



A COMPLETE NUMERACY PROGRAMME FOR PRIMARY SCHOOLS

4th Class Textbook Answers

Topic: Revision Page 5

- B.**
- 14 nights
 - €111
 - €149
 - €538
 - Flights to New York are likely to be dearer. New York hotel may offer better quality accommodation. Seasonal factors.
 - 30 days
- C.**
- Camera
 - Skipping rope
 - Aeroplane
 - Kite
 - €30.01
 - €4.51
 - €1.01
 - €77.99
 - €6.01
 - Kite, skipping rope and Jack-in-the-box
 - €14.01
 - Kite and skipping rope

Topic: Revision Page 6

- A.**
- (a) 131 (b) 504
(c) 685 (d) 769
(e) 669 (f) 781
 - (a) 42 (b) 91
(c) 459 (d) 355
(e) 278 (f) 318
- B.**
- (a) 240 (b) 560
(c) 350 (d) 270
(e) 450 (f) 240
 - (a) 128 (b) 168
(c) 234 (d) 378
(e) 272 (f) 415
 - (a) 31 (b) 18
(c) 47 (d) 19
(e) 16 (f) 14
 - (a) 45 r 1 (b) 29 r 1
(c) 24 r 3 (d) 17 r 2
(e) 15 r 2 (f) 19 r 4
- C.**
- (a) $\frac{1}{4}$ past 10 (b) 20 to 5
(c) 5 past 11 (d) 5 to 1
(e) 25 to 3
 - (a) 70 minutes (b) 110 minutes
(c) 90 minutes (d) 105 minutes
(e) 119 minutes (f) 75 minutes
 - Teacher Check

Topic: Revision Page 7

- A.**
- Bottle – 2l
Distance sign – 50km
Cash – €85
Clocks – 6 hours
Coins – 88c
Ruler – 2cm

- Butter – 500g
Mug – 250ml
Potatoes – 5kg
2. Teacher Check
3D shapes – triangular prism, cone, cuboid, sphere, pyramid, cylinder, cube (pupils may not be familiar with all labels but should be able to differentiate between 2D and 3D shapes).

- B.**
- Dan 20 minutes
Cleo 5 minutes
Sam 35 minutes
Zelda 25 minutes
 - Sam takes longest and probably lives furthest. However there are many other factors: perhaps he walks or waits on bus whereas other students are driven by parents/perhaps there are road works or a detour to slow him down/perhaps he broke his leg and can only walk very slowly . . .
 - 10 minutes longer
 - 15 minutes
 - No deadline/stop at shops/wait for a bus . . .
 - Teacher Check
 - Teacher Check

Topic: Place Value Page 8

- B.**
- 1,446 2, 2,075
 - 3,020 4, 1,507
 - 2,402 6, 3,007
- C.**
- (a) 2 thousands (b) 4 hundreds
(c) 2 tens (d) 4 hundreds
(e) 5 thousands (f) 7 hundreds
(g) 11 hundreds (h) 23 units
(i) equal
 - (a) 20 units
(b) 200 units
(c) 2,000 units
 - (a) 30 tens (b) 50 tens
(c) 100 tens
 - (a) 50 hundreds (b) 70 hundreds
(c) 90 hundreds

Topic: Place Value Page 9

- A.**
- (a) $3,000 + 600 + 30 + 7$
(b) $1,000 + 700 + 40 + 6$
(c) $9,000 + 100 + 50 + 6$
(d) $2,000 + 400 + 60 + 2$
(e) $8,000 + 100 + 60$
(f) $6,000 + 200 + 5$
(g) $5,000 + 20 + 6$
(h) $7,000 + 500$
(i) $6,000 + 8$ (j) $4,000 + 50$

- (k) $5,000 + 2$ (l) $3,000 + 10 + 3$
2. (a) 6,104 (b) 4,026
(c) 2,002 (d) 4,650
- (a) 4 hundreds (b) 40 hundreds
(c) 90 hundreds (d) 3 tens
(e) 30 tens (f) 300 tens

- B.**
- (a) 6,591 (b) 7,216
(c) 6,821 (d) 5,852
(e) 3,951 (f) 2,200
(g) 8,810 (h) 3,400
 - (a) 1,368 (b) 2,020
(c) 7,007 (d) 4,599
(e) 3,111
 - (a) 1,348 (b) 2,478
(c) 4,679 (d) 1,557
(e) 247 (f) 78
(g) 1,147 (h) 2,237
(i) 1,224 (j) 2,228
(k) 4,455 (l) 1,188

- C.**
Teacher Check

Topic: Place Value Page 10

- A.**
- Teacher Check
 - (a) 7,152 (b) 2,574
(c) 7,000 (d) 7,001
(e) 713
 - (a) 1,884 (b) 4
(c) 8,746 (d) 7,224
(e) 2,314
- B.**
- (b) 7,532 or 7,523
(c) 8,517 or 8,571 or 8,715 or 8,751
(d) can't be done
(e) 9,220 or 9,202
 - (a) 5,611 or 6,511 or 6,151 or 6,115
(b) 5,522
(c) can't be done
(d) 8,622
(e) can't be done

Topic: Place Value Page 11

- A.**
- (a) 4,500 (b) 3,900
(c) 4,100
 - (a) 5,300 (b) 6,100
(c) 5,500
 - (a) 7,999 (b) 8,004
(c) 7,990
- B.**
- (a) 3,000 (b) 4,000
(c) 4,000 (d) 4,000
(e) 4,000 (f) 3,000
(g) 3,000 (h) 4,000
 - (a) 9,000 (b) 3,000
(c) 1,000 (d) 7,000
(e) 2,000 (f) 6,000
(g) 5,000 (h) 3,000

C.

- (a) 2 (b) no
(c) 1 (d) 80
(e) no (f) no
(g) no (h) 808
(i) no (j) 9
(k) no (l) no
- (a) 206 (b) 509
(c) 5,006 (d) 308
(e) 500 (f) 6,060
(g) 2,500 (h) 3,050
- (a) no (b) yes
(c) yes (d) yes
(e) no (f) no
(g) no (h) yes

Topic: Place Value Page 12

A.

Teacher Check

B.

- (a) 8,000 (b) 2,000
(c) 4,000 (d) 5,000
(e) 6,000 (f) 8,000
- 0345 0354 0435 0453
0534 0543 3045 3054
3405 3450 3504 3540
4035 4053 4305 4350
4503 4530 5034 5043
5304 5340 5403 5430

C.

- Wonder, 9,006 2. Blue, 8,218
- Control, 4,419 4. Melody, 4,409
- Dancer, 4,194 6. Crazy, 4,094
- Fond, 4,049 8. Lost, 2,159
- Together, 1,319 10. Razzmatazz 943

D.

- False 2. False
- False 4. True
- True 6. True
- True 8. True

E.

- Fourth, sixth, eighth, tenth, 3rd, 5th, 7th, 9th
- Usually best to be 1st in a race and 1st in a queue
- 13th 14th 15th 16th
17th 18th 19th 20th
- Teacher Check

Topic: Addition Page 13

B.

1. 17 2. 14 3. 15 4. 13
5. 18 6. 17 7. 26 8. 18
9. 23 10. 27 11. 28 12. 27
13. 30 14. 42 15. 67 16. 88

C.

- (a) 478 (b) 552
(c) 781 (d) 819
- (a) 985 (b) 822
(c) 540 (d) 914

D.

1. $13 + 14 = 27$ 2. $19 + 13 = 32$
3. $26 + 14 = 40$ 4. $24 + 27 = 51$
5. $36 + 36 = 72$ 6. $31 + 39 = 70$
7. $45 + 45 = 90$ 8. $47 + 46 = 93$

Topic: Addition Page 14

A.

- (a) 549 (b) 791
(c) 606 (d) 932
(e) 731 (f) 1000
- 311 flights
- (a) 490 visitors (b) 735 visitors

B.

- (a) 6,929 (b) 6,797
(c) 9,376 (d) 7,361
- (a) 6,215 (b) 6,052
(c) 7,550 (d) 6,065

C.

- 16, 9, 6, 3
5, 4, 15, 10
11, 14, 1, 8
2, 7, 12, 13

- 22, 11, 9, 10
7, 12, 20, 13
17, 16, 4, 15
6, 13, 19, 14

- 19, 14, 9, 6
6, 9, 16, 17
15, 18, 5, 10
8, 7, 18, 15

D.

- (a) 5,496 votes
(b) Cillian was elected
(c) 9,955 people voted
- 607c or €6.07

Topic: Addition Page 15

A.

- (a) 7,694 (b) 9,449
(c) 9,078 (d) 6,684
(e) 4,432 (f) 4,004
- (a) plain umbrellas
(b) 3,719 umbrellas
(c) 3,357 umbrellas
(d) 2,980 umbrellas
(e) 5,028 umbrellas
(f) umbrella with logo is likely to be most expensive. (Discuss why.)
- (a) 6,557 (b) 8,563
(c) 7,953 (d) 6,316
(e) 7,173 (f) 9,947

B.

- (a) 4,000 (b) 3,000
(c) 4,000 (d) 4,000
(e) 3,000 (f) 4,000
(g) 3,000 (h) 4,000
- (a) 1,000 (b) 8,000
(c) 4,000 (d) 3,000
(e) 8,000 (f) 6,000
(g) 8,000 (h) 5,000
- (a) 9,000 (b) 9,000
(c) 9,000 (d) 8,000
(e) 6,000 (f) 6,000
- (a) 8,000 (b) 8,000
(c) 9,000 (d) 7,000

Topic: Addition Page 16

A.

- C key
- + key is large because it is likely to be used most often.
- 8 digits
- solar means powered by the sun
- no, calculators vary according to model, manufacturer etc. but have common basic functions.
- Set A
(a) 72 (b) 126 (c) 144
(d) 212 (e) 226 (f) 172
Set B
(a) 676 (b) 713 (c) 961
(d) 666 (e) 803 (f) 1,404
Set C
(a) 6,422 (b) 6,984 (c) 4,358
(d) 5,579 (e) 6,009 (f) 4,480

B.

Teacher Check

C.

- (a) 14 (b) 16 (c) 19
(d) 20 (e) 25 (f) 31
- (a) 19 (b) 24 (c) 27
(d) 29 (e) 34 (f) 47
- (a) 30 (b) 42 (c) 53
(d) 66 (e) 68 (f) 75

Topic: Addition Page 17

A.

Teacher Check

B.

- (a) 32 (b) 27 (c) 29
(d) 34 (e) 27 (f) 31
(g) 27 (h) 28 (i) 32
(j) 24
- (a) 6,623 (b) 9,590
(c) 6,508 (d) 7,532
(e) 7,476

C.

- | | |
|----------|--------------|
| Ava | 2,350 |
| Samantha | 2,430 |
| Tony | 2,540 |
| Total | 7,320 photos |

D.

- ... bringing his account to €1,100
- ... to the nearest thousand is 9,000
- They are the same (addition is commutative).
- $6,036 + 1,839 = 7,875$

E.

- 17, 24, 1, 8, 15
23, 5, 7, 14, 16
4, 6, 13, 20, 22
10, 12, 19, 21, 3
11, 18, 25, 2, 9
- 12, 11, 5, 24, 18
19, 13, 7, 6, 25
26, 20, 14, 8, 2
3, 22, 21, 15, 9
10, 4, 23, 17, 16

3. 19, 26, 3, 10, 17
25, 7, 9, 16, 18
6, 8, 15, 22, 24
12, 14, 21, 23, 5
13, 20, 27, 4, 11

Topic: Time 1 Page 18

- B.**
1. 20 minutes past 1 o'clock
 2. 15 minutes to 11 o'clock
 3. 5 minutes past 10 o'clock
 4. 25 minutes to 4 o'clock
 5. 10 minutes to 6 o'clock
- C.**
1. 4 minutes to 2. 16 minutes to
 3. 27 minutes to 4. 18 minutes to
 5. 27 minutes past 6. 3 minutes past
 7. 9 minutes past
- D.**
1. 29 minutes past 8 o'clock
 2. 14 minutes to 2 o'clock
 3. 18 minutes past 12 o'clock
 4. 28 minutes to 10 o'clock
 5. 14 minutes past 5 o'clock

Topic: Time 1 Page 19

- A.**
1. 10 o'clock
10 minutes past 10 o'clock
20 minutes to 10 o'clock
10 minutes to 10 o'clock
25 minutes to 10 o'clock
 2. 20 minutes to 5 o'clock
15 minutes past 4 o'clock
5 minutes to 5 o'clock
5 minutes to 4 o'clock
5 minutes past 4 o'clock
- B.**
1. 15 minutes past 2 o'clock
25 minutes to 3 o'clock
5 minutes to 2 o'clock
5 minutes to 3 o'clock
20 minutes to 3 o'clock
 2. 15 minutes past 11 o'clock
20 minutes past 10 o'clock
5 minutes past 11 o'clock
25 minutes to 10 o'clock
15 minutes to 10 o'clock
 3. 9 o'clock
22 minutes past 9 o'clock
11 minutes past 9 o'clock
30 minutes past 9 o'clock
15 minutes past 9 o'clock
 4. 8 minutes past 11 o'clock
1 minute to 11 o'clock
29 minutes past 11 o'clock
22 minutes past 11 o'clock
12 minutes to 12 o'clock

Challenge Yourself!

- 19 minutes to 4 o'clock
- 29 minutes past 3 o'clock
- 1 minute to 4 o'clock
- 9 minutes to 4 o'clock
- 24 minutes to 6 o'clock

Topic: Time 1 Page 20

- A.**
1. (b) 5 past 4 (c) 4:10
 2. (a) 4:15 (b) 20 past 4 (c) 4:25
 3. (a) $\frac{1}{2}$ past 4 (b) 4:35 (c) 20 to 5
 4. (a) 4:45 (b) 10 to 5 (c) 4:55
 5. (a) 5 o'clock (b) 9:30 (c) 5 past 8
 6. (a) 11:20 (b) 25 to 2 (c) 1:10
 7. (a) $\frac{1}{4}$ to 5 (b) 7:00 (c) 5 to 4
- B.**
1. 7:00 2. 4:55
 3. 12:25 4. 8:05
 5. 9:10 6. 11:20
 7. 5:40 8. 6:45
 9. 3:40 10. 1:35
 11. 1:30 12. 10:15
- C.**
1. (a) 20 minutes (b) Sport
(c) 25 minutes (d) 22 minutes
(e) 8:05
 2. (a) 37 minutes (b) 16 minutes
(c) 63 minutes (1 hour 3 minutes)
(d) Z Crisis 5:08 Z Factor 5:30
Z News 6:07 Z World 6:39
Z Movie 7:20 Z End 8:44
- D.**
1. 12:20 2. 1:15
 3. 10:05 4. 3:52

Topic: Time 1 Page 21

- A.**
1. (a) Tuesday (b) Friday
(c) Wednesday (d) Monday
(e) Thursday (f) Monday
 2. Sunday 3. Thursday
 4. Friday 19th March
 5. Wednesday 31st March
 6. St Patrick's Day
 7. 7:03
 8. 6:26
 9. They are exactly 12 hours apart.
 10. 12 hours 41 minutes
 11. 14th March 12. 15 days
- B.**
1. 366 days 2. 7 months
 3. 91 days 4. 36 hours

Topic: Time 1 Page 22

- A.**
- Teacher Check
- B.**
1. (a) 4:02 (b) 10:17
(c) 2:31 (d) 11:41
(e) 6:53
 2. (a) $\frac{1}{4}$ past 4 (b) 5 past 7
(c) $\frac{1}{4}$ to 9 (d) 11 o'clock
(e) 25 to 12 (f) 25 past 7
(g) 20 past 5 (h) 10 to 3
 3. (a) 1:30 (b) 2:20
(c) 7:45 (d) 10:00
(e) 8:40 (f) 12:40
(g) 4:05 (h) 6:14

- C.**
1. am 2. pm
 3. pm 4. am
 5. pm 6. am

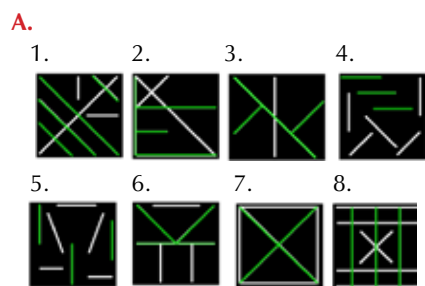
D.-E.
Teacher Check

Topic: Lines and Angles Page 23

- B.**
- 1.-2. Discuss instances of vertical, horizontal and sets of parallel and perpendicular lines in photos. Draw children's attention to lines that are almost but not quite vertical, horizontal, parallel or perpendicular. Also point out that lines do not necessarily have to be horizontal (or vertical) in order to be parallel e.g. lines in the banisters picture

- C.**
- 1.- 5. Teacher Check
 6. Oblique walls might be unstable.

