## Unit 1 Number – Answers

**Learner's Book**

**Pages 7–8: Practise**

**1**  **a**  0.312
   **b**  2.131
   **c**  2.133
   **d**  3.204

**2**  **a**  0.008 (8 thousandths)
   **b**  0.08 (8 hundredths)
   **c**  −0.008 (negative 8 thousandths)
   **d**  −0.8  (negative 8 tenths)
   **e**  80 and 0.008 (8 tens and 8 thousandths)

**3**  **a**  $45.36 = $40 + $5 + $0.30 + $0.06
   **b**  $453.60 = $400 + $50 + $3 + $0.60
   **c**  15.25 km = 10 km + 5 km + 0.2 km + 0.05 km
   **d**  1.525 km = 1 km + 0.5 km + 0.02 km + 0.005 km
   **e**  23.99 kg = 20 kg + 3 kg + 0.9 kg + 0.09 kg
   **f**  2.399 kg = 2 kg + 0.3 kg + 0.09 kg + 0.009 kg

**4**  **a** to **d** Learners will have their own examples of regrouping.

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**Page 10: Practise**

**1**  **a**  $45 \div 10 = \boxed{4.5}$      **b**  $0.48 \times 10 = \boxed{4.8}$      **c**  $2.609 \times 10 = \boxed{26.09}$
   $45 \div 100 = \boxed{0.45}$         $0.48 \times 100 = \boxed{48}$         $26.09 \div 10 = \boxed{2.609}$
   $45 \div 1\,000 = \boxed{0.045}$      $0.048 \times 100 = \boxed{4.8}$      $2.609 \times 1\,000 = \boxed{2\,609}$
   $4.5 \div 100 = \boxed{0.045}$         $0.048 \times 1\,000 = \boxed{48}$      $2\,609 \div 1\,000 = \boxed{2.609}$

⭐**2**  **a**  Wrong – these are the same distance; 3.45 m is 10 times as far as 0.345 m
   **b**  Wrong – 1 569 m is 1 000 times as far as 1.569 m
   **c**  Wrong – 3.6 kg is 1 000 times as light as 3 600 kg
   **d**  Wrong – 14.5 kg is 10 000 times as light as 145 000 kg
   **e**  Correct

**3**  **a**  Missing numbers are: 0.007, 70, 0.7
   **b**  Missing numbers are: 9 763, 97.63, 9 763

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**Page 12: Practise**

**1**  **a**  12, 15, 18          3 × 6 = 18
   **b**  20, 25, 30, 35          5 × 7 = 35
   **c**  24, 30, 36, 42, 48          6 × 8 = 48
   **d**  36, 45, 54, 63, 72, 81          9 × 9 = 81

**2**  **a**  In a sequence that starts 2, 4, 6, the value of the 12th term is <u>24</u> (2 × 12 = 24)
   **b**  In a sequence that starts 10, 20, 30, the value of the 15th term is <u>150</u> (10 × 15 = 150)
   **c**  In a sequence that starts 7, 14, 21, the value of the 9th term is <u>63</u>. (7 × 9 = 63)

**3 a**

| Position | Term |
|----------|------|
| 1 | 5 |
| 2 | 10 |
| 3 | 15 |
| 11 | **55** |
| **20** | 100 |
| 29 | **145** |

**b**

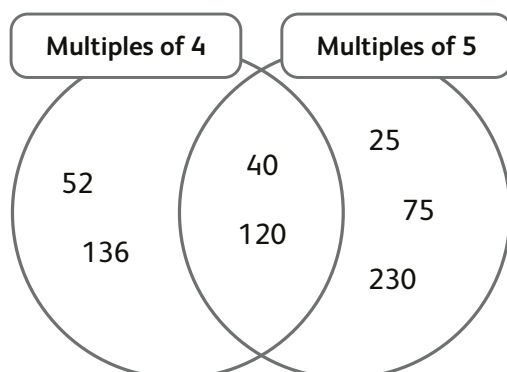| Position | Term |
|----------|------|
| 1 | 8 |
| 2 | 16 |
| 3 | 24 |
| **6** | 48 |
| 12 | **96** |
| 25 | **200** |

**Page 13: Practise**

**1 a** $4 \times 4 = 16$ and $4^2 = 16$
  **b** $6 \times 6 = 36$ and $6^2 = 36$
  **c** $7 \times 7 = 49$ and $7^2 = 49$
  **d** $10 \times 10 = 100$ and $10^2 = 100$

**2 a** 5th position
  **b** 9th position
  **c** 7th position
  **d** 8th position

**Page 15: Practise**

**1 a** First 10 multiples for 2: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22
    First 10 multiples for 3: 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33
    Common multiples for 2 and 3: 6, 12, 18
  **b** First 10 multiples for 2: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22
    First 10 multiples for 5: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55
    Common multiples for 2 and 5: 10, 20
  **c** First 10 multiples for 3: 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33
    First 10 multiples for 5: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55
    Common multiples for 3 and 5: 15, 30
  **d** First 10 multiples for 4: 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44
    First 10 multiples for 6: 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66
    Common multiples for 4 and 6: 24

⭐**2 a**

Multiples of 4 / Multiples of 5

52, 136 (Multiples of 4 only); 40, 120 (intersection); 25, 75, 230 (Multiples of 5 only)

  **b** Check that learners' own numbers are in the correct parts of the Venn diagram.

**Page 16: Practise**

**1** Learners should list the factors for each pair of numbers and then circle the common factors. The following common factors in each pair should be circled:

  **a** 1, 2, 4
  **b** 1, 3
  **c** 1, 2, 5, 10
  **d** 1, 2, 3, 4, 6

**2 a**

|  | Factor of 36 | Not a factor of 36 |
|---|---|---|
| **Factor of 18** | 1, 2, 3, 6, 9, 18 |  |
| **Not a factor of 18** | 12, 36 | 5, 7 |

  **b** They are all divisible by 18 and 36.
  **c** Learners' own answers.

**3** Guss is wrong. The factors of 28 are **1**, **2**, **4**, 7, 14, 28. The factors of 40 are **1**, **2**, **4**, 5, 8, 10, 20, 40 … so, the common factors of 28 and 40 are 1, 2, 4.
  Elok is also wrong. The factors of 18 are **1**, **2**, **3**, **6**, 8, 18. The factors of 30 are **1**, **2**, **3**, 5, **6**, 10, 15, 30 … so, the common factors of 18 and 30 are 1, 2, 3 and 6.

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**Page 16: Try this**

The factors of 10 are 1, 10, 2 and 5. These are all common factors of 10, 20 and 30.
4 is a factor of 20, but not of 10 or 30.
3, 6 and 15 are factors of 30, but not of 10 or 20.
So, 10 is a factor of the larger numbers, and 10s factors are also factors of the larger number.

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**Page 18: Practise**

**1 a** 158 (given in Learner's Book)      237: 2 + 3 + 7 = 12, so 1 + 2 = 3
  162: 1 + 6 + 2 = 9            548: 5 + 4 + 8 = 17, so 1 + 7 = 8
  1 224: 1 + 2 + 2 + 4 = 9         2 187: 2 + 1 + 8 + 7 = 18, so 1 + 8 = 9
  3 445: 3 + 4 + 4 + 5 = 16, so 1 + 6 = 7

  **b** 162, 1 224 and 2 187

**2** 585 trees, 756 trees and 999 trees

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**Page 19: Practise**

**1 a** 78, 372, 159, 348, 654, 2 142, 2 145
  **b** 78, 372, 348, 654, 2 142
  **c** They are all the numbers that are divisible by both 3 and by 2. 6 is made up of 2 threes, so every 6 is an even number of threes.

**2 a** 102 (accept 108)
  **b** 144
  **c** 180

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⭐**Page 20: Let's talk**



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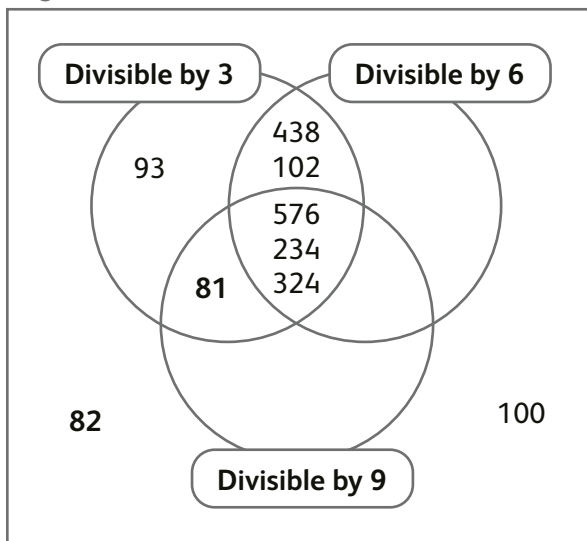
**Page 20: Quiz**

**1 a** 14 578 = 10 000 + 4 000 + 500 + 70 + 8
  **b** 1 457.8 = 1 000 + 400 + 50 + 7 + 0.8
  **c** 145.78 = 100 + 40 + 5 + 0.7 + 0.08
  **d** 14.578 = 10 + 4 + 0.5 + 0.07 + 0.008

**2 a** False: 36.132 × 1 000 = 36 132
  **b** False: 605.32 ÷ 10 = 60.532
  **c** True

**3 a** 80 (10 × 8 = 80)
  **b** 192 (24 × 8 = 192)

**4 a** 40, 80, 120
  **b** 1, 2, 4, 8

**5 a** Divisible by 3: 96, 99, 102, 105, 108, 111, 114, 117, 120, 123, 126, 129
  **b** Divisible by 6: 96, 102, 108, 114, 120, 126
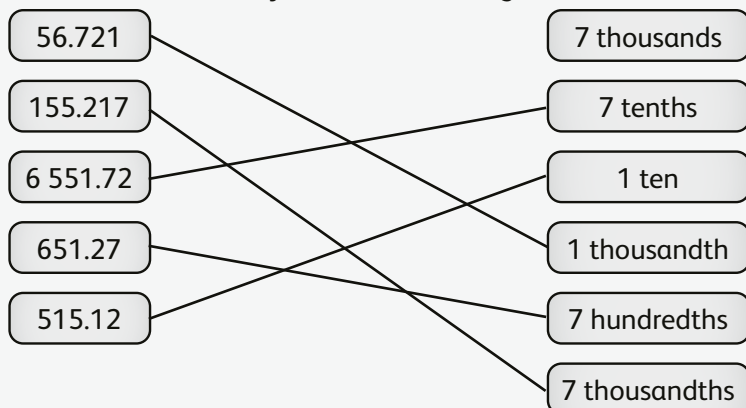  **c** Divisible by 9: 99, 108, 117, 126

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**Workbook pages 4–5:**

**Can you remember?**

Learners should have circled: 3.469, 3.472 and 3.465

**Composing, decomposing and regrouping whole numbers and decimals**

**1** Learners should have joined the following values:

| | |
|---|---|
| 56.721 | 7 thousands |
| 155.217 | 7 tenths |
| 6 551.72 | 1 ten |
| 651.27 | 1 thousandth |
| 515.12 | 7 hundredths |
| | 7 thousandths |

**2 a** 79.423 = 79 + $\boxed{0.423}$
    **b** 79.423 = 60 + $\boxed{19.4}$ + 0.023
  **c** 79.423 = 79 + 0.4 + $\boxed{0.023}$
    **d** 79.423 = $\boxed{794}$ tenths and $\boxed{23}$ thousandths

**3 a** 20, 4, 0.7 and 0.06 coloured yellow
  **b** 40, 2, 0.3, 0.07 and 0.006 coloured red
  **c** 3, 0.6, 0.03 and 0.007 coloured green

**Workbook page 5:**
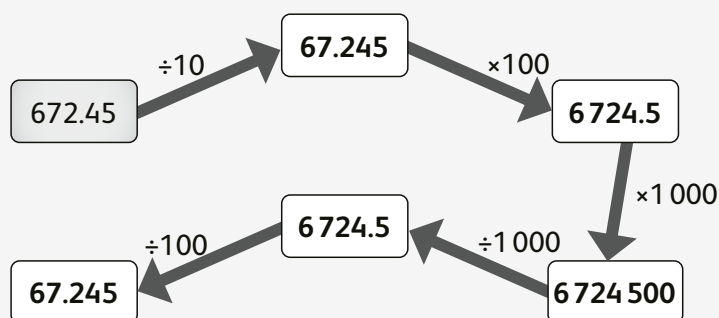
**Multiplying and dividing whole numbers and decimals by 10, 100 and 1 000**

**1**

672.45 →(÷10)→ **67.245** →(×100)→ **6 724.5** →(×1 000)→ **6 724 500** →(÷1 000)→ **6 724.5** →(÷100)→ **67.245**

**2** A to B = 279.485 km; C to D is 100 times that far = **19 996** km

**Workbook page 6:**

Patterns and sequences

**1**

| Position | 1 | 2 | 3 | 6 | 10 | 19 | 21 | 42 | 50 |
|---|---|---|---|---|---|---|---|---|---|
| Term | 7 | 14 | **21** | **42** | **70** | **133** | **147** | **294** | **350** |

**2  a**  6

**b**  120

**c**  An explanation that 604 is not in the sequence, for example, because 600 is in the 100th position, so 606 is the next term in the sequence.

**3**  Learner's own answers for convincing others of their decision. They could say that 81 is the 9th term in the sequence of square numbers, so Sanchia is wrong. Some learners could have drawn all the square numbers to reach that decision.

**Workbook page 7:**

Common multiples and common factors

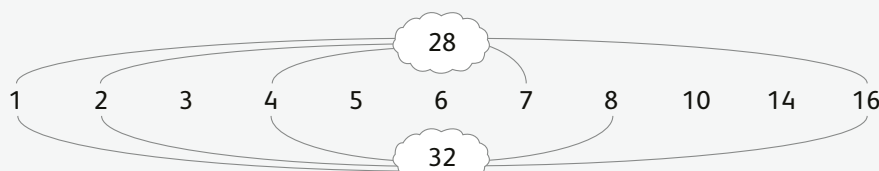**1  a**

| 40 |
|---|
| 30 |
| 20 |
| 10 |

| 2 | 5 |
|---|---|

**b**

| 48 |
|---|
| 36 |
| 24 |
| 12 |

| 3 | 4 |
|---|---|

**c**

| 80 |
|---|
| 60 |
| 40 |
| 20 |

| 4 | 5 |
|---|---|

**2  a**



28

1    2    3    4    5    6    7    8    10    14    16

32

**b**  2 and 4 are <u>common</u> <u>multiples</u> of 28 and 32.

**3**  Learners should explain that 1, 2, 4 and 6 are not the common factors of 18 and 24 because 18 is not divisible by 4. The common factors are 1, 2, 3 and 6.

**Workbook page 8:**

Tests of divisibility

**1**

| Divisible by 3, 6 and 9 |
|---|
| 828 |
| 216 |
| 486 |

| Divisible by 3 but not by 9 | |
|---|---|
| 600 | 1 281 |
| 321 | 375 |
| 510 | 402 |
| 588 | |

| Divisible by 9 but not by 6 |
|---|
| 459 |
| 1 143 |

| Divisible by 3 but not by 6 or 9 |
|---|
| 573 |
| 321 |
| 375 |

**2**  325 and 650
Accept 'Divisible by 5' or 'Divisible by 25'

# 2D and 3D shapes – Answers

**Learner's Book**

**Pages 23–24: Practise**

⭐**1 a** 65 degrees
   **b** 140 degrees
   **c** 125 degrees

**2** Learners' angles must all measure 50 degrees, presented in different orientations.

**3 a** 35 degrees – acute angle
   **b** 165 degrees – obtuse angle
   **c** 70 degrees – acute angle

⭐**4** Learners' isosceles triangles drawings will vary. Are learners able to convince you of their answer?

⭐**Page 24: Try this**

Learners may find it helpful to record their thinking in a table and use this to inform their predictions.
The rule is that the angles decrease by 25 degrees each time.

| Angle 1 | Angle 2 | Angle 3 | | | | |
|---------|---------|---------|---|---|---|---|
| 180 | 155˚ | 130˚ | | | | |

**Pages 28–29: Practise**

**1 a** 75 degrees
   **b** 30 degrees
   **c** 100 degrees
   **d** 95 degrees

⭐**2** These groups of three sets form triangles:
   85˚ + 65˚ + 30˚ = 180˚
   105˚ + 35˚ + 40˚ = 180˚
   110˚ + 25˚ + 45˚ = 180˚

**3 a** Triangle A: 20˚, 80˚, 80˚
      Triangle B: 15˚, 15˚, 150˚
      Triangle C: 90˚, 45˚, 45˚
   **b** The triangle could be: 36˚, 36˚, 108˚ or 36˚, 72˚, 72˚

**Page 31: Practise**

⭐**1** The shapes that learners make from the rectangular strips will vary – learners should be able to justify all shapes based on known properties.

⭐**2** Learners' answers will vary – learners should be able to justify their answers based on known properties.

⭐**3 a** A kite with two right angles would be forced to form a square.
   **b** A parallelogram with at least one line of symmetry must be a rectangle.
   **c** A trapezium with exactly one right angle is impossible.
   **d** Learners should draw any given quadrilateral with no right angles and no parallel lines.

**Page 33: Quiz**

1  **a** to **c** Learners' angles may be drawn in different orientations, to provide increased challenge.

2  The size of the remaining angle is 90 degrees.

3  **a** to **c** Learners' sketches should identify parallel lines. They could also include information about sides of equal length.

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**Workbook pages 10–11:**

**Can you remember?**

116° is obtuse                    12° is acute            112° is obtuse            67° is acute

**Measuring and drawing angles**

1  **a**  40°              **b**  140°              **c**  70°              **d**  110°
   **e**  37°              **f**  123°              **g**  27°              **h**  58°

2  Learners' angles will vary but they should have measured them accurately.

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**Workbook pages 12–13:**

**Calculating angles in triangles**

1  **a**  70°
   **b**  30°
   **c**  20° and 20°
2  **a**  Approximately 45°
   **b**  Approximately 68°
   **c**  Approximately 67°
   **d**  60°
   **e**  60°
   **f**  60°
3  Learners' answers will vary.

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**Workbook pages 13–14:**

**Properties of quadrilaterals**

1  Answers will vary – learners should be able to justify answers based on known properties.
2  Angles and lines of symmetry should be labelled accurately, and the name of each shape should be correct.
3  Learners' investigations should lead to the discovery that any quadrilateral tessellates.

## Unit 3 Calculation – Answers

**Learner's Book**

Pages 35–36: Practise

**1 a** 10      **b** 12      **c** 14      **d** 20

   **e** 22      **f** 18      **g** 20      **h** 20

**2 a** Singapore is 30° warmer than Minsk.

   **b** Oslo (−7 °C) and Hanoi (15 °C) have a difference of 22°.

   **c** 25 °C

   **d** −15 °C

⭐**3 a** Learners must classify the calculations.

   **b** Actual classification of the calculations under the headings is:

| Answer will be a positive number | Answer will be a negative number |
|---|---|
| −37 + 50 = 13<br>−87 + 89 = 2 | −100 + 99 = −1<br>−15 −23 = −38<br>65 − 79 = −14<br>0 − 29 = −29 |

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⭐**Page 36: Try this**

| | |
|---|---|
| 3 | −5 |
| −2 | 6 |
| −7 | 1 |

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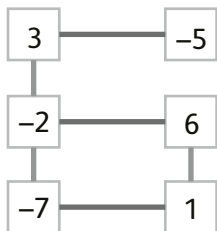
**Page 38: Practise**

**1 a** 4 305 + 2 986 = 7 291      **b** 2 305 + 4 986 = 7 291

   **c** 4 305 + 4 306 = 8 611      **d** 4 305 − 1 348 = 2 957

   **e** 4 305 − 1 997 = 2 308      **f** 4 305 − 312 = 3 993

**2 a** 3 407 seated      **b** 432 more people seated than standing

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**Page 38: Try this**

The right-hand column has all three numbers; these can be used to find the total as 3 825.

| **1 757** | 825 | 1 243 |
|---|---|---|
| 996 | **2 572** | 257 |
| **1 072** | **428** | 2 325 |

⭐**Page 40: Practise**

**1** Table to show values of A and B to total 13, for example:

| A | B |
|---|---|
| 13 | 0 |
| 12 | 1 |
| 11 | 2 |
| 10 | 3 |
| … | |

**2 a** m − 5 = n

**b** Answers will vary. Learners should give at least five possible values for each of **m** and **n**, for example:

| m | n |
|---|---|
| 6 | 1 |
| 7 | 2 |
| 16 | 11 |
| 17 | 12 |
| 21 | 16 |

**3 a** x + 10 = y or 10 + x = y

**b** Answers will vary. Learners must give at least five possible values for each of x and y.

| x | y |
|---|---|
| 0 | 10 |
| 5 | 15 |
| 6 | 16 |
| 15 | 25 |
| 24 | 34 |

⭐**Page 40: Let's talk**

In total, there are 13 different solutions:

| A | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 3 | 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B | 1 | 2 | 3 | 0 | 1 | 2 | 3 | 0 | 1 | 2 | 0 | 1 | 0 |
| C | 3 | 2 | 1 | 3 | 2 | 1 | 0 | 2 | 1 | 0 | 1 | 0 | 0 |

**Page 42: Practise**

**1 a** 19 × 5 × 2 = 190 (use associative law to solve as 19 × 10)

**b** 250 + 999 + 750 + 1 = 2 000 (use commutative law to reorder as 250 + 750 + 999 + 1 = 1 000 + 1 000)

**c** 2 × 6 × 5 − 20 = 40 (use commutative law to reorder as 2 × 5 × 6 − 20 = 10 × 6 − 20)

**d** 200 − 5 × 25 × 4 = 300 (use associative law to solve as 200 − 5 × 100)

⭐**2 a** 25 + 2 × 9 × 50 = 925 (2 × 50 = 100)

**b** 30 + 47 + 53 + 12 = 142 (47 + 53 = 100)

**c** 45 ÷ 9 × 5 × 20 = 500 ( 5 × 20 = 100)

**d** 8 × 65 + 8 × 35 = 800 ( 8 × 65 + 8 × 35 = 8 × 100 )

⭐**3 a** 25 × 4 × 6 or 6 × 25 × 4, and so on

**b** 600 legs

**Pages 44–45: Practise**

1. a  267 × 8 = 2 136
   b  3 067 × 9 = 27 603
   c  7 000 × 5 = 35 000
   d  2 800 × 4 = 11 200
   e  4 783 × 7 = 33 481
   f  3 200 × 3 = 9 600

2. 2 575 × 8 = 20 600 m    3 475 × 6 = 20 850 m    20 850 − 20 600 = 250 m
   The team that has six people runs 250 m further.

