

Answers

Pages 8-9 — Section One

- 1) 7 899 462
- 2) a) 1000 (1 thousand)
b) 4 000 000 (4 million)
c) four million, twenty one thousand, eight hundred and ninety six
- 3) 6 892 is larger than 6 425. So Ariel's rock weighs more.
- 4) 2 874 561, 2 999 890, 3 846 546, 3 848 782
Remember — ascending means go from smallest to largest. Descending is from largest to smallest.
- 5) a) 5
b) -15
c) -10
Drawing a number line makes answering these questions easier.
- 6) a) The difference between -2°C and -15°C is 13°C .
b) The difference between 6°C and -15°C is $6 + 15 = 21^{\circ}\text{C}$.
- 7) $8 + 2 = 10^{\circ}\text{C}$
- 8) $-6 + 62 = 56$ points
- 9) $26 - 31 = -5^{\circ}\text{C}$
- 10) a) 840 000
b) 4 000 000
c) 64 000
- 11) $60\,000 + 900 = 60\,900$
- 12) a) 3 kg
b) 2.7 kg
c) 2.69 kg
- 13) 8.90 seconds
- 14) $32.9 - 24.2 = 8.7$

Pages 22-23 — Section Two

- 1)
$$\begin{array}{r} 1\ 3\ 2\ 1 \\ \times\ 6 \\ \hline 7\ 9\ 2\ 6 \\ \hline \end{array}$$
- 2) a)
$$\begin{array}{r} 7\ 5\ 9 \\ \times\ 3\ 8 \\ \hline 6\ 0\ 7\ 2 \\ 2\ 2\ 7\ 7\ 0 \\ \hline 2\ 8\ 8\ 4\ 2 \end{array}$$

b)
$$\begin{array}{r} 5\ 4\ 9\ 5 \\ \times\ 2\ 6 \\ \hline 3\ 2\ 9\ 7\ 0 \\ 1\ 0\ 9\ 1\ 0\ 0 \\ \hline 1\ 4\ 2\ 8\ 7\ 0 \end{array}$$
- 3)
$$\begin{array}{r} 1\ 2\ 8\ 2 \\ \times\ 1\ 4 \\ \hline 5\ 1\ 3\ 2\ 8 \\ 1\ 2\ 8\ 2\ 0 \\ \hline 1\ 7\ 9\ 4\ 8 \end{array}$$
- 4)
$$\begin{array}{r} \pounds\ 6\ 3\ 7 \\ 7\ \overline{)4\ 4\ 2\ 5\ 4\ 9} \end{array}$$

You could use long division here, but because you're dividing by a small number short division is easier.
- 5)
$$\begin{array}{r} 3\ 3\ 4 \\ 23\ \overline{)7\ 6\ 8\ 2} \\ \underline{-6\ 9} \\ 7\ 8 \\ \underline{-6\ 9} \\ 9\ 2 \\ \underline{-9\ 2} \\ 0 \end{array}$$

She has 22 pieces measuring 15 cm.
- 6) a)
$$\begin{array}{r} 2\ 2\ \text{r}12 \\ 15\ \overline{)3\ 4\ 2} \\ \underline{-3\ 0} \\ 4\ 2 \\ \underline{-3\ 0} \\ 1\ 2 \end{array}$$

b) 12 cm
- 7)
$$\begin{array}{r} 3\ 5\ \text{r}9 \\ 18\ \overline{)6\ 3\ 9} \\ \underline{-5\ 4} \\ 9\ 9 \\ \underline{-9\ 0} \\ 9 \end{array}$$

 $9 \div 18 = 0.5$ or $\frac{1}{2}$.
So each piece weighs 35.5 g or $35\frac{1}{2}$ g.