Topic: Lines and Angles Page 24



B. Teacher Check

Topic: Lines and Angles Page 25

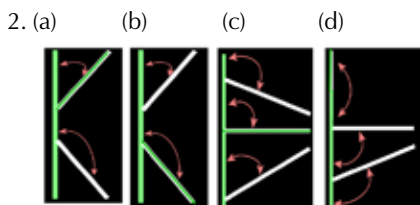
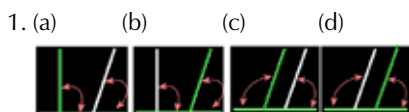
- A.**
- 1, 2 and 3
- B.**
1. Acute / less than right angle
 2. Acute / less than right angle
 3. Obtuse / greater than right angle
 4. Acute / less than right angle
 5. Acute / less than right angle
 6. Obtuse / greater than right angle
 7. Straight / greater than right angle
 8. Right angle / equal
 9. Right angle / equal
 10. Acute / less than right angle
 11. Obtuse / greater than right angle
 12. Obtuse / greater than right angle
- C.**
1. Arm on left: right angle
Arm on right: right angle
 2. Arm on left: straight angle
Arm on right: acute angle

- Arm on left: obtuse angle
Arm on right: acute angle
- Arm on left: acute angle
Arm on right: obtuse angle

Topic: Lines and Angles

Page 26

A.



B.

- Obtuse angle
- No (though vertical take off and landing aeroplanes have been developed for military purposes!)
- Acute angle
- Faster
- Downhill
- To prevent balls from freely rolling
- Vertical walls are stable
- Our climate ensures plentiful rainfall. Sloped roofs are designed to allow rain to run off whereas rain can collect on flat roofs which may leak.
- [Shallow slope – not very steep]
- Water skiers

Topic: Lines and Angles

Page 27

A.

The space usually measured in degrees between two intersecting lines.

B.

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

	Has Parallel Lines	Has Perpendicular Lines
A		
E	✓	✓
F	✓	✓
H	✓	✓
I		
L		✓
M		
N	✓	
R		✓
T		✓
U		
V		
W		

X		
Y		
Z	✓	

	Vertical Line	Horizontal Line
A		✓
E	✓	✓
F	✓	✓
H	✓	✓
I	✓	
L	✓	✓
M		
N	✓	
R	✓	✓*
T	✓	✓
U	✓*	
V		
W		
X		
Y	✓	
Z		✓

* Purists could rightly argue that these do not qualify as part of the line is curved. Opportunity for discussion.

- (a) Spinning top
(b) Fan, chopper
(c) Clockwise
(d) Teacher Check

C.

9 right angles

D.

E, F, H and L.

E. Teacher Check

The Game Show Pages 28 and 29

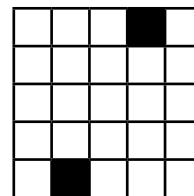
- 2,335
- 2,079
- Jake
- Acute angle
- 7:27
- 12 minutes
- 33 minutes
- 45 minutes
- Plasma TV, Snowboarding trip, Mountain bike
- Lily: Mountain bike, Laptop, Snowboarding trip, Shopping spree
Ben: Laptop, Snowboarding trip, Shopping spree
Abbie: Mountain bike, Laptop, Shopping spree
Jake: Laptop, Shopping spree
- 4,414
- No
- 4 hours 33 minutes
- 10 minutes past 8 o'clock (approx.)
- Yes (e.g. each abacus)
- 8,849 points
- 7
- Abbie
- He could afford both the laptop and the shopping spree.
- He only answered one 1,000 point question.

Mental Maths 1

Page 30

A.

- $\frac{3}{4}$
- Acute
- 200c
- 0.3
- 480
- 100cm
- 28 squares
- Quarter
- 105
- 21
- July
- $\frac{1}{4}$ past 4
- 1 bee
- Teacher Check



B.

- mug
 - Teacher Check
 - Teacher Check
 - 12
-
-
- 1 kg
 - Saturday
 - 21c
 - 0-6
 - 3
 - 20 squares
 - $\frac{3}{4}$
 - 500
 - 20
 - False

Mental Maths 1

Page 31

C.

- 3,729
 - 8
-
-
- $\frac{1}{4}$ to 1
 - $\frac{1}{3}$
 - €1.40
 - 3 calls
 - Ireland
 - Teacher Check
 - 63
 - 3F698D9
 - Obtuse
 - 0.7
 - Teacher Check
 - Teacher Check

D.

- Unlikely
- $\frac{9}{10}$
- 10km
- Notebook
- None of these
- €2.10
- 20c
- 40c
- C
- None of these

Topic: Subtraction

Page 32

B.

- 305
- 241
- 559
- 89
- 637
- 318
- 247
- 670
- 338
- 728
- 481
- 385

13. 279 14. 567
 15. 743 16. 577
 17. 587 18. 554

C.

- 47 rainy days
- 122 wrestling cards
- 232 pages left
- 108 ballads

Topic: Subtraction Page 33

A.

P	I	R	A	T	E
253	155	145	111	729	137

S	H	I	P
364	42	155	253

B.

- 226 tourists 2.176 coconuts
- 374 pieces of gold 4.213cm

Challenge Yourself!

96 pirates

Topic: Subtraction Page 34

A.

- (a) 3,082 (b) 2,448
(c) 1,091 (d) 5,921
- 7,875 people
- 6 empty seats (not 7)
- 937 unsold tickets
- (a) 2,909 (b) 1,088
(c) 5,892 (d) 5,189
(e) 4,879
- (a) 137 more flags than hats
(b) 544 more scarves than flags
(c) 681 more scarves than hats
- Greatest possible numbers are 8,752 and 7,433
 $8,752 - 7,433 = 1,319$

Challenge Yourself!

Teacher Check

Topic: Subtraction Page 35

A.

- (a) 3,059 (b) 6,257
(c) 3,791 (d) 5,765
- 2,694cm 3. 1,365ml

B.

- (a) 6,757 (b) 3,684
(c) 2,688 (d) 1,557
- 818 cars

C.

- (a) 2,751 (b) 2,716
(c) 1,781 (d) 6,962
- (a) 17 years (or 16)*
(b) 21 years (or 20)*
(c) 14 years (or 13)*
(d) 25 years (or 24)*
 *Discussion point: It depends on when the person was born and when they played their first match. Consider Roy: Born 1983, played in 2000
 Possibility 1: Born March 1983, played in April 2000: 17 years old
 Possibility 2: Born March 1983, played in February 2000: 16 years old.

- €1,770
- 517 coffees

Topic: Subtraction Page 36

A.

To take away one number from another number to get the difference between the two.

B.

- (a) 22 (b) 30 (c) 1
- (a) 20 (b) 13 (c) 13
- (a) 477 (b) 4,103
(c) 5,305 (d) 1,922
- (a) 3,128 (b) 6,201
(c) 2,409 (d) 5,817

C.

- (a) 4,246 points (b) 367 points
(c) Ben
- 1,020 pages 3. 1,750 cards

D.

- Take away 2. Less
- Fewer 4. Decrease
- Reduce 6. Minus

E.

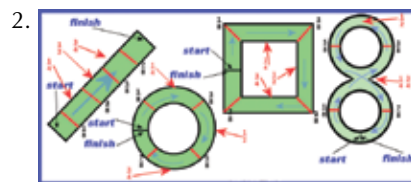
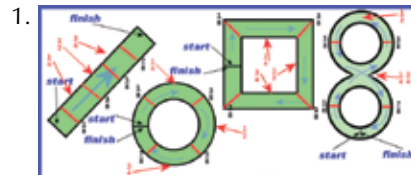
200 pupils in 5th and 6th
 94 pupils in fifth

Topic: Fractions 1 Page 37

B.

- $\frac{1}{4}$ 2. $\frac{1}{4}$ 3. $\frac{3}{4}$ 4. $\frac{5}{8}$
- $\frac{7}{8}$ 6. $\frac{3}{8}$

C.



3. Teacher Check. Sample answers:

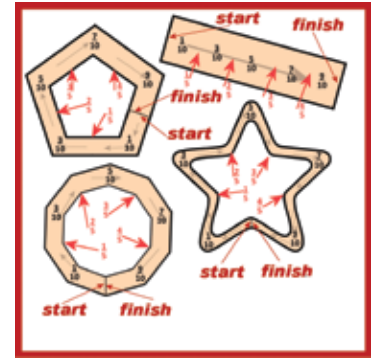
- (a) $\frac{2}{4}$ (b) $\frac{2}{8}$ (c) $\frac{6}{8}$
(d) $\frac{2}{2}$ (e) $\frac{4}{8}$ (f) $\frac{3}{4}$

Topic: Fractions 1 Page 38

A.

- (a) $\frac{1}{5}$ (b) $\frac{4}{5}$ (c) $\frac{7}{10}$
(d) $\frac{6}{10}$ (e) 1 unit (f) equal
- Teacher Check. Sample answers:
(a) $\frac{5}{10}$ (b) $\frac{6}{10}$ (c) $\frac{2}{5}$
(d) $\frac{2}{10}$ (e) $\frac{1}{2}$ (f) $\frac{2}{3}$
- 5 equal pieces
- 10 equal pieces
- Equal quantities
- 10 equal pieces

Challenge Yourself!



Topic: Fractions 1 Page 39

A.

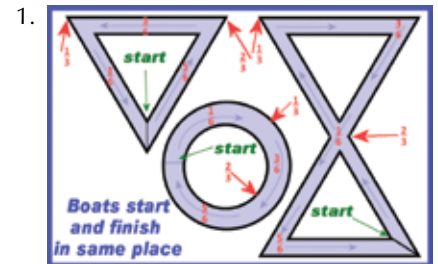
- (a) $\frac{2}{3}$ (b) $\frac{1}{3}$ (c) 1 unit
(d) $\frac{7}{9}$ (e) $\frac{3}{6}$ (f) $\frac{7}{9}$

2.

3. Teacher Check. Sample answers:

- (a) $\frac{4}{6}$ (b) $\frac{1}{2}$ (c) $\frac{1}{3}$
(d) $\frac{2}{3}$ (e) $\frac{6}{6}$ (f) $\frac{2}{3}$

B.



C.

- $\frac{1}{3}$ $\frac{2}{3}$ 1
- $\frac{1}{6}$ $\frac{3}{6}$ $\frac{5}{6}$
- $\frac{7}{12}$ $\frac{8}{12}$ $\frac{11}{12}$
- $\frac{1}{6}$ $\frac{1}{3}$ $\frac{5}{6}$
- $\frac{2}{9}$ $\frac{5}{9}$ $\frac{2}{3}$
- $\frac{3}{6}$ $\frac{7}{12}$ $\frac{11}{12}$

Topic: Fractions 1 Page 40

A.

1. Teacher Check. Sample answers:

- (a) $\frac{2}{6}$ (b) $\frac{3}{6}$
(c) $\frac{2}{8}$ (d) $\frac{2}{10}$
(e) $\frac{4}{6}$ (f) $\frac{9}{12}$
(g) $\frac{4}{10}$ (h) $\frac{10}{12}$

2. Teacher Check. Sample answers:

- (a) $\frac{1}{8}$ (b) $\frac{1}{12}$
(c) $\frac{1}{10}$ (d) $\frac{1}{6}$
- $\frac{1}{12}$ $\frac{2}{12}$ etc.
 $\frac{2}{5}$ $\frac{3}{5}$ etc.

5. (a) $\frac{10}{12}$ (b) $\frac{3}{4}$
 (c) $\frac{6}{10}$ (d) $\frac{6}{9}$
 (e) $\frac{5}{10}$ (f) $\frac{3}{12}$
 (g) $\frac{6}{10}$ (h) $\frac{4}{6}$
 (i) $\frac{2}{3}$ (j) $\frac{3}{4}$

- B.**
 1. Teacher Check

2. $\frac{4}{5}, \frac{5}{6}, \frac{7}{8}, \frac{11}{12}$

Challenge Yourself!

$\frac{3}{8}$ (not $\frac{3}{6}$)

Topic: Fractions 1 Page 41

- A.**
 Numerator: it increases, stretches the fraction, increasing its value.
 Denominator: it increases, shrinks the fraction, decreasing its value.

- B.**
 1. Teacher Check
 2. $\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, 1, 1\frac{1}{4}$, etc.
 3. $\frac{1}{3}, \frac{2}{3}, 1, 1\frac{1}{3}, 1\frac{2}{3}$, etc.
 4. $\frac{1}{5}, \frac{2}{5}, \frac{3}{5}, \frac{4}{5}, 1, 1\frac{1}{5}, 1\frac{2}{5}$, etc.

- C.**
 1. $\frac{3}{6}$ 2. $\frac{7}{10}$
 3. 6 tenths 4. 6 eighths
 5. 4 sixths 6. 9 eighths
 7. 7 sixths 8. 11 tenths

- D.**
 1. A small fraction: much fewer than half of the number of children.
 2. Improved a little, but not significantly.
 3. Much more than half of his money, a significant amount of his money.

- E.**
 1. 3 cuts will create 4 pieces.
 2. (a) 2 cuts (b) 4 cuts (c) 5 cuts

Topic: Graphs Page 42

- B.**
 Swan 6 Gull 10
 Heron 5 Duck 11

- C.**
 Teacher Check

- D.**
 Teacher Check

Topic: Graphs Page 43

- A.**
 1. Lights left on 2. 10 times
 3. 10 times 4. Horizontal
 5. €3·80
 6. Machines are most economical when used at optimum capacity which in the case of a dishwasher is when it is full.

- B.**
 1. 1:100 2. 1:10
 3. 1:2 4. 1:5
 5. 1:10

Topic: Graphs Page 44

- A.**
 Teacher Check
- B.**
 1. Points
 (a) Ballyhoo 25 Masons 40
 Rathlag 15 Millers 50
 Dunard 35
 (b) Rathlag
 (c) 35 more points
 (d) 1:5
 (e) highest number to be graphed is 50. Scale of 1:1 would be silly. If we divide 50 by say 10 (the number of 'notches' on the graph), we get 5
2. Goals
 (a) Ballyhoo 8 Masons 7
 Rathlag 10 Millers 3
 Dunard 7
 (b) Masons and Dunard
 (c) 7 more goals
 (d) Scale of 1:1 was suitable because the highest number to be graphed is 10
3. Both
 (a) Ballyhoo 49 Masons 61
 Rathlag 45 Millers 59
 Dunard 56
 (b) Masons
 (c) points are usually easier to score than goals
 (d) vertical

- C.**
 1. Suitable scale 1:50
 2. Suitable scale: 1:10

Topic: Graphs Page 45

- A.**
 1. graphz.ie 2. 45 hits
 3. 20 hits 4. 90 hits
 5. €9

- B.**
 Teacher Check

- C.**
 1. (a) 12 per team (b) 8 per team, (c) 6 per team
 2. It is impossible to divide 23 pupils into teams with equal numbers of players.
 3. He could join in himself (5 teams of 5) if two teams play at a time, he could ask a pupil from a spectating team to sub when the team of 4 is playing (4 teams of 5 and 1 team of 4) if two teams play at a time, he could have 5 teams and only allow 4 players to play at a time (4 teams of 5 and 1 team of 4).

- D.**
 Teacher Check

Topic: Graphs Page 46

- A.**
 Scales are used when the biggest number to be graphed is so high that it would be very difficult to have a notch on the graph for every unit.