3. a  2 500 × 8 = 20 000 cm²
   b  4 566 × 7 = 31 962 cm²
   c  1 999 × 9: 2 000 × 9 = 18 000 subtract 1 × 9 = 17 991 cm²
   Rectangle **b** has the largest area.

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**Page 46: Practise**

1. a  2 172 × 10 = 21 720
      2 172 × 14 = 30 408
   b  4 263 × 20 = 85 260
      4 263 × 26 = 110 838
   c  6 105 × 30 = 183 150
      6 105 × 32 = 195 360
   d  3 286 × 40 = 131 440
      3 286 × 43 = 141 298

2. a  2 065 × 45 because 2 000 × 40 = 80 000 and 2 000 × 50 = 100 000
   b  Check learners' estimates.

   | 1 249 × 34 = **42 466** | 2 364 × 29 = **68 556** | 2 062 × 45 = **92 790** | 3 476 × 12 = **41 712** |

3. 114 625 g

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**Page 47: Quiz**

1. a  25°
   b  32°
   c  18°
   d  10°

2. a  3 752 + 1 989 = 5 741
   b  2 045 − 252 = 1 793
   c  3 276 + 1 623 = 4 899

3.
   | A | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
   |---|---|---|---|---|---|---|---|---|
   | B | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |

4. a  Reorder, so: 170 − 5 × 16 × 2 = 170 − 10 × 16 = 170 − 160 = 10
   b  Reorder, so: 4 × 32 × 25 + 20 = 100 × 32 + 20 = 3 200 + 20 = 3 220
   c  Reorder, so: 45 + 19 + 55 + 4 × 5 = 100 + 19 + 20 = 139

5. a

   ```
        4   5  [2][5]
    ×             7
    ─────────────────
        3   1  6  7  5
   ─────────────────
   ```

   b

   ```
        3  [3]  6  9
    ×           [6]
    ─────────────────
        2   0  2  1  4
   ─────────────────
   ```

> **Workbook pages 16–17:**

**Can you remember?**

**a** 1 230
12.3
12.3

**b** 3.21
32 100
1 000

**c** 55.5
555
5 550

**Addition and subtraction with positive and negative numbers**

**1 a**

| Location | A | B | C | D | E |
|---|---|---|---|---|---|
| **Summer** | 28 °C | 30 °C | 15 °C | **19 °C** | 10 °C |
| **Winter** | –2 °C | –4 °C | **–3 °C or 33 °C** | –8°C | **–12 °C or 32 °C** |
| **Difference** | **30°** | **34°** | 18° | 27° | 22° |

**b** 15 degrees

**2 a** –34 + 36 = $\boxed{2}$
–24 + 26 = $\boxed{2}$
–14 + 16 = $\boxed{2}$
–4 + 6 = $\boxed{2}$

**b** 22 – 46 = $\boxed{-24}$
32 – 66 = $\boxed{-34}$
42 – 86 = $\boxed{-44}$
52 – 106 = $\boxed{-54}$

**c** $\boxed{-16}$ + 25 = 9
9 –25 = $\boxed{-16}$
20 – $\boxed{100}$ = –80
– 80 + $\boxed{100}$ = 20

Learners will notice that all answers in part **a** are the same.

Look for learners describing patterns as the first number in the addition increases by 10 more each time; the second number decreases by 10 each time. Look for others who notice that the difference is 2 each time because the number to be added each time is 2 more than is needed to reach zero.

In part **b**, the answers are 10 smaller each time. This is as a result of the number to be subtracted from (minuend) getting 10 bigger and then number being subtracted getting 20 bigger.

> **Workbook pages 17–18:**

**Addition and subtraction**

**1 a** False: 3 920 + 2 780 < 7 000 (not >)
**c** True
**e** True

**b** True
**d** True
**f** True

**2** Check the methods learners used.
**a** 1 200 + 900 = 2 100
**c** 6 945 + 1 997 = 8 942
**e** 3 655 – 1 255= 2 400

**b** 2 315 – 1 030 = 1 285
**d** 4 732 + 3 675 = 8 407
**f** 7 027 – 6 955 = 72

**3** Check that solutions sum to 18 475 g and that Sack A is double the mass of Sack B. Also, Sack C has a mass that rounds to 7 kg to the nearest 1 000 g; for example, Sack A is 3 800 g, Sack B is 7 600 g and Sack C is 7 075 g.

✏️ **Workbook page 18:**

**Using letters to represent quantities**

1 **a** $f - 20 = g$

**b** Answers will vary.

| $f$ | 25c | 30c | 32c | 50c | 65c | 68c | 100c | 200c |
|---|---|---|---|---|---|---|---|---|
| $g$ | 5c | 10c | 12c | 30c | 45c | 48c | 80c | 180c |

⭐ 2 **a** An explanation that there are only 10 toys in total and 5 + 3 + 3 = 11.

**b** Learners use their own letters to represent each shelf.
Check that learners have five possible solutions, for example:

| Shelf | Solution 1 | Solution 2 | Solution 3 | Solution 4 | Solution 5 |
|---|---|---|---|---|---|
| **x** | 1 | 2 | 3 | 3 | 5 |
| **y** | 2 | 3 | 2 | 4 | 1 |
| **z** | 7 | 5 | 5 | 3 | 4 |

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✏️ **Workbook page 19:**

**Simplifying calculations**

1 Check to see how learners have simplified the calculations:

**a** 35 × 6 + 4 × 35 = 350
For example, as 35 × 10

**b** 72 × 12 − 2 × 72 = 840
For example, as 70 × 12

**c** 40 + 96 ÷ 3 + 60 = 132
For example, as 32 + 100

2 **a** **i** 35 + ⬚2⬚ × 25 × 2 = 135

**ii** 9 × ⬚29⬚ − 9 × 19 = 90

**iii** 55 ÷ ⬚11⬚ + 5 × ⬚19⬚ × 2 = 195

**b** **i** 35 + 4 × 25 = 35 + 100

**ii** 9 × 29 − 9 × 19 = 9 × 10

**iii** 55 ÷ 5 + 10 × 19 = 5 + 190

---

✏️ **Workbook pages 19–20:**

**Multiplying whole numbers up to 10 000**

⭐ 1 **a** Jin ⬚400⬚ and Pia ⬚404⬚

**b** Jin ⬚3 995⬚ and Pia ⬚3 999⬚

**c** Jin ⬚403⬚ and Pia ⬚3 999⬚

2 Check learners' methods of calculation and estimates.

**a** 5 329 × 6 = **31 974**
Estimate: for example, 5 000 × 6 = 30 000

**b** 5 329 × 26 = **138 554**
Estimate: for example, 5 000 × 30 = 150 000

**c** 6 175 × 8 = **49 400**
Estimate: for example, 6 000 × 8 = 48 000

**d** 6 175 × 38 = **234 650**
Estimate: For example, 6 000 × 40 = 240 000

3 **a** A = 1 296 mm²
B = 2 304 mm²
C = 3 600 mm²
D = 5 184 mm²
E = 7 056 mm²

**b** F = 60 mm × 12 mm = 720 mm²
G = 12 mm × 36 mm = 432 mm²

**Learner's Book**

Page 49: Practise

Answers will vary, but learners should be able to explain their findings and their decisions about which charts to use and how to interpret the data.

Page 52: Practise

Answers will vary, but learners should be able to explain their findings and their decisions about which charts to use and how to interpret the data.

Page 52: Quiz

1 Learners' responses should show some understanding of which sorts of data (such as length, time or mass) can be any intermediate values, or when items need grouping as whole numbers.
Responses may be in the form of examples rather than theoretical discussion.

2 Responses should show an understanding of how to make a reasoned estimate.

**Workbook pages 22–23:**

Can you remember?

Answers vary but could include any six of the following:
- bar chart
- frequency chart
- line graph
- dot plot
- waffle diagram
- tally chart
- pictogram

Comparing data and charts

1 Learners' questions to investigate how to stay healthy will vary.

2 Check that learners' chart of choice is accurate and represents their information clearly.

3 Check that learners' chart of choice is accurate and represents their information clearly.

4 Learners' interpretations will vary. Was the data helpful and did it show clear findings in answer to their posed question?

**Workbook pages 23–24:**

Line graphs and scatter plots

1
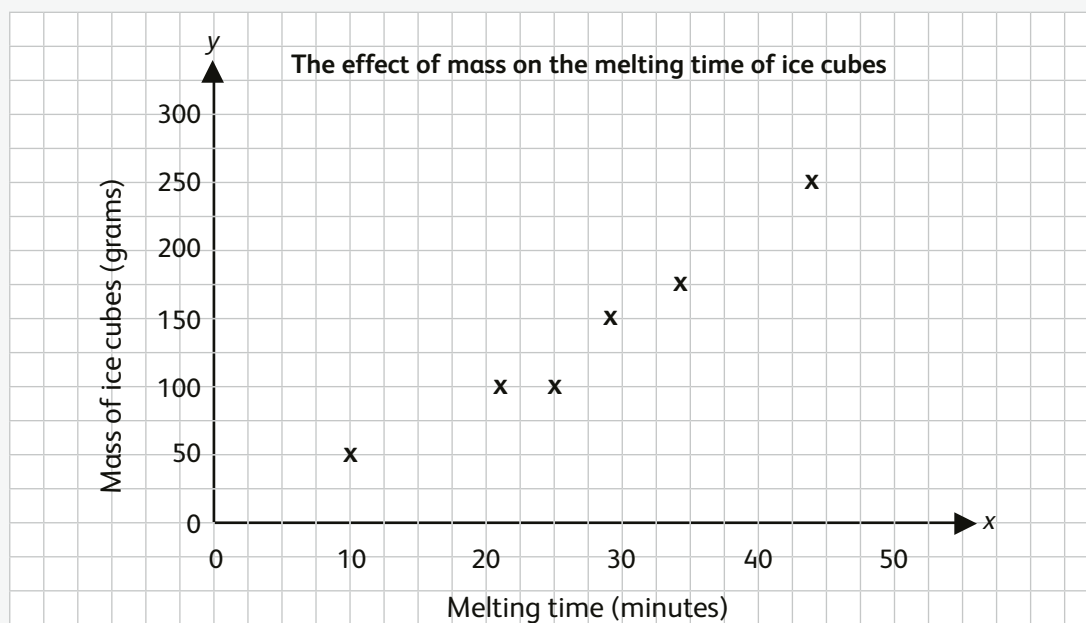


The graph shows that as the mass increases, so the melting time increases.

2 Answers will vary, depending on their line of best fit, but learners should be able to justify this from their graph.

**Learner's Book**

**Page 54: Practise**

**1** $\frac{1}{2}, \frac{5}{8}$ and $\frac{2}{5}$ are in their simplest form. The numerators and denominators cannot be divided any further to leave whole digits, that is, they share no common factors.

**★2 a** True **b** False $(\frac{15}{25} = \frac{3}{5})$ **c** False $(\frac{40}{50} = \frac{4}{5})$

**d** True **e** False $(\frac{70}{100} = \frac{7}{10})$

**3 a** $\frac{3}{4}$ **b** $\frac{3}{5}$ **c** $\frac{4}{8} = \frac{1}{2}$ **d** $\frac{4}{10} = \frac{2}{5}$

---

**Page 57: Practise**

**1 a** $\frac{15}{2}$ litres $15 \div 2 = \frac{15}{2}$ **b** $\frac{15}{4}$ litres $15 \div 4 = \frac{15}{4}$

**c** $\frac{15}{6}$ litres $15 \div 6 = \frac{15}{6}$ **d** $\frac{15}{7}$ litres $15 \div 7 = \frac{15}{7}$

**e** $\frac{15}{20}$ litres (or $\frac{3}{4}$ litre) $15 \div 20 = \frac{15}{20}$

**2 a**

| Number of pizzas | 7 | 9 | 11 | 14 | 18 | 25 |
|---|---|---|---|---|---|---|
| Fraction of a whole pizza on each of the 10 plates | $\frac{7}{10}$ | $\frac{9}{10}$ | $\frac{11}{10}$ | $\frac{14}{10}$ | $\frac{18}{10}$ | $\frac{25}{10}$ |

**b** $\frac{11}{10} = 1\frac{1}{10}$; $\frac{14}{10} = 1\frac{4}{10}$; $\frac{18}{10} = 1\frac{8}{10}$; $\frac{25}{10} = 2\frac{5}{10}$

**c** $1\frac{4}{10}$ or $1\frac{2}{5}$; $1\frac{8}{10} = 1\frac{4}{5}$; $2\frac{5}{10} = 2\frac{1}{2}$

---

**Page 60: Practise**

**1 a** $\frac{2}{4} < \frac{5}{8}$ **b** $\frac{2}{4} < \frac{3}{5}$ **c** $\frac{2}{3} > \frac{5}{8}$

**d** $\frac{2}{3} > \frac{6}{10}$ **e** $\frac{4}{5} < \frac{7}{8}$

**2 a** $\frac{3}{10}, \frac{2}{5}, \frac{4}{5}$ **b** $\frac{1}{4}, \frac{5}{8}, \frac{3}{4}, \frac{7}{8}$

**c** $\frac{1}{3}, \frac{4}{9}, \frac{2}{3}, \frac{7}{9}$ **d** $\frac{1}{3}, \frac{1}{2}, \frac{4}{6}, \frac{5}{6}$

**3 a** Banko with $\frac{4}{5}$ kg **b** $\frac{1}{2}$ kg, $\frac{7}{10}$ kg, $\frac{4}{5}$ kg

⭐**Page 60: Try this**

The diagram shows:

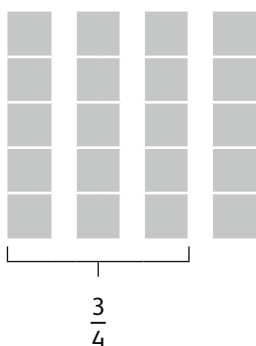Blue = $\frac{3}{12}$ = $\frac{1}{4}$ 　　　　White = $\frac{2}{12}$ = $\frac{1}{6}$ 　　　　Green = $\frac{4}{12}$ = $\frac{1}{3}$

Pink = $\frac{2}{12}$ = $\frac{1}{6}$ 　　　　Yellow = $\frac{1}{12}$

---

**Page 62: Practise**

**1** Check that learners have sketched each diagram correctly, for example, **a**:



$$\frac{3}{4}$$

**b** $\frac{6}{2}$ of 20. Check that learners have drawn three wholes (of 20) divided into two parts each.

**c** $\frac{4}{5}$ of 35. Check that learners have drawn 35 parts divided into five rows of seven or vice versa, and have marked 28 parts of the 35 parts.

**d** $\frac{8}{5}$ of 35. Check that learners have drawn one whole to equal 35 and then $\frac{3}{5}$ of 35, which is 21 parts of 35.

**e** $\frac{9}{10}$ of 60. Check that learners have drawn 60 and marked 54 of those parts.

**f** $\frac{15}{10}$ of 60. Check that learners have drawn one whole to equal 60, and another half of a whole to show 30.

**2 a** $\frac{4}{5}$ of 45 = 36 　　　**b** $\frac{9}{5}$ of 45 = 81 　　　**c** $\frac{5}{8}$ of 40 = 25 　　　**d** $\frac{13}{8}$ of 40 = 65

**3 a** Guss sold 45 sacks of wheat.
　**b** Guss took orders for 105 sacks of wheat.

---

**Pages 64–65: Practise**

**1 a** A = 25 % 　　　　　　B = 70 % 　　　　　　　C = 84 %

**b** A = $\frac{25}{100}, \frac{1}{4}$, 0.25 　　B = $\frac{70}{100}, \frac{7}{10}$, 0.7 　　C = $\frac{84}{100}$ (= $\frac{42}{50}$ = $\frac{21}{25}$), 0.84

⭐**2 a** False: $\frac{50}{100}$ = $\frac{5}{10}$ = $\frac{1}{2}$ = 50 % = **0.5** 　　　**b** False: $\frac{40}{100}$ = $\frac{4}{10}$ = $\frac{2}{5}$ = **40%** = 0.4

**c** False: $\frac{21}{100}$ = 21 % = **0.21** 　　　　　　**d** False: $\frac{8}{100}$ = $\frac{4}{50}$ = **8%** = 0.08

**3 a** Shop B has the best sale offer. 　　　**b** $\frac{3}{5}$ off or 60 % off

---

⭐**Page 65: Let's talk**

**0.8** links to $\frac{80}{100}$ links to **80%** links to $\frac{4}{5}$          **0.75** links to $\frac{75}{100}$ links to **75%** links to $\frac{3}{4}$
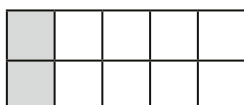
**0.06** links to $\frac{6}{100}$ links to **6%** links to $\frac{3}{50}$          **0.26** links to $\frac{26}{100}$ links to 26 % links to $\frac{13}{50}$

---

**Page 67: Practise**

⭐**1** Check that learners have shaded their rectangles correctly, for example:
  **a**  20 % = an equivalent of 2 squares shaded

  

  **b**  35 % = an equivalent of $3\frac{1}{2}$ squares shaded     **c**  75 % = an equivalent of $7\frac{1}{2}$ squares shaded

  **d**  90 % = an equivalent of 9 squares shaded     **e**  15 % = an equivalent of $1\frac{1}{2}$ squares shaded

  **f**  45 % = an equivalent of $4\frac{1}{2}$ squares shaded

**2**  **a**  $30          **b**  $15          **c**  $45          **d**  $8          **e**  $16          **f**  $8

**3**  **a**  25 % of 60 ml          **b**  50 % of 250 kg
     **c**  35 % of 120 cm          **d**  95 % of 300 km

---

**Page 67: Try this**

10 % of 200 litres is 20 litres, so 60 litres is 10 % × 3 or 30 %.

30 % is equivalent to $\frac{3}{10}$ or 0.3. It is larger than $\frac{1}{4}$ (0.25) but smaller than $\frac{1}{2}$ (0.5).