Answers

Pages 38-39 — Section Three

- 8)
$$\begin{array}{r} 1\ 3\ 2 \\ \times\ 2\ 6\ 4 \\ \hline 1\ 3\ 2\ 0 \\ 7\ 9\ 2\ 0 \\ 7\ 9\ 2\ 0 \\ \hline 1\ 5\ 8\ 4 \end{array}$$

132 is 100 times bigger than 1.32, so divide by 100. $1584 \text{ miles} \div 100 = 15.84 \text{ miles}$
- 9)
$$\begin{array}{r} 6\ 3\ 6 \\ 4\ \overline{)2\ 2\ 5\ 4\ 2\ 4} \end{array}$$

2544 is 100 times bigger than 25.44, so divide by 100. $\pounds 636 \div 100 = \pounds 6.36$
- 10) $(2 + 6) \times 4 = 32$
- 11) $3 \times (17 - 11) + 2 = 20$
- 12) a) Drinks: $2 \times \pounds 1.95$
$$\begin{array}{r} 1\ 9\ 5 \\ \times\ 2 \\ \hline 3\ 9\ 0 \\ \hline \end{array} = 390\text{p} = \pounds 3.90$$

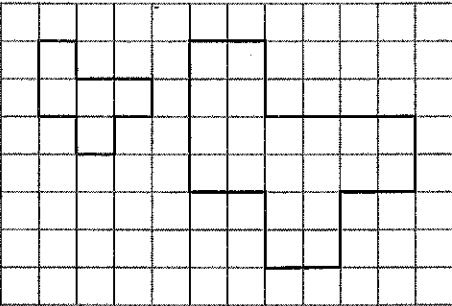
 $\pounds 3.90 + \pounds 1.12 = \pounds 5.02$
No, Jago can't buy two drinks and a bag of sweets with a $\pounds 5$ note.
b) Popcorn: $5 \times \pounds 2.00 = \pounds 10.00$
Drinks: $4 \times \pounds 1.95$
$$\begin{array}{r} 1\ 9\ 5 \\ \times\ 4 \\ \hline 7\ 8\ 0 \\ \hline \end{array} = 780\text{p} = \pounds 7.80$$

Sweets: $6 \times \pounds 1.12$
$$\begin{array}{r} 1\ 1\ 2 \\ \times\ 6 \\ \hline 6\ 7\ 2 \\ \hline \end{array} = 672\text{p} = \pounds 6.72$$

He spends $\pounds 10.00 + \pounds 7.80 + \pounds 6.72 = \pounds 24.52$, and gets $\pounds 25.00 - \pounds 24.52 = 48\text{p}$ change.
- 13) $6.7 \times 9 \approx 7 \times 9 = 63$ minutes
- 14) a) E.g. $98.27 \div 20 \approx 100 \div 20 = 5$
b) E.g. $55.78 \div 8 \approx 56 \div 8 = 7$
c) E.g. $10.48 \div 2.6 \approx 10 \times 3 = 30$
- 15) 70.394 is between 64 and 72.
 $64 \div 8 = 8$ and $72 \div 8 = 9$, so Ché is correct.
- 16) 73
- 1) $\frac{3}{4} = \frac{9}{12}$
- 2) a) $\frac{6}{8} = \frac{3}{4}$
b) $\frac{18}{45} = \frac{2}{5}$
- 3) 18 is a common multiple of all the denominators:
 $\frac{2}{3} = \frac{12}{18}$, $\frac{1}{2} = \frac{9}{18}$, $\frac{7}{9} = \frac{14}{18}$, $\frac{5}{6} = \frac{15}{18}$, $\frac{11}{18} = \frac{11}{18}$
In order from smallest to largest:
 $\frac{9}{18}$, $\frac{11}{18}$, $\frac{12}{18}$, $\frac{14}{18}$, $\frac{15}{18}$
So the order is: $\frac{1}{2}$, $\frac{11}{18}$, $\frac{2}{3}$, $\frac{7}{9}$, $\frac{5}{6}$.
- 4) a) $\frac{1}{5} \times \frac{1}{7} = \frac{1}{5 \times 7} = \frac{1}{35}$
b) $\frac{2}{9} \times \frac{1}{4} = \frac{2 \times 1}{9 \times 4} = \frac{2}{36} = \frac{1}{18}$
c) $\frac{5}{12} \times \frac{3}{10} = \frac{5 \times 3}{12 \times 10} = \frac{15}{120} = \frac{5}{40} = \frac{1}{8}$
- 5) 9 and 12 have 36 as a common multiple.
Saleem has painted: $\frac{2}{9} = \frac{8}{36}$
Korina has painted: $\frac{5}{12} = \frac{15}{36}$
Together they have painted: $\frac{8}{36} + \frac{15}{36} = \frac{23}{36}$
- 6) 4, 5 and 20 have 20 as a common multiple.
 $\frac{7}{4} = \frac{35}{20}$
 $\frac{1}{5} = \frac{4}{20}$
 $\frac{1}{5} = \frac{4}{20} + \frac{2}{20} = \frac{5+2}{20} = \frac{7}{20}$
 $\frac{35}{20} - \frac{28}{20} + \frac{9}{20} = \frac{35-28+9}{20} = \frac{16}{20} = \frac{4}{5}$
- 7) $\frac{3}{4} \div 6 = \frac{3}{4 \times 6} = \frac{3}{24} = \frac{1}{8}$
- 8) $\frac{10}{12} \div 5 = \frac{10}{12 \times 5} = \frac{10}{60} = \frac{1}{6}$
- 9) a) $\frac{46}{100} = 0.46$
b) $\frac{11}{25} = \frac{44}{100} = 0.44$
c) $\frac{155}{200} = \frac{775}{1000} = 0.775$
- 10) a) $0.6 = \frac{6}{10} = \frac{3}{5}$
b) $0.24 = \frac{24}{100} = \frac{6}{25}$
c) $0.085 = \frac{85}{1000} = \frac{17}{200}$
- 11) $0.37 = 37\%$
- 12) a) $63\% = 0.63$
b) $31\% = \frac{31}{100}$
c) $12.2\% = \frac{122}{1000} = \frac{61}{500}$
- 13) Nora got: $\frac{14}{20} = \frac{70}{100} = 70\%$
Stacey got: 65%
So Nora got the higher score.
You can also work this out by converting Stacey's score to a fraction over 20.