- B.**
 1. Teacher Check
 2. Teacher Check
- C.**
 1. Horizontal bar line graph
 2. Alarm codes
 3. Telephone number
 4. 25 people
 5. Most people nowadays store telephone numbers in their mobile phones
 6. 150 people
- D.**
 1. The bars in a vertical bar graph go from top to bottom. / The bars in a horizontal bar graph go from left to right.
 2. Using a scale of 1:5 for a graph would need more space than using a scale of 1:10.
 3. A pie chart is circular.
 4. Keeping a tally helps when counting
- E.**
 Teacher Check

Topic: Multiplication Page 47

- B.**
 1. (a) 14 (b) 12 (c) 11 (d) 40
 2. (a) 30 (b) 12 (c) 8 (d) 120
 3. (a) 16 (b) 121 (c) 49 (d) 4
 4. (a) 18 (b) 48 (c) 16 (d) 5
 5. (a) 50 (b) 30 (c) 63 (d) 44
 6. (a) 0 (b) 8 (c) 9 (d) 110
 7. (a) 81 (b) 36 (c) 1 (d) 64
 8. (a) 12 (b) 0 (c) 42 (d) 132

- C.**
 1. (a) 215 (b) 234 (c) 292 (d) 252 (e) 112 (f) 165 (g) 126 (h) 276
 2. (a) 144 (b) 156 (c) 570 (d) 666 (e) 469 (f) 588 (g) 448 (h) 333
 3. 254
 4. 32

Topic: Multiplication Page 48

- A.**
 1. (a) 1,075 (b) 1,560 (c) 1,836 (d) 476 (e) 435 (f) 912
 2. (a) 5,887 (b) 2,080 (c) 2,346 (d) 3,008 (e) 2,696 (f) 3,744
 3. (a) 1,295 (b) 1,432 (c) 2,850 (d) 4,936 (e) 1,695 (f) 4,613 (g) 3,548

- B.**
 1. Teacher Check
 2. (a) $2 \times 9 = 9 \times 2 = 18$
 (b) $9 \times 6 = 6 \times 9 = 54$
 (c) $4 \times 3 = 3 \times 4 = 12$
 (d) $7 \times 0 = 0 \times 7 = 0$
 (e) $3 \times 8 = 8 \times 3 = 24$
 (f) $8 \times 4 = 4 \times 8 = 32$
 (g) $6 \times 2 = 2 \times 6 = 12$
 (h) $1 \times 8 = 8 \times 1 = 8$
 3. 0

- C.**
 1. (a) 3,960 (b) 1,743 (c) 954 (d) 3,899 (e) 1,194 (f) 2,508 (g) 2,920

2. (a) 8,991 (b) 7,992 (c) 7,104
(d) 6,216 (e) 5,439 (f) 3,108
(g) 6,216
3. (a) Joe 5,328 (b) Erin 4,662
(c) Sam 2,886 (d) Eva 2,442

Topic: Multiplication Page 49

A.

Th	H	T	U
		8	0

Th	H	T	U
		6	0

Th	H	T	U
	6	3	0

Th	H	T	U
	5	2	0

Th	H	T	U
1	8	2	0

Th	H	T	U
3	9	4	0

7. (a) 130 (b) 150 (c) 220 (d) 360
(e) 450 (f) 510 (g) 630 (h) 790
8. (a) 180 (b) 250 (c) 320 (d) 400
9. (a) 230 (b) 570 (c) 840 (d) 620
10. (a) 370 (b) 630 (c) 970 (d) 300

B.

1. 150g 2. 140 pages
3. 500 fireworks
4. (a) 170 (b) 290 (c) 380
(d) 440 (e) 530 (f) 640

Topic: Multiplication Page 50

1. (a) n/a
330 firecrackers
420 shells
560 fountains
990 rocket arrangements
(b) 150 Roman candles
210 firecrackers
580 shells
800 fountains
620 rocket arrangements
(c) 1,420 Roman candles
2,140 firecrackers
2,360 shells
1,140 fountains
2,010 rocket arrangements
2. (a) €3,120
(b) €4,400
(c) €2,950
3. (a) 5,680 Catherine wheels
(b) 6,020 sparklers
(c) 7,520 stars
(d) 9,850 waterfalls

B.

- 1.(a) 31 (b) 80 (c) 24
(d) 72 (e) 34 (f) 54
(g) 19 (h) 40

- 2.(a) 10 (b) 14 (c) 26
(d) 19
3.(a) 19 (b) 17 (c) 14
(d) 16

Topic: Multiplication Page 51

A.

The process of finding the number or quantity found by repeating additions of a specified number or quantity a specified number of times.

B.

1. (a) 27 (b) 18 (c) 60
(d) 55
2. (a) 64 (b) 320 (c) 81
(d) 930
3. (a) 0 (b) 42 (c) 132
(d) 56
4. (a) 36 (b) 440 (c) 121
(d) 1,150
5. (a) 2,568 (b) 1,962 (c) 4,081
(d) 3,140 (e) 3,812 (f) 5,142
(g) 5,872

C.

1. 254 legs (including the shepherd's legs)
2. 1,120 letters
3. €665
4. 4,020cm (40m 20cm)
5. (a) €825 (b) €660

D.

1. True 2. False 3. False

E.

- (a) 490 (b) 560 (c) 940
(d) 800 (e) 2,230 (f) 2,870
(g) 6,670 (h) 7,010

Discussion Point: one type of question where working out the answer in your head is likely to be faster than using a calculator.

Pirate Graveyard Pages 52 and 53

1. 6 pirates 2. 135 visitors
3. 225 pieces 4. 16th century
5. 17th century
6. (a) 1608 (b) 1611
7. (a) 41 years (b) 48 years
8. (a) 1569 (b) 1569
9. $\frac{5}{6}$ 10. $\frac{1}{3}$ or $\frac{2}{6}$
11. (a) $\frac{1}{3}$ (b) $\frac{1}{2}$
12. 1st November
13. 31st October – it was Hallowe'en.
14. €675
15. 85 visitors
16. Teacher Check
17. 520 gold coins
18. 250 doubloons/360 pieces of eight/1,120 silver ingots
19. 2,250 coins
20. 52 gold coins

Mental Maths 2 Page 54

A.

1. South
2. There are many answers e.g. 0-8
3. 4,000 4. 1700

5.

6. Yes 7. 9D86F3
8. Circle 9. False
10. 20 to 9 11. 46
12. 84
13. Number greater than 1
14. 150 pages
15. Teacher Check

B.

1. 10 minutes past 8 o'clock
2. Number less than 6
3. True
4. Teacher Check
5. 27c
6. Took 4 from 6 instead of 6 from 4
7. There are many, e.g. $\frac{1}{6}$
8. 20th century
9. litres and millilitres

10.

11. 1st November 12. 8C785E2
13. 4,200
14. There are many, e.g. 1-3
15. 7

Mental Maths 2 Page 55

C.

1. Teacher Check 2. 36 panes
3. 9-28 4. 4 tenths
5. 560 6. 10,000
7. 7 should be an 8. Forgot to carry
8. Likely 9. 0.3
10. Apr, Jun, Sep, Nov

11.

12. Teacher Check
13. Twelfth
14. 15 coins 15. East

D.

1. NE 2. 15 coins
3. C 4. 15
5. 4 6. 80cm
7. 72 panes 8. Improbable
9. 8,710 10. 7:52

Topic: Division 1 Page 56

- B.**
- (a) 12 (b) 7 (c) 8 (d) 6
 - (a) 48 (b) 8 (c) 2 (d) 8
 - (a) 6 (b) 3 (c) 3 (d) 6
 - (a) 40 (b) 6 (c) 7 (d) 11
 - (a) 45 (b) 3 (c) 6 (d) 10
 - (a) 14 (b) 2 (c) 4 (d) 9
 - (a) 63 (b) 9 (c) 9 (d) 1

- C.**
- $7 \times 4 = 28$ $2 \times 8 = 16$
 $9 \times 5 = 45$ $4 \times 11 = 44$
 $6 \times 10 = 60$ $8 \times 9 = 72$
 $7 \times 6 = 48$ $5 \times 7 = 35$
 - $7 \times 3 = 21$
 $2 \times 6 = 12$ or $4 \times 3 = 12$
 $4 \times 9 = 36$
 $10 \times 2 = 20$ or $4 \times 5 = 20$
 $5 \times 5 = 25$
 $7 \times 7 = 49$
 $4 \times 11 = 44$ or $2 \times 22 = 44$
 $9 \times 9 = 81$
 $11 \times 11 = 121$
 - 12 bags
 - 6 messages

Topic: Division 1 Page 57

- A.**
- 4 cubes 2. 3 cubes
 - 2 cubes 4. 6 cubes
 - $12 \div 4 = 3$ $12 \div 6 = 2$
 $12 \div 2 = 6$
- B.**
- (a) 12 pears (b) 8 pears
(c) 6 pears (d) 4 pears
(e) 2 pears
 - (a) 20 apples (b) 10 apples
(c) 8 apples (d) 5 apples
(e) 4 apples

- C.**
- (a) 5 cards each
(b) 4 cards each, 2 left over
(c) 7 cards each, 1 left over
(d) 2 left over
 - (a) 1 card left over
(b) 2 cards left over
(c) 5 cards left over
(d) 2 cards left over
 - (a) 1 (b) 3 (c) 4 (d) 9

Topic: Division 1 Page 58

- A.**
- (a) 3 cars (b) 5 cars
(c) 7 cars (d) 9 cars
(e) 11 cars (f) 25 cars
 - (a) 3 plane trips (b) 5 plane trips
(c) 7 plane trips (d) 9 plane trips
(e) 12 plane trips (f) 20 plane trips
 - 12 bags 4. 9 disks
 - 6 times

- B.**
- (a) 6 toys 1 left over
(b) 5 toys 2 left over
(c) 10 toys 3 left over
 - (a) 3 toys 4 left over
(b) 7 toys 1 left over
(c) 10 toys

Topic: Division 1 Page 59

- A.**
- (a) 2 r 3 (b) 2 r 4 (c) 6 r 3
 - (a) 5 r 1 (b) 4 r 6 (c) 8 r 5
 - (a) 4 r 0 (b) 4 r 6 (c) 10 r 6 (d) 6 r 1
 - (a) 9 r 3 (b) 12 r 2 (c) 11 r 2 (d) 10 r 5
 - (a) 7 r 1 (b) 9 r 2 (c) 4 r 7 (d) 1 r 11
- B.**
- 7
 - 5 taxis
Discussion Point: You cannot have a remainder in this question.
 - (a) 75 minutes (b) 16 batteries
 - (a) 10 oranges (b) 8 customers
(c) €16
 - 11 photos

- C.**
- (a) not without leaving people out
(b) 2 teams of 5 and 2 teams of 6
(not 3 teams of 5 and 1 team of 7)
 - 20, 21 and 21 infants (not 20, 20 and 22)
 - 25c, 25c, 25c and 24c (not 24c, 24c, 24c and 27c)

Challenge Yourself!
Box A: 7kg, 7kg and 6kg (total 20kg)
Box B: 6kg, 6kg and 9kg (total 21kg)

Topic: Division 1 Page 60

- A.** Teacher Check
- B.**
- (a) 8 (b) 7 (c) 3 (d) 11
 - (a) 14 (b) 1 (c) 9 (d) 3
 - (a) 4 (b) 6 (c) 8 (d) 8
 - (a) 3 r 4 (b) 4 r 1 (c) 3 r 7 (d) 8 r 1
 - 14
 - None of these
 - 7
 - None of these
- C.** 10 times (not 9 times and 1 left over)
[Note: Some students will notice that it will have to come back across the river each time. So it will need to cross the river 19 times (10 times over and 9 times back)]

- D.**
- Repeated subtraction
 - Sharing
 - Sharing
 - Repeated subtraction
- E.**
- $\frac{1}{5}$ of 35 = 7 2. $\frac{1}{6}$ of 48 = 8
 - $\frac{1}{4}$ of 40 = 10 4. $\frac{1}{3}$ of 33 = 11
 - $\frac{1}{8}$ of 32 = 4 6. $\frac{1}{10}$ of 50 = 5

Topic: Decimals 1 Page 61

- B.**
- 0.02 2. 0.2
 - 0.16 4. 0.56
 - 0.8 6. 0.08
 - 0.09 8. 0.99

Topic: Decimals 1 Page 62

- A.** Teacher Check
- B.**
- (a) 0.31 0.38 0.83
(b) 0.45 0.49 0.54
(c) 0.01 0.10 0.11
(d) 0.04 0.40 0.44
(e) 0.79 0.97 0.99
(f) 0.34 0.40 0.43
(g) 1.05 1.50 1.55
(h) 2.06 2.07 2.76
(i) 3.08 3.10 3.80
 - (a) 0.17 (b) 0.29 (c) 0.73
(d) 0.03 (e) 0.3 (f) 0.9
(g) 0.5 (h) 0.25 (i) 0.75
(j) 1.23 (k) 1.87 (l) 1.09
(m) 1.7 (n) 2.21 (o) 3.01
 - (a) $\frac{23}{100}$ (b) $\frac{41}{100}$ (c) $\frac{89}{100}$
(d) $\frac{47}{100}$ (e) $\frac{7}{10}$ (f) $\frac{7}{100}$
(g) $\frac{97}{100}$ (h) $\frac{9}{100}$ (i) $1\frac{33}{100}$
(j) $1\frac{3}{100}$ (k) $2\frac{87}{100}$ (l) $7\frac{57}{100}$
(m) $5\frac{9}{10}$ (n) $5\frac{9}{100}$ (o) $4\frac{9}{100}$

Topic: Decimals 1 Page 63

- A.**
- 0.1 0.7 1.2 1.5
1.7 2.1 2.4 2.9 3.1
- B.**
- (a) 0.6 (b) 1.1 (c) 2 (d) 3.1
(e) 6.1 (f) 4.0 (g) 2.9 (h) 4.9
 - (a) False (b) True (c) True (d) False
- C.**
- Teacher Check
 - Teacher Check. Sample answers:
(a) 0.01 (b) 0.02 (c) 0.05 (d) 0.09
(e) 0.1 (f) 0.11 (g) 0.15 (h) 0.2
(i) 0.57 (j) 1
 - Line showing 0.2, 0.21, 0.22 0.23 . . . 0.3

Challenge Yourself!
Line showing 0.95, 0.96, 0.97 . . . 1.05

Topic: Decimals 1 Page 64

- A.**
- (a) 0.05 (b) 0.08 (c) 0.43 (d) 0.84
(e) 1.01 (f) 1 (g) 0.6 (h) 0.2
 - (a) 163 (b) 0.63 (c) 0.61 (d) 0.60
(e) 2.61 (f) 3.62 (g) 4.61 (h) 6.05
- B.**
- (a) 4.36 (b) 4.07 (c) 1.08 (d) 8.88
(e) 2.82 (f) 26.09
 - (a) $4 + 0.1 + 0.08$
(b) $2 + 0.6 + 0.03$
(c) $7 + 0.4 + 0.09$

- (d) $6 + 0.3 + 0.02$
 (e) $8 + 0.8 + 0.08$
 (f) $2 + 0.05$
 (g) $3 + 0.7$
 (h) $0.4 + 0.09$
 (i) $2 + 0.2 + 0.02$
 (j) $10 + 6 + 0.6 + 0.01$

- C.**
 1. (a) All necessary
 (b) 7 (c) 8
 (d) All necessary (e) All necessary
 (f) 404
 2. (a) All necessary (b) 4.5
 (c) 6.2 (d) All necessary
 (e) All necessary (f) 1.6
 (g) 3 (h) All necessary
 (i) 0.5 (j) All necessary

- D.**
 1. 20.75 2. 60.65
 3. 19.84 4. 26.29
 5. 52.07 6. 30.80
 7. Teacher Check

Topic: Decimals 1 Page 65

- B.**
 1. (a) 0.7 (b) 0.07 (c) 0.17
 (d) 3.09 (e) 7.75
 2. (a) $\frac{57}{100}$ (b) $\frac{3}{10}$ (c) $\frac{3}{100}$
 (d) $2\frac{1}{100}$ (e) $8\frac{6}{10}$
 3. Teacher Check

- C.**
 1. 4,159 2. 0.49
 3. 0.43 4. 52.41

- D.**
 Teacher Check

- E.**
 1. Niamh
 2. Rachel's tank is almost empty
 3. Niamh 0.3
 David 0.62
 Rachel 0.91
 4. Niamh (assuming all their tanks were full to begin with)
 5. Not sensible – it takes time to reach the surface and Rachel will need to breathe as she swims to the surface. If the divers are very deep, Rachel will also need to stop at intervals on the way up in order to avoid 'the bends.'
 6. 0.19

Topic: Money Page 66

- B.**
 1. €1.42 2. €1.69
 3. €2.31 4. €1.07
 5. 94c 6. €2.05
- C.**
 1. (a) €1.30 (b) €4.65
 (c) €8.88 (d) €12.15
 (e) €7.86
 2. (a) €4 (b) €2 (c) €9 (d) €11
 (e) €18 (f) €15 (g) €1 (h) €10
 3. (a) 1c (b) 8c (c) 12c (d) 27c
 (e) 33c (f) 21c (g) 36c (h) 19c

Topic: Money Page 67

- A.**
 1. (a) $80c + 20c$ $75c + 25c$
 $59c + 41c$
 (b) $55c + 45c$ $63c + 37c$
 $93c + 7c$
 (c) $€0.42 + €0.58$ $€0.11 + €0.89$
 $€0.23 + €0.77$
 2. (a) 50c (b) 80c (c) 1c
 (d) 85c (e) 15c (f) 99c
 (g) 75c (h) 12c (i) 37c
 (j) 53c (k) 83c (l) 64c
 3. (a) 258c (b) 296c (c) 210c
 (d) 205c (e) 201c (f) 199c
 (g) 151c (h) 109c (i) 374c
 (j) 459c (k) 547c (l) 712c
 4. (a) €2.36 (b) €2.89 (c) €2.13
 (d) €2.08 (e) €1.21 (f) €1.03
 (g) €3.08 (h) €3.80 (i) €4.99
 (j) €5 (k) €7.12 (l) €8.45
 5. (a) 463c (b) €2.20 (c) 441c
 (d) 350c (e) €8 (f) €10

- B.**
 Teacher Check. Sample answers:

1. (a) Bought different amounts of cheese – cheese usually sold by weight.
 (b) Bought different varieties of cheese.
 (c) Bought in different shops – prices vary from shop to shop.

