

LETS GET READY – FOUNDATION PLUS - SOLUTIONS

1st May

- (a) How many minutes are there in $5\frac{1}{2}$ hours?
 (b) How many hours are there in 720 minutes?
 (c) Paul starts watching a film at 11.25am. The film lasts 1hr 45 minutes. At what time does it finish?

- (a) **330 minutes**
 (b) **12 hours**
 (c) **13:10 or 1.10pm**

2nd May

- (a) $\frac{5}{8}$ of a number is 75. What is the number?
 (b) 16% of a number is 28. What is the number?

- (a) $\frac{1}{8} = 75 \div 5 = 15$ Number = $15 \times 8 = \mathbf{90}$
 (b) $16\% = 28$ $4\% = 7$ $100\% = 4\% \times 25 = 7 \times 25 = \mathbf{175}$

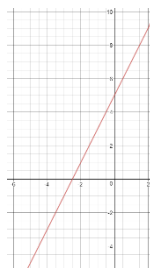
3rd May

A café has a choice of two main dishes, fish and chips or cheese pie. It has a choice of three deserts – apple pie, chocolate brownie or ice cream. People choose a main course and a desert as part of a deal the café offers. Write down all the possible combinations of dishes that could be chosen.

- | | | |
|-------|-------|-------|
| FC/AP | FC/CB | FC/IC |
| CP/AP | CP/CB | CP/IC |

4th May

Draw the graph of $y - 2x = 5$ between $x = -5$ and $x = 2$



5th May

Without using a calculator, find the answer to:

- (a) $35609 \div 7$
 (b) 93×24

$$7 \overline{) 35609} \begin{array}{r} 5087 \end{array}$$

$$\begin{array}{r} 93 \\ \times 24 \\ \hline 372 \\ 1860 \\ \hline 2232 \end{array}$$

6th May

A survey of students in a Y11 class done to find the favourite football team.
 9 said Sheffield Wednesday
 4 said Manchester United
 5 said Liverpool
 13 said Sheffield United
 5 said they didn't like any team.
 (a) Draw a pie-chart to illustrate the information.
 (b) A student is picked at random. What is the probability they support Liverpool?

- Frequency = 36 1 person = $360^\circ \div 36 = 10^\circ$
 SW = $9 \times 10 = 90^\circ$
 MU = $4 \times 10 = 40^\circ$
 Liv = $5 \times 10 = 50^\circ$
 SU = $13 \times 10 = 130^\circ$
 None = $5 \times 10 = 50^\circ$



7th May

- (a) A rectangle has a length of 9cm and an area of 45cm^2 . What is its width?
 (b) The perimeter of a regular hexagon is 72cm. What is the length of each side of the hexagon?

- (a) Width = $45 \div 9 = \mathbf{5\text{ cm}}$
 (b) Side = $72 \div 6 = \mathbf{12\text{ cm}}$

8th May

- (a) Expand and fully simplify $(x + 5)(x - 2)$
 (b) Factorise fully $x^2 + 9x - 36$
 (c) Using your answer to part (b) solve $x^2 + 9x - 36 = 0$
- (a) $x^2 - 2x + 5x - 10 = x^2 + 3x - 10$
 (b) $(x + 12)(x - 3)$
 (c) $x = -12$ and $x = 3$

9th May

- Look at this set of numbers.
 1, 3, 6, 8, 9, 11, 27, 42
 Write down...
- (a) a factor of 24
 (b) a multiple of 4
 (c) a prime number
 (d) a square number
 (e) a cube number
- (a) 1 or 3 or 6 or 8
 (b) 8
 (c) 3 or 11
 (d) 1 or 9
 (e) 1 or 8 or 27

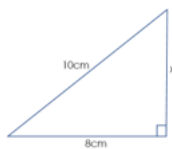
10th May

- Find the mean, mode, median and range of the numbers
 8, 9, 3, 8, 2, 6, 11, 9
- 2, 3, 6, 8, 8, 9, 9, 11
 Mean = $(2+3+6+8+8+9+9+11) \div 8 = 56 \div 8 = 7$
 Mode = 8 and 9
 Median = 8
 Range = $11 - 2 = 9$

11th May

- (a) Find the n th term of the sequence 9, 16, 23, 30, 37, ...
 (b) Bill says that 261 is in the sequence. Is he right? Explain your answer.
- (a) n th term = $7n + 2$
 (b) $7n + 2 = 261$ $7n = 259$ $n = 37$
 Yes it is the 37th term

12th May



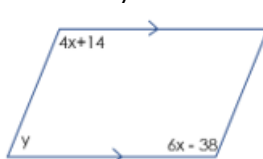
- (a) Find the size of length x .
 (b) Find the perimeter and area of the triangle.

(a) $x^2 + 8^2 = 10^2$ $x^2 + 64 = 100$ $x^2 = 36$ $x = 6$
 (b) Perimeter = $10 + 8 + 6 = 24\text{cm}$
 Area = $\frac{1}{2} \times 8 \times 6 = 24\text{cm}^2$

13th May

- (a) Simplify fully $4a + 9a - a - 2a$
 (b) Simplify fully $8x - 3y - 4x - y$
 (c) Expand $5(2x - 7)$
- (a) $10a$
 (b) $4x - 4y$
 (c) $10x - 35$

14th May



The diagram shows a parallelogram.
 Find the value of y .

$4x + 14 = 6x - 38$ $14 = 2x - 38$ $52 = 2x$ $x = 26$
 $y = 180 - (4(26) + 14) = 180 - 118 = 62^\circ$

15th May

- (a) Find 0.48×9.8
 (b) Use your answer to write