Answers

Pages 54-55 — Section Four

- 1) a) 8 eggs is twice as many as in the recipe, so Vikram needs $100 \text{ g} \times 2 = \mathbf{200 \text{ g of flour}}$ (twice as much flour as in the recipe).
 b) 300 g is three times as much flour as in the recipe. So Louisa needs $4 \text{ eggs} \times 3 = \mathbf{12 \text{ eggs}}$ (three times as many as in the recipe).
- 2) a) There are $2 + 3 = 5$ parts altogether. $25 \div 5 = 5$, so one part is 5 marbles. Bridget has 2 parts = $5 \times 2 = \mathbf{10 \text{ marbles}}$
 b) Polly has 3 parts = $5 \times 3 = \mathbf{15 \text{ marbles}}$
- 3) a) 10% of $240 = 240 \div 10 = 24$
 50% of $240 = 5 \times 24 = 120$
 5% of $240 = 24 \div 2 = 12$
 55% of $240 = 120 + 12 = \mathbf{132 \text{ pages}}$
 b) $100\% - 55\% = \mathbf{45\%}$
- 4) Jenni has saved $\frac{30}{50} = \frac{60}{100} = 60\%$
 Nasreen has saved $\frac{130}{200} = \frac{65}{100} = 65\%$
Nasreen has saved the highest percentage.
- 5) 
- 6) Scale factor = enlarged length \div original length.
 $= 24 \div 4 = \mathbf{6}$
- 7) Area = Base \times Height
 $= 7 \text{ mm} \times 6 \text{ mm} = \mathbf{42 \text{ mm}^2}$
- 8) **Price = £10 + £2 \times Number of hours**
- 9) H = Hector's age.
 Sati's age = $20 = (H \div 2) + 7$
 $20 - 7 = (H \div 2)$
 $13 = H \div 2$
 $26 = H$
 Hector is **26 years old.**
- 10) a) Maud has $y = 11$
 Hamish has $3y - 5 = 3 \times 11 - 5 = \mathbf{28 \text{ pencils}}$
 b) Hamish has $3y - 5 = 16 \text{ pencils}$
 $3y = 16 + 5$
 $3y = 21$
 $y = 7$
 Maud has **7 pencils.**
 y is the number of pencils Maud has, so you need to get y on its own. To do this, add 5 to both sides, then divide both sides by 7.