---

**Page 68: Quiz**

**1**  **a**  $\frac{1}{3}$ and $\frac{2}{7}$          **b**  $\frac{3}{5}, \frac{1}{5}, \frac{1}{2}$

**2**  **a**  $\frac{5}{8}$          **b**  $\frac{5}{3}$

**3**  **a**  $\frac{4}{5} > \frac{2}{3}$          **b**  $\frac{3}{4} < \frac{5}{6}$          **c**  $\frac{5}{9} > \frac{3}{7}$

**4**  **a**  20 litres          **b**  52 litres

**5**  $\frac{\boxed{40}}{100} = \frac{\boxed{4}}{10} = \frac{2}{5} = \boxed{40}\% = \boxed{0.4}$

**6**

| Percentage | 10 % | 5 % | 15 % | 25 % | 30 % | 60 % |
|---|---|---|---|---|---|---|
| Amount ($) | $8 | $4 | $12 | $20 | $24 | $48 |

---

✎ **Workbook pages 26–27:**

*Can you remember?*

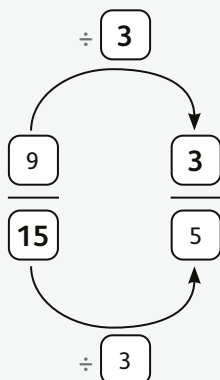**a** $\frac{1}{2} = \frac{②}{4} = \frac{④}{8} = \frac{⑧}{16}$

**b** $\frac{1}{3} > \frac{\text{any number < 2}}{6}$

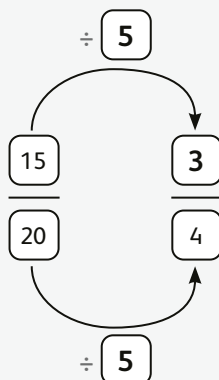**c** $\frac{3}{9} > \frac{\text{any number < 9}}{27}$

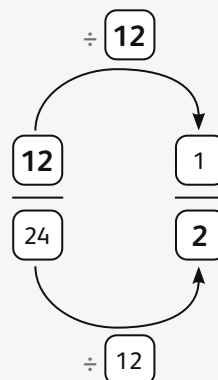**d** $\frac{1}{2} = \frac{⑤}{10} = \frac{㊿}{100}$

*Simplifying fractions*

**1 a**



$\div 3$ : $\frac{9}{15} \rightarrow \frac{3}{5}$ , $\div 3$

**b** $\div 5$ : $\frac{15}{20} \rightarrow \frac{3}{4}$ , $\div 5$

**c** $\div 12$ : $\frac{12}{24} \rightarrow \frac{1}{2}$ , $\div 12$

**2** $\frac{②}{⑤}$

**3 a** $\frac{3}{30} = \frac{1}{10} = 0.1$   **b** $\frac{20}{25} = \frac{4}{5} = 0.8$   **c** $\frac{11}{55} = \frac{1}{5} = 0.2$

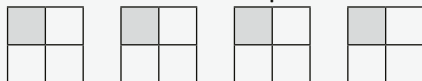**d** $\frac{12}{30} = \frac{4}{10} = \frac{2}{5} = 0.4$   **e** $\frac{36}{40} = \frac{9}{10} = 0.9$

---

✎ **Workbook page 27:**

*Fractions and division*

**1 a** Check learner's examples, for example:
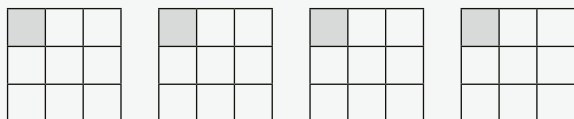


$\frac{4}{9} = ④ \div ⑨$

**b** Check learners' examples, for example:



$5 \div 4 = \frac{⑤}{④}$

**2 a** $\frac{⑤}{③}$ metres

**b** $\frac{⑦}{④}$ kilograms

---

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**Workbook page 28:**

Comparing and ordering fractions

**1** Check that learners have written the greater fraction on the appropriate side of the scale.

**a** $\frac{3}{4}$ kg is heavier than $\frac{4}{5}$ kg

**b** $\frac{2}{4}$ kg is heavier than $\frac{3}{10}$ kg

**c** $\frac{2}{3}$ kg is heavier than $\frac{3}{5}$ kg

**d** $\frac{2}{5}$ kg is heavier than $\frac{3}{8}$ kg

**2 a** $\frac{1}{3}, \frac{3}{5}, \frac{2}{3}, \frac{4}{5}$      **b** $\frac{2}{4}, \frac{5}{9}, \frac{3}{4}, \frac{7}{9}$      **c** $\frac{1}{6}, \frac{2}{10}, \frac{3}{10}, \frac{7}{10}, \frac{5}{6}$

**3** Banko

---

**Workbook pages 28–29:**

Fractions as operators

**1 a** $\frac{1}{5}$ of 30 = 6      **b** $\frac{1}{6}$ of 42 = 7      **c** $\frac{1}{9}$ of 54 = 6

    $\frac{3}{5}$ of 30 = 18          $\frac{5}{6}$ of 42 = 35         $\frac{5}{9}$ of 54 = 30

    $\frac{3}{5}$ of 60 = 36          $\frac{5}{6}$ of 84 = 70         $\frac{5}{9}$ of 108 = 60

**2 a** $\frac{5}{4}$ of 24 = 30      **b** $\frac{11}{4}$ of 24 = 66

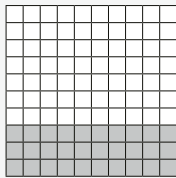**3** 380 metres (1 500 − 1 120 = 380)

✏️ **Workbook page 29:**

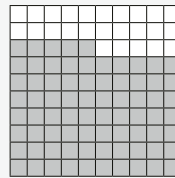Fraction, decimal and percentage equivalences

**1 a**

0.3     30 %
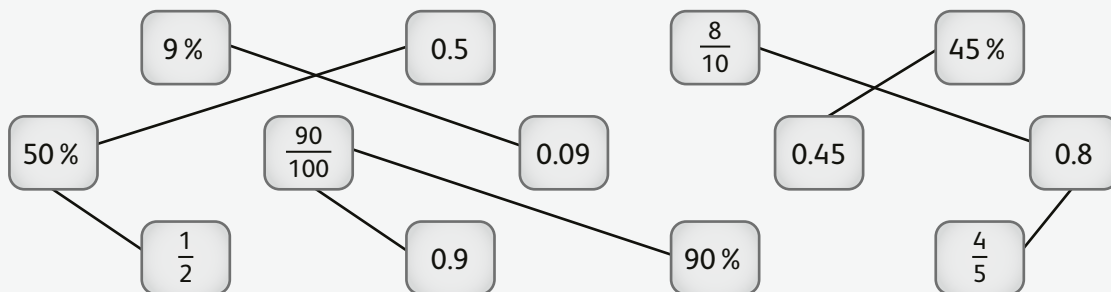
$\dfrac{30}{100}$     $\dfrac{3}{10}$

**b**

0.75     75 %

$\dfrac{75}{100}$     $\dfrac{3}{4}$

**2** Equivalent values:

9 %     0.5     $\dfrac{8}{10}$     45 %

50 %     $\dfrac{90}{100}$     0.09     0.45     0.8

$\dfrac{1}{2}$     0.9     90 %     $\dfrac{4}{5}$

---

✏️ **Workbook page 30:**

Percentages of shape and quantities

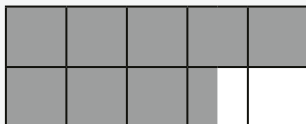**1 a** 60 %                **b** 75 %                **c** 50 %

**2** Learners' own calculations, for example, spin a 5 and choose to find 75 % of $1 000 = $750.

**3 a** 35 % = $3\frac{1}{2}$ blocks should be coloured in.
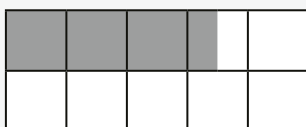
**b** 85 % = $8\frac{1}{2}$ blocks should be coloured in.

**4** 60 fruits are apples          96 fruits are bananas

12 fruits are oranges          72 fruits are pineapples

Check: 60 + 96 + 12 + 72 = 240

**Learner's Book**

**Page 70: Practise**

**1** **a**  1 in 2 or 50 %  chance of picking a yellow ball    **b**  2 in 4, or 1 in 2, or 50 %
     **c**  1 in 4 or 25 %          **d**  2 in 8, or 1 in 4, or 25 %

**2** **a**  25 %, or 1 in 4          **b**  2 in 4, 1 in 2, or 50 %
     **c**  2 in 4, 1 in 2, or 50 %      **d**  2 in 4, 1 in 2, or 50 %
     **e**  3 in 4, or 75 %          **f**  Impossible, or 0 %

**3**  Learners' answers will vary. They should be able to justify all answers using the language of proportion.

---

**Page 71: Quiz**

**1**  2 in 4, 1 in 2, 50 %          **2**  1 in 4, 25 %
**3**  1 in 4, 25 %          **4**  3 in 4, 75 %

---

**Workbook pages 32–33:**

**Can you remember?**

Answers will vary but should show awareness of increasing likelihood.

**Probability and proportionality**

**1** **a**  1 in 6          **b**  1 in 6
     **c**  5 in 6          **d**  5 in 6
     **e**  3 in 6, 1 in 2, or 50 %      **f**  3 in 6, 1 in 2, or 50 %
**2** **a**  1 shaded, 3 blank          **b**  2 shaded, 2 blank
     **c**  7 shaded          **d**  5 shaded
     **e**  3, 4 or 5 shaded          **f**  2 shaded, 3 unshaded
**3**  Learners' answers will vary.

## Units 1–6

**Pages 72–73**

**1  a**  79.012 = 70 + 9 + 0 + 0.01 + 0.002
 **b**  97.123 = 90 + 7 + 0.1 + 0.02 + 0.003
 **c**  1.78 =  1 + 0.7 + 0.08

**2  a**  Factors of 30: 1, 2, 3, 5, 6, 10, 15, 30
 **b**  Factors of 12: 1, 2, 3, 4, 6, 12
 **c**  1, 2, 3 and 6 should be circled

**3  a**  Missing angle is 20°
 **b**  Scalene triangle; all three sides different lengths; two angles the same

**4**  26°

**5**

| M | 9 | 8 | 7 | 6 | 5 | 4 | 3 |
|---|---|---|---|---|---|---|---|
| N | 6 | 5 | 4 | 3 | 2 | 1 | 0 |

**6  a**  to **c** Learners' own drawings and explanations
 Bar chart: check that the bars have a space between each and that the axes are correctly marked.
 Frequency chart: check that the bars have no spaces between each and that the axes are correctly marked.
 Line graph: check that learners have drawn a correct example of a line graph.
 Scatter plot: check that learners have drawn an example correctly.

**7  a**  $\frac{1}{2}$  **b**  $\frac{3}{5}$
 **c**  $\frac{3}{4}$  **d**  $\frac{7}{10}$

**8  a**  True
 **b**  True
 **c**  False ($\frac{6}{15} < \frac{9}{15} < \frac{10}{15} = \frac{2}{5} < \frac{3}{5} < \frac{2}{3}$)

**9  a**  4 in 8 chances, 50 %
 **b**  2 in 8 chances, 25 %
 **c**  6 in 8 chances, 75 %
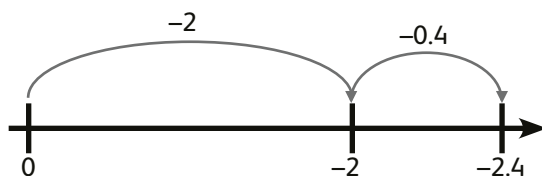 **d**  8 in 8 chances, 100 %

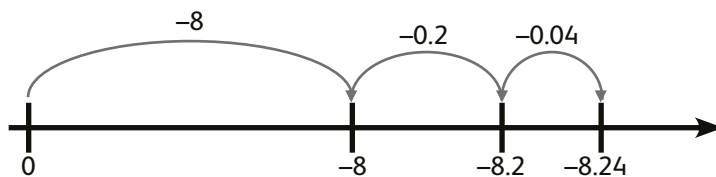**Learner's Book**

**Pages 75–76: Practise**

**1 a** Number = 90 + 5 + 0.6 + 0.04 + 0.006 = 95.646
  **b** Values: 0.6 and 0.006, so 6 tenths and 6 thousandths
**2** Check that learners have sketched number lines correctly.
  **a i**
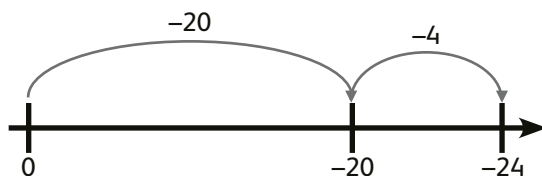


  **ii**



  **iii**



  **b** Check learners' examples of regrouping.

**⭐3 a** 3.406 = 3 + 0.4 + 0 + 0.006
    43.99 = 40 + 3 + 0.9 + 0.09
    25.382 = 20 + 5 + 0.3 + 0.08 + 0.002
  **b** Learners' will have their own ways of regrouping into three parts, for example:
    3.406 as 2, 1.4 and 0.006
    43.99 as 40, 2.09 and 1.9
    25.382 as 10.3, 15.05 and 0.032
    253.82 as 103, 150.5 and 0.32

**Page 78: Practise**

**1 a** Rounds to 7 m: Accept any five measurements from 6.5 m to less than 7.5 m.
  **b** Rounds to 7.1 m: Accept any five measurements from 7.05 m to less than 7.15 m.
  **c** Rounds to 6.9 m: Accept any five measurements from 6.85 m to less than 6.95 m.
  **d** Rounds to 10 m: Accept any five measurements from 9.5 m to less than 10.5 m.

**2**

| | Adelie | Chinstrap | King | Emperor | Gentoo |
|---|---|---|---|---|---|
| **Mass of each penguin** | 4.9 kg | 4.49 kg | 13.8 kg | 22.45 kg | 5.21 kg |
| **a** Rounded to the nearest whole kg | **5 kg** | **4 kg** | **14 kg** | **22 kg** | **5 kg** |
| **b** Rounded to the nearest 0.1 kg | **4.9 kg** | **4.4 kg** | **13.8 kg** | **22.4 kg** | **5.2 kg** |

**3** Guss could have written any numbers that are greater or equal to 3.39 but less than 3.5.

**Page 80: Practise**

**1 a** 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22
  **b** 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55
  **c** 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110
  **d** The common multiples of 2, 5 and 10 are: 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110
   The common multiples of 2, 5 and 10 are all the multiples of 10.

**2 a** Learners are asked to list at least three common multiples of the numbers 3, 4 and 5, for example, 60, 120 and 180.
  **b** Learners should be able to provide an explanation to convince others that 240 and 320 will also be common multiples of 3, 4 and 5 because each can be counted in groups of 60 or are made up of groups of 60.

**3 a** True
  **b** False: 42, 84 and 126 are common multiples of 2, 3 and 7 (accept alternative common multiples to 126)
  **c** False: 16, 32 and 28 are common multiples of 2, 4 and 8 (accept alternative common multiples to 32)

**Page 81: Practise**

**1 a** 1, 2, 4 and 8
  **b** 1, 2, 3, 4, 6 and 12
  **c** 1, 2, 4, 5, 10 and 20
  **d** 1, 2 and 4

**2** 42, 16 and 100 have the largest number of common factors: 1, 2 and 4.

**Page 83: Practise**

**1 a**

| Divisible by 3 | | | | | Divisible by 6 | | Divisible by 9 |
|---|---|---|---|---|---|---|---|
| 129 | 258 | 384 | 585 | 2127 | 258 | 384 | 585 |

  **b** 436 and 332. The tens and ones '36' and '32' are divisible by 4.

**2 a** 4 **6 5** is divisible by 3.
  **b** **4 9** 8 is divisible by 6.
  **c** **7** 7 **4** is divisible by 9.

**Page 84: Quiz**

1  **a**  2.6 → 0.6; 24.6 → 0.6; 2.460 → 0.06; 6.24 → 6; 2.416 → 0.006
   **b**  Check that learners have regrouped 2.465 in three different ways, for example: 2.4 and 0.065, 1.065 and 2.4, 2.5 and 0.114.
   **c**  3.65

2  Learners should have rounded the numbers as shown in the table.

|  | | 12.15 | 2.45 | 15.62 | 12.45 | 12.54 |
|---|---|---|---|---|---|---|
| **a** | Whole number | 12 | 2 | 16 | 12 | 13 |
| **b** | Tenth | 12.2 | 2.5 | 15.7 | 12.5 | 12.5 |

3  **a**  Accept 1, 2, 4, 12, 24 or 48        **b**  Accept 1, 2, 3 or 6

4  **a**  Divisible by 9: 999, 990, 981, 972, 963
   **b**  Divisible by 3 and 6 but not by 9: 996, 984, 978, 966, 960
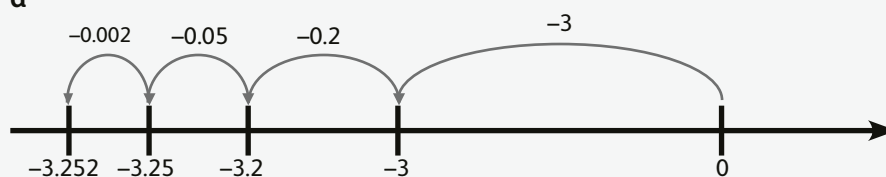
---

**Workbook page 35:**

**Can you remember?**

**a**  0.35
**b**  13.035
**c**  3.503

**Numbers and place value**

1

| 14.325 | 25.609 |
|---|---|
| 14.325 = 10 + 4 + 0.3 + 0.02 + 0.005 | 25.609 = 20 + 5 + 0.6 + 0 + 0.009 |
| 14.325 = 14.3 + [0.025] | 25.609 = 10 + 5.6 + [10.009] |
| [14.325] | [25.609] |
| [143] tenths [25] thousandths | [2 560] hundredths [9] thousandths |

2  **a**



**b**  Value: [−0.2] (minus two tenths) and [−0.002] (minus 2 thousandths)

**Workbook page 36:**

Rounding decimal numbers

1

| Number | Rounded to the nearest tenth | Rounded to the nearest whole number | Rounded to the nearest 10 |
|---|---|---|---|
| 12.39 | 12.4 | 12 | 10 |
| 11.11 | 11.1 | 11 | 10 |
| 19.19 | 19.2 | 19 | 20 |
| 55.55 | 55.6 | 56 | 60 |
| 13.99 | 14.0 | 14 | 10 |
| 29.99 | 30.0 | 30 | 30 |

2

| Elok | $4.50 | $4.51 | $4.52 | $4.57 | $4.58 | $4.59 |
|---|---|---|---|---|---|---|
| Guss | $4.40 | $4.41 | $4.42 | $4.47 | $4.48 | $4.49 |

**Workbook pages 36–37:**

Finding common multiples and common factors

1 a 30, 45 and 60
  b Learners make their own conjectures or generalisations but these should show that common multiples of 3 and 5 can be found by continuing to add 15 each time for example, 15, 30, 45, 60, 75, and so on, because each group of 15 is a common multiple of both 3 and 5.
2 a 30, 60 and 90
  b An explanation that all the common multiples in part **a** of this question are also common multiples of
    3 and 5, however, to be also a multiple of 2 they have to be even, so only the even examples from question 1 are included in question **2a**.
3 Learners play a game about common factors.

**Workbook page 38:**

Using tests of divisibility

1 For example:
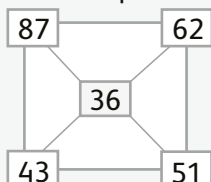


2 There are two digits missing each time, so check that the two digits sum to the following numbers:
  a Any two digits that sum to 8, for example, to make 3 177 or 3 537, …
  b Any two digits that sum to 1 or to 10, for example, to make 1 800 or 4 806, …
  c Any two digits that sum to 7 or 16, for example, to make 61 569 or 69 579, …

3

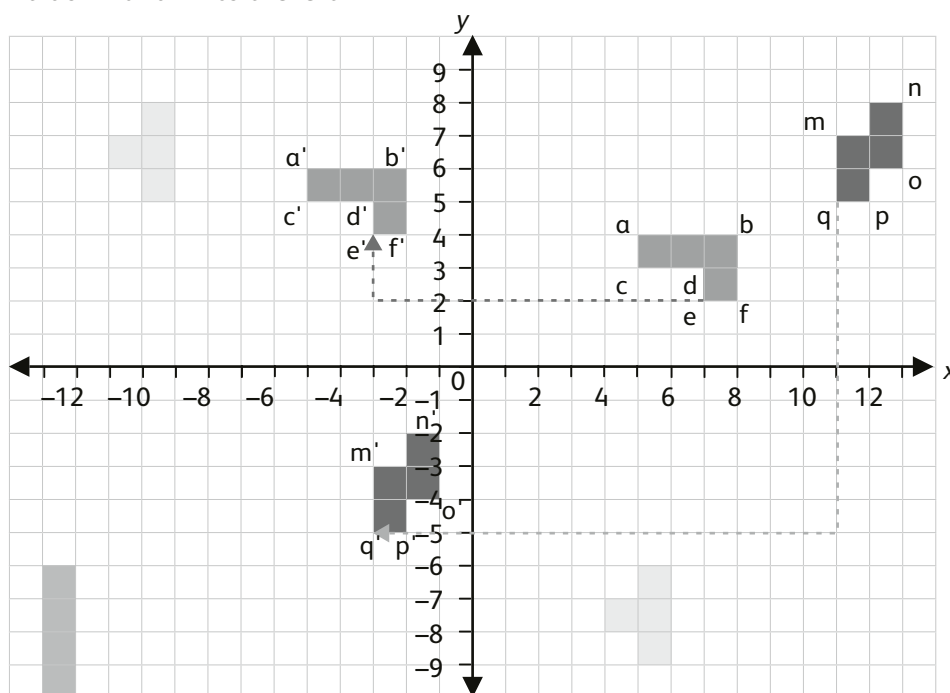| Numbers for Pia | Numbers for Sanchia |
|---|---|
| Five examples from: 201, 207, 213, 219, 225, 231, 237, 243, 249 | Five examples from: 203, 209, 215, 221, 227, 233, 239, 245 |

**Learner's Book**

**Pages 86–87: Practise**

**1 a** A (3, 5)  B (3, –5)  C (–3, –5)  D (–5, 3)
  **b** The fourth vertex would be at (–3, 5).

**2** Learners' answers will vary.

**3 a** a (–4, –2)  b (1, –1)  c (–1, –2)  d (4, –6)
  **c** The coordinate at a would be on the line of red dots.

---

**Page 89: Practise**
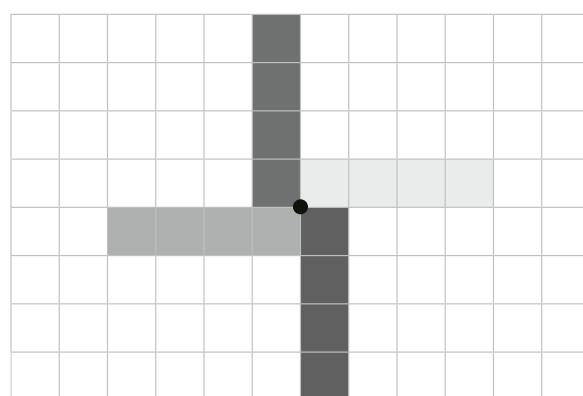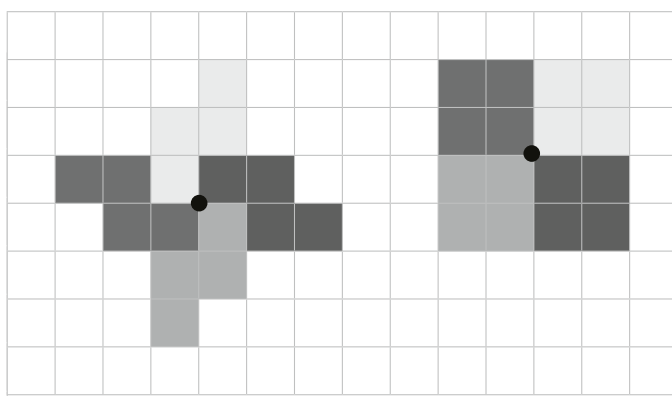
**1 a** 10 down and 14 to the left