2. Teacher Check
 Discussion point: prices vary, quantities vary etc.

Challenge Yourself!

Conor handed the driver a €1 coin
 Katie handed the driver €1 in small change. It was obvious therefore that she did not wish to go to the park (in which case she could have proffered 70c).

Topic: Money Page 68

- A.**
 1. (a) €6.59 (b) €5.62
 (c) €7.17 (d) €4.82
 (e) €4.48
 2. (a) €9.44 (b) €10.94
 (c) €11.09 (e) €2.97
 (d) €10.66
 3. €6.98 4. €6.98
- B.**
 1. (a) €3.15 (b) €5.38
 (c) €4.71 (d) €6.82
 2. (a) €3.28 (b) €6.15
 (c) €4.71 (d) €6.58
 (e) €2.25
 3. 36c
 4. (a) €11.51 (b) €4.01
 (c) €10.01 (d) €8.51

- C.**
 Teacher Check. Sample answers:

1. Chocolate
 Fizz shots & chews
 2 lucky bags
 2. Cards & lucky bag
 Chocolates & fizz shots & chews

2 lollies & chews & lucky bag & chocolates
 Discussion Point: Do the children have to spend all of their money?

3. Yes
 4. 3 fizz shots

Topic: Money Page 69

- A.**
 1. (a) €22.40 (b) €12.25
 (c) €22.74 (d) €26.88
 (e) €23.52
 2. (a) €43.61 (b) €26.96
 (c) €18.72 (d) €10.62
 (e) €13.77
 3. (a) €1.98 (b) €2.97
 (c) €3.96 (d) €4.95
 (e) None of these
 4. (a) 40c (b) 52c (c) 45c (d) 70c
 (e) 25c (f) 40c (g) 40c (h) 58c
 (i) 44c (j) 4c (k) 19c (l) 0c

- B.**
 1. (a) 5c (b) 9c (c) 12c (d) 7c
 (e) 11c (f) 25c (g) 9c (h) 15c
 (i) 20c
 2. Adam's apples cost 11c each
 Eve's apples cost 10c each
 Eve's were better value for money
 Discussion points: 1. Comparing like with like. Maybe Adam's were bigger or sweeter or juicier . . .
 Even though Eve paid more money, the unit cost was cheaper. Discuss buying in bulk / buy two get one free / buy three items and get cheapest item free . . .

3. (a) 3 for 24c (b) 5 for 30c
 (c) 4 for 32c (d) 6 for 18c
 (e) 6 for 66c (f) Same
 4. (a) 17c (b) 19c
 (c) 17c (d) 13c
 (e) 47c
 5. 33c each

Topic: Money Page 70

- A.**
 Teacher Check
- B.**
 1. (a) €10 (b) €3 (c) €5.50
 (d) €8 (e) €13 (f) €3.50
 (g) €43
 2. (a) €4 (b) €7.50 (c) €5
 (d) €5 (e) €6 (f) €17.50
 Discussion Point: Doesn't advertise that children under 4 are free. We must therefore assume that Cian must be paid for.
 (g) €45

- C.**
 Teacher Check. Sample answers:
 Culture and tradition are two. Also consider that generally, the cheaper the denomination, the more it is used. Compare €5, €10, €20 and €50 notes. The €5 tends to be the most grubby. If we had €1 notes or 50c notes, they would not last very long!
 Vending machines, until relatively

recently, were designed for coins.
The author suspects that it is cheaper to design and create coin operated machines only (think of parking meters) than those that accept notes.

D.
Teacher Check

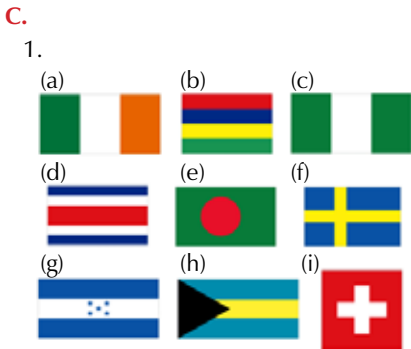
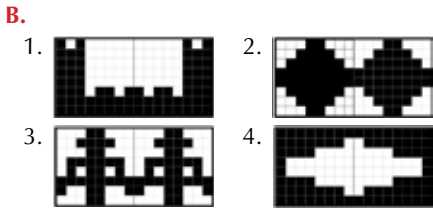
Topic: Symmetry Page 71

B.
Teacher Check

C.
Teacher Check

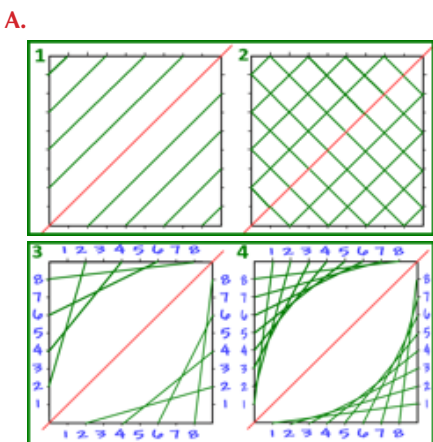
Topic: Symmetry Page 72

A.
1. Vertical 2. Horizontal
3. Vertical



2. (a) horizontal (b) vertical
(c) horizontal (d) vertical
(e) horizontal (f) horizontal
(g) vertical (h) horizontal
(i) vertical

Topic: Symmetry Page 73



B.
Teacher Check

Topic: Symmetry Page 74

A.
Teacher Check

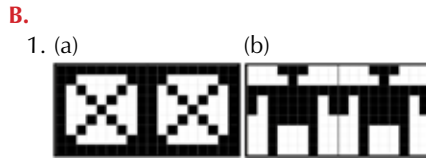
B.
1. Other answers exist
(a) (b) (c) (d) (e)

2. H, I, O, X
Discussion Point: Does this depend on the way in which the capital letter is written?

3. Yes

Topic: Symmetry Page 75

A.
Having exactly the same parts facing each other horizontally and/or vertically.



2. (a), (b), (d), (f), (i), (j)
3. Teacher Check

C.
(a), (b), (c), (e), (f), (g)

D. Teacher Check
E. Teacher Check

Christmaths Shopping Pages 76 and 77

1. (a) €12.19 (b) €4
(c) €1.59 (d) €3.05
(e) €1.50 (f) €1.79

2. (a) €2.80 (b) €5.01
(c) €8.50 (d) €9.25
(e) €7.50 (f) €9.20

3. €1.07 4. Teacher Check

5. Teacher Check 6. 9 houses
7. Teacher Check 8. 3 houses
9. 8 carrots each 10. 9 toys
11. 4, 4, 4, 3, 3, 3, 3, 3, 3
12. 6 glasses 13. 24 houses
14. Teacher Check

Mental Maths 3 Page 78

A.

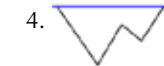
1. Bigger piece: halves are equal
2. ~~///~~ ~~///~~ /
3.

4. 2,009
5. 40 legs
6. 4 minutes to 6
7. $\frac{49}{100}$
8. Anticlockwise
9. €5
10. 12 leaves

11.

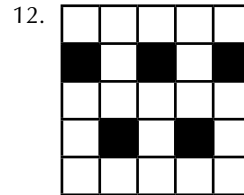
12. Teacher Check
13. 0.75
14. 3 trees
15. 6

B.
1. ÷
2. 2 minutes past 4
3. €2 (for discussion)



5. 48 pages
6. 97 sheep
7. 1st January
8. 450
9. The number must be 4 (or three times a number is 108 . . .)

10. 13
11. 6,400



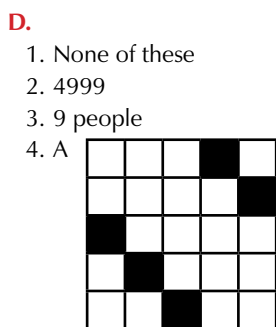
13. €6
14. 46 legs (include farmer's legs)
15. 9

Mental Maths 3 Page 79

C.

1. 8th February 2. Teacher Check
3. Any number from 2,310 to 2,318
4. 0.3
5. Teacher Check 6. $1\frac{1}{2}$ litres
7. Teacher Check
8. The total number of spellings (or the number she got wrong).
9. $\frac{1}{2}$
10. Took 3 from 5 instead of 5 from 3.
11. 20 people
12. 110
13.

14. red 15. 120c



5. None of these

6. 120
7. 0.33
8. $4\frac{1}{2}$ kg
9. 12 edges
10. 12

Topic: Length Page 80

B.

1. Probably right
2. Definitely wrong
3. Definitely wrong
4. Definitely wrong
5. Probably right
6. Probably right

C.

1. Doors are usually 2m high
2. – 8. Teacher Check

Topic: Length Page 81

A.

1. Actual lengths
A 6cm B 4cm C 3cm
D 2cm E 7cm F 9cm
G 4cm H 10cm
2. Teacher Check
3. (a) Bus (b) Length of table
(c) Pencil (d) Middle finger
(e) Leg (f) Hurling pitch
(g) Basketball court
(h) Car-parking space

B.

1. (a) 4m 21cm = 421cm
(b) 2m 97cm = 297cm
(c) 1m 89cm = 189cm
(d) 6m 50cm = 650cm
(e) 2m 20cm = 220cm
(f) 14m 12cm = 1,412cm
(g) 19m 95cm = 1,995cm
(h) 1m 1cm = 101cm
(i) 5m 6cm = 506cm
(j) 7m 9cm = 709cm
(k) 4m 50cm = 450cm
(l) 6m 75cm = 675cm
2. (a) 4-61m (b) 2-18m
(c) 3-47m (d) 1-17m
(e) 2-6m (f) 2-06m
(g) 6-4m (h) 6-04m
(i) 3-42m (j) 9-19m
(k) 3-8m (l) 3-03m
(m) 23-0m (n) 0-23m
(o) 8.0m (p) 0.08m
3. (a) 2cm (b) 14cm
(c) 24cm (d) 67cm
(e) 88cm (f) 96cm
(g) 38cm (h) 73cm

Topic: Length Page 82

A.

1. (a) 3-91m (b) 9-28m
(c) 8-31m (d) 4-33m
(e) 8-94m
2. (a) 3-31m (b) 3-26m
(c) 2-82m (d) 7-33m

- (e) 5-70m (f) 4-68m
(g) 4-17mm (h) 5-06m
3. Not less than 15-4m
4. 67-75m
5. (a) 5-11m (b) 4-89m
(c) Bobby is the guy on the see-saw
6. 95cm

B.

1. (a) 7-38m (b) 14-98m
(c) 27-36m (d) 28-65m
(e) 15-96m
2. (a) 11cm (b) 23cm
(c) 39cm (d) 13cm
(e) 17cm (f) 16cm
(g) 28cm (h) 49cm
3. 680m

Topic: Length Page 83

A.

1. 2-50m 2. 5-22m
6-09m

Challenge Yourself!

B.

1. (a) 2,000m (b) 5,000m
(c) 7,000m (d) 9,000m
(e) 500m (f) 250m
(g) 750m (h) 4,500m
(i) 6,250m
2. (a) 2km 630m = 2,630m
(b) 5km 140m = 5,140m
(c) 2km 760m = 2,760m
(d) 1km 80m = 1,080m
(e) 1km 800m = 1,800m
(f) 9km 30m = 9,030m
(g) 9km 300m = 9,300m
(h) 7km 100m = 7,100m
3. (a) 4-56km (b) 2-14km
(c) 7-15km (d) 7-24km
(e) 3-06km (f) 3-6km
(g) 4-8km (h) 4-08km

C.

94km is the straight line distance between the two places. The signpost indicates the road distance which is longer as roads tend to wind along to avoid natural obstacles and to bypass towns.
(a) 14km
(b) Mostown 27km, Rivertown 26km, Hightown $23\frac{1}{2}$ km, Rainytown 11-4km

Topic: Length Page 84

A.

1. Teacher Check
2. It would be incorrect to try to measure long lengths and long distances using centimetres only. The unit of measure should fit the task.

B.

1. 8m 8cm 2. 3m 92cm
3. 12-48m

C.

Swimming pool 25m
Pen 12cm

Distance from school 2km
Distance travelled by Mum's car 605,093km
Length of her shoe 21cm
Length of a sheet of paper 30cm
Width of the road 7m

D.

1. Donegal – Killarney 407km
Donegal – Belfast 180km
Donegal – Limerick 296km
2. Limerick – Belfast 323km
Limerick – Wexford 190km
Limerick – Galway 105km
3. Wexford – Dublin 142km
Wexford – Waterford 63km
Wexford – Galway 253km
Wexford – Donegal 372km
4. 219km
5. 357km
6. 304km
7. 467km

Topic: Long Multiplication Page 85

B.

1. (a) 190 (b) 360 (c) 580
2. (a) 730 (b) 1,450 (c) 1,320
3. (a) 1,940 (b) 1,280 (c) 3,470
4. (a) 6,230 (b) 5,760 (c) 8,300
5. (a) 9,650 (b) 7,120 (c) 5,600
6. (a) 8,080 (b) 8,800 (c) 8,880

C.

1. (a) 2440 (b) 2080 (c) 920
2. (a) 1880 (b) 3040 (c) 3560
3. (a) 760 (b) 1,470 (c) 3,200
(d) 4,560 (e) 6,160 (f) 7,440
4. (a) 8,700 (b) 7,890 (c) 7,540
(d) 9,900 (e) 8,610 (f) 9,360

Topic: Long Multiplication Page 86

A.

1. (a) $(10 \times 42) + (7 \times 42)$
(b) $(10 \times 52) + (7 \times 52)$
(c) $(10 \times 85) + (7 \times 85)$
(d) $(10 \times 37) + (6 \times 37)$
(e) $(10 \times 29) + (9 \times 29)$
(f) $(10 \times 64) + (3 \times 64)$
(g) $(10 \times 56) + (8 \times 56)$
(h) $(10 \times 73) + (9 \times 73)$
(i) $(10 \times 95) + (4 \times 95)$
2. (a) 697 (b) 527
(c) 867 (d) 884
(e) 765 (f) 629
3. (a) 816 (b) 952
(c) 1,071 (d) 1,173
(e) 1,258 (f) 1,411
4. (a) 504 (b) 435
(c) 1,026 (d) 988
(e) 1,581 (f) 1,558

B.