- 11) $7 + A + 4 + 6 + B + 2 = 25$
 $A + B + 19 = 25$
 $A + B = 6$
A = 1, B = 5
A = 2, B = 4
A = 4, B = 2
A = 5, B = 1
 You need to write all of these pairs.
- 12) a) $10 - 3 = 7$
 So the rule is:
Add on 7 to get from one term to the next.
 b) $24 + 7 = 31, 31 + 7 = 38, 38 + 7 = 45$
 The next three terms are: **31, 38, 45.**

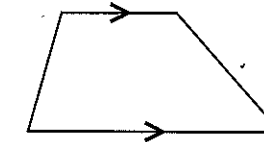
Answers

Pages 66-67 — Section Five

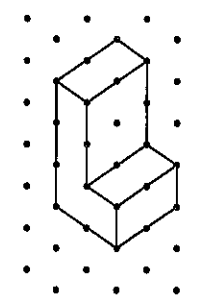
- 1) $562 \times 1000 = \mathbf{562 \text{ 000 g}}$
- 2) $6 \times 12 = 72$
 $72 + 3 = \mathbf{75 \text{ inches}}$
- 3) a) $3 \times 7 = \mathbf{21 \text{ days}}$
 $21 \times 24 = \mathbf{504 \text{ hours}}$
 b) $504 \times 60 = \mathbf{30240 \text{ minutes}}$
- 4) a) $55 \div 5 = 11$
 $11 \times 8 = \mathbf{88 \text{ km}}$
 b) $48 \div 8 = 6$
 $6 \times 5 = \mathbf{30 \text{ miles}}$
- 5) a) $2 + 4 + 2 + 2 + 4 + 8 + 4 + 2 = \mathbf{28 \text{ m}}$
 b) $2 \times 4 = 8 \text{ m}^2$
 $4 \times 8 = 32 \text{ m}^2$
 $8 + 32 = \mathbf{40 \text{ m}^2}$
- 6) Area of 1st rectangle: $2 \times 9 = 18 \text{ m}^2$
 Area of 2nd rectangle: $6 \times 3 = 18 \text{ m}^2$
 Perimeter of 1st rectangle: $2 + 9 + 2 + 9 = 22 \text{ m}$
 Perimeter of 2nd rectangle: $6 + 3 + 6 + 3 = 18 \text{ m}$
 So Kai is **not correct**. The areas of the rugs are the same, but they have different perimeters.
- 7) $\frac{1}{2} \times 8 \times 12 = \mathbf{48 \text{ cm}^2}$
- 8) $\frac{1}{2} \times 3 \times 2 = 3 \text{ cm}^2$
 $3 \times 4 = \mathbf{12 \text{ cm}^2}$
 Find the area of one triangle, then multiply it by 4.
- 9) $5 \times \text{base} = 50$
 $\text{base} = 50 \div 5 = \mathbf{10 \text{ m}}$
- 10) Area of bottom rectangle: $3 \times 10 = 30 \text{ m}^2$
 Area of square: $4 \times 4 = 16 \text{ m}^2$
 Area of top parallelogram:
 $4 \times (12 - 4 - 3) = 4 \times 5 = 20 \text{ m}^2$
 Divide the last shape into a rectangle and triangle.
 Area of rectangle:
 $4 \times (10 - 4) = 4 \times 6 = 24 \text{ m}^2$
 Area of triangle: $\frac{1}{2} \times (10 - 4) \times (12 - 4 - 3)$
 $= \frac{1}{2} \times 6 \times 5 = 15 \text{ m}^2$
 Total area: $30 + 16 + 20 + 24 + 15 = \mathbf{105 \text{ m}^2}$
 When asked to find the area of a complicated shape, just split it up into simpler shapes and find their areas. Then add them all together.
- 11) $30 \times 22 \times 2 = \mathbf{1320 \text{ m}^3}$
- 12) Volume of left-hand cuboid:
 $5 \times 6 \times 12 = 360 \text{ cm}^3$
 Volume of middle cuboid:
 $5 \times (18 - 6 - 6) \times (12 - 4) = 8 \times 6 \times 5$
 $= 240 \text{ cm}^3$
 Volume of right-hand cuboid:
 $5 \times 6 \times 4 = 120 \text{ cm}^3$
 Total volume: $360 + 240 + 120 = \mathbf{720 \text{ cm}^3}$

