
 (i) 415-4

Let's Look Back Page 202

A.

1. (a) ml (b) kg (c) g (d) km
 (e) m (f) ares / hectares / m²
 (g) m² (h) degrees (i) cm/m
 (j) l (k) kph
 (l) degree Centigrade/degree Fahrenheit
 2. (a) 8-0m (b) 6-24m
 (c) 9-23m (d) 0-91m
 (e) 0-58m (f) 0-09m
 (g) 0-03m (h) 0-003m
 (i) 3-0m (j) 0-7m
 (k) 0-07m (l) 0-007m
 3. (a) 3l 515ml (b) 8l 558ml
 (c) 7l 160ml (d) 2l 40ml
 (e) 7l 300ml (f) 8l 100ml
 (g) 8l 3ml (h) 0l 37ml
 (i) 2l 300ml (j) 2l 30ml
 (k) 2l 3ml (l) 4l 625ml
 4. (a) 8-155kg (b) 7-917kg
 (c) 12-819kg
 5. (a) Area 323m² Perimeter 72m
 (b) Area 234m² Perimeter 70m
 (c) Area 192m² Perimeter 104m
 (d) Area 340m² Perimeter 88m
 (e) Area 15-58m² Perimeter 15-8m
 (f) Area 37-84m² Perimeter 26m

B.

1. (a) 08:00 (b) 19:00
 (c) 04:00 (d) 16:00

- (e) 21:30 (f) 14:15
 (g) 15:20 (h) 11:25
 (i) 12:35 (j) 13:45
 (k) 00:15 (l) 12:30

2. (a) 9 hours 29 minutes
 (b) 10 hours 12 minutes
 (c) 9 hours 16 minutes
 (d) 8 hours 6 minutes
 (e) 8 hours 13 minutes
 3. (a) 1hr (b) 30min
 (c) 40min (d) 16min

Let's Look Back Page 203

A.

1. Soccer: v3 v3.1 v4 v4.1 v4.2 v5
 Basketball: v1 v1.1 v2 v2.1 v2.11 v2.2
 Gonzalez: v4 v4.1 v4.11 v4.12 v4.2
 2. 20 times

B.

- (a) (i) nothing (ii) leaflet (iii) flowers and
 pizza
 (b) 30
 (c) 97
 (d) e.g. 15

Challenge Yourself!

The prisoner cannot guarantee his freedom but he maximises his chances by placing one white ball in one urn and all the other balls in the other urn.

Thus when the guard chooses an urn, he has a 50-50 chance of choosing the urn with the white ball. Even if he doesn't choose that urn, he has a further (almost) 50-50 chance of choosing a white ball.

2. Swap horses.

Bonus

Tipperary: Nenagh (An tAonach) and Cahir (An Chathair)