1. 630 tennis balls 400 basketballs
648 rugby balls 780 slottars

- 2,458 altogether
2. (a) 522 (b) 1,666
(c) 1,218 (d) 1,232
(e) 1,170 (f) 1,235
3. (a) 494 (b) 800
(c) 1,098 (d) 1,125
(e) 931 (f) 504
4. Offer 1: $14 \times 32 = 448$ sugar cubes
Offer 2: $32 \times 14 = 448$ sugar cubes

Topic: Long Multiplication
Page 87

- A.**
1. (a) $(20 \times 59) + (7 \times 59)$
(b) $(20 \times 28) + (7 \times 28)$
(c) $(20 \times 62) + (7 \times 62)$
(d) $(40 \times 71) + (7 \times 71)$
(e) $(40 \times 53) + (2 \times 53)$
(f) $(50 \times 64) + (6 \times 64)$
(g) $(70 \times 79) + (9 \times 79)$
(h) $(60 \times 59) + (2 \times 59)$
(i) $(80 \times 91) + (9 \times 91)$
2. (a) 1,404 (b) 1,917
(c) 1,701 (d) 1,728
(e) 1,566
3. (a) 1,066 (b) 1,512
(c) 1,608 (d) 1,728
(e) 1,856
4. (a) 1,792 (b) 3,008
(c) 6,016 (d) 4,872
(e) 6,075

Challenge Yourself!

1. (a) 896 seats (b) 1,260 seats
(c) 2,016 seats
2. 1,638 seats

- B.**
1. (a) 4,872 (b) 6,643
(c) 3,024 (d) 1,044
(e) 3,920
2. (a) 1,024 (b) 3,481
(c) 5,929 (d) 6,889 (e) 9,801
3. 1,008km

Topic: Long Multiplication
Page 88

- A.**
1. (a) 4,131 (b) 3,864
(c) 5,046 (d) 2,992
(e) 4,060
2. (a) 7,378 (b) 9,828
(c) 9,730 (d) 8,773
(e) 7,803
3. (a) 6,210 (b) 7,024
(c) 7,812 (d) 9,405
(e) 6,328
4. 4,770 homes
5. 6,072 passengers
6. (a) 8,760 hours (b) 8,784 hours
7. 7,200ml 8. 8,400g
9. (a) 6,608 (b) 9,218
(c) 9,953 (d) 9,954
(e) 9,968 (f) 8,792

- B.**
1. Tixi 5,844 days
Zozo 1,461 days
Bonzo 4,383 days
Ezmo 2,922 days
Lixi 7,305 days
2. Teacher Check

Topic: Long Multiplication
Page 89

- B.**
1. (a) 6,380 (b) 8,340
(c) 9,960 (d) 9,250
(e) 9,780 (f) 9,870
2. (a) 4,134
(b) None of these (6,408)
(c) 9,424 (d) 9,936

- C.**
1. 80 minutes
2. (a) 2,000ml (b) 7,000ml
(c) 4,500ml (d) 9,500ml
(e) 6,250ml
3. €585

D. Teacher Check

- E.**
1. (a) 3,000 (b) 1,400
(c) 4,800 (d) 1,800
(e) 4,500 (f) 4,200
2. Estimates Answers
(a) 2,100 1,988
(b) 1,800 1,947
(c) 3,600 3,828
(d) 1,800 1,656
(e) 1,200 988
(f) 1,600 1,849

Topic: Fractions 2 **Page 90**

- B.**
1. 4 ducks
2. 4 cars
3. (a) 8 (b) 9 (c) 11
(d) 13 (e) 20 (f) 30
4. (a) 6 (b) 9 (c) 12
(d) 20 (e) 7 (f) 11

Topic: Fractions 2 **Page 91**

- A.**
1. 3 books
2. 2 fish
3. (a) 5 (b) 7 (c) 9
(d) 12 (e) 11 (f) 8
4. (a) 3 (b) 5 (c) 7
(d) 9 (e) 10 (f) 11
- B.**
1. 2 2. 3 3. 2
- C.**
1. (a) 8 (b) 11 (c) 15 (d) 50
2. (a) 5 (b) 7 (c) 9 (d) 12
3. (a) 3 (b) 5 (c) 6 (d) 8
4. (a) 3 (b) 5 (c) 7 (d) 9
5. (a) 6 (b) 10 (c) 14 (d) 18

Challenge Yourself!

20 ice-creams not sold.

Topic: Fractions 2 **Page 92**

- A.**
1. $\frac{1}{4}$
2. $\frac{3}{4}$
3. 4 buns
4. 3 buns
5. (a) Blue: 16 of 32 = $\frac{1}{2}$
(b) Green: 4 of 32 = $\frac{1}{8}$
(c) Yellow: 4 of 32 = $\frac{1}{8}$
6. Red: 8 of 32 = $\frac{1}{4}$
7. Red: $\frac{1}{3}$
8. (a) Blue: 3 (b) Green: 3
(c) Yellow: 2 (d) Orange: 2
(e) Uncoloured: $\frac{1}{9}$

- B.**
1. (a) 12 (b) 16 (c) 20
(d) 24 (e) 40 (f) 60
2. (a) 16 (b) 28 (c) 36
(d) 48 (e) 52 (f) 80
3. (a) 9 (b) 15 (c) 21
(d) 27 (e) 30 (f) 33
4. 36, 35, 84, 33, 54, 42, 60, 55

Topic: Fractions 2 **Page 93**

- A.**
1. (a) 24 (b) 32 (c) 36 (d) 44
2. (a) 20 (b) 30 (c) 50 (d) 60
3. (a) 18 (b) 30 (c) 54 (d) 60
4. (a) 40 (b) 56 (c) 72 (d) 96
- B.**
1. (a) 8 (b) 16 (c) 32 (d) 44
2. (a) 20 (b) 25 (c) 35 (d) 50
3. (a) 42 (b) 64 (c) 54 (d) 40
4. 50 litres

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

Topic: Fractions 2 **Page 94**

- A.**
- Fractions and division are closely related. Consider $\frac{1}{6}$ of 18. To find the answer, we divide 18 by 6. We are dividing our 18 items into 6 equal parts ($\frac{1}{6}$ of 18) or sharing our 18 items among 6 people.
- B.**
1. (a) 18 (b) 35 (c) 56 (d) 30
(e) 36
2. (a) 18 (b) 32 (c) 50 (d) 42
(e) 72 (f) 64 (g) 81 (h) 40
3. (a) 18 red squares and 18 blue squares
(b) 12 green squares, 12 red squares, 12 blue squares
(c) 6 yellow squares, 9 blue squares, 21 green squares

- (d) 16 black squares, 12 green squares, 8 red squares
 (e) 30 blue squares, 4 red squares, 2 orange squares

C.

When they are back at the start after completing one complete lap.

D.

- Tom: 10 more minutes
- Tina: 50 minutes
- Cake: 35 minutes
- Eva: 27 minutes
- Batteries: 72 minutes
- Pat: 45 minutes

Topic: Chance Page 95

B.

- (a) True (b) False
(c) True (d) True
- (a) True (b) False
(c) False (d) True

Topic: Chance Page 96

A.

1. Teacher Check. In this experiment the pupils should discover that all three cubes have an equal likelihood of being drawn. Therefore each cube should be drawn around 10 times. In reality, few children will draw each cube 10 times. The results are more likely to be 7, 9 and 14, for instance. Should a cube be drawn an extraordinary number of times (say 21, 4, 5) discuss the possibility of bias. Are you sure the cubes were shaken? Do all the cubes feel the same? Might one cube be bigger than the others?

B.

- A red cube is twice as likely to be drawn as a blue cube.
Results should be close to 20, 10.
- A red cube is thrice as likely to be drawn as a blue cube.
Results should be close to 22, 8.
- Results should be close to 18, 12.

Challenge Yourself!

Close to:
 Red 24
 Black 6

Topic: Chance Page 97

A.

- Most likely: The pink snail will win
 Less likely: The yellow snail will win
 Least likely: The blue snail will win
- Most likely: Ticket number is <60
 Less likely: Ticket number is >60
 Least likely: Ticket number is 60
- Most likely: Pointer will stop on green
 Less likely: Pointer will stop on blue
 Least likely: Pointer will stop on yellow
- Most likely: Card will be lower than 10

Less likely: Card will be higher than 10
 Least likely: Card will be a 10

B.

Teacher Check

Topic: Chance Page 98

A.

Teacher Check. Random numbers are used in many areas of life. Modern computer games have digital random number generators to provide the game with a chance or unpredictable dimension. The children will be familiar with the idea of rolling a dice to generate a random number. The random number wheel is essentially a list of random numbers between 1 and 6 or 2 and 12.

B.

- 7. Teacher Check
 Discussion Point: Using random number list to generate an outcome, such as taking a line for a walk. Discuss N, S, E and W before embarking on this task.

Topic: Chance Page 99

A.

Probably: likely, expected

B.

- Most likely: yellow
 Least likely: purple
- Most likely: red
 Least likely: purple
- Most likely: red
 Least likely: purple

C.

- Teacher Check
- A lower 3 higher
 J lower 2 higher
 K lower 10 lower
 6 higher Q lower
 5 higher 7 higher
 9 lower 8 equally likely

D. Teacher Check

Lord Voldemort's Lab Pages 100 and 101

- 750m
- (a) 3 treats (b) 7 treats
- Teacher Check
- (a) 36ml (b) 63ml
- (a) 28g (b) 18g
- (a) 45 minutes (b) 40 minutes
(c) 48 minutes (d) 54 minutes
- 1,248ml
- 4,104ml
- 5,880g
- 4,032g
- Teacher Check
- (a) 5cm (b) 3cm
(c) 8cm (d) 9cm
(e) 7cm (f) 4cm
- (a) 0.05m (b) 0.03m

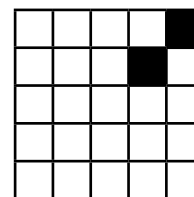
- 0.08m (d) 0.09m
- 0.07m (f) 0.04m
- 0.95m (b) 0.97m
- 0.92m (d) 0.91m
- 0.93m (f) 0.96m

Mental Maths 4 Page 102

A.

- €4.08 2. 43cm
- 80 4. $\frac{1}{2}$
- 6,010 or 6,011 6. Teacher Check
- True
- Teacher Check. Sample answers:
 6:15pm
- 12 legs 10. 12
- Random
- 1,000m 13. Month (and time)
- 1

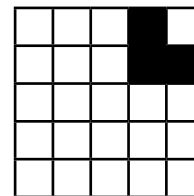
15.



B.

- A guess is random. An estimate is based on experience.
- Nearly drowned
- 23 legs
- Venue; a.m. or p.m.
- 25c

6.

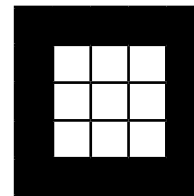


- Spades, hearts, diamonds
- 6:28 9. hexagon
- 27 11. 4,410
- $\frac{1}{4}$ 13. Teacher Check
- 6:30 15. 2 hours

Mental Maths 4 Page 103

C.

- 9 2. 1 chance in 2
- Units 4. 5.62
- February is the shortest month so it is likely that it will have the fewest birthdays.
- Teacher Check
- 6 o'clock 8. $\frac{1}{4}$
- 39
- Zero in second line omitted.
- Sphere (3D)
- 12.

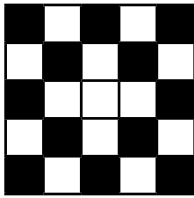


13. Teacher Check. Sample answer: 0·9
 14. The length and width of a square are equal. Should read 'rectangle'.
 15. 10cm

D.

1. 12 pairs 2. 400
 3. 40 times 4. 366 days
 5. 1 chance in 6 6. Left
 7. None of these (6:24)

8. D:



9. 4·2 10. 8 quarters

Topic: Division 2 Page 104

B.

1. (a) 7 (b) 5 (c) 8
 2. (a) 11 (b) 6 (c) 9
 3. (a) 7 (b) 12 (c) 3
 4. (a) 5 (b) 7 (c) 2
 5. (a) 9 (b) 11 (c) 1
 6. (a) 7 r 3 (b) 4 r 3 (c) 4 r 3
 7. (a) 6 r 1 (b) 6 r 1 (c) 6 r 5
 8. (a) 31 (b) 21 (c) 34
 (d) 16 (e) 13
 9. (a) 19 (b) 19 (c) 14
 (d) 16 (e) 19
 10. (a) 28 r 1 (b) 29 r 1 (c) 15 r 3
 (d) 13 r 1 (e) 17 r 4

C.

1. 50 2. 5 3. None of these
 4. 12 r 2 5. None of these

Topic: Division 2 Page 105

A.

1. (a) 177 (b) 163 (c) 168
 2. (a) 185 (b) 138 (c) 147
 3. (a) 142 (b) 156 (c) 129
 4. (a) 184 (b) 284 (c) 133
 (d) 123 (e) 133

B.

1. $815 \div 5 = 163$
 $894 \div 6 = 149$
 $912 \div 8 = 114$
 $875 \div 7 = 125$
 2. 418
 $836 \div 2 = 418$
 3. 32 teams
 4. 139 cards each
 5. 136 weeks
 6. 696 paintings left

Topic: Division 2 Page 106

A.

1. (a) 122 r 3 (b) 118 r 1
 (c) 215 r 3 (d) 129 r 2
 (e) 126 r 5
 2. (a) 258 r 2 (b) 198 r 1
 (c) 106 r 3 (d) 123 r 4
 (e) 236 r 1

3. 56 chairs and one leg left over
 4. 38 jeeps and 2 wheels left over
 5. 35 tents (not 34 r 4)

B.

1. (a) 203 (b) 308
 (c) 109
 2. (a) 103 (b) 107 r 3
 (c) 109
 3. (a) 208 r 1 (b) 209 r 3
 (c) 105 r 4 (d) 100 r 5
 (e) 100 r 2
 4. 107 times 5. 104 pages

C.

1. Omitted the remainder:
 correct answer 56 r 2
 2. Omitted the zero:
 correct answer 108
 3. Calculating error:
 correct answer 155
 4. Omitted the zero:
 correct answer 304
 5. Omitted the zero:
 correct answer 406 r 1

Topic: Division 2 Page 107

A.

1. (a) 60 (b) 110 (c) 50 (d) 50
 (e) 80 (f) 70 (g) 40 (h) 90
 (i) 60 (j) 30 (k) 40 (l) 70
 2. (a) 20 (b) 40 (c) 50 (d) 90
 (e) 30 (f) 70 (g) 20 (h) 90
 (i) 80 (j) 90
 3. (a) 60 (b) 20 (c) 80 (d) 40
 (e) 50 (f) 90 (g) 100 (h) 50
 4. (a) 60 (b) 90 (c) 20 (d) 40
 (e) 80 (f) 20 (g) 70 (h) 100
 5. (a) 60 trays (b) 60 trays
 (c) 70 trays

B.

1. (a) 7 (b) 6 (c) 4 (d) 9
 (e) 8 (f) 5 (g) 12 (h) 15
 (i) 18 (j) 23 (k) 36 (l) 42
 2. (a) 18 (b) 26 (c) 27 (d) 34
 (e) 75 (f) 83 (g) 72 (h) 16

Topic: Division 2 Page 108

A.

A division question has a remainder when the amount we have cannot be shared equally.

B.

1. (a) 223 r 1 (b) 121 r 2
 (c) 65 r 4 (d) 93 r 5
 (e) 142 r 4
 2. (a) 147 r 3 (b) 249 r 1
 (c) 103 (d) 98 r 6
 (e) 107
 3. (a) 248 r 2 (b) 142 r 5
 (c) 124 r 5 (d) 207
 (e) 88 r 8

C.

1. 10 buildings, 3 cubes left
 2. 16 buildings, 8 cubes left
 3. (a) 23 boxes (b) 56 boxes
 (c) 31 boxes (d) 64 boxes

- (e) 29 boxes (f) 86 boxes
 (g) 38 boxes (h) 109 boxes
 (i) 45 boxes (j) 113 boxes

D.

1. No
 2. Estimating helps us to realise that the answer we have worked out might be wrong if it is very different to our estimate. Estimation is very useful when we want a quick or rough answer, especially if there is no pencil and paper or calculator handy.
 3. Division and multiplication tables are like opposites.
 4. 9

E.

1. 24 2. 283
 3. 103 4. 179
 5. 102 6. 116
 7. 187 8. 109
 9. 207 10. 93
 11. 107 12. 66

Topic: Decimals 2 Page 109

B.

1. (a) 0·6 (b) 0·8 (c) 0·9 (d) 0·8
 2. (a) 1·7 (b) 1·6 (c) 1·4 (d) 1·8
 3. (a) 2 (b) 2·7 (c) 2·9 (d) 3·7
 4. (a) 3·3 (b) 8·7 (c) 4·3 (d) 5·1
 5. (a) 2·02 (b) 9·08 (c) 4·07 (d) 3·06
 6. (a) 9·1 (b) 11·9 (c) 5·5 (d) 12·4

Topic: Decimals 2 Page 110

A.