Pages 84-85 — Section Six

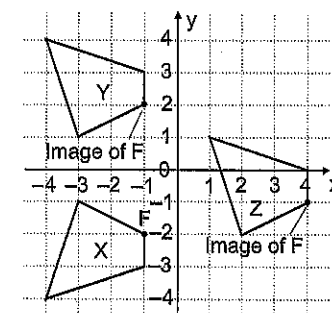
- 1) $36^\circ + 57^\circ + 134^\circ + 108^\circ + v = 360^\circ$
 $335^\circ + v = 360^\circ$ so $v = 360^\circ - 335^\circ = \mathbf{25^\circ}$
- 2) $a = 180^\circ - 140^\circ = \mathbf{40^\circ}$ (angles on a straight line)
 $b = \mathbf{110^\circ}$ (vertically opposite angles)
- 3) The side lengths should be correct to within 1 mm. The angle should be correct to within 1° .



- 4) $24 = 2 \times r$
 $24 \div 2 = \mathbf{12 \text{ cm}}$
- 5) $50^\circ + 50^\circ + \text{missing angle} = 180^\circ$
 $\text{missing angle} = 180^\circ - 100^\circ = \mathbf{80^\circ}$
- 6) a) Exterior angle: $360^\circ \div 10 = \mathbf{36^\circ}$
 b) Interior angle: $180^\circ - 36^\circ = \mathbf{144^\circ}$



- 7) Point C is in line horizontally with point B — its y-coordinate is also -3. A is one unit to the left of B, so C is one unit to the left of A. C's x-coordinate is 1. Point C is **(1, -3)**.
- 8) Vertex A is 2 units to the right of the y-axis. The image of vertex A is 2 units to the left of the y-axis. Shape J was reflected in the **y-axis**.
- 9) a) and c)



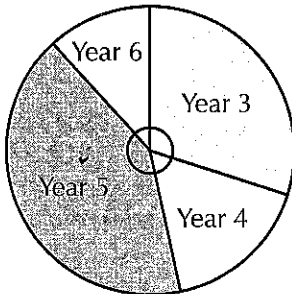
- 10) b) **(-1, 2)**
 d) **(4, -1)**
- 11) a) and c)
- 12) $(a - 4, b + 2) = (-3 - 4, -8 + 2) = \mathbf{(-7, -6)}$

Answers

Pages 92-93 — Section Seven

- 1) a) **18th April**
 b) The biggest increase is shown by the steepest line, so this is **Week 3**.
 c) The horizontal section of line for Week 2 shows the number of coins didn't change that week, so the museum was closed in **Week 2**.
 d) $38 - 32 = 6$ **coins**
- 2) a) **3 metres**
 b) **28 feet**
 c) From part a), 10 feet = 3 m,
 so 60 feet = $6 \times 3 = 18$ m
 $3 \times 5 = 15$ m which isn't enough.
 $4 \times 5 = 20$ m, which is enough.
 So she should buy **4 rolls**.
- 3) a) Toast is $\frac{1}{4}$ of the pie chart.
 If $\frac{1}{4}$ of the class is 6 children, the number in the whole class must be $4 \times 6 = 24$
 b) Measuring with a protractor, the angle for pancakes = 15° .
 As a fraction of the whole pie chart, this is

$$\frac{15}{360} = \frac{5}{120} = \frac{1}{24}$$
 So $\frac{1}{24}$ of the 24 children had pancakes.
 $24 \div 24 = 1$ **child had pancakes**.
 The sectors for cereal and pancakes make up half of the pie chart. This represents half of the children, which is $24 \div 2 = 12$ children.
 1 had pancakes, so $12 - 1 = 11$ had cereal.
 So $11 - 1 = 10$ **more children** had cereal than pancakes.
- 4) a) $36 + 20 + 50 + 14 = 120$
 b) $360 \div 120 = 3^\circ$
 c) Angles: Year 3 = $36 \times 3 = 108^\circ$
 Year 4 = $20 \times 3 = 60^\circ$
 Year 5 = $50 \times 3 = 150^\circ$
 Year 6 = $14 \times 3 = 42^\circ$



- 5) Total = $8 + 6 + 3 + 2 + 9 + 8 = 36$
 Mean = $36 \div 6 = 6$
- 6) Total number of gold stars = $5 \times 11 = 55$
 Chanelle, Wayne, Kyle and Jordan received
 $8 + 12 + 7 + 18 = 45$ gold stars,
 so Britney received $55 - 45 = 10$ **gold stars**.