  **b** m' is (–3, –3), n' is (–1, –2), o' is (–1, –4), p' is (–2, –5)

⭐**2** Either 15 left and 14 up, or 15 right and 14 down

**3** (8, 4), (7, 4), (8, 0) (7, 0)

**4** Learners' own pentomino translations will vary. Check that they understand what they need to do.

---

**Page 91: Practise**

1  Check the rotation patterns that learners make by rotating each tetromino around the marked vertex.

2  Learners' investigations of what happens when they rotate the same shape from a different vertex will vary. Here are some examples.
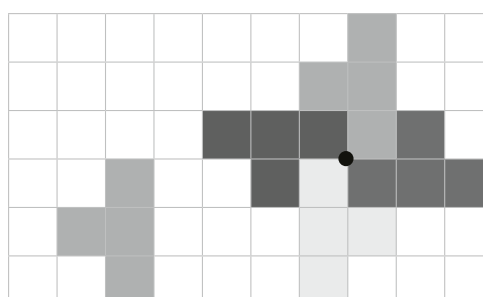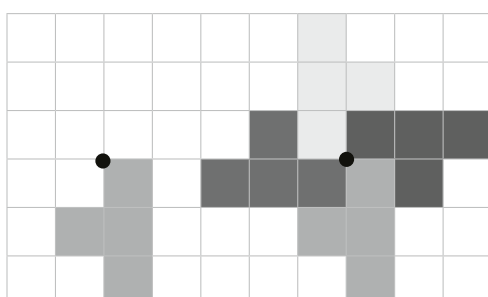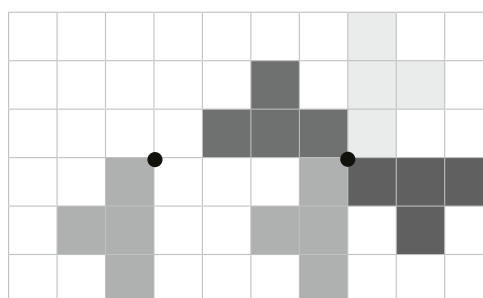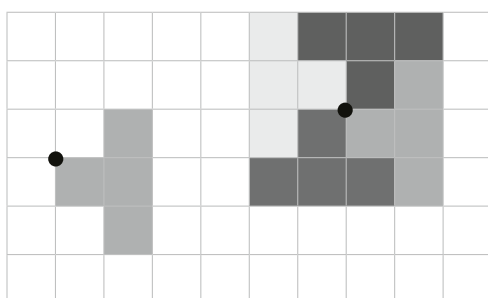
⭐3  Learners' own rotations

---

**Page 92: Quiz**

1  Answers should show an understanding of how the positive and negative coordinates vary for each quadrant: (+ve, +ve) (+ve, –ve), (–ve, +ve) and (–ve, –ve).

2  **a**  (3, 5)            **b**  (–1, –3)            **c**      (3, –3)

3  Answers will vary, but learners should be able to explain which vertex they chose, and which direction of rotation they chose.

---

**Workbook page 40:**

Can you remember?

(9, 9)

Four quadrants

1
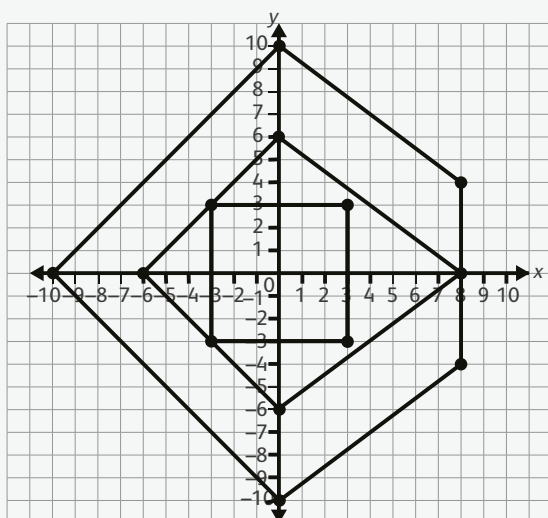


2
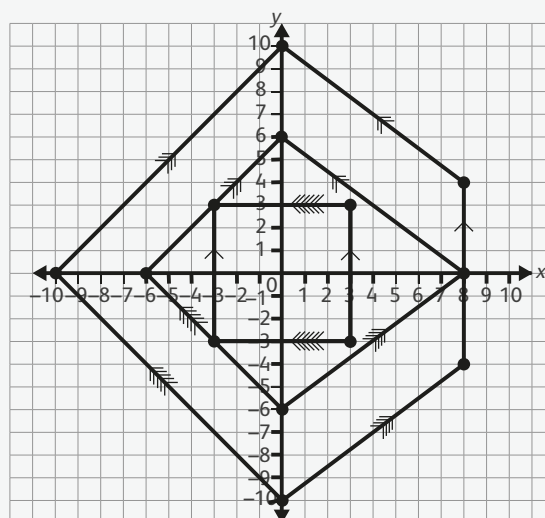


**Workbook pages 41–42:**

Translations on a coordinate grid

1  **a**  A = (2, 6)          B = (6, 6)          C = (6, –4)          D = (–4, 2)
   **b** and **c**   A = (–3, 9)          B = (1, 9)          C = (1, –1)          D = (–3, –1)
   **d**   Learners' own answers

2  Learners' translations should look like this.
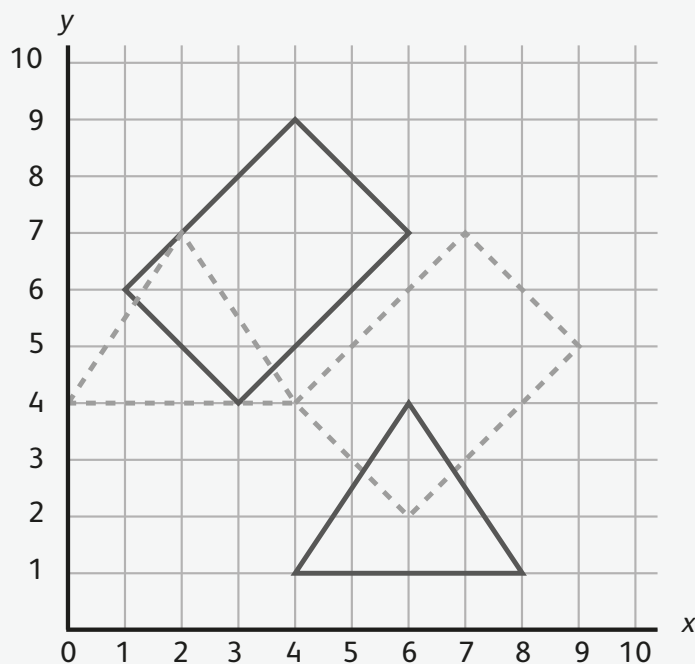


   **b**   The new shapes share a vertex at (4, 4).

**Workbook pages 42–43:**

Rotation about a point

**1**



**2**
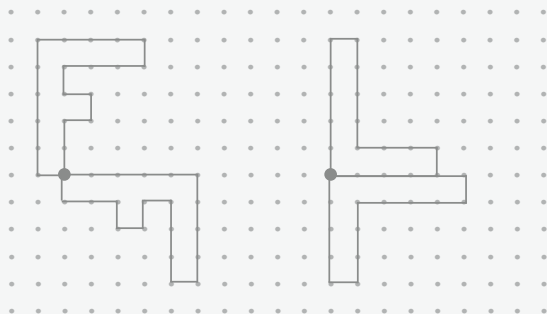


**3** Learners' answers will vary.

**Learner's Book**

**Page 94: Practise**

**1 a** −20 + 34 = $\boxed{14}$      **b** 14 − 35 = $\boxed{-21}$

  **c** −20 − 14 = $\boxed{-34}$      **d** −12 + $\boxed{24}$ = 12

  **e** $\boxed{-11}$ − 9 = −20

**2 a** 12°            **b** 18°

  **c** 18°            **d** 28°

**3 a** triangle p = s + s + s (p = 3s)

     pentagon p = s + s + s + s + s (p = 5s)

     square p = s + s + s + s (p = 4s)

     hexagon p = s + s + s + s + s + s (p = 6s)

  **b** Check that learners' perimeter of each shape is as shown in this table.

| | **i** When s = 5 cm | **ii** When s = 9 cm | **iii** When s = 15 cm |
|---|---|---|---|
| Triangle | 15 cm | 27 cm | 45 cm |
| Pentagon | 25 cm | 45 cm | 75 cm |
| Square | 20 cm | 36 cm | 60 cm |
| Hexagon | 30 cm | 54 cm | 90 cm |

**Page 96: Practise**

**1**

| | Car wash | Sponsored walk | Fair | Exhibition |
|---|---|---|---|---|
| **Charity A** | $975.80 | $2 347.68 | **$4 566.72** | $748.84 |
| **Charity B** | $898.75 | **$3 507.67** | $3 488.05 | $1 237.51 |
| **Total** | **$1 874.55** | $5 855.35 | $8 054.77 | **$1 986.35** |

**2 a** 265.2 + 127.4 = **392.6**      **b** 265.2 − 127.4 = **137.8**

  **c** 529.36 + 231.38 = **760.74**      **d** 529.36 − 231.38 = **297.98**

  **e** 62.473 + 21.314 = **83.787**      **f** 62.473 − 21.314 = **41.159**

**3 a** The total mass of parcels A and B is 7.606 kg.   **b** Parcel A is 1.744 kg heavier than parcel B.

**Pages 98–99: Practise**

**1 a** $\frac{1}{2} + \frac{4}{5} = \frac{\mathbf{9}}{\mathbf{10}}$                   **b** $\frac{5}{7} - \frac{1}{2} = \frac{\mathbf{3}}{\mathbf{14}}$

  **c** $\frac{7}{8} + \frac{5}{6} = \frac{41}{24} = \mathbf{1}\frac{\mathbf{17}}{\mathbf{24}}$         **d** $\frac{9}{10} - \frac{2}{3} = \frac{\mathbf{7}}{\mathbf{30}}$

  **e** $\frac{9}{6} + \frac{1}{4} = \frac{21}{12} = 1\frac{9}{12} = \mathbf{1}\frac{\mathbf{3}}{\mathbf{4}}$      **f** $\frac{11}{8} - \frac{2}{3} = \frac{\mathbf{7}}{\mathbf{24}}$

⭐**2** **a** $\dfrac{5}{6} + \boxed{\dfrac{3}{8}} = 1\dfrac{5}{24}$　　　　　　　　**b** $\boxed{\dfrac{8}{9}} - \dfrac{1}{2} = \dfrac{7}{18}$

　　**c** $1\dfrac{7}{20} = \dfrac{3}{5} + \boxed{\dfrac{3}{4}}$　　　　　　　　**d** $\dfrac{17}{24} = \boxed{\dfrac{11}{8}} - \dfrac{2}{3}$

**3** **a** $\boxed{\dfrac{59}{40}}\,\text{kg} = 1\dfrac{19}{40}\,\text{kg}$　　　　　　**b** $\dfrac{9}{20}\,\text{m}$ of string is left

---

**Pages 101–102: Practise**

**1** **a** $8 \times 6 = \boxed{48}$　　　　**b** $9 \times 4 = \boxed{36}$　　　　**c** $3 \times 7 = \boxed{21}$

　　　$0.8 \times 6 = \boxed{4.8}$　　　　　$0.9 \times 4 = \boxed{3.6}$　　　　　$0.3 \times 7 = \boxed{2.1}$

　　　$0.08 \times 6 = \boxed{0.48}$　　　　$0.09 \times 4 = \boxed{0.36}$　　　　$0.03 \times 7 = \boxed{0.21}$

**2** **a** $9.3 \times 4 = \textbf{37.2}$　　**b** $9.3 \times 34 = \textbf{316.2}$　　**c** $2.39 \times 34 = \textbf{81.26}$

**3** **a** 67.2 cm　　**b** 50.56 cm　　**c** 192.4 cm　　**d** 134.72 cm

---

**Pages 104–105: Practise**

**1** **a** $45 \div 9 = 5$　　　　　　　　**b** $64 \div 8 = 8$

　　　$47 \div 9 = 5\ \text{r}\ 2$ or $5\dfrac{2}{9}$　　　　$62 \div 8 = 7\ \text{r}\ 6$ or $7\dfrac{6}{8}$ or $7\dfrac{3}{4}$

　　　$450 \div 9 = 50$　　　　　　　$640 \div 8 = 80$

　　　$470 \div 9 = 52\ \text{r}\ 2$ or $52\dfrac{2}{9}$　　　$620 \div 8 = 78\ \text{r}\ 4$ or $78\dfrac{4}{8}$ or $78\dfrac{1}{2}$

**2** **a** 1　　　　**b** 3　　　　**c** 4　　　　**d** 4

**3** **a** $216 \div 9 = \boxed{24}$　　**b** $217 \div 3 = \boxed{72\dfrac{1}{3}}$　　**c** $364 \div 8 = \boxed{45\dfrac{1}{2}}$

　　**d** $532 \div 5 = \boxed{106\dfrac{2}{5}}$　　**e** $125 \div 25 = \boxed{5}$　　**f** $205 \div 25 = \boxed{8\dfrac{1}{5}}$

⭐**4** **a** $565 \div 10 = 56\dfrac{1}{2}$　　　*or* $565 \div 2 = 282\dfrac{1}{2}$

　　**b** Answers greater than 100: $438 \div 4 = 109\dfrac{1}{2}$, $438 \div 2 = 219$

　　　Answers less than 100: $438 \div 5 = 87\dfrac{3}{5}$, $438 \div 8 = 54\dfrac{3}{4}$, $438 \div 10 = 43\dfrac{4}{5}$ (accept 43.8)

---

**Page 107: Practise**

**1** **a** $25 - 4 \times 3 = \boxed{13}$　　　　　**b** $(25 - 4) \times 3 = \boxed{63}$

　　**c** $36 \div 6 - 2 = \boxed{4}$　　　　　**d** $36 \div (6 - 2) = \boxed{9}$

　　**e** $18 \div 3 \times 3 = \boxed{18}$　　　　**f** $18 \div (3 \times 3) = \boxed{2}$

⭐**2** **a** False: $(15 - 10) \div 5 = 1$　　**b** False: $20 \div (2 \times 5) = 2$

　　**c** False: $6 \times 9 - 2 = 52$　　　　**d** True

　　**e** True

**3** **a** $(\$10 - \$2) \times 5$　　　　　　**b** $\$40$

---

⭐**Page 108: Let's talk**

Examples of solutions include:
4 × (12 ÷ 6), 24 ÷ (6 − 3), 2 × (24 ÷ 6), 2 × (16 ÷ 4), 2 × (12 ÷ 3), 16 ÷ (5 − 3), 2 × (6 − 2).

**Page 108: Quiz**

**1** 24 cm

**2 a** 16.9 + 14.7 = **31.6**

**b** 1.69 − 1.47 = **0.22**

**c** $10.49 + $17.38 = **$27.87**

**d** $25.75 − $9.49 = **$16.26**

**3 a** False: $\frac{2}{3} + \frac{3}{4} = \frac{8}{12} + \frac{9}{12} = \frac{17}{12} = 1\frac{5}{12}$

**b** True

**c** False: $\frac{11}{10} + \frac{4}{3} = \frac{33}{30} + \frac{40}{30} = \frac{73}{30} = 2\frac{13}{30}$

**4 a** 0.7 × 9 = 6.3

**b** 1.7 × 9 = 15.3

**c** 2.17 × 9 = 19.53

**d** 2.17 × 12 = 26.04

**5** 7 blocks

**6** Part **b** has the largest answer.

**a** 8 × 6 ÷ 3 = 16

**b** 8 × (6 + 3) = 72

**c** 8 × (6 ÷ 3) = 16

**d** (8 × 6) + 3 = 51

---

✏️ **Workbook pages 45–46**

**Can you remember?**

Learners should have ticked yes and no as follows.

**a** Yes – a remainder

**b** No remainder

**c** No remainder

**d** Yes – a remainder

**e** No remainder

**f** Yes – a remainder

**Using addition and subtraction**

**1 a** p = s + s + s + s

**b** p = 4s or p = 4 × s

**c i** p = 32 metres

**ii** p = 48 metres

**iii** p = 100 metres

⭐**2** Accept any reasonable explanations, for example: The difference between 5 and −2 is not the same as 5 − 2 = 3. So between Tuesday and Wednesday, the temperature changed by 7˚. This is not the same as the temperature difference between Wednesday and Thursday, which is 3˚.

✎ **Workbook pages 46–47**

Adding and subtracting decimal numbers

**1 a** 77 + 23 = $\boxed{100}$

7.7 + 2.3 = $\boxed{10}$

0.77 + 0.23 = $\boxed{1}$

7.7 + $\boxed{2.3}$ = 10

**b** 36 + 64 = $\boxed{100}$

3.6 + 6.4 = $\boxed{10}$

0.36 + 0.64 = $\boxed{1}$

0.036 + 0.064 = $\boxed{0.1}$

**c** 375 – 152 = $\boxed{223}$

37.5 – 15.2 = $\boxed{22.3}$

3.75 – 1.52 = $\boxed{2.23}$

0.375 – 0.152 = $\boxed{0.223}$

⭐ **2 a**

Smallest total

$\boxed{1}$ 0 $\boxed{5}$ . 8
+ $\boxed{3}$ 4 $\boxed{6}$ . $\boxed{8}$
―――――――
$\boxed{4}$ $\boxed{5}$ $\boxed{2}$ . $\boxed{6}$

Largest total

$\boxed{8}$ 0 $\boxed{5}$ . 8
+ $\boxed{6}$ $\boxed{3}$ 4 $\boxed{5}$ . $\boxed{1}$
―――――――
$\boxed{1}$ $\boxed{4}$ $\boxed{4}$ $\boxed{8}$ . $\boxed{9}$

**b**

Smallest difference

$\boxed{3}$ 1 $\boxed{1}$ . $\boxed{5}$
− 2 $\boxed{8}$ $\boxed{6}$ . 7
―――――――
$\boxed{2}$ $\boxed{4}$ . $\boxed{8}$

Largest difference

$\boxed{1}$ 1 $\boxed{1}$ . $\boxed{1}$
+ 2 $\boxed{1}$ $\boxed{3}$ . 7
―――――――
$\boxed{6}$ $\boxed{0}$ $\boxed{2}$ . $\boxed{8}$

---

✎ **Workbook pages 47–48**

Adding and subtracting fractions

**1 a**

| $\frac{1}{3}$ | $\frac{1}{3}$ | $\frac{1}{3}$ |

$\frac{8}{12}$

| $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{1}{4}$ |

$\frac{9}{12}$
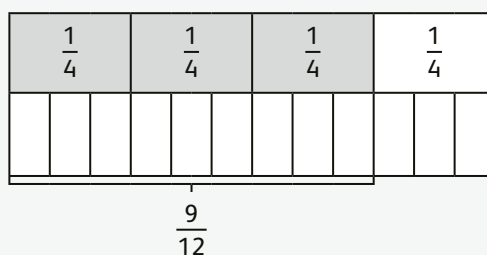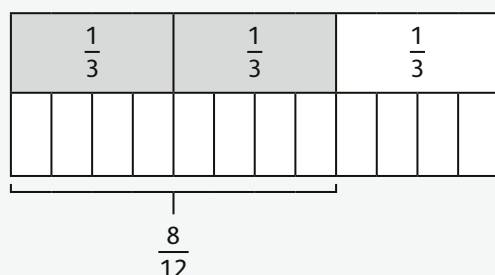
**b** $\frac{2}{3} + \frac{3}{4} = \frac{\boxed{17}}{\boxed{12}}$ or $\boxed{1\frac{5}{12}}$

⭐ **2** Check that learners have at least two correct calculations in each box, for example:

| Additions with totals greater than 1 | Additions with totals less than 1 |
|---|---|
| $\frac{3}{5} + \frac{1}{2} = \frac{11}{10}$ | $\frac{2}{6} + \frac{1}{2} = \frac{5}{6}$ |
| $\frac{5}{9} + \frac{7}{8} = \frac{103}{72}$ | $\frac{2}{3} + \frac{1}{4} = \frac{11}{12}$ |
| Subtractions with answers greater than $\frac{1}{2}$ | Subtractions with answers less than $\frac{1}{2}$ |
| $\frac{13}{10} - \frac{2}{6} = \frac{29}{30}$ | $\frac{3}{4} - \frac{2}{3} = \frac{1}{12}$ |
| $\frac{8}{5} - \frac{1}{4} = \frac{27}{20}$ | $\frac{5}{9} - \frac{1}{2} = \frac{1}{18}$ |

**3 a** $\frac{9}{10}$ kg

**b** $\frac{3}{10}$ m or 0.3 m

✎ **Workbook pages 48–49:**

Multiplying decimal numbers

**1 a**

| × | 4 | 0.8 |
|---|---|---|
| 6 | 24 | 4.8 |

24 + 4.8 = **28.8**

**b**

| × | 4 | 0.8 |
|---|---|---|
| 20 | 80 | 16 |
| 6 | 24 | 4.8 |

80 + 16 + 24 + 4.8 = **114.8**

**c**

| × | 7 | 0.4 | 0.08 |
|---|---|---|---|
| 20 | 140 | 8 | 1.6 |
| 6 | 42 | 2.4 | 0.48 |

140 + 8 + 42 + 1.6 + 2.4 + 0.48 = **194.48**

**2**

| Population | City A | City B | City C | City D |
|---|---|---|---|---|
| When ⚪ has the value of 0.5 million | 4.5 | 2.5 | 4 | 3.5 |
| When ⚫ has the value of 0.25 million | 2.25 | 1.25 | 2 | 1.76 |
| When ⚪ has the value 1.5 million | 13.5 | 7.5 | 12 | 10.5 |

✎ **Workbook pages 49–50**

Dividing whole numbers up to 1 000

**1 a** 705 ÷ 8, 459 ÷ 9 and 581 ÷ 7 circled (636 ÷ 5 and 381 ÷ 3 – not circled)

**b** 705 ÷ 8 = **$88\frac{1}{8}$**

459 ÷ 9 = **51**

581 ÷ 7 = **83**

636 ÷ 5 = **$127\frac{1}{5}$**

381 ÷ 3 = **127**

⭐ **c** Learner's explanation should include that the divisor (the number to divide by) is greater than the number of hundreds in the number to be divided.