1. (a) 3·87 (b) 8·27 (c) 36·27
 (d) 42·41 (e) 23·23
 2. (a) 7·13 (b) 12·01 (c) 87·97
 (d) 29·19 (e) 45·28 (f) 57·99
 (g) 69·08 (h) 26·08
 3. (a) 60·58 (b) 29·76 (c) 23·69
 (d) 14·48 (e) 10·77 (f) 55·46
 4. (a) 9·05 (b) 9·95 (c) 19·40
 (d) 'rainy day' / interest

B.

1. (a) 2·53 (b) 2·86
 (c) 4·22 (d) 0·89
 (e) 2·68
 2. (a) 1·1 (b) 1·7
 (c) 3·7 (d) 3
 3. (a) 4·83 (b) 6·19
 (c) 36·64 (d) 35·35
 4. (a) 2·04 (b) 7·85
 (c) 11·51 (d) 22·98
 5. €9·01 6. 1·75m

Topic: Decimals 2 Page 111

A.

1. 2·0 5·0 9·0 10·0
 14·0 21·0 100·0 135·0
 159·0 160·0 200·0 301·0
 2. (a) 2·7 (b) 3·4 (c) 5·5
 (d) 1·19 (e) 5·54 (f) 8·66
 3. (a) 1·3 (b) 3·2 (c) 6·6
 (d) 7·61 (e) 8·22 (f) 11·08

Challenge Yourself!

- Start – dead tree – pile of rocks – treasure 135.05m
- 173.56m
- 200.43m
- 12.78m
- 31.28m
- 302.81m

B.

- (a) 29.61 (b) 296.1 (c) 50.16
- (a) 501.6 (b) 45.72 (c) 457.2
- (a) 42.18 (b) 13.92 (c) 148.2
(d) 38.82 (e) 54.06 (f) 332.4
(g) 44.46 (h) 30.42 (i) 44.4
(j) 43.5 (k) 55.98 (l) 317.4

Topic: Decimals 2 Page 112**A.**

- (a) 1.68 (b) 1.84 (c) 1.22
(d) 1.58
- (a) 2.34 (b) 2.44 (c) 1.43
(d) 1.35
- (a) 3.35 (b) 2.75 (c) 1.53
(d) 0.94 (e) 0.71 (f) 1.02

B.

- (a) 1.75 (b) 1.5 (c) 4.5
(d) 3.5
- (a) 2.4 (b) 5.5 (c) 15.5
(d) 23.5
- (a) 6.6 (b) 45.5 (c) 8.75
(d) 9.8
- (a) 2.5 (b) 4.5 (c) 6.5
(d) 3.25
- 1.4kg
- (a) Ron 13.5 mb Rita 10.8 mb
Tom 6.75 mb
- (b) Ron 40.5 mb Rita 43.2 mb
Tom 47.25 mb

C.

- 3.8
- None of these (4.75)
- 0.85
- None of these (0.35)

Topic: Decimals 2 Page 113**A.**

Decimal point separates whole values from the fractional parts of a number.

B.

- (a) 9.8 (b) 12.47
(c) 26.45 (d) 18.71
- (a) 2.35 (b) 3.09
(c) 6.35 (d) 14.96
- (a) 34.08 (b) 97.3
(c) 24.93 (d) 142.8

C.

- (a) €27.52 (b) €0.43

D.

Underneath
Estimate
After

E.

- (a) €37.75 (b) €14.49
(c) €16.24 (d) €68.48
- Rings €76

Locket €24.95
Pearls €26.25
Earrings €261
Bracelets €48.93
Necklaces €55.50
Total Value: €492.63

- (a) Ring €10.50
Locket €5.99
Pearls €9.75
Earrings €30
Bracelet €7.99
Necklace €10.25
(b) Total: €492.63 + €38 = €530.63

Topic: Weight Page 114**B.**

- 3g (2) 30kg
- 2kg (4) 450g
- 100g

C.

- 450g (2) 180kg
- 2kg (4) 32kg

Topic: Weight Page 115**A.**

- 10g + 5g + 1g + 1g
- 5g + 1g
- 10g + 10g + 10g + 10g
- 10g + 10g + 5g
- 10g + 10g + 5g + 1g + 1g + 1g
- 10g + 1g
- 10g + 10g + 1g
- 10g + 10g + 10g + 1g + 1g + 1g
- 10g + 10g + 10g + 10g + 10g + 1g

B.

- Teacher Check
- (a) 4,300g (b) 1,900g
(c) 2,200g (d) 3,600g
(e) 1,250g (f) 3,450g
(g) 7,890g (h) 2,089g
(i) 1,070g (j) 3,008g
(k) 3,080g (l) 3,800g
- (a) 1kg 300g (b) 2kg 600g
(c) 7kg 900g (d) 4kg 600g
(e) 2kg 450g (f) 1kg 750g
(g) 6kg 590g (h) 2kg 340g
(i) 2kg 70g (j) 3kg 8g
(k) 6kg 80g (l) 1kg 1g
(m) 0kg 85g (n) 2kg 500g
(o) 3kg 250g (p) 4kg 750g

C.

Approximations only. Weight will depend on size, etc.
Litre of water weighs around 1kg.
Large elephant weighs around 5,000kg (5 tonnes).
Bicycle weighs around 10kg.
Bar of gold weighs around 12.4kg.
Small bar of chocolate weighs around 100g (much variance).
Bag of coal weighs around 40kg.
Discussion point: gold is very heavy.
A bar of gold that is the same size as a bar of chocolate would weigh much more than the chocolate.

Topic: Weight Page 116**A.**

- (a) 4.64kg (b) 5.23kg
(c) 8.69kg (d) 9.12kg
(e) 1.97kg (f) 3.3kg
(g) 3.03kg (h) 2.09kg
(i) 2.5kg (j) 5.25kg
(k) 0.75kg (l) 7.75kg
- (a) 4kg 560g (b) 1kg 550g
(c) 8kg 780g (d) 9kg 240g
(e) 1kg 990g (f) 2kg 500g
(g) 3kg 600g (h) 4kg 800g
(i) 4kg 80g (j) 2kg 10g
(k) 3kg 30g (l) 4kg 150g

B.

- (a) 5kg 572g (b) 8kg 516g
(c) 7kg 171g (d) 8kg 990g
(e) 8kg 30g
- (a) 3kg 260g (b) 2kg 347g
(c) 2kg 244g (d) 1kg 886g
(e) 3kg 765g

C.

- 7kg 600g
- Gross weight is greater
- 450g
- 454g
- 716g
- 446g
- The bag with an advertised net weight of 100g is better value
Discussion Point: why is this bag better value?

Topic: Weight Page 117**A.**

Alf	light flyweight
Joe	bantamweight
Bert	heavyweight
Dan	middleweight
Ernie	light heavyweight
AJ	super heavyweight
Ali	light welterweight
Hal	featherweight

B.

- (a) 15.19kg (b) 14.72kg
(c) 47.34kg
- (a) 14.55kg (b) 31.45kg
(c) 9.84kg (d) 14.46kg
(e) 8.32kg (f) 27.63kg
- 30kg + 36kg = 66kg
- (a) 3.120kg (b) 3.410kg
(c) 1.130kg (d) 1.020kg
(e) 2.160kg (f) 3.28kg

- 1kg 88g

- 1.25kg

Discussion Point: The above answer assumes she lost the same amount of weight each day (which is unlikely). There are many possible correct answers.

Topic: Weight Page 118

- Teacher Check

- B.**
- (a) 7kg 747g (b) 6kg 240g
(c) 8kg 320g
 - (a) 6kg 592g (b) 5kg 968g
(c) 3kg 777g
 - (a) 6.15kg (b) 8.1kg
(c) 9.72kg (d) 8.96kg
 - (a) 1.25kg (b) 2.09kg
(c) 2.41kg (d) 2.95kg

- C.**
- 1kg 2. $7\frac{1}{2}$ g
 - 20g 4. 300g

- D.**
- Teacher Check
 - Price
 - Priced at different rates
 - Healthy eating = minerals, vitamins, roughage
 - No. It would be almost impossible to buy exactly half a kilo of carrots without cutting one of the carrots. (You could buy a jar of carrots weighing half a kg)
 - To allow for the weight of the bag
Discuss net and gross weight.

Topic: 2D Shapes Page 119

- B.**
- 3 2. 3
 - Length 4. 2
 - Scalene 6. Teacher Check
 - Teacher Check

- C.**
- 8 triangles (4 obvious ones [quarter of square] + 4 half squares)
 - Teacher Check
 - Yes
 - No

Challenge Yourself!

- 6 triangles
- Teacher Check

Topic: 2D Shapes Page 120

- A.**
- 4 sides 2. 4 sides
 - 4 angles 4. 4 angles
 - right angles
 - 2 acute and 2 obtuse or 4 right angles (because a rectangle is a parallelogram)
 - The 4 sides of a rhombus are the same length
 - Yes
 - Teacher Check
 - Triangles

- B.**
- 5 sides 2. 5 angles
 - Obtuse 4. 8 sides
 - 8 angles 6. Obtuse
 - The sides and angles of a regular pentagon are the same size
 - Teacher Check
 - ocht / octagon

10.

	How many sides?	Has parallel lines?
Triangle	3	No
Parallelogram	4	Yes
Rhombus	4	Yes
Regular Pentagon	5	No
Regular Octagon	8	Yes

	How many angles?	Has a right angle?
Triangle	3	Sometimes
Parallelogram	4	Sometimes
Rhombus	4	Sometimes
Regular Pentagon	5	No
Regular Octagon	8	No

Topic: 2D Shapes Page 121

- A.**
- Parallelograms
 - Triangles / rectangles
 - Octagon / rhombus
 - Isosceles triangle
 - Equilateral triangle
 - 10
 - Rectangles / parallelogram – discuss
 - Octagon

- B.**
- Parallelogram
 - Hexagon
 - Cones – discuss (3D)

Topic: 2D Shapes Page 122

- A.** Teacher Check
- B.** Teacher Check
- C.** Teacher Check

Topic: 2D Shapes Page 123

- A.** A 2D shape is one that has length and width but no height. Two dimensions.

- B.**
- (a) Stop: regular octagon
(b) No left turn: circle
(c) Children crossing equilateral triangle
(d) Yield Right of Way: isosceles triangle
(e) Signage: pentagon (not regular)
 - Teacher Check

- C.**
- True 2. False
 - True 4. False
 - True
 - False (although they fit neatly, the pieces are different shapes)
 - True

- D.**
- Model 1: 14 Model 2: 10
 - Two entrances and one exit
 - South (Main Street is likely to be busier than Mill Lane).
 - Direction of traffic flow / one way traffic
 - Clockwise

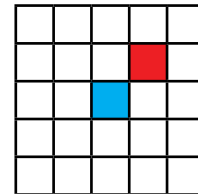
- Disabled driver
- North-east. The pedestrians only signage and the availability of disabled driver spaces would suggest this.
- Rectangle
- Model 1
- Model 2
- Model 2 may be safer because it allows fewer cars and it is easier for drivers to park their cars.

Parade Day Pages 124 and 125

- 88 lollies 2. 35 lollies
- 196 boys 4. 15 minutes
- 4128.6kg 6. 6.74kg
- 30g 8. Teacher Check
- Teacher Check 10. 46l
- 95c 12. €2.45

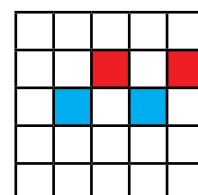
Mental Maths 5 Page 126

- A.**
- 11
 - Pentagon
 - Three €5 notes
 - Number greater than 4



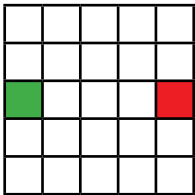
- 2,800g
- Floor
- Destination
- 24 months
- Rhombus
- 4
- 10 days
- 3.30
- 0.84
- No need for line of zeros

- B.**
- 104 weeks
 - 7 days
 - Teacher Check
 - 8 should have been written as 8.00
 - 10 to 8
 - 6
 - Equally likely
 - a.m. / p.m. and day / date
 - 0.05
 - 99
 - Violet
 - Teacher Check



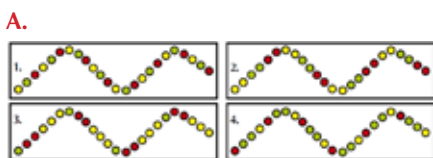
- Octagon
- Parallelogram

- C.
- 21 spots
 - Teacher Check
 - Angles
 - 3·08
 - Weight of the apples
 - Monday
 - 13 letters
 - 560
 - 32
 - The sides and angles are equal in a regular hexagon.
 - should be 203: zero omitted
 - 32c



- Teacher Check
 - Backward slash
- D.
- Equal
 - 25
-
- 3,750g
 - Monday
 - None of these – 16c
 - 0·94
 - 7
 - 8 angles
 - 4·68
 - 8 angles

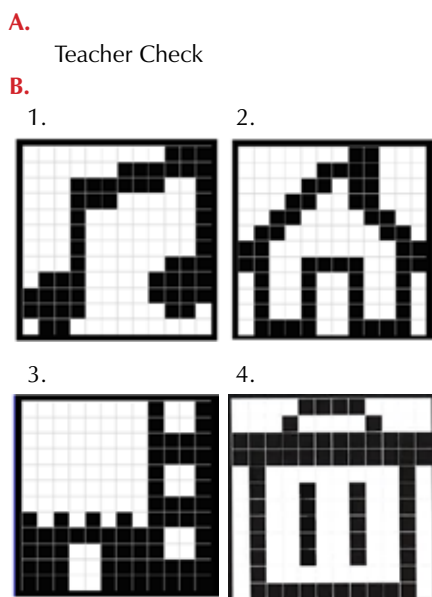
- B.
- Teacher Check
- C.
- (a) Green, green, red, green,
(b) Blue, blue, orange, orange,
(c) Blue, blue, blue, blue,
(d) Red, red, orange, orange, blue, red
 - Teacher Check



- B.
- Sunset
 - Flag at full mast
 - Tiny square inside
 - Keyboard continuation
 - Two shorter lines within at right angles
 - Two longer lines outside at right angles
- C.
- Teacher Check

- A.
- (a) 12, 14, 16 (b) 18, 21, 24
(c) 30, 35, 40 (d) 60, 70, 80
(e) 600, 700, 800 (f) 42, 49, 56
 - (a) 8, 4, 0 (b) 44, 33, 22
(c) 27, 18, 9 (d) 16, 8, 0
(e) 36, 30, 24 (f) 150, 100, 50
 - (a) K, M, O (b) U, T, S
(c) L, N, P (d) P, S, V
(e) P, N, L
(f) D, Q, E (two sequences in one: ABCDE...NOPQR...)
 - (a) FG, GH, HI
(b) FF, GG, HH
(c) KM, MO, OQ
(d) FU, GT, HS
(e) Ff, Gg, Hh
(f) F6, G7, H8
 - (a) FGH, GHI, HIJ
(b) FHJ, GIK, HJL
(c) FFG, GGH, HHI
(d) FHF, GIG, HJH
(e) F6F, G7G, H8H
(f) UFU, TGT, SHS

- B.
- S (Sunday – days)
 - U (Uranus – planets)
 - E (Eight – counting)
 - V (Violet – colours of the rainbow)
 - Q (QWERTY Keyboard layout)
 - D (Do Tonic Sol-fa: do, re, me, fa,...)
- C.
- Multiples of 4 are every second even number.
 - Multiples of 10 are every second multiple of 5.
 - Teacher Check
 - Teacher Check



- A.
- A pattern is a sequence or list that is

created in such a way that we can accurately predict what will come or happen next.

- B.
- (a) Continue chequerboard.
(b) L and invert L patterns.
 - (a) 750
(b) $1\frac{1}{2}$
(c) None of these (4)
(d) 2·4
- C.
- He wrote the code backwards.
 - She wrote the code starting with the second digit and added the missing first number to the end.
 - (a) 05784 (b) 35541
(c) 94432 (d) 79512
(e) 57412 (f) QXWCA
 - (a) 87504 (b) 45531
(c) 34492 (d) 15972
(e) 14752 (f) CWXQA
- D.
- Teacher Check
- E.
- 11
 - 17
 - 23
 - 25
 - 53
 - 56
 - 60
 - 70

- B.
- 120m
 - 475m
 - (a) 540m
(b) 1,080m / 1.08km
- C.
- Teacher Check

- A.
- 54cm
 - 60cm
 - 60cm
 - 78cm
 - 128cm
 - 140cm
- B.
- 162m
 - 256m
 - 180m
 - 270m
 - (a) 6cm (b) 11cm
(c) 17cm (d) 16cm
- C.
- 25m
 - 31m
 - 35m
 - 96cm

- 16cm
- 18cm
- 24cm
- 24cm
- 18cm
- 28cm

Challenge Yourself!

Add the length to the width and double your answer.

- B.
- 50m
 - 90m
 - 72m
 - 170m

Topic: Length and Perimeter
Page 136

- A.**
- | | |
|---------------|-------------|
| 1. White 12cm | Blue 16cm |
| Black 12cm | Yellow 22cm |
| Orange 22cm | Green 22cm |
| Red 22cm | Grey 24cm |
2. Teacher Check
- B.**
1. Square 8cm
Rectangle 10cm
Z shape 10cm
T shape 10cm
L shape 10cm
2. Square
3. (a) If we only have our squares touching at the corners, then we can produce a shape with a perimeter of 20cm (each square provides a 4cm perimeter). If we insist that our squares abut as in B1, then there are many combinations that will create a 12cm perimeter.
(b) 10cm (4 x 4 square with one more square abutting)

Topic: Length and Perimeter
Page 137

- A.** Distance around the sides of a 2D shape.
- B.**
- | | |
|--------|--------|
| 1. 60m | 2. 40m |
| 3. 13m | 4. 96m |
- C.**
- | | |
|---------|---------|
| 1. 400m | 2. 70m |
| 3. 80m | 4. 220m |
- D.** Teacher Check. Emphasis on the word perimeter. The firemen cordoned off the fire to prevent people from entering the burning building.
- E.**
- | |
|---------|
| 1. 120m |
| 2. 160m |

Topic: Area **Page 138**

- B.**
- | | |
|----------------|--------------|
| 1. (b) | |
| 2. (a) 8 tiles | (b) 16 tiles |
- C.**
1. Europe
2. County Cork
3. Cover of the book
4. Yard
5. Cinema screen
6. Teacher's table
- D.**
1. Crusoe
2. It has a lake in the centre.
Discussion Point: land area.
3. Land area is greater

Topic: Area **Page 139**

- A.** Holly-silver birch – oak - sycamore
- B.**
1. – 3. Teacher Check
4. Orange 12cm²
Yellow 15cm²
Green 16cm²
Blue 19cm²
Red 15cm²
Brown 20cm²
5. Full stop, comma, postage stamp, my footprint, my shoe print.

Topic: Area **Page 140**

- A.**
- | |
|---------------------------------|
| (a) Green 4cm ² |
| (b) Blue 9cm ² |
| (c) Yellow 16cm ² |
| (d) Orange 30cm ² |
| (e) Pink 7cm ² |
| (f) Dark blue 24cm ² |
| (g) Grey 20cm ² |
| (h) Cream 12cm ² |
| (i) Red 8cm ² |
- B.**
- | |
|------------------------------|
| (a) Blue 9cm ² |
| (b) Orange 8cm ² |
| (c) Pink 14cm ² |
| (d) Green 8cm ² |
| (e) Yellow 6cm ² |
| (f) Orange 25cm ² |
| (g) Red 16cm ² |

Topic: Area **Page 141**

- A.** Teacher Check
Likely estimates:
Bear: 12cm²
Jet: 7cm²
Holmes: 14cm²
Elephant: 17cm²
Dinosaur: 13cm²
Cat: 10cm²
Butterfly: 22cm²
- B.**
1. – 3. Teacher Check
4. $100 \times 100 = 10,000\text{cm}^2$
Note: This number exceeds 4th Class curriculum limit of 9,999.

Topic: Area **Page 142**

- A.** Area may be defined as a measure of the part of a 2D shape enclosed by its boundaries.
- B.** Teacher Check. Sample answers:
1. Dundalk, County Louth, County Cork, Ireland
2. 1cm², 10cm², 1m², 10m²
3. Stamp, leaf, maths book, your desk
4. Bathroom, kitchen, living room, garden

5. Classroom, school hall, school yard, O2 arena
6. Garden, local pitch, Croke Park, Dublin

- C.**
- | | |
|--------------------------|-----------------------|
| 1. (a) 176m ² | (b) 264m ² |
| 2. 5.4m ² | |

Challenge Yourself!
228m²

- D.**
1. Teacher Check
2. (a) Greater than 1m²
(b) Greater than 1m²
(c) Less than 1m²
(d) Broadsheets and tabloids less than 1m² (even when open)
(e) Greater than 1m²
(f) Depends on the pane of glass
- E.**
- | | |
|---------------|------------------|
| 1. Howth Head | 2. North Bull |
| 3. Dublin Bay | 4. Lambay Island |
| 5. Dublin Bay | |

Topic: Time 2 **Page 143**

- B.**
- | | | |
|---------|------|-------|
| 1. 3:55 | 4:05 | 4:15 |
| 4:25 | 4:35 | 4:45 |
| 2. 8:05 | 8:30 | 8:55 |
| 9:20 | 9:45 | 10:10 |
| 3. 2:25 | 3:30 | 4:35 |
| 5:40 | 6:45 | 7:50 |

- C.**
- | | | |
|-------------------------|-----------------|-------|
| 1. (a) 5:45 | 6:55 | 8:05 |
| (b) 5:00 | 4:45 | 4:30 |
| (c) 1:00 | 12:40 | 12:20 |
| (d) 6:15 | 5:40 | 5:05 |
| 2. (a) 70 minutes | (b) 85 minutes | |
| (c) 75 minutes | (d) 100 minutes | |
| (e) 119 minutes | (f) 150 minutes | |
| (g) 121 minutes | (h) 135 minutes | |
| (i) 165 minutes | | |
| 3. (a) 1 hour 5 minutes | | |
| (b) 1 hour 20 minutes | | |
| (c) 1 hour 23 minutes | | |
| (d) 1 hour 34 minutes | | |
| (e) 1 hour 39 minutes | | |
| (f) 1 hour 41 minutes | | |
| (g) 2 hours 0 minutes | | |
| (h) 2 hours 10 minutes | | |
| (i) 2 hours 25 minutes | | |
| (j) 2 hours 55 minutes | | |
| (k) 3 hours 4 minutes | | |
| (l) 3 hours 20 minutes | | |

Topic: Time 2 **Page 144**

- A.**
- | |
|---------------------------|
| 1. (a) 6 hours 43 minutes |
| (b) 6 hours 49 minutes |
| 2. (a) 5 hours 57 minutes |
| (b) 6 hours 28 minutes |
| (c) 6 hours 43 minutes |
| (d) 10 hours 53 minutes |
| (e) 9 hours 47 minutes |
| 3. 3 hours 41 minutes |

B.

- 2 hours 5 minutes
- 3 hours 5 minutes
- 3 hours 15 minutes
- 2 hours 20 minutes
- 6 hours 55 minutes

C.

Teacher Check

Topic: Time 2 Page 145**A.**

- (a) 3 hours 21 minutes
(b) 4 hours 18 minutes
(c) 2 hours 23 minutes
(d) 3 hours 29 minutes
(e) 4 hours 18 minutes
- (a) 2 hours 87 minutes
(b) 2 hours 95 minutes
(c) 2 hours 72 minutes
(d) 1 hour 109 minutes
(e) 1 hour 112 minutes
(f) 1 hour 79 minutes
(g) 3 hours 119 minutes
(h) 4 hours 68 minutes

B.

- (a) 2 hours 16 minutes
(b) 1 hour 53 minutes
(c) 1 hour 38 minutes
- (a) 3 hours 41 minutes
(b) 3 hours 19 minutes
(c) 1 hour 39 minutes
(d) 2 hours 41 minutes
(e) 3 hours 36 minutes
- 55 minutes
- 55 minutes
- 2 hours 25

C. Teacher Check**Topic: Time 2 Page 146****A.**

- 10:30
- Arrivals
- 10 minutes
- Galway
- Cork and Kilkenny
- 1 hour 45 minutes
- Athlone

B.

- 5 minutes
- 20 minutes
- It will not run
- Killarney
- Dublin – it cannot be in any of the places mentioned on Arrivals or Departures boards
- Roscommon
- 10 minutes

C.

- 160km
- 40km

Topic: Time 2 Page 147**A.**

We are not adding units, tens and hundreds when adding hours and minutes.

B.

- (a) 7 hours 28 minutes
(b) 9 hours 18 minutes
(c) 3 hours 8 minutes
(d) 2 hours 36 minutes
(e) 3 hours 50 minutes

2. Teacher Check**C.**

- 22nd May, 3.00pm
- 22nd May 1.00pm
- 2 days and 4 hours
- 22nd May, 2.00pm

D.

- Week
- Hours
- Seconds
- Minutes / minutes
- Months

E.

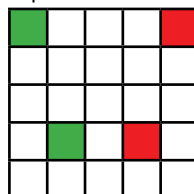
Teacher Check

Sporting Maths Pages 148 and 149

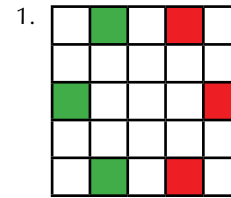
- 150m
- 90m
- 10m
- 15m
- (a) 160m (b) 1500m²
- (a) 80m (b) 375m²
- 405cm
- 3 minutes / 4 $\frac{1}{2}$ minutes
- 2 $\frac{1}{4}$ minutes
- $\frac{1}{2}$ minute
- Teacher Check
- Teacher Check
- Teacher Check
- 10 points = 3 goals 2 points red card
14 points = 4 goals 2 points goal posts
17 points = 5 goals 2 points goal posts
20 points = 6 goals 1 point red card

Mental Maths 6 Page 150**A.**

- m² and cm²
- 5
- 107 and 109
- 1 should not have been carried
- EeE
- Twice
- 11
- €5.01
- 7.7
- 6.3
- Teacher Check
- width of rectangle
- Departures



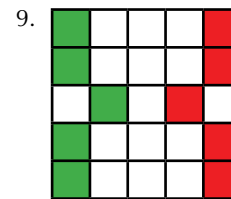
- 1 hour 41 minutes

B.

- Teacher Check
- 3:03pm
- €10.01
- 50
- Arrivals
- 160 toes
- vVv
- 1 should not have been carried
- 3 times
- 106
- 10
- Oct
- Doesn't say the shape
- 0.14

Mental Maths 6 Page 151**C.**

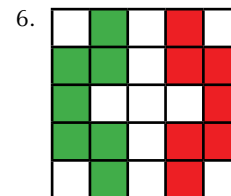
- 13 dogs
- cm not cm²
- 13
- Joan's height
- 20
- 3,008 and 3,010
- Teacher Check
- €30.01



- cm² instead of cm
- 72
- 1.6
- Girl's name starting with G

D.

- 24
- 0.88
- 51
- 11:45
- Mark



- None of these
- 21
- 21
- 51

Topic: Operations Page 152**B.**

- (a) 237 cars (b) 501 cars
- (a) 58 kites (b) 64 kites
(c) 444 kites
- 723

C.

- €0.01
- €45
- €34.50
- 52 white keys

Topic: Operations Page 153

- A.**
 1. (a) 6 (b) 4 (c) 9 (d) 11
 2. (a) 6 (b) 10 (c) 16 (d) 5
 3. 11 passengers

- B.**
 1. 9 2. 12 3. 11
 4. 2 5. 11 6. 14
 7. 5 8. 13 9. 16

- C.**
 1. 4 6 1
 2 5 0
 6 9 0
 2. 1 2 3
 9 0 6
 9 9 6
 3. 3 2 1
 4 9 7
 8 6 3
 4. 1 8 9
 1 4 9
 1 0 9
 5. 3 2 5
 1 8 0
 2 5 0

Topic: Operations Page 154

- A.**
 1. (a) 180 (b) 470
 (c) 810 (d) 950
 (e) 1,760
 2. (a) 1,264 (b) 654
 (c) 3,374 (d) 6,543
 (e) 948 (f) 1,290
 3. (a) 1,560 (b) 4,880
 (c) 5,880 (d) 3,720
 (e) 7,860 (f) 9,520
 4. 480 lollies

- B.**
 (a) 250 (b) 550 (c) 7120
 (d) 231 (e) 135 (f) 213
 (g) 33 (h) 27 (i) 71
 (j) 25 (k) 55 (l) 712
 Children should notice that the second set of questions is related to the first set. Multiplication and division are related, are the reverse of one another as demonstrated in the reflection.

- C.**
 1. (a) 9 (b) 11
 (c) 7 (d) 3
 (e) 10
 2. (a) 63 (b) 78
 (c) 99 (d) 13
 (e) 27 (f) 45
 3. (a) 98 (b) 25
 (c) 57 (d) 208
 (e) 177 (f) 204
 4. 6 sweets

Topic: Operations Page 155

- A.**
 1. (a) 2,408 (b) 1,701
 (c) 2,700 (d) 2,688
 (e) 7,786 (f) 8,451
 2. (a) 169 r 4 (b) 215 r 3

- (c) 61 r 7 (d) 29 r 5
 (e) 92 r 1 (f) 103 r 6
 3. (a) 48 (b) 45
 (c) 27 (d) 192
 4. (a) 10 (b) 8
 (c) 8 (d) 7

- B.**
 1. 36 apples
 2. €704
 3. (a) 625 (b) 784
 (c) 1,296 (d) 2,304
 (e) 2,809 (f) 4,096
 4. (a) 32 (b) 95 (c) 53 (d) 71
 (e) 92 (f) 88 (g) 36 (h) 65
 Easy because the multiplication cancels out the division.

Topic: Operations Page 156

- A.**
 Addition and subtraction / multiplication and division may be regarded as opposite operations.
 $4 + 7 = 11$ and $11 - 7 = 4$
 $/ 4 \times 7 = 28$ and $28 \div 7 = 4$

B.

X	7	9	16	20
8	56	72	128	160
11	77	99	176	220
15	105	135	240	300
30	210	270	480	600

X	25	50	75
8	200	400	600
11	275	550	825
15	375	750	1,125
30	750	1,500	2,250

X	121	256	333
8	968	2,048	2,664
11	1,331	2,816	3,663
15	1,815	3,840	4,995
30	3,630	7,680	9,990

÷	2	3	4	6	12
96	48	32	24	16	8
120	60	40	30	20	10
156	78	52	39	26	13
204	102	68	51	34	17
348	174	116	87	58	29
504	252	168	126	84	42
792	396	264	198	132	66

÷	2	5	10
60	30	12	6
80	40	16	8
110	55	22	11
140	70	28	14
230	115	46	23
370	185	74	37
830	415	166	83

- C.**
 1. (a) 90 times (b) €500
 2. (a) 22 boxes of fuses
 (b) 1,408 lift offs
D.
 1. Division
 2. Multiplication (if each class has the same number of chairs) or addition.
 3. Multiplication

Topic: Capacity Page 157

- B.**
 1. (a) 100ml (b) 300ml
 (c) 50ml (d) 950ml
 2. Teacher Check
C.
 Less than 1 litre:
 egg cup, spoon, glass, perfume
 About 1 litre:
 measuring jug, milk carton
 More than 1 litre:
 bath, bucket, watering can

Topic: Capacity Page 158

- A.**
 Teacher Check
B.
 1. (a) 5 times (b) 15 litres
 2. 8 minutes
C.
 1. (a) 3l 700ml (b) 2l 567ml
 (c) 4l 600ml (d) 2l 989ml
 (e) 4l 689ml (f) 8l 0ml
 (g) 4l 5ml (h) 5l 34ml
 2. (a) 3,200ml (b) 3,530ml
 (c) 1,789ml (d) 4,654ml
 (e) 1,340ml (f) 3,004ml
 (g) 6,000ml (h) 3,045ml
D.
 1. (a) 6l 125ml (b) 8l 237ml
 (c) 12l 883ml (d) 11l 579ml
 (e) 13l 616ml
 2. (a) 3l 82ml (b) 2l 677ml
 (c) 2l 583ml (d) 3l 839ml
 (e) 2l 27ml

Topic: Capacity Page 159

- A.**
 1. 27l 250ml 2. 525ml
 3. 190ml
B.
 1. (a) 4.28l (b) 1.63l

- (c) 4-55l (d) 3-7l
 (e) 7-43l (f) 3-05l
 (g) 0-05l (h) 7-0l
 (i) 0-07l
 2. (a) 4l 530ml (b) 2l 560ml
 (c) 1l 980ml (d) 3l 780ml
 (e) 7l 560ml (f) 12l 400ml
 (g) 3l 50ml (h) 2l 300ml
 (i) 6l 80ml
 3. (a) 10-50l (b) 25-38l
 (c) 11-42l (d) 21-30l
 4. (a) 12-80l (b) 12-08l
 (c) 24-92l (d) 48-84l
 5. (a) 0-47l (b) 0-34l
 (c) 1-36l (d) 0-47l
 6. (a) 1-17l (b) 1-19l
 (c) 1-38l (d) 2-95l

- C.
 1. 3l 520ml
 2. 450ml each

Topic: Capacity Page 160

- A.
 1. 4l 800ml 2. 600ml each
 3. 600ml each 4. 27l
 5. 11 or 12 oranges
 Answer is uncertain because some oranges yield more juice than others.