⭐ **2** Learners' own division, for example: 357 ÷ 5 = 71$\frac{2}{5}$

**3 a** $13.50          **b** 10 buses          **c** 32 boxes

**Workbook page 50:**

**Using brackets**

**1 a** 9 × (5 × 6) = $\boxed{270}$     9 × (5 + 6) = $\boxed{99}$

(9 × 5) × 6 = $\boxed{270}$     (9 × 5) + 6 = $\boxed{51}$

(6 × 9) × 5 = $\boxed{270}$     (6 + 9) × 5 = $\boxed{75}$

6 × 9 × 5 = $\boxed{270}$     6 × (9 + 5) = $\boxed{84}$

**b** For example: All the calculations in the first column only involve multiplication and it does not matter which order they are carried out in. The calculations in the second column include multiplication and addition and they cannot be carried out in any order. You have to do the brackets first.

**2 a** (25 × 5) – 10 = 125 – 10 = 115

115 pencils

**b** (85 – 35) × 9 = 50 × 9 = 450

450 cents

**Learner's Book**

Pages 110–111: Practise

⭐ **1** Answers will vary, depending on results of the experiments. Learners should recognise that increasing the number of trials improves our understanding of the probabilities of each outcome.

**2** Answers will vary, but learners should be able to explain their judgements in relation to the number of trials shown for each experiment.

⭐ **3** Answers will vary, but learners should be able to justify their probabilities based on the design of each experiment.

---

Page 112: Quiz

**1** and 2 Answers will vary but should show some understanding that the larger the number of trials, the more likely it is that the answers will be accurate.

---

### Workbook pages 52–53:

**Can you remember?**

**a** There is a two in four chance of picking a white cube. <u>False (two in eight/one in four)</u>
**b** There is a 75 % chance of picking a black cube. <u>False (50 %)</u>
**c** There is less than 25 % chance of picking a grey cube. <u>False (exactly 25 % chance)</u>
**d** The chance of picking a white cube is equal to the chance of picking a grey cube. <u>True</u>

**Probability experiments**

**1** Answers will vary depending on the results of experiments, but learners' predictions should show an understanding of the probable outcomes.

⭐ **2** Answers will vary depending on the results of experiments, but learners' predictions should show an understanding of the probable outcomes.

**Learner's Book**

**Page 114: Practise**

**1** Check learners bar models.

**a** $\frac{3}{4}$ of 200 = 150

**b** $\frac{7}{4}$ of 200 = 350
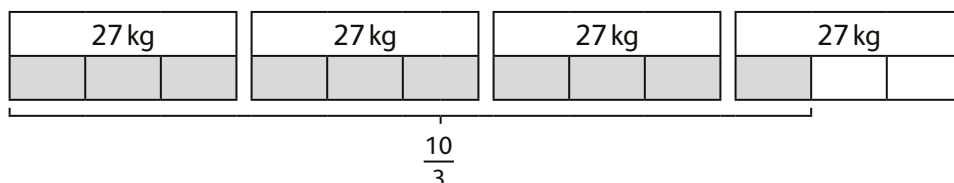
**c** $\frac{2}{7}$ of 350 = 100

**d** $\frac{10}{7}$ of 350 = 500

**e** $\frac{5}{8}$ of 640 = 400

**f** $\frac{15}{8}$ of 640 = 1 200

**2 a** $\frac{16}{6}$ of 18 = 48

**b** $\frac{10}{3}$ of 27 kg = 90 kg

| 27 kg | | | 27 kg | | | 27 kg | | | 27 kg | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

$\frac{10}{3}$

**3** Guss has $21 and Sanchia has $42.

---

**Page 116: Practise**

**1 a** 3.9 > 3.3　　**b** 4.1 > 3.9　　**c** 3.31 < 3.49
　**d** 4.01 > 3.99　**e** 40.1 > 39.9　**f** 0.14 < 0.39

**★2 a** Check that learners' own examples meet the criteria but that the ones number must have 2 ones but is smaller than 2.86 and the other must have 2 ones but is larger than 2.86. There are fewer possibilities for the latter, so 2.87 to 2.99 inclusive.
　**b** Learners should order their two numbers along with 2.86. Answers will vary.
　　for example: ⌊2.74⌋ < ⌊2.86⌋ < ⌊2.96⌋

**3** Learners should have ordered each set of quantities from smallest to largest, as below.
　**a** $14.25　　$14.52　　　$15.24　　　$15.42
　**b** 8.49 m　　9.48 m　　　9.84 m　　　10.89 m
　**c** 2.99 kg　　20.52 kg　　22.05 kg　　25.02 kg　　25.21 kg

---

**Page 118: Practise**

**1**

| | a | b | c | d | e | f | g | h | i |
|---|---|---|---|---|---|---|---|---|---|---|
| Hours | 0.1 | **0.2** | 0.3 | 0.4 | **0.5** | **0.6** | 0.7 | 0.8 | 0.9 |
| Minutes | 6 | 12 | **18** | **24** | 30 | 36 | **42** | **48** | **54** |

**2 a** 2.6 hours: 2 hours and 36 minutes　　3.2 hours: 3 hours and 12 minutes
　　2.75 hours: 2 hours and 45 minutes　　2.5 hours: 2 hours and 30 minutes
　**b** 4 hours and 42 minutes: 4.7 hours

**3** Each guard protects the gates for 4 hours and 48 minutes.

---

**Page 119: Practise**

| 1 | | a | b | c | d | e | f | g | h | i |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Minutes** | 0.1 | 0.2 | 0.3 | **0.4** | **0.5** | 0.6 | **0.7** | 0.8 | 0.9 |
| | **Seconds** | 6 | 12 | **18** | 24 | 30 | **36** | 42 | **48** | **54** |

**2 a** 4.7 minutes: 4 minutes and 42 seconds      5.3 minutes: 5 minutes and 18 seconds
     5.25 minutes: 5 minutes and 15 seconds      4.5 minutes: 4 minutes and 30 seconds
  **b** 3 minutes and 24 seconds: 3.4 minutes

**3 a** 3.75 minutes

  **b** 3 minutes and 45 seconds

---

**Page 121: Practise**

| 1 | a | b | c |
|---|---|---|---|
| **Dinosaur name** | Tyrannosaurus Rex | Brachiosaurus | Diplodocus |
| **Length** | 4 metres | 8 metres | 11 metres |
| **Height** | 2 metres | 5 metres | 2 metres |

**2** Ingredients to make soup for eight people rather than four should be doubled:
6 carrots
8 potatoes
2 onions
200 g peas
100 g mushrooms
600 ml water

---

**Pages 123–124: Practise**

**1** Check learners' patterns. The table up to the 12th row should be:

| Blue squares | Pink squares |
|---|---|
| 2 | 5 |
| 4 | 10 |
| 6 | 15 |
| 8 | 20 |
| 10 | 25 |
| 12 | 30 |
| 14 | 35 |
| 16 | 40 |
| 18 | 45 |
| 20 | 50 |
| 22 | 55 |
| 24 | 60 |

**2**

| 1 | 2 |
|---|---|
| 2 | 4 |
| **3** | 6 |
| 5 | **10** |
| **6** | 12 |
| 10 | **20** |

**3** **a** 12 orange drinks
**b** 8 lime drinks
**c** 45 drinks in total

**Page 124: Quiz**

**1** **a** 45
**b** 153

**2** **a** Check that learners have recorded their comparisons correctly and have used the < and > symbols. Answers will vary as learners choose pairs of decimal numbers from the circle, for example:
4.61 < 6.41, 6.41 > 5.32, 4.16 < 4.61, …
**b** Numbers in order from smallest to largest: 4.16 , 4.61, 5.32, 5.38, 6.41

**3** **a** False: 3.4 hours = 3 minutes and 24 minutes
**b** True
**c** True

**4** 450 cm

**5** 15 apple juices

**Workbook page 55:**

**Can you remember?**

**a** $\frac{3}{12} = \frac{1}{4}$

$\frac{4}{12} = \frac{1}{3}$

$\frac{6}{12} = \frac{1}{2}$

$\frac{9}{12} = \frac{3}{4}$

**b** $\frac{2}{10} = \frac{1}{5}$

$\frac{4}{10} = \frac{2}{5}$

$\frac{6}{10} = \frac{3}{5}$

$\frac{5}{10} = \frac{1}{2}$

**c** $\frac{25}{100} = \frac{1}{4}$

$\frac{75}{100} = \frac{3}{4}$

$\frac{80}{100} = \frac{4}{5}$

$\frac{150}{100} = \frac{3}{2} = 1\frac{1}{2}$

**More about fractions as operators**

**1** **a** $\frac{3}{4}$ of $45 should be ticked
**b** $\frac{5}{3}$ of 45 cm should be ticked
**c** $\frac{9}{10}$ of 40 kg should be ticked
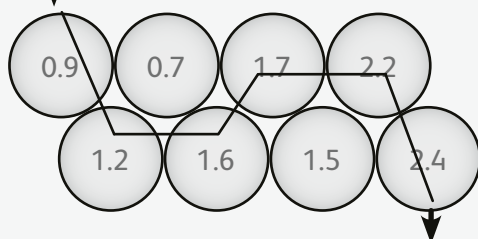**d** $\frac{5}{8}$ of 72 litres should be ticked

**2** Bookcase: <u>60</u> cm          Pen: <u>15</u> cm
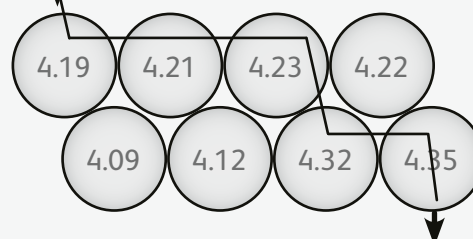**3** 3 kg heavier

✎ **Workbook page 56:**

**Comparing and ordering decimal numbers**

**1  a  Start**    **b  Start**



**Finish**    **Finish**

**2  a**  3.43 $<$ 3.45    **b**  34.5 $>$ 34.3    **c**  51.98 $>$ 51.89

   **d**  69.6 $<$ 69.7    **e**  5.4 $<$ 32.3

**3**  D  68.45    B  65.84    A  64.58    E  58.64    C  58.46

**Longest**    **Shortest**

---

✎ **Workbook page 57:**

**Using decimals and mixed units for time**

**1**



| 3.5 hours | | 3 hours and 15 minutes |
| 3.75 hours | | 3 hours and 36 minutes |
| 3.25 hours | | 3 hours and 45 minutes |
| 3.2 hours | | 3 hours and 30 minutes |
| 3.6 hours | | 3 hours and 12 minutes |
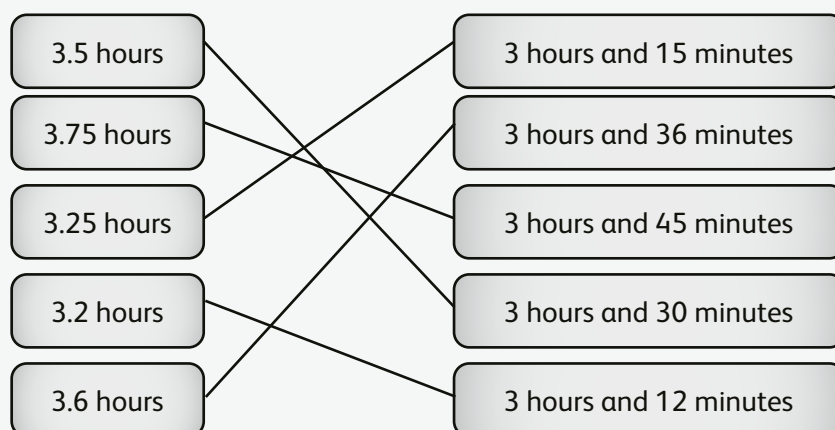
⭐ **2**  Check learners' bar model to show that $\frac{1}{10}$ or 0.1 of 60 minutes is 6 minutes, so 0.4 is 24 minutes, not 40, for example:

| 60 minutes | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |

**3**  <u>2.25</u> minutes    <u>2</u> minutes and <u>15</u> seconds

**Workbook pages 57–58:**

**Direct proportion**

**1 a** 900 g strawberries
   270 g sugar
   750 ml milk
   750 ml cream
   3 vanilla pods
   30 egg yolks
   6 tablespoons lemon juice
   *Serves 18*

**b** Using only 30 g of sugar, the recipe will serve 2 people.

**2** Height: 75 cm          Length: 54 cm          Width: 20 cm

**Workbook page 58:**

**Equivalent ratios**

**1 a** For every 5 squares, there are 7 circles.

**b**

| Tiles | 1 | 2 | 4 | 8 | 10 | 20 |
|---|---|---|---|---|---|---|
| Circles | 7 | **14** | **28** | 56 | **70** | **140** |
| Squares | **5** | 10 | **20** | **40** | 50 | **100** |
| Total shapes | 12 | **24** | 48 | **96** | **120** | **240** |

**2 a** 18 (dolls)                    **b** 45 (teddies)

**3** 15 km

**Learner's Book**

**Pages 126–127: Practise**

**1**  **a**  goes with B        **b**  goes with A        **c**  goes with C
   **d**  goes with D        **e**  goes with E

⭐**2**  **a**  12 cubes        **b**  12 cubes
   **c**  12 cubes        **d**  24 cubes
   **e**  24 cubes        **f**  24 cubes

⭐**3**  Learners' compound shapes will vary.

---

**Page 129: Practise**

**1**  Learners' nets will vary – learners should be able to test or justify their sketches.

⭐**2**  **a**  **i** to **iv**  Learners' nets for pyramids with different base shapes will vary – learners should be able to test or justify their sketches.

**b**

| Base shape | Number of faces | Number of vertices | Number of edges |
|---|---|---|---|
| Triangle | 4 | 4 | 6 |
| Square | 5 | 5 | 8 |
| Pentagon | 6 | 6 | 10 |
| Hexagon | 7 | 7 | 12 |
| Septagon | 8 | 8 | 14 |
| Octagon | 9 | 9 | 16 |

**c**  The number of faces and the number of vertices is always one greater than the number of sides/vertices of the base shape, so the number of faces and vertices for a pyramid with a nine-sided base is 10.
   The number of edges is always double the number of sides/vertices of the base shape, so the number of edges for a pyramid with a nine-sided base is 18.

**3**  Check learners' nets for different prisms. The should explain as follows. In a prism:
   number of edges = 3 × number of sides of the shape of the cross-section
   number of vertices = 2 × number of vertices of shape of the cross-section
   number of faces = 2 + number of sides on the shape of the cross-section

---

**Page 130: Quiz**

**1**  To support learners with making sketches, hand out copies of *Template 13: Isometric grid* (in the online resources in boost-learning.com).

**2**  **a** to **c**  Prompt learners to justify the number of faces, vertices and edges of their shapes.

---

✏️ **Workbook pages 60–61:**

**Can you remember?**

Prism          (Square-based) pyramid          Cuboid          Pyramid/tetrahedron

**Compound shapes**

1    Check that learners' sketches match each shape with reasonable accuracy.
2    Check that learners' sketches match each shape with reasonable accuracy.
3    Learners' sketches of a six-cube cuboid, also drawn from two other positions, will vary.
4    Learners' sketches of a seven-cube shape, also drawn from two other positions, will vary.

✏️ **Workbook pages 61–62:**

**Nets**

1    Learners may be able to use as few as three colours.
2    **a**  Pentagonal prism                         **b**  Triangular prism
      **c**  Hexagonal prism                          **d**  Octagonal prism
3    Responses will vary, but could include:
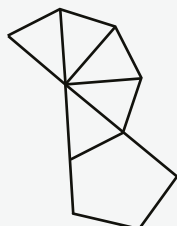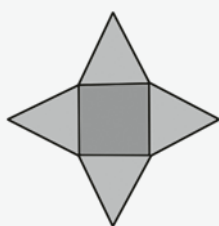
## Units 7–12

Pages 131–132

**1**

| | Number | Round to the nearest whole number | Round to the nearest tenth |
|---|---|---|---|
| **a** | 2.38 | 2 | 2.4 |
| **b** | 12.81 | 13 | 12.8 |
| **c** | 128.05 | 128 | 128.1 |

**2** First four common multiples of 3 and 4: 12, 24, 36, 48

**3** Coordinates: P = (−3, 4)    Q = (3, −4)    R = (−4, −3)

**4 a** $\frac{4}{5} + \frac{2}{3} = \frac{22}{15} = \boxed{1\frac{7}{15}}$

   **b** $\frac{4}{5} - \frac{2}{3} = \boxed{\frac{2}{15}}$

   **c** $\frac{11}{10} - \frac{3}{4} =$

**5** The total length that the farmer uses is: 220.8 metres.

**6** If you definitely have 5 heads and 5 tails from flipping a coin 10 times, then the 11th flip will give you a 1 in 2 or 50 % chance of getting a head or a tail. If you flip the coin 11 times from scratch, the possibilities are completely random: 11 heads or 11 tails, or 1 in 11 up to 10 out of 11 either way.