- B.
 1. 10 lemons (as above)
 2. 650ml approx, yes
 3. $255 - 180 = €75$
 4. 18l, 90l
 5. 450ml

Topic: Capacity Page 161

- A.
 Kilogrammes are units of weight / litres are units of capacity.

- B.
 1. (a) 4-36l (b) 3-29l
 (c) 8-11l (d) 4-40l
 (e) 4-04l (f) 40-04l
 (g) 5-16l (h) 1-01l
 2. (a) 4l 390ml (b) 1l 180ml
 (c) 8l 390ml (d) 50l 500ml
 (e) 5l 500ml (f) 5l 50ml
 (g) 2l 20ml (h) 0l 30ml
 3. (a) 9l 164ml (b) 5l 715ml
 4. (a) 1l 949ml (b) 5l 420ml
 5. (a) 11-36l (b) 18-54l
 6. (a) 1-08l (b) 1-6l

- C.
 1. Because of the weight of the bottle. Net weight of the water is 1kg.

- D. Teacher Check
 E.

Fill the 5l container. Fill the 3l container from the 5l container leaving 2l of water in 5l container. Empty the 3l container. Pour the 2l of water that you have in the 5l container into the 3l container. Fill the 5l container. Now if you fill the 3l container (which contains 2l) from the 5l container, you will be left with 4l in the 5l container.

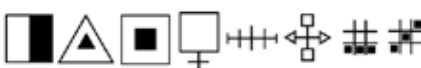
Topic: Problem-Solving 1 Page 162

- A.
 1. 16 sleeves 2. 40
 3. 3 4. 28
 5. €19 6. 17 apples
 7. 28 minutes 8. 46 pages

- B.
 1. 168 buttons 2. 8,356
 3. 989 4. 1,323
 5. €11-93 6. 9,564 points
 7. 4 hours 34 minutes
 8. 4,368 pages

- C.
 384 beads

Topic: Problem-Solving 1 Page 163

- A.
 1. - 8.


- B.
 1. - 8.


Topic: Problem-Solving 1 Page 164

- A.
 1. 3l 2. 4l 740ml
 3. 2-84l



- B.
 1. 5km 2. 26km
 3. 1km 390m
 All questions assume that equal distances were covered each day.


- C.
 1. 2kg
 2. 1-47kg
 3. 3-4kg

- D.
 1. (a) 6m (b) 36m²
 2. 400m²
 3. 1444m²

- E.
 1. 48
 2. 36
 3. 216

Topic: Problem-Solving 1 Page 165

- A.
 1. 
 2. 

- B.
 1. 
 2. 20 times (counting 77 as 2 instances)

- (7, 17, 27, 37, 47, 57, 67, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 87, 97)

- C.
 1. (a) 3 socks (b) 12 socks
 2. 4,100 (easy to go wrong at the last hurdle and offer an answer such as 4,000).

Topic: Problem-Solving 1 Page 166

- A.
 There are many problem-solving strategies. Examples: try it with smaller numbers / draw a diagram / decide on which operations are needed.

- B.
 1. 60c 2. 70c
 3. €1-90 4. €3-55

- C.
 1. 3 more days 2. 5 more days
 3. 10 more days 4. 12 more days
 5. 30 more days

- D.
 We do not know how many of the 80 customers paid €15 and how many paid €25. To estimate, we could assume that half of the customers paid €15 and half paid €25. This would amount to €1,600

Discussion Point: What is the most money the hairdresser may have taken in?

What is the least amount of money the hairdresser may have taken in?

- E. Teacher Check

Topic: 3D Shapes Page 167

Teacher Check

Topic: 3D Shapes Page 168

- A.
 Teacher Check
 B.
 1. Hexagonal prism 2. Cuboid
 3. Square pyramid 4. Triangular prism
 5. Cone 6. Cylinder
 7. Sphere

Topic: 3D Shapes Page 169

- A.
 1. 12 cubes 2. 24 cubes
 3. 36 cubes 4. 16 cubes
 5. 64 cubes 6. 120 cubes
 B.
 48 worms and 72 worms respectively
 C.
 1. $2 \times 2 \times 2$
 2. Strictly speaking, one cube is automatically a cuboid. It takes 2 cubes to create a cuboid that is not a cube.
 3. 24 cubes
 4. $3 \times 3 \times 3$
 5. Yes. They are stable when stacked.
 6. Cuboids

7. Spheres, cones, triangular prisms, pyramids . . . are unsuitable
8. True 9. False

Topic: 3D Shapes Page 170

- A.**
(a) Triangular prism
(b) Rectangular prism or cuboid
(c) Pentagonal prism
(d) Hexagonal prism
- B.**
(a) Square pyramid
(b) Hexagonal pyramid
(c) Pentagonal pyramid
(d) Triangular pyramid or tetrahedron

- C.**
1. Teacher Check
2. Teacher Check
3. Red, orange, yellow, green, blue, indigo, violet (Richard Of York Gave Battle In Vain).

Topic: 3D Shapes Page 171

- A.**
3D shapes also have height in comparison to 2D shapes which only have length and width.

B.

	Faces	Vertices	Edges
Cube	6	8	12
Cuboid	6	8	12
Triangular prism	5	6	9
Pentagonal prism	7	10	15
Hexagonal prism	8	12	18
Triangular pyramid	4	4	6
Square pyramid	5	5	8
Pentagonal pyramid	6	6	10
Cone	2	1	1

- C.**
1. Cuboids
2. Sphere
3. Cone

- D.**
1. True 2. False
3. True 4. True
5. True 6. False
7. True

Note: however a slope on the gable end(s) renders this false.

8. True 9. False
10. True

- E.**
Teacher Check

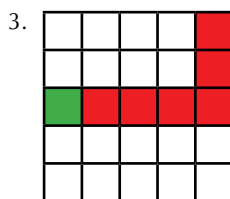
Star Cinema Pages 172 and 173

1. Teacher Check

2. 600ml
3. (a) prism
(b) cone
(c) cylinder
(d) pyramid
(e) cylinder (imperfect)
(f) cuboid
5. (a) €2.50 (b) €21
(c) €2.60 (d) €4.50
(e) €33.50 (f) €14.20
6. €6.50
7. 10 minutes
8. 10 minutes
9. Drinking chocolate
10. pm

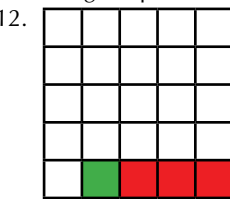
Mental Maths 7 Page 174

- A.**
1. 0 2. Face



3. 4. 5,000
5. Answer should be 8
6. 36636 is odd one out. It's not a palindrome.
7. Square pyramid
8. Teacher Check
9. 86 minutes
10. 10c 11. 9 keys
12. units 13. 18
14. 4,010 15. $\frac{1}{8}$

- B.**
1. $\frac{5}{9}$ 2. 7 glasses
3. Vertex 4. $2\frac{1}{2}$ minutes
5. 121 minutes
6. Answer should be 7
7. 21 8. 5,996
9. €3.98 10. €1.05
11. Triangular prism



13. Turn left or right?
14. 5 15. 45

Mental Maths 7 Page 175

- C.**
1. 2.31
2. 96c
3. ~~////~~ ~~////~~ ~~////~~
4. scalene
5. 24 times
6. 18 (answer 14 is also acceptable)
7. octagon

8. 4,809
9. 40
10. Took 5 from 7 instead of 7 from 5
11. €25
12.

13. $\frac{1}{2}$ 14. $\frac{1}{5}$ 15. PQS

- D.**
1.
2. Twice 3. 4,060ml
4. 4 5. 1.94
6. 8.01 7. €250
8. 25 9. €1.20
10. None of these

Topic: Number Sentences Page 176

- A.**
6, 9, 8
- B.**
1. (a) 7 (b) 1 (c) 9 (d) 4
(e) 0 (f) 5
2. (a) 8 (b) 1 (c) 7 (d) 12
(e) 20 (f) 15
3. (a) 5 (b) 0 (c) 2 (d) 8
(e) 8 (f) 28
- C.**
1. $35 + 15 = 50$
2. $65 + 15 = 80$
3. Teacher Check
- D.**
1. (a) 3 (b) 4 (c) 2
2. (a) 2 (b) 0 (c) 7
3. (a) 5 (b) 7 (c) 15
4. $20 - 12 = 8$
5. $80 - 17 = 63$
6. Teacher Check

Topic: Number Sentences Page 177

- A.**
1. (a) 5 (b) 7 (c) 9 (d) 11
2. (a) 9 (b) 11 (c) 5 (d) 4
3. (a) 7 (b) 4 (c) 3 (d) 20
4. $5 \times 8 = 40$
5. $8 \times 6 = 48$
6. Teacher Check
- B.**
1. 5 frogs
2. (a) 2 (b) 7 (c) 9 (d) 11
3. (a) 7 (b) 9 (c) 9 (d) 3
4. $72 \div 12 = 6$
5. $56 \div 7 = 8$
6. Teacher Check

- C.**
- 7 trips (not 6 r 2)
 - 48 passengers
 - Seven 20c coins

Topic: Number Sentences
Page 178

- A.**
- 501kg Note: Remind the children that these are whole number exercises only.
 - 100kg
- B.**
- Discussion Point: There are many numbers which will make these number sentences true. The questions specifically require the greatest possible whole number.
- (a) 300 (b) 200 (c) 450 (d) 2 (e) 0 (f) 250
 - (a) 50 (b) 30 (c) 2 (d) 99 (e) 95 (f) 58
 - (a) 1 (b) 7 (c) 10 (d) 22 (e) 13 (f) 0 (g) 29 (h) 31 (i) 49

- C.**
- $3 + 4 < 8$
 - $3 + 9 < 13$
 - $120 + 180 < 301$

Topic: Number Sentences
Page 179

- A.**
- 20 minutes
- B.**
- Discussion Point: There are many numbers which will make these number sentences true. The questions specifically require the lowest possible whole number.
- (a) 40 (b) 30 (c) 50 (d) 10 (e) 5 (f) 17
 - (a) 20 (b) 25 (c) 1 (d) 10 (e) 99 (f) 88 (g) 64 (h) 42 (i) 73
 - (a) 9 (b) 11 (c) 15 (d) 10 (e) 2 (f) 34 (g) 22 (h) 68 (i) 35

- C.**
- $6 + 14 > 19$
 - $65 + 35 > 99$
 - $75 + 15 > 89$

Challenge Yourself!
 $4 / 2 / 5 / 4 / 5 / 8$

Topic: Number Sentences
Page 180

- A.**
- Maximum is the upper limit – the greatest allowable.
Minimum is the lower limit – the least that is acceptable.
- B.**
- Teacher Check. Sample answers:
(a) $6 + 10 / 3 + 3 + 5 + 5$

- $7 + 13 / 1 + 6 + 5 + 8$
 - $25 / 7 + 7 + 1 + 10$
 - $30 / 10 + 20 / 8 + 2 + 15 + 5$
- (a) $7 + 5$ (b) $10 + 8$
(c) $12 + 12$ (d) $14 + 16$
(e) $99 + 1$ (f) $6 + 8$
(g) $20 + 1 + 1$ (h) $20 + 15 + 5$
(i) $10 + 25 + 15$

- C.**
- Teacher Check. Sample answers:
- pen 30c and pencil 20c.
 - 20 minutes at sums and 10 minutes at spellings
 - 20g
 - 250ml each

- D.**
- True
 - False
 - True
 - False
 - True
 - False

E. n/a

Topic: Problem-Solving 2
Page 181

- A.**
- Signing in allows the user to be uniquely identifiable. It usually entails entering a username (often an email address) and password.

- B.**
- €73.50
 - €109.50

- C.**
- Games console
 - Baseball cap
 - No because of the €5 P&P charge

- D.**
- Teacher Check
 - To register means to set yourself up as a user or client.
 - There are many aspects to staying safe online. One of the most important is never to reveal personal information to an unreliable contact without the consent of a trusted adult.

- E.**
- Teacher Check
 - Credit card, laser card, debit card, money transfer (e.g Paypal), etc.

Topic: Problem-Solving 2
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Teacher Check

Topic: Problem-Solving 2
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- A.**
- Birr
 - Malin Head
 - 9°C
 - Mullingar & Belmullet, Kilkenny & Rosslare
 - Teacher Check

- B.**
- 3.6m
 - None of these (3-52m)
 - None of these (9900m)
 - 99 points
 - $4\frac{1}{4}$ days
 - Cork

C. Teacher Check

- D.**
- 15 minutes
 - 80c
 - 5th May
 - Monthly

Topic: Problem-Solving 2
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- A.**
- 4 minutes time
 - Next post collection
 - €12.50
 - Drivers with high loads / lorries
 - Parking places
 - 64
 - No – ‘up to’ means that some items will be reduced by amounts less than 40%

- B.**
- As soon as the Luas arrives, the signage changes. A commuter might consider waiting for the next one (if the wait is not too long) because s(he) is waiting for a friend, finishing a private phone conversation or because the present one is very crowded.
 - No – the post collector will arrive at approximately 5:30pm (or 5:30pm at the earliest) .

Topic: Problem-Solving 2
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- A.**
- €11
 - Vertical, parallel, perpendicular lines
 - Limerick
 - 2008
 - Hospital
 - Closed and horizontal
 - Fuel
 - One litre
 - If you insert more than you need, the machine will not issue change.
 - €1.60

- B.**
- Ticket issued / clamped / towed away
 - To allow patients time to recover, to allow doctor visits, etc.

Topic: Revision **Page 186**

- A.**
- $10/15, 15/20, 30, 20/25, 50, 50, 25$
 - $12/18, 18/24, 36, 24/30, 60, 60, 30$
 - $6/9, 9/12, 18, 12/15, 30, 30, 15$
 - $8/12, 12/16, 24, 16/20, 40, 40, 20$
 - $14/21, 21/28, 42, 28/35, 70, 70, 35$

B.

- (a) 77, 62, 28, 19
(b) 211, 106, 34, 6
(c) 177, 94, 87, 45
(d) 179, 126, 19, cannot be completed because you cannot take 20 from 19
(e) 364, 306, 280, 235

Topic: Revision

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A.

- 36, 288, 2880
- 21, 126, 1260
- 20, 60, 600
- 42, 210, 2100
- 36, 288, 2880
- 36, 324, 3240

B.

- 64, 16, 8
- 96, 24, 8, 2
- 420, 210, 70, 10
- 360, 120, 24, 8
- 168, 24, 8, 4
- 128, 16, 4, 2
- 243, 81, 9, 3

Topic: Revision

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A.

- 2, 4, 6, 8 34
6, 12, 18, 24 . . .108
7, 14, 21, 28 . . . 105
135, 126, 117, 108, 99 . . .9
13, 26, 39, 52 . . .169

B.

[Note: these questions are quite tricky.
Target more able students]

- 355, 209, 725
- 844, 515, 4256
- 1·24, 6·81, 5·72
- 5·65, 6·55. 5·91

C.

- Both the same: halves are always equal!
- First six months have $31 + 28 + 31 + 30 + 31 + 30 = 181$ days (182 in leap year)
Last six months have $31 + 31 + 30 + 31 + 30 + 31 = 184$
- No