**7 a** 3.5 hours: 3 hours and 30 minutes      2.6 hours: 2 hours and 36 minutes
     4.25 hours: 4 hours and 15 minutes    1.76 hours: 1 hour and 45 minutes
  **b** 3.25 minutes: 3 minutes and 15 seconds   4.8 minutes: 4 minutes and 48 seconds
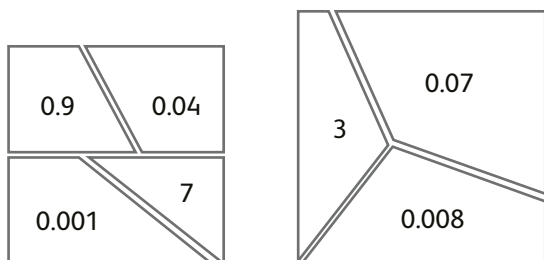     1.75 minutes: 1 minute and 45 seconds    2.6 minutes: 2 minutes and 36 seconds

**8** 30 × 45 cm

**9** 10 cubes

**Learner's Book**

**Page 134: Practise**

**1 a** Learners should be able to copy or trace the shapes and put them together to make two squares, as follows.

  **b** Learners should write the two numbers as: 7.941 and 3.078.



**2 a** 0.5 kg        **b** 0.5 litres        **c** 0.05 km        **d** 5 kg

⭐**3 a** Wrong: −46 tenths and −35 thousandths
    **b** Correct
    **c** Wrong: −3 ones and −1 635 thousandths

---

**Page 136: Practise**

**1**

|  | a | b | c | d |
|---|---|---|---|---|
|  | **9.65** | **8.06** | **13.93** | **21.34** |
| **Round to the nearest whole number** | 10 | 8 | 14 | 21 |
| **Round to the nearest tenth** | 9.7 | 8.1 | 13.9 | 21.3 |

**2 a** A = 0.41 ℓ      B = 0.75 ℓ      C = 1.12 ℓ      D = 1.48 ℓ      E = 1.99 ℓ
  **b** 0.41 ℓ rounds to 0.4 ℓ, 0.75 ℓ rounds to 0.8 ℓ, 1.12 ℓ rounds to 1.1 ℓ, 1.48 ℓ rounds to 1.5 ℓ, 1.99 ℓ rounds to 2 ℓ

**3 a** Mases from lightest to heaviest: 40.7 kg < 46.07 kg < 46.75 kg < 47.6 kg < 74.6 kg
  **b** 46.07 kg rounds to 46 kg, 47.6 kg rounds to 48 kg, 74.6 kg rounds to 75 kg, 46.75 kg rounds to 47 kg, 40.7 kg rounds to 41 kg

---

**Page 138: Practise**

**1 a** Rule: add 3.5
    Missing terms are 3.5 and 10.5
  **b** Rule: subtract 2.5
    Missing terms are 17.5, 12.5 and 10
  **c** Rule: add $\frac{2}{8}$
    Missing terms are $\frac{3}{8}, \frac{5}{8}$ and $\frac{9}{8}$

**d** Rule: subtract $\frac{3}{4}$

Missing terms are $11\frac{1}{4}$, $10\frac{1}{2}$ $(10\frac{2}{4})$, $9\frac{3}{4}$, $8\frac{1}{4}$

**e** Rule: add 3.5

Missing terms are –4.3, –0.8, 13.2 and 16.7

**2**

| Rule | Value of 12th term | Value of 21st term |
|---|---|---|
| **a** Add 0.2 | 2.4 | 4.2 |
| **b** Add 0.3 | 3.6 | 6.3 |
| **c** Add 0.4 | 4.8 | 8.4 |
| **d** Add $\frac{1}{3}$ | 4 | 7 |

**3**

| | Position | Term |
|---|---|---|
| **a** | 2 | **18** |
| **b** | 3 | **27** |
| **c** | **4** | 36 |
| **d** | 45 | **405** |
| **e** | **99** | 891 |
| **f** | 145 | **1305** |

---

**Page 140: Practise**

**1 a** $3^3 = \boxed{3} \times \boxed{3} \times \boxed{3} = \boxed{27}$

**b** The cube of $\boxed{3}$ is $\boxed{27}$

**c** $3^3 = \boxed{3^2} \times \boxed{3}$

**2** $\boxed{1^3} = \boxed{1} \times \boxed{1} \times \boxed{1} = \boxed{1}$

$\boxed{2^3} = \boxed{2} \times \boxed{2} \times \boxed{2} = \boxed{8}$

$\boxed{3^3} = \boxed{3} \times \boxed{3} \times \boxed{3} = \boxed{27}$

$\boxed{4^3} = \boxed{4} \times \boxed{4} \times \boxed{4} = \boxed{64}$

$\boxed{5^3} = \boxed{5} \times \boxed{5} \times \boxed{5} = \boxed{125}$

⭐**3 a** True

**b** False: $64 = 4^2 \times 4$

**c** False: $125 = 5^3 = 5 \times 5 \times 5$

**d** True

---

**Page 141: Quiz**

**1 a** 0.4    **b** 0.04    **c** 0.006    **d** −0.05

**2 a** 54, 142, 2 680    **b** 54.4, 142.1, 2 679.6

**3 a** −1.8, −1.3, −0.8, **−0.3, 0.2, 0.7**

**b** $\frac{13}{10}, \frac{\mathbf{11}}{\mathbf{10}}, \frac{9}{10}, \frac{\mathbf{7}}{\mathbf{10}}, \frac{\mathbf{5}}{\mathbf{10}}, \frac{\mathbf{3}}{\mathbf{10}}$

**4**

| Position | 6 | **5** | 12 | 25 |
|---|---|---|---|---|
| Term | **3.6** | 3 | **7.2** | **15** |

**5** $\boxed{5^3}$ = $\boxed{125}$

---

**Workbook page 64:**

**Can you remember?**

**a** 0.04 × $\boxed{1\,000}$ = 40
400 ÷ 1 000 = $\boxed{0.04}$

**b** $\boxed{530.1}$ ÷ 100 = 5.301
5.301 × $\boxed{1\,000}$ = 5 301

**c** 960 ÷ $\boxed{1\,000}$ = 0.96
$\boxed{960}$ × 100 = 9.6

**More about numbers and place value**

**1**

| | Number | How many tenths? | How many hundredths? | How many thousandths? |
|---|---|---|---|---|
| **a** | 5.291 | **52** | 529 | 5 291 |
| **b** | 42.36 | **423** | 4 236 | 42 360 |
| **c** | 9.4 | **94** | 940 | 9 400 |
| **d** | 4.405 | **44** | 440 | 4 405 |

**2 a** 0.03    **b** 70 and 0.07    **c** 0.02    **d** 0.6 and 0.006

**3** Possible solutions are: 4.564, 4.565 and 4.566

---

**Workbook page 65:**

**Rounding decimal numbers**

**1 a** Learners should have ticked the second and third examples (0.99 kg rounds to 1 kg; 3.09 kg rounds to 3.1 kg). Improvements are:
  • 1.45 kg rounds to 1.5 kg
  • 12.84 kg rounds to 12.8 kg
  • 5.44 kg rounds to 5.4 kg

**b** Check learners' two examples.

**2** Possible starting numbers are: 3.225, 3.23, 3.235, 3.24 and 3.245

**3** David and Maris can buy the pairs of items in **b** and **d**.
  **a** $14.50 and $21.75 ➜ $15 + $22 = $37
  **b** $18.29 and $15.25 ➜ $18 + $15 = $33 $\boxed{✓}$
  **c** $28.95 and $6.89 ➜ $29 + $7 = $36
  **d** $20.30 and $14.55 ➜ $20 + $15 = $35 $\boxed{✓}$

**Workbook page 66:**

More about sequences

**1 a** $\frac{14}{3}, \frac{11}{3}, \frac{8}{3}, \frac{5}{3}, \frac{2}{3}, -\frac{1}{3}, -\frac{4}{3}$        Rule: subtract $\frac{3}{3}$

  **b** 2.3, **4.8**, 7.3, **9.8**, **12.3**, **15.8**       Rule: add 2.5

  **c** −50, **−10**, **30**, **70**, 110, **150**, **190**      Rule: add 40

**2 a**

| Position | 6 | 8 | 9 | 12 | 20 | 39 | 99 |
|---|---|---|---|---|---|---|---|
| Term | **54** | 72 | **81** | 108 | 180 | **351** | **891** |

  **b** The 200th term is 9 × 200 = 1 800, so 1 791 is the 199th term.

  **c** 3 682 is not divisible by 9. Its digital root is 1 and numbers that are divisible by 9 have a digital root of 9.

**Workbook pages 66–67**

Cube numbers

**1** Learners should have ticked cubes **b** and **c**, which show 3 × 3 × 3 and 4 × 4 × 4.

**2**



| 125 | 27 | $1^3$ | 8 | 64 | 25 |
|---|---|---|---|---|---|

| $2^2 \times 2$ | $4^3$ | $5^3$ | $5^3 - 10^2$ | 3 × 3 × 3 | $1 \times 1^2$ |
|---|---|---|---|---|---|
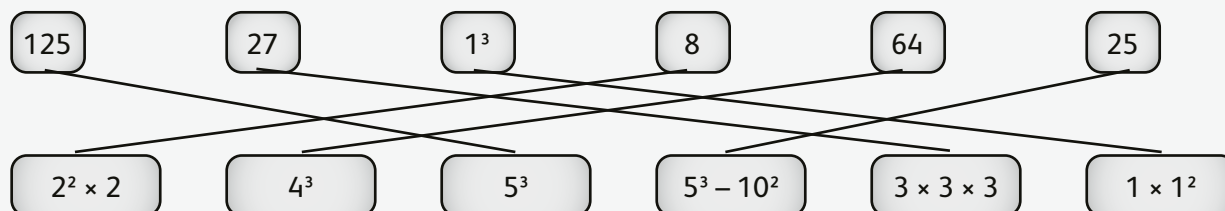
**3** Jin had 64 blocks to begin with. He had the exact number to make a 4 × 4 × 4 cube. When he gave 37 blocks to Elok, he had 27 blocks left. He can use these to make a 3 × 3 × 3 cube.

**4** For example, Sanchia could have thought of the square number 16 from $4^2$ and multiplied it by 4, giving her 64, which is a cube number.
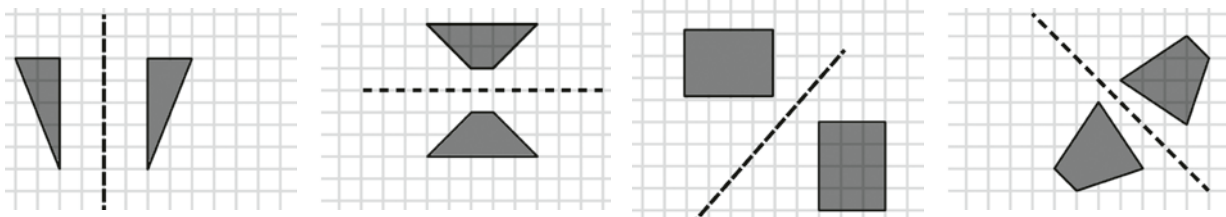
**Learner's Book**

**Page 143: Practise**

⭐**1**  a = 4        b = 5        c = 1        d = 2        e = 3        f = 10        g = 9        h = 8        i = 6        j = 7

**2**



**Page 145: Practise**

⭐**1**  **a**  The missing coordinates of the corners are (30, 25) and (30, –15).

**b**

| Inside the square | Outside the square | On the perimeter of the square |
|---|---|---|
| (5, 15) | (–15, 10) | (–10, –5) |
| (0, 0) | (25, –25) | |
| (25, –14) | (–25, 15) | |
| $(5\frac{1}{2}, 10\frac{3}{4})$ | (–30, –15) | |
| | (–10.25, 15.6) | |

**2**  A = (20, 15)                B = (–10, 10)                C = (35, –5)

**Page 146: Quiz**

**1**  Learners should be able to justify the correct position by measuring the distance of each vertex to the mirror line. Use *Template 17: Shape reflections* (in the online resources in boost-learning.com) to provide support for some learners to help them solve this.
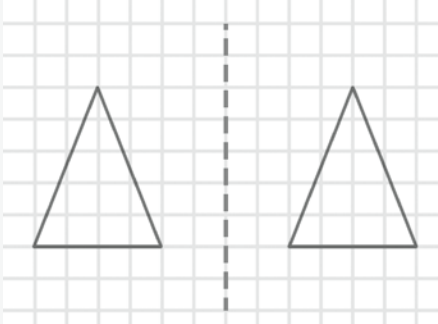
**2**  Coordinates: A (40, 25)                B (–60, –15)
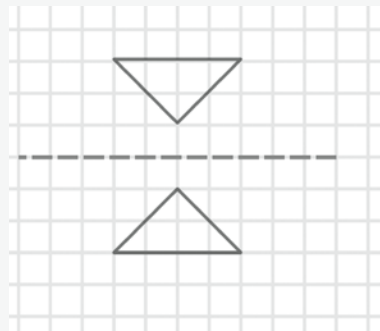
**Workbook pages 69–71:**

**Can you remember?**

Other points on the line include (5, –5), (–4, 4), (3, –3), and so on.
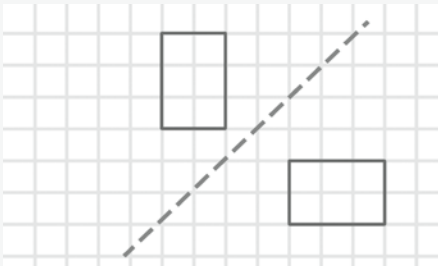
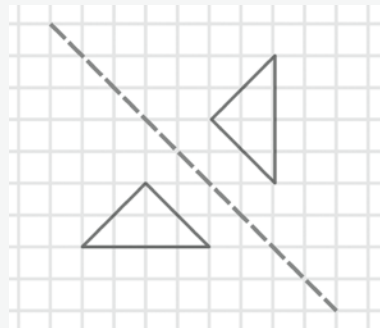**Reflections**
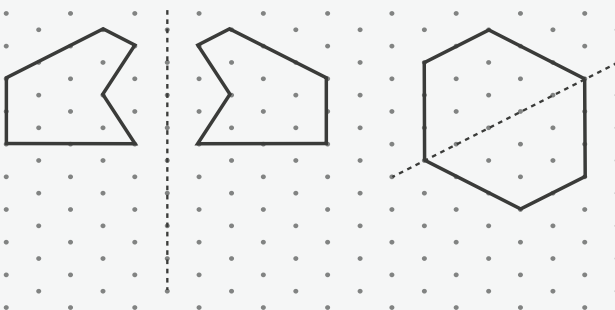
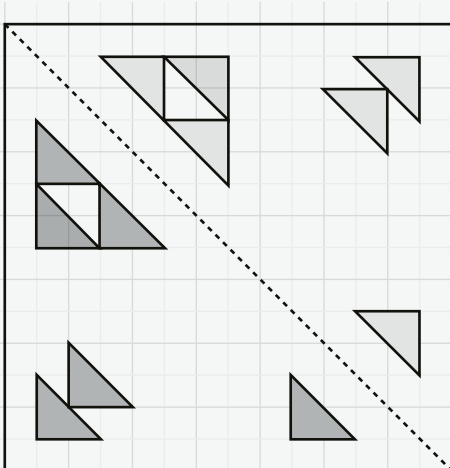**1 a**



**b**



**c**



**d**



**2**



**3** Learners' answers will vary, depending on the rotation they choose.
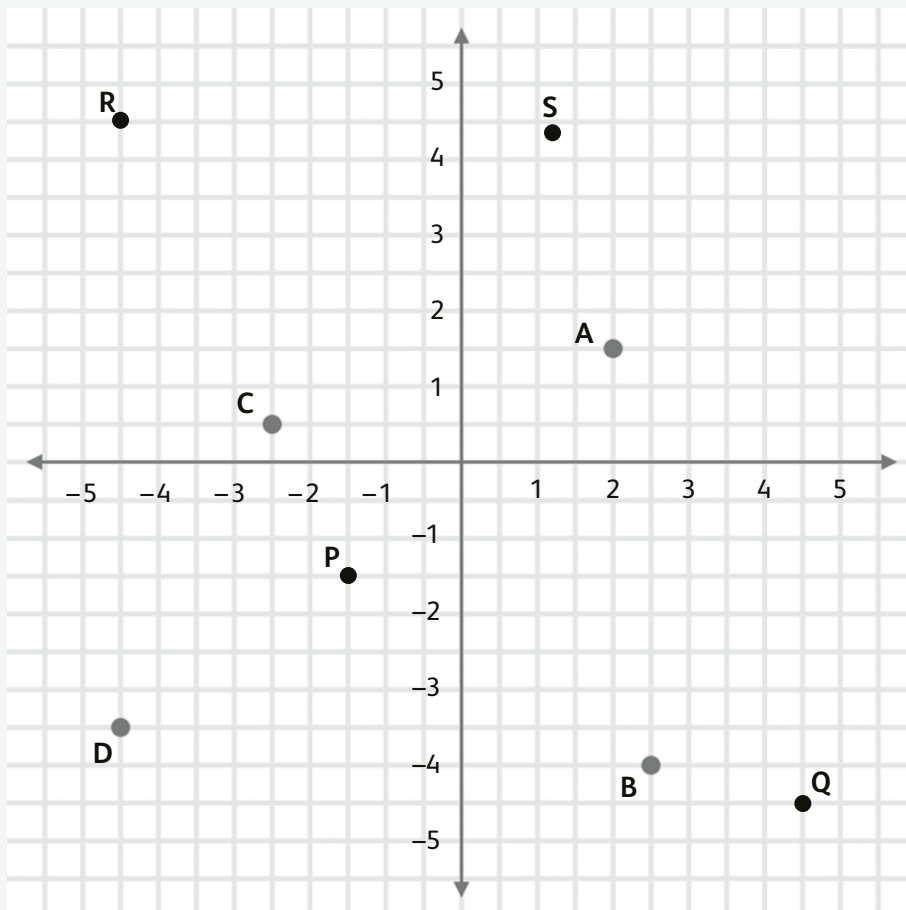They should compare their transformations with a partner.

**4**

**Workbook pages 71–72:**

**Coordinates**

**1 a**  A (2,1.5)     B (2.5, –4)     C (–2.5, 0.5)     D (–4.5, –3.5)

  **b**



**2 a**  (–30, 30)       (–20, 10)
  **b**  Check learners' sketches of the parallelogram in its new position.
  **c**  The new parallelogram has vertices: (–40, 5) (–30, –15) (10, 5) (20, –15)
  **d**  Learners' answers will vary.

**Learner's Book**

**Page 148: Practise**

1   a   $\dfrac{7}{8} + \dfrac{4}{5} = \dfrac{67}{40} = 1\dfrac{27}{40}$

 $\dfrac{7}{8} + \dfrac{3}{10} = \dfrac{47}{40} = 1\dfrac{7}{40}$

 $\dfrac{17}{8} + \dfrac{4}{5} = \dfrac{117}{40}$ or $2\dfrac{37}{40}$

   b   $\dfrac{5}{6} - \dfrac{1}{5} = \dfrac{19}{30}$

 $\dfrac{5}{6} - \dfrac{2}{5} = \dfrac{13}{30}$

 $\dfrac{15}{6} - \dfrac{2}{5} = \dfrac{63}{30}$ or $2\dfrac{3}{30}$ or $2\dfrac{1}{10}$

   c   $\dfrac{7}{10} + \boxed{\dfrac{2}{3}} = \dfrac{41}{30}$

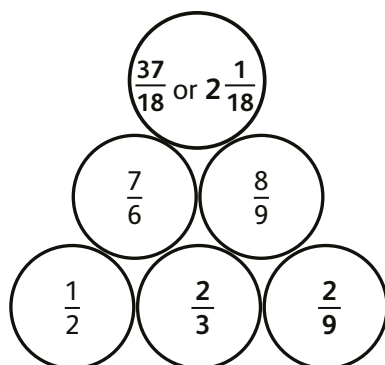 $\dfrac{19}{10} - \boxed{\dfrac{4}{3}} = \dfrac{17}{30}$

 $\boxed{\dfrac{4}{3}} + \dfrac{3}{10} = 1\dfrac{19}{30}$

2   a   $\dfrac{39}{40}$ km

   b   $\dfrac{1}{30}$

---

**Page 148: Try this**

Answers are, from top:



Top circle: $\dfrac{37}{18}$ or $2\dfrac{1}{18}$

Middle row: $\dfrac{7}{6}$   $\dfrac{8}{9}$

Bottom row: $\dfrac{1}{2}$   $\dfrac{2}{3}$   $\dfrac{2}{9}$

---

**Page 150: Practise**

1   1.76 + 1.7 = 3.46
2   a   345.3 − 123.6 = 221.7          b   654.75 + 262.4 = 917.15
    c   654.75 − 262.4 = 392.35        d   56.913 + 34.27 = 91.183
    e   56.913 − 34.27 = 22.643
3   a   17.02 kg       18.67 kg       19.749 kg      22.42 kg
    b   2.025 m        2.005 m        3.304 m        3.725 m
4   a   133.5 − 3.5 + 12.46 = 142.46   b   133.5 − (3.5 + 12.46) = 117.54
    c   4.299 + 1.2 − 1.09 = 4.409     d   4.299 + (1.2 − 1.09) = 4.409

---

⭐ **Page 150: Let's talk**

Possible solutions are:
a   1.95 litres, 1.85 litres, 1.75 litres, …
b   1.9 litres, 1.8 litres etc. or 1.99 litres, 1.98 litres, 1.97 litres, 1.96 litres, 1.94 litres, …
c   1.999 litres, 1.998 litres, 1.997 litres, … (any amount less than 2 litres written to 3 decimal places)

**Pages 152–153: Practise**

⭐**1** a $\frac{2}{5} \div 2 = \frac{2}{5}$  b $\frac{2}{3} \div 4 = \frac{2}{12} = \frac{1}{6}$  c $\frac{3}{4} \div 5 = \frac{3}{20}$  d $\frac{4}{6} \div 2 = \frac{4}{12} = \frac{2}{6} = \frac{1}{3}$

**2** Check learner's diagrams.

a $\frac{4}{5} \div 4 = \frac{1}{5}$  b $\frac{4}{5} \div 8 = \frac{1}{10}$  c $\frac{3}{4} \div 2 = \frac{3}{8}$

d $\frac{3}{4} \div 4 = \frac{3}{16}$  e $\frac{6}{10} \div 6 = \frac{1}{10}$  f $\frac{6}{10} \div 3 = \frac{1}{5}$

**3** a $\frac{1}{8}$ metre  b $\frac{5}{24}$ kg

**Page 154: Practise**

⭐**1** a $\frac{3}{4} \times 3 = \frac{9}{4}$ or $2\frac{1}{4}$  b $\frac{2}{3} \times 3 = \frac{6}{3}$ or 2  c $\frac{3}{6} \times 2 = \frac{6}{6}$ or 1  d $\frac{5}{9} \times 2 = \frac{10}{9}$ or $1\frac{1}{9}$

⭐**2** Check that learners have sketched their diagrams correctly.

a $\frac{2}{3} \times 2 = \frac{4}{3}$ or $1\frac{1}{3}$  b $\frac{2}{3} \times 4 = \frac{8}{3}$ or $2\frac{2}{3}$  c $\frac{3}{5} \times 2 = \frac{6}{5}$ or $1\frac{1}{5}$

d $\frac{3}{5} \times 3 = \frac{9}{5}$ or $1\frac{4}{5}$  e $\frac{3}{8} \times 4 = \frac{12}{8}$ or $1\frac{4}{8}$ or $1\frac{1}{2}$

f $\frac{3}{8} \times 5 = \frac{15}{8} = 1\frac{7}{8}$

**3** $\frac{24}{10}$ kg or $2\frac{4}{10}$ kg or $2\frac{2}{5}$ kg

**Page 156: Practise**

**1** a

```
        5  8
  12 | 6  9  6
      6  0
      9  6
      9  6
         0
```
696 ÷ 12 = [58]
$696 ÷ 12 = [$58]
696 cents ÷ 12 = [58 cents]

b

```
        3  7
  11 | 4  0  7
      3  3
      7  7
      7  7
         0
```
407 ÷ 11 = [37]
$407 ÷ 11 = [$37]
$4.07 ÷ 11 = [$0.37 or 37 cents]

c

```
        3  7
  15 | 5  5  5
      4  5
      1  0  5
      1  0  5
            0
```
555 ÷ 15 = [37]
$555 ÷ 15 = [$37]
$5.55 ÷ 15 = [37 cents]

**2** a 19 years
b 25 pencils
c 24 groups (with 5 people left over)

**3** a 396 + 600 = 996, 996 ÷ 12 = 83
b 332 + 550 = 882, 882 ÷ 14 = 63
c 473 ÷ 11 = 43

**Pages 157–158: Practise**

**1 a** 418 × 20 = 8 360
418 × 24 = 10 032
418 × 48 = 19 824

**b** 2 985 × 40 = 119 400
2 985 × 46 = 137 310
2 985 × 47 = 140 295

**c** 6 073 × 30 = 182 190
6 073 × 32 = 194 336
6 073 × 31 = 188 263

**★2 a** Check learners' sorting. Correct positioning is:

| Products are less than 100 000 | Products are greater than 100 000 but less than 300 000 | Products are greater than 300 000 |
|---|---|---|
| 2 531 × 11 = 27 841<br>4 765 × 18 = 85 770 | 4 523 × 30 = 135 690<br>6 349 × 37 = 234 913 | 7 533 × 50 = 376 650 |

**b** Answers are in the table.

**3 a** 6 144 hours

**b** 16 440 minutes

**4** The red rope is 27 300 mm.

**Page 158: Try this**

| 10 000s | 1 000s | 100s | 10s | 1s |
|---|---|---|---|---|
| | 2 | 3 | 4 | 5 |
| × | | | 2 | 3 |
| | 7 | 0 | 3 | 5 |
| 4 | 6 | 9 | 0 | 0 |
| 5 | 3 | 9 | 3 | 5 |

| 10 000s | 1 000s | 100s | 10s | 1s |
|---|---|---|---|---|
| | | 3 | 0 | 6 | 4 |
| × | | | | 2 | 8 |
| 2 | 4 | 5 | 1 | 2 |
| 6 | 1 | 2 | 8 | 0 |
| 8 | 5 | 7 | 9 | 2 |

**Pages 160–161: Practise**

**1 a** 36.54 ÷ 9 = 4.06
36.54 ÷ 18 = 2.03
270.72 ÷ 9 = 30.08
270.72 ÷ 18 = 15.04

**b** 47.39 × 8 = 379.12
47.39 × 24 = 1 137.36
147.39 × 8 = 1 179.12
147.39 × 24 = 3 537.36

**c** 30.15 × 5 = 150.75
150.75 ÷ 5 = 30.15
375.25 ÷ 25 = 15.01
15.01 × 25 = 375.25

**2**

| Calories | Fat | Saturates | Protein | Carbs | Sugar | Salt | Fibre |
|---|---|---|---|---|---|---|---|
| 6 945 | 141 g | 35.25 g | 336 g | 1 167.75 g | 67.5 g | 4.5 g | 74.85 g |

**3 a** 6.02 cm

**b i** 42.14 cm     **ii** 144.48 cm     **iii** 114.38 cm

**Page 162: Quiz**

**1 a** Check that learners have completed at least three additions.
Learners are asked to take one fraction from each shape, for example:

$\frac{3}{5} + \frac{5}{8} = \frac{49}{40} = 1\frac{9}{40}$

$\frac{2}{3} + \frac{1}{2} = \frac{7}{6} = 1\frac{1}{6}$

$\frac{3}{10} + \frac{9}{4} = \frac{51}{20} = 2\frac{11}{20}$

**b** Check that learners have completed at least three subtractions.
Learners are asked to take one fraction from each shape, for example:

$\frac{3}{5} - \frac{1}{2} = \frac{1}{10}$

$\frac{5}{8} - \frac{3}{10} = \frac{13}{40}$

$\frac{9}{4} - \frac{2}{3} = \frac{19}{12} = 1\frac{7}{12}$

**2 a** False: 41.25 + 32.3 = 73.55
**b** False: 4.125 − 3.23 = 0.895
**c** True

**3 a** $\frac{2}{3} \times 4$

**b** $\frac{7}{9} \div 3$

**4 a** $151 600
**b** 19

**5 a** 4.2 × 3 = 12.6      4.25 × 3 = 12.75      4.25 × 23 = 97.75
**b** 3.5 ÷ 7 = 0.5      35.49 ÷ 7 = 5.07      34.17 ÷ 17 = 2.01

✏️ **Workbook pages 74–75:**

**Can you remember?**

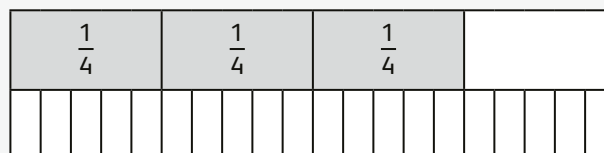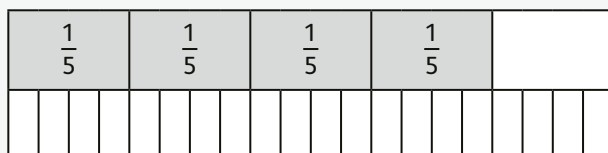Square numbers: 1, 4, 9, 16, 25  Cube numbers: 1, 8, 27, 64, 125
Triangular numbers: 1, 3, 6, 10, 15  Prime numbers: 2, 3, 5, 7, 11
Common multiples of 3 and 4: 12, 24, 36, 48, 60

**Adding and subtracting fractions**

⭐ **1** Check learners' diagrams.

| $\frac{1}{5}$ | $\frac{1}{5}$ | $\frac{1}{5}$ | $\frac{1}{5}$ | | $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{1}{4}$ | |

$\frac{16}{20} + \frac{15}{20} = \boxed{\frac{31}{20} \text{ or } 1\frac{11}{20}}$

**2 a** $\frac{15}{8} - \frac{2}{3} = \boxed{\frac{29}{24} \text{ or } 1\frac{5}{24}}$     **b** $\frac{13}{10} - \frac{3}{4} = \boxed{\frac{11}{20}}$

**c** $\frac{2}{3} + \frac{6}{5} = \boxed{\frac{28}{15} \text{ or } 1\frac{13}{15}}$     **d** $\frac{11}{12} - \frac{2}{3} = \boxed{\frac{2}{12} \text{ or } \frac{1}{4}}$

**3** $\frac{59}{40}$ kg or $1\frac{19}{40}$ kg

---

✏️ **Workbook pages 75–76:**

**Adding and subtracting decimal numbers**

**1** The combined weight of the children is 89.65, so they may safely bounce together. This question may be answered most easily by approximation: 100 ÷ 4 = 25 kg. As none of the children weighs more than 25 kg, they cannot add up to more than the weight limit.

**2** 26.45 km

**3** Check that learners have used the column method correctly.
  **a** 354.6 + 123.35 = 477.95     **b** 354.6 – 123.35 = 231.25
  **c** 68.479 + 32.3 = 100.779

**4 a** 5.25 km + 7.345 km + 6.1 km = 18.695 km     **b** 7.345 km + 6.1 km + 7.345 km = 20.79 km
  **c** 76.04 km

---

✏️ **Workbook pages 77–78:**

**Multiplying and dividing proper fractions by whole numbers**

**1 a** $\frac{4}{6} \div 2 = \frac{2}{6}$

**b** $\frac{4}{5} \div 3 = \frac{4}{15}$

**2 a** $\frac{2}{3} \times 3 = \frac{6}{3} = 2$

**b** $\frac{5}{8} \times 2 = \frac{10}{8}$

**3 a** Area = $\frac{21}{8}$ m² or $2\frac{5}{8}$ m²

**b** Area = $\frac{21}{5}$ m² or $4\frac{1}{5}$ m²

**c** Area = $\frac{99}{10}$ m² or $9\frac{9}{10}$ m²

**4 a** $\frac{8}{10}$ m ÷ 4 = $\frac{2}{10}$ m or $\frac{1}{5}$ m

**b** $\frac{8}{10}$ m ÷ 3 = $\frac{8}{30}$ m

**c** $\frac{8}{10}$ m ÷ 5 = $\frac{8}{50}$ m

**d** $\frac{8}{10}$ m ÷ 6 = $\frac{8}{60}$ m

**e** $\frac{8}{10}$ m ÷ 8 = $\frac{1}{10}$ m

---

✏️ **Workbook pages 78–79:**

**Multiplication and division**

**1 a**
```
      4   3
15 | 6   4   ⁴5
```
**b**
```
           7   1  r3
12 | 8   5   ¹5
```
**c**
```
           5   3  r4
11 | 5   8   ³7
```

**2 a** Check learners' working.
$8 979 × 16 = $143 664

**b** $89 856

**3 a** $1.75          **b** 13 slabs          **c** 30 full boxes

---

✏️ **Workbook pages 79–80:**

**Multiplying and dividing decimal numbers**

**1 a**    4.3 × 9 = [ 38.7 ]

2.43 × 9 = [ 21.87 ]

24.35 × 9 = [ 219.15 ]

24.35 × 18 = [ 438.3 ]

**b**    7.2 ÷ 8 = [ 0.9 ]

16.72 ÷ 8 = [ 2.09 ]

16.72 ÷ 16 = [ 1.045 ]

320.64 ÷ 32 = [ 10.02 ]

**c**    [ 0.35 ] = 0.07 × 5

[ 0.35 ] ÷ 5 = 0.07

[ 51.6 ] ÷ 12 = 4.3

4.3 × 24 = [ 103.2 ]

**2 a**

| Number of turns | 3 | 5 | 9 | 12 | 15 | 21 |
|---|---|---|---|---|---|---|
| Total time (seconds) | 109.44 | 182.4 | 328.32 | 437.76 | 547.2 | 766.08 |

⭐ **b** An explanation that finding a quarter is the same as dividing by 4, so Sanchia is correct.

**c** An explanation that finding a third is the same as dividing by 3.
36.48 seconds ÷ 3 = 12.16 seconds

⭐ **3** Learners should circle the following amounts:

**a** 2 kg          **b** 2 ℓ          **c** 7 lb          **d** 6 pints

---

# Unit 16  2D and 3D shapes – Answers

**Learner's Book**

**Pages 165–166: Practise**

**1  a**  Rectangle: 40 cm², triangle: 20 cm²   **b**  Rectangle: 30 cm², triangle: 15 cm²
  **c**  Rectangle: 20 cm², triangle: 10 cm²   **d**  Rectangle: 50 cm², triangle: 25 cm²

**2  a**  10 cm²      **b**  12.5 cm²      **c**  15 cm²      **d**  1 500 cm²

★**3**  Answers will vary, but learners should be able to use the TWM skill of 'convincing' to justify their four suggested triangles.

★**4  a**  The surface area of the 7 cm cube is 294 cm². (7 × 7 = 49 × 6)
     The surface area of the 3.5 cm cube is 73.5 cm². (3.5 × 3.5 = 12.25 × 6)
  **b**  Learners should get 63 cm² (3 × 1.5 = 4.5 × 2 = 9; 4.5 × 3 = 13.5 × 4 = 54.
     So, the surface area is 9 cm² + 54 cm² = 63 cm²)

---

**Pages 169–170: Practise**

**1**  A = Centre      B = Radius
  C = Circumference   D = Diameter

**2**  Sketches should match the following measurements:
  **a**  Radius of 5 cm      **b**  Diameter of 8 cm
  **c**  Radius of 4.5 cm    **d**  Diameter of 11 cm

★**3**  Top diagram with four circles: Radius is 1.25 cm, diameter is 2.5 cm
   Triangular diagram with three circles: Radius is 7.5 cm, diameter is 15 cm

---

**Pages 171–172: Practise**

**1**  Parts **a** and **d** have rotational symmetry of order 2 and 4, respectively. Parts **b** and **c** must be turned through a whole turn to match the original position.

★**2**  Equilateral triangles have rotational symmetry of order 3.
   All three types of triangles must be turned through a whole turn to match the original position – they have rotational symmetry of order 1.

**3  a**  Order 1 (must be turned through a whole turn to match)
  **b**  Order 4
  **c**  Order 2
  **d**  Order 2
  **e**  Order 2
  **f**  Order 1 (must be turned through a whole turn to match)

**Page 172: Quiz**

1 Area of triangle = 16 cm²
2 Learner's sketches should show the parts accurately.
3 Learners should be able to justify thinking using tracing paper or by referring to the properties of the shapes.

---

### Workbook pages 82–83:

**Can you remember?**

| a 96 cm | b 80 cm | c 128 cm |
|---|---|---|

**Area**

1 a Area 7.5 cm²        b Area 9 cm²        c Area 12 cm²
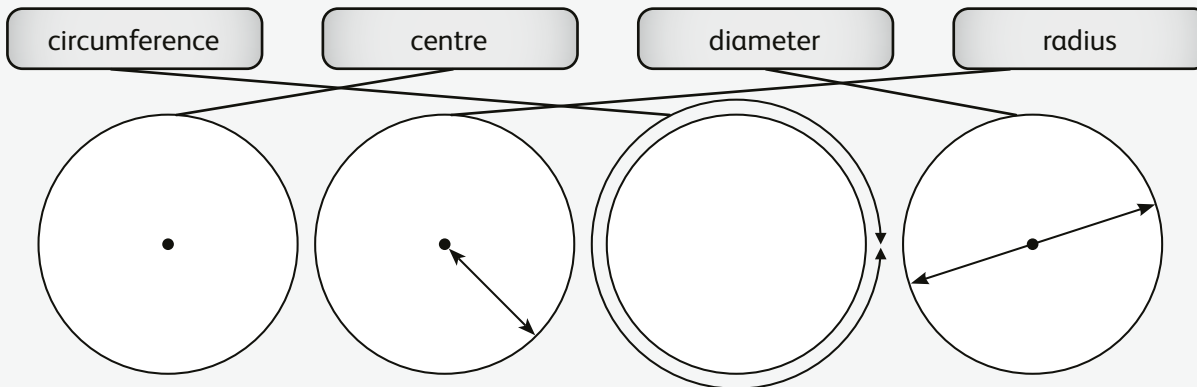  d Area 5 cm²        e Area 13.5 cm²
2 Responses will vary.
3 Responses will vary. Learners should be able to justify their calculations and measurements.
4 Responses will vary. Learners should be able to justify their calculations and measurements.

---

### Workbook page 84:

**Circles**

1

| circumference | centre | diameter | radius |
|---|---|---|---|

2 a Radius 2.5 cm diameter 5 cm
  b Radius 3.5 cm diameter 7 cm
  c Radius 4.5 cm, diameter 9 cm
3 Radius 3.5 cm, diameter 7 cm

---

### Workbook pages 85–86:

**Rotational symmetry**

Responses vary, but learners should be able to justify their responses based on the properties of the shapes and the rotations, perhaps using tracing paper to check.

**Learner's Book**

**Page 174: Practise**

**1**  **a**  2.3 > 2.23          **b**  2.3 = 2.30          **c**  5.45 < 5.5

  **d**  5.4 > 4.98          **e**  5.0 < 5.01

**2**  **a**  1.42 m < 2.24 m < 2.4 m          **b**  $1.57 < $1.70 < $1.75 < $1.80
  **c**  10.08 kg < 10.57 kg < 10.7 kg < 10.75 kg < 10.8 kg
  **d**  0.1 m < 0.11 m < 1.01 m < 1.1 m < 1.11 m

**3**  One box weighs more (1 box = 3.6 kg; 2 tins = 3.24 kg).

---

⭐**Page 174: Try this**

Possible solutions are: 4.65 > 4.55 > 4.1 and 4.65 > 4.51 > 4.5

---

**Page 176: Practise**

**1**  **a**  Learners' different mixed numbers that are equivalent to 1.25 will vary.
     Examples are: $1\frac{1}{4}$, $1\frac{2}{8}$, $1\frac{3}{12}$, $1\frac{4}{16}$.

  **b**  2.75

**2**  Answers will vary (make sure that learners have compared at least five pairs of fractions),
   for example: $\frac{3}{8} < \frac{3}{4}, \frac{4}{5} > \frac{2}{3}$

**3**  Check that learners have ordered each set of quantities from smallest to largest.

  **a**  $\frac{1}{4}, \frac{3}{8}, \frac{3}{4}, \frac{7}{8}$          **b**  $\frac{1}{3}, \frac{2}{3}, \frac{5}{6}, \frac{6}{6}$

  **c**  $\frac{2}{3}, \frac{4}{5}, \frac{9}{10}$          **d**  $0.2, 0.4, \frac{3}{5}, \frac{4}{5}, 0.9$

  **e**  $5\%, \frac{1}{4}, 30\%, \frac{65}{100}, \frac{3}{4}$          **f**  $25\%, \frac{3}{10}, \frac{1}{2}, \frac{54}{100}, 0.75$

**4**  **a**  In their simplest form: $4\frac{1}{2}, \frac{3}{5}, \frac{7}{10}$
  **b**  $\frac{6}{10} = \frac{3}{5}$          $1\frac{9}{12} = 1\frac{3}{4}$          $5\frac{4}{20} = 5\frac{1}{5}$          $2\frac{6}{15} = 2\frac{2}{5}$

---

**Page 178: Practise**

**1**



15%    75%    95%
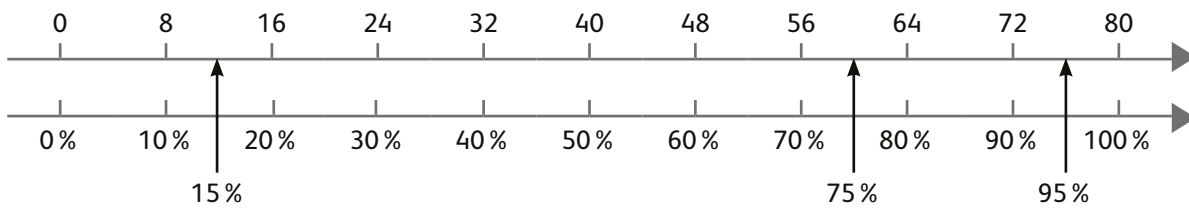
**a** 50% is $40    **b** 75% is $60    **c** 10% is $8

**d** 40% is $32    **e** 15% is $12    **f** 95% is $76

**2 a** 25%    **b** $\frac{3}{4}$

**3 a** 10% of 160 kg    **b** 60% of 70 cm    **c** They are equal.

---

**Page 179: Practise**

**1**

| Item | a | b | c | d | e |
|---|---|---|---|---|---|
| | Scarf | Bag | Gloves | Socks | Cap |
| **Original price** | $20 | $40 | $5 | $3 | $8 |
| **New price** | **$22** | **$44** | **$5.50** | **$3.30** | **$8.80** |

**2** 600 g butter
450 g light brown sugar
3 eggs
3 teaspoons vanilla flavouring
540 g plain flour
420 g chocolate

---

**Page 179: Try this**

The percentage increase in the mass of the kitten is 20%.

---

**Page 182: Practise**

**1** Length 48 cm, Height 36 cm
**2** 1 000 mm × 600 mm × 500 mm
**3 a** 12 people: 6 apples, 4 oranges, 32 strawberries, 2 bananas, 500 ml fruit juice
**b** 3 people: $1\frac{1}{2}$ apples, 1 orange, 8 strawberries, $\frac{1}{2}$ banana, 125 ml fruit juice
**c** 1 apple
**d** 6 oranges

**Page 184: Practise**

**1**

| Yellow tins | 3 | **15** | 18 | **27** | 21 | **24** |
|---|---|---|---|---|---|---|
| Red tins | 2 | 10 | **12** | 18 | **14** | **16** |
| Total number of tins | 5 | **25** | 30 | **45** | **35** | 40 |

**2 a** 21 **b** 9

**3 a** Learners' explanation or diagram to show that Guss is correct, for example:
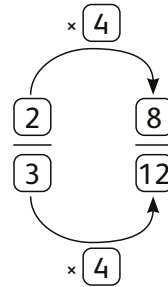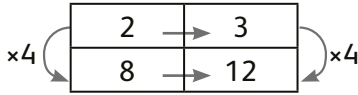


**b** Three or more equivalent ratios for 8 : 12, for example, 4:6, 10:15, 12:18.

**Page 185: Quiz**

**1** From smallest to largest: 3.4, 3.45, 4.35, 4.4, 4.5

**2 a** True

**b** False: $\frac{3}{5} < \frac{2}{3} < \frac{4}{5}$

**c** False: $\frac{8}{10} > \frac{3}{5} > \frac{52}{100} > 0.25$

**d** True

**3 a** 50 % is $36
25 % is $18
10 % is $7.20
15 % is $10.80
45 % is $32.40

**b** 33 cents

**4** Rectangle D is not in proportion to the others.

**5** There are 12 yellow counters.

---

### Workbook page 88:

**Can you remember?**

**a** $\frac{15}{20} = \frac{3}{4}$ **b** 75 %

**c** $\frac{3}{4}$ = 90 minutes, so it will take $\frac{1}{4}$ = 30 minutes to finish.

**Comparing and ordering decimal numbers**

**1** For example:
  **a** $0.12 < 0.2$ **b** $1.2 > 0.5$
  **c** $1.01 < 1.2$ **d** $1.3 > 0.9 > 0.2$

**2 a** 12.3 cm **b** 14.2 cm **c** 13.25 cm
  **d** 12.75 cm **e** 11.7 cm

---

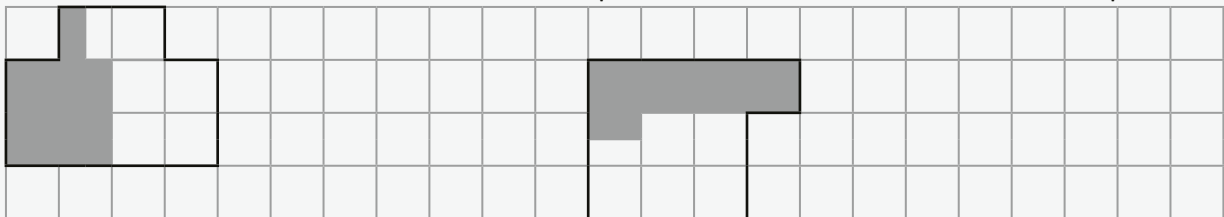✏️ **Workbook page 89:**

Fractions, decimals and percentages

⭐ **1** Answers will vary, but answers should range from 0.41 to 0.74 – in fraction form = $\frac{41}{100}$ to $\frac{74}{100}$ $(\frac{37}{50})$.

**2 a** $75\%, \frac{60}{100}, \frac{3}{6}, 0.4$    **b** $0.6, 0.45, 35\%, 6\%$

**3 a** The following should be circled: $\frac{19}{24}$, $2\frac{4}{5}$ and $\frac{9}{10}$

**b** $\frac{12}{24} = \frac{1}{2}$    $2\frac{9}{15} = 2\frac{3}{5}$    $1\frac{50}{100} = 1\frac{1}{2}$

**c** $\boxed{\frac{12}{24}} < 0.7$    $\boxed{2\frac{4}{5}} = 2.8$

---

✏️ **Workbook pages 89–90:**

Calculating with percentages

**1** Check that learners have drawn two different shapes and shaded 45 % each time, for example:



**2** Learners' own calculations, for example, spin a 5 and choose to find 75 % of $1 000 = $750.

**3** Sports: 174        Art: 92        Music: 138
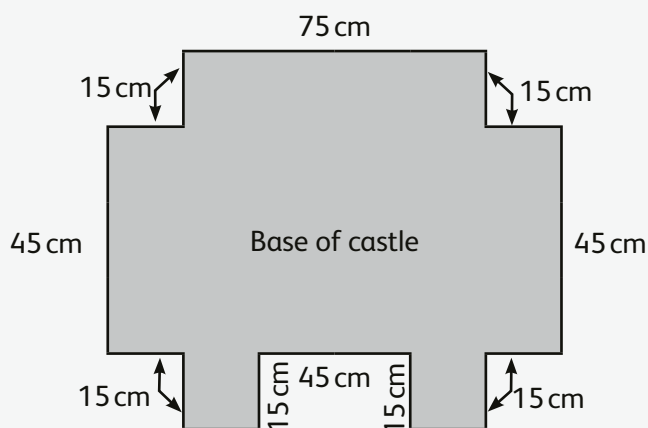
---

✏️ **Workbook pages 90–91:**

More about direct proportion

**1**

| Shape | Base of shape | Top of shape | Sloped sides of shape |
|-------|---------------|--------------|------------------------|
| A | **19.5 cm** | 12 cm | **15 cm** |
| B | 22 cm | **14 cm** | **18 cm** |
| C | **48 cm** | **30 cm** | 24 cm |
| D | **35 cm** | **20 cm** | 22.5 cm |

**Workbook pages 90–91:** *(continued)*

**2 a** Learners must measure accurately to find lengths of sides as 1 cm, 3 cm or 5 cm.

**b**

75 cm

15 cm ↗ ↘ 15 cm

45 cm    Base of castle    45 cm

15 cm ↕    15 cm ↕ 45 cm 15 cm    ↙ 15 cm

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**Workbook page 91:**

**Ratio problems**

**1** Check that learners have drawn three shapes with two colours of shaded triangles that are equivalent in ratio to 3 : 2, for example:

**2 a**

5 : 4

×6  30 : 24  ×6

÷2  15 : 12  ÷2

×8  120 : 96  ×8

**b**

8 : 3

×4  ×4

32 : 12

÷2  16 : 6  ÷2

×7  112 : 42  ×7
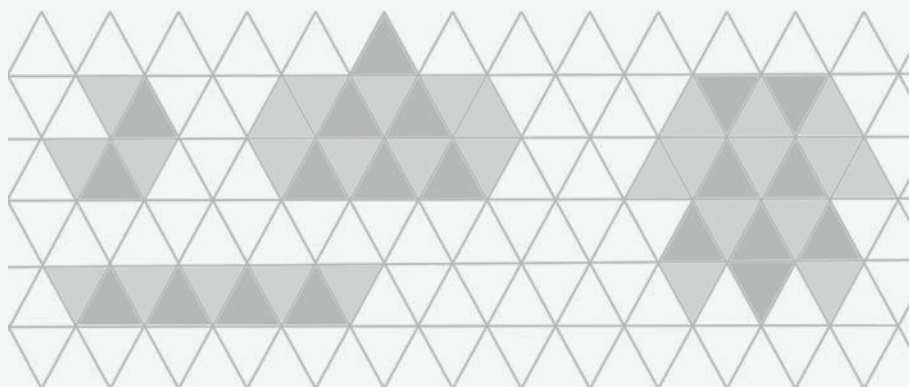
**3 a** 21      **b** 56

# Unit 18 Statistical methods – Answers

**Learner's Book**

**Pages 186–187: Practise**

1  **a** and **b** Learners' responses will vary. The pie charts must match learners' results.
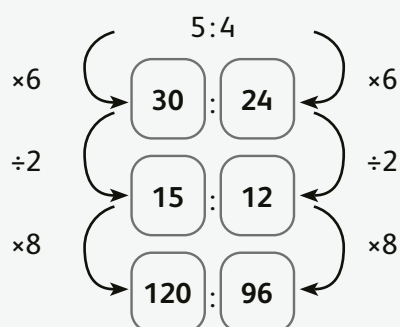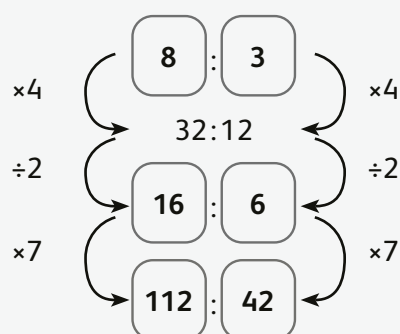
   **c** to **e** Check that learners have interpreted their results by thinking about the original question. They should have compared their results with others in the class to see if their findings were the same. Learners also need to think about how to improve the investigation. Are there things they could have done better?

2  Pie chart B matches the waffle diagram.

3  The pie chart shows slices that show that approximately 25 % is paper, 60 % is plastic, 10 % is garden waste and the remaining slice is glass.

   Over half of the waste recycled is <u>plastic</u>.

   A quarter of the waste is <u>paper</u>.

   Twice as much <u>garden waste</u> is recycled as <u>glass</u>.

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**Pages 189–190: Practise**

1  **a** The mode is 35.

   **b** The median is 35.

   **c** The mean is 34.9.

   **d** The range is 39 − 30 = 9.

2  Results will vary depending on the class investigation.

3  **a** The average (mean) height is 178.8 cm.

   **b** The mean mass is 84.9 kg.

   **c** The basketball players are the three tallest athletes in the group, whereas the heights of the weightlifters vary a great deal. For the heights, the mean is 178.8 and the median is 185.5. All three basketball players have heights that exceed the mean and the median. One weightlifter's height is close to both mean and median, at 186 cm, and the other's height is far below both, at 140 cm. For the weights, the mean is 84.9 kg, the median is 88.5 kg, and the range is 130 kg. The masses of the basketball players also greatly exceed both the mean and median, whereas the mass of one weightlifter is far greater, and of the other is far less.

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**Page 191: Quiz**

1  25 %, 10 %, 65 % approximately

2  **a** Mean distance jumped: 2.866 m

   **b** Median of the jumps is now 2.9 m

---

**Workbook pages 93–94:**

**Can you remember?**

| | |
|---|---|
| Shop A sold three times as many bicycles as Shop C | True |
| Shop B sold more than twice as many than Shop C | True |
| Shop A sold over 50 % of the total bicycles sold. | False (Shop A sold 24; the two other shops sold 26 between them.) |

✎ **Workbook pages 93–94 (continued)**

**Proportion of the whole**

**1 a** Learners' pie charts should match these frequency tables.

**Town Car Wash**

| Engine type | Frequency | Pie chart shading out of 20 segments |
|---|---|---|
| Diesel | 9 | $\frac{9}{20}$ = 9 segments shaded |
| Electric | 3 | $\frac{3}{20}$ = 3 segments shaded |
| Petrol | 8 | $\frac{8}{20}$ = 8 segments shaded = $\frac{2}{5}$ |

**City Car Wash**

| Engine type | Frequency | Pie chart shading out of 16 segments |
|---|---|---|
| Diesel | 5 | $\frac{5}{16}$ = 5 segments shaded |
| Electric | 3 | $\frac{3}{16}$ = 3 segments shaded |
| Petrol | 8 | $\frac{8}{16}$ = 8 segments shaded = $\frac{1}{2}$ |

**b** City Car Wash had the greater proportion of petrol cars.
$\frac{8}{16}$ to $\frac{8}{20}$ = $\frac{1}{2}$ to $\frac{2}{5}$ = 5 : 4

**2 a** and **b** Results will vary, depending on learners' probability experiments, but learners' pie charts should match individual results.

✎ **Workbook pages 94–95:**

**Mode, mean, median, range**

**1 a**

| Jin's class | |
|---|---|
| **Transport** | **Tally** |
| Walk | ll |
| Bicycle | lll |
| Bus | lll |
| Car | ll |
| **Total** | **10** |

| Elok's class | |
|---|---|
| **Transport** | **Tally** |
| Walk | ll |
| Bicycle | 0 |
| Bus | ⊞ l |
| Car | ll |
| **Total** | **10** |

**b** Mode for Jin's class = bicycle and bus. Mode for Elok's class = bus.

**2** Mean for Jin's class = 3.33 km. Mean for Elok's class = 4.31 km

**3** Jin's class data set: The median is 2.2 km (difference between 2.3 and 2.1).
The range is 7.7 (8.9 − 1.2).
Elok's class data set: The median is 2.45 km (difference between 2.6 and 2.3).
The range is 14.8 (15.3 − 0.5).

★ **4** Learners' answers will vary.

**Units 13–18**

Pages 192–193

**1** 64, 125

**2 a** 3.67 + 2.3 = 5.97

   **b** 7.6 – 2.45 = 5.15

   **c** 10.25 + 10.8 = 21.05

   **d** 21.32 – 16.4 = 4.92

**3 a** (20, 15) and (–20, –15)

   **b**, **c** and **d** Learners' own answers

**4 a** $\frac{3}{5} \times 3 = \frac{9}{5}$

   **b** $\frac{3}{5} \div 3 = \frac{1}{5}$

   **c** $\frac{7}{8} \times 4 = \frac{28}{8} = 3\frac{4}{8} = 3\frac{1}{2}$

   **d** $\frac{7}{8} \div 4 = \frac{7}{28} = \frac{1}{4}$

**5 a** Largest product: 743 × 65 = 48 295       Smallest product: 467 × 35 = 16 345

   **b** Division with no remainder, for example: 456 ÷ 3 = 152 and 537 ÷ 4 = 134 r 1

**6** Area of triangle = 4 × 9 = 36 divided by 2 = 18 cm²

**7 a** 70

   **b** $2

   **c** $17.60

**8** 15 rugby balls

**9** Range = 15

   Median = 11.5

   Mean = 12

   Mode = 5 and 20 equal numbers

**ESL Worksheet 1:** Number

**1**

| | | Whole number | Square number | Decimal number | Cube number | Positive number | Negative number |
|---|---|---|---|---|---|---|---|
| **a** | 24 | ✓ | | | | ✓ | |
| **b** | 0.31 | | | ✓ | | ✓ | |
| **c** | 9 | ✓ | ✓ | | | ✓ | |
| **d** | 6 | ✓ | ✓ | | | ✓ | |
| **e** | −27 | ✓ | | | ✓ | | ✓ |
| **f** | −0.29 | | | ✓ | | | ✓ |

**2 a** Taking a number to the nearest whole number, or nearest 10, 100 or 1 000     <u>Round</u>
   **b** The name for the values in a sequence     <u>Terms</u>
   **c** The value a digit is given in a number, for example, the '3' in 30 equals 3 tens     <u>Place value</u>
   **d** Putting numbers in a sequence from smallest to largest, or largest to smallest     <u>Order</u>
   **e** The single digit number after adding the digits in a number     <u>Digital root</u>

**3 a** 15 is a (<u>multiple</u> / factor / term) of 5.
   **b** 3 and 4 are common (<u>multiples</u> / factors / fractions) of 12 and 24.
   **c** 1, 4 and 5 are (<u>factors</u> / multiples / common denominators) of 20.
   **d** (Compound / <u>consecutive</u> / square) numbers follow each other.
   **e** The (<u>position-to-term</u> / term-to-term / term-to position) rule helps you to work out what value is in a sequence if you know its position in the sequence.

**4** Learners' answers will vary when they write their own true or false statements about numbers. Check that learners interact by answering true of false and explaining why they say so.

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**ESL Worksheet 2:** 2D and 3D shapes

**1 a** A triangle that has two angles of the same size     <u>Isosceles</u>
   **b** A triangle that has angles of 60 degrees     <u>Equilateral</u>
   **c** A triangle that has three sides of different lengths     <u>Scalene</u>

**2 a** A parallelogram has four right angles.     <u>F (It has no right angles.)</u>
   **b** A trapezium has one set of parallel sides.     <u>T</u>
   **c** A quadrilateral has sides that are all the same length.     <u>F (The lengths can be different.)</u>
   **d** A pyramid has a base and triangular faces.     <u>T</u>
   **e** The base of a triangular prism is a square.     <u>F (It is a rectangle.)</u>
   **f** An equilateral triangle has rotational symmetry.     <u>T</u>

3  **a**  Check that learners have drawn and named a parallelogram.
   **b**  Check that learners have drawn and named a rhombus.
   **c**  Check that learners have drawn and named an irregular quadrilateral.
   **d**  Check that learners have drawn and named a rectangle.

---

**ESL Worksheet 3:** Calculation

1  **a**  276 – 125 = 151
   **b**  276 ÷ 16 = 17.25
   **c**  276 × 4 = 1104
   **d**  500 – 276 = 224
   **e**  276 × 3 = 828

2  $\frac{5}{7} + \frac{3}{7} + \frac{6}{7} = \frac{14}{7}$ = The children cycle 2 kilometres altogether.

3  1.5 metres = 1 500 centimetres.
   1 500 ÷ 500 = 100 bricks used for the length of the wall
   100 × 5 rows to make the 500 bricks used
   So, 12 cm (height of brick) × 5 rows = 60 cm.
   The height of the wall is 60 cm.

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**ESL Worksheet 4: Statistical methods**

1  **a**  Check that learners can explain the terms to their partner, for example:
   **Proportion** – comparing a part to a whole, for example, there are 10 counters in a bag, 7 are red and 3 are blue; he proportion of red counters is $\frac{7}{10}$ or 70 %

   **Percentage** – a number that is expressed as a fraction of 100, or per hundred, for example, 70 % is equivalent to $\frac{70}{100}$

   **Ratio** – comparing part to part, for example, for every three oranges, there are two apples, so the ratio of oranges to apples is 3 : 2 (three oranges to two apples)
   **b**  First add all the objects together: 20 + 5 + 10 + 5 + 60 = 100.
   So $\frac{20}{100}$ = 20 %.
   **c**  The ratio of apples to cupcakes is 5 : 10, or simplified, it is 1 : 2.
   **d**  The proportion of bags of marbles to the total number of objects bought is $\frac{5}{100}$.
   **e**  The bags of marbles are 5 % of the total.

2  Check that learners think up questions and that their partner can answer them, proving that they make sense.

**3** Learners' pie charts should look like this to show the percentages.



**Key:**
- 20 pencils
- 5 bags of marbles
- 10 cupcakes
- 5 apples
- 60 badges

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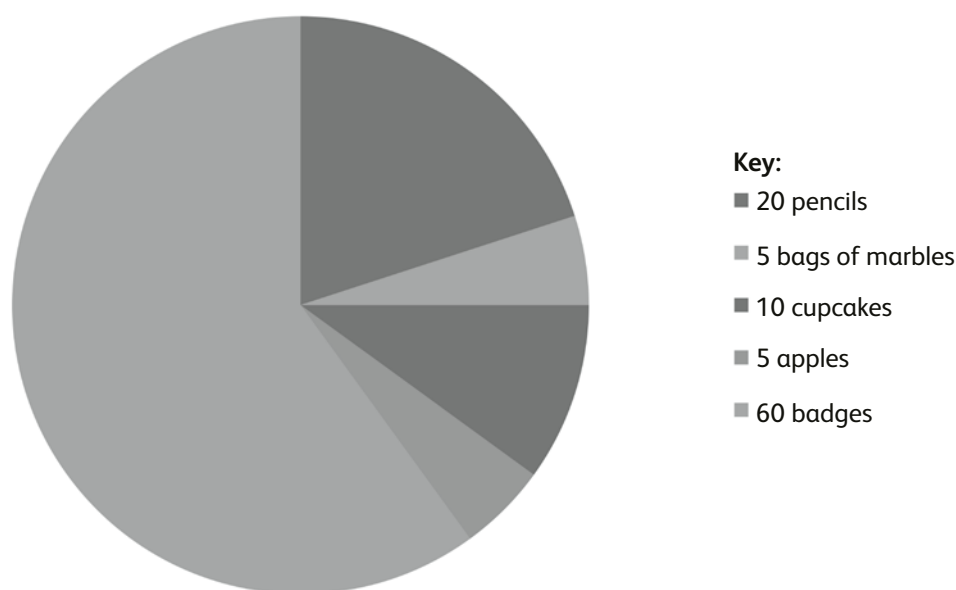
**ESL Worksheet 5:** Coordinate grids

**1 a** Learners should be able to write the instructions using the words translate or reflect to move the house that David drew incorrectly on the grid. Make sure learners also use the words *first, next, then* and *finally.* Then they should finish the drawing on the grid.

**b** Observe learners as they draw a door and a window on the house and give the coordinate points for each.

**2** Learners should draw their own picture on an open part of the grid, and then ask their partner to translate or reflect it to another set of coordinates.

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**ESL Worksheet 6:** Probability

**1** Check that learners are able work out the probabilities after looking at the 0 to 9 spinner.

**a** Probability of spinning an even number: 5 out of 10 chance, $\frac{5}{10}$, 50 % (0, 2, 4, 6, 8)

**b** Probability of spinning an odd number: 5 out of 10 chance, $\frac{50}{100}$, 50 % (1, 3, 5, 7, 9)

**c** Probability of spinning a multiple of 3: 3 out of 10 chance, $\frac{3}{10}$, 30 % (3, 6, 9)

**d** Probability of spinning a number less than 10: 10 out of 10 chance, $\frac{10}{10}$, 100 % (all 10 numbers)

**e** Probability of spinning a multiple of 4: 2 out of 10 chance, $\frac{2}{10}$, 20 % (4, 8)

**f** Probability of spinning a square number: 3 out of 10 chance, $\frac{3}{10}$, 30 % (0, 4, 9)

**2 a** to **f** Observe as learners draw the different spinners and give examples of events.

**3** Partners should check and discuss each other's spinners. Are they correct or can they be improved?

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**ESL Worksheet 7:** Using suffixes to understand mathematical words

**1 a** measurement For example, *measure* is a verb, which means to see how long something is.
*Measurement* is the noun, or what we get after measuring.

**b** movement For example, *move* is a verb.
*Movement* is a noun.

**c** improvement For example, *improve* is a verb, meaning to make something better.
*Improvement* is the noun, or what we did to make something better

**d** statement For example, *state* is a verb, which means to say.
A *statement* is a noun, which means something we have said – verbal or written.

**2 a** probable – probability For example, the clouds show me that it is *probable* that it will rain.
The sun is shining, so the *probability* of rain is 0 per cent.

**b** divisible – divisibility For example, 10 is *divisible* by 5 to make 2.
We can use tests of *divisibility* to check whether one number can be divided by another number.

**c** possible – possibility For example, it is *possible* that it will snow, as the temperature is nearing zero degrees.
The *possibility* of a lion reading a book is zero.

**3 a** mathematical (from mathematics) For example, she is good at *mathematics*, so we can say that she has a *mathematical* mind.

**b** digital (from digit) For example, the watch has *digits* on it, so we say it is *digital*.

**4** Encourage learners to use dictionaries to say how the words have changed.
**a** decision (from the verb *decide*) For example, a decision is what we have decided.
**b** division (from the verb *divide*) For example, we must divide in a division calculation.
**c** prediction (from the verb *predict*) For example, prediction is the name for what we have predicted.
**d** multiplication (from the verb *multiply*) For example, we need to multiply a multiplication calculation.
**e** addition (from the verb *add*) For example, we need to add an addition calculation.
**f** translation (from the verb *translate*) For example, a translation is what we get after we have translated from one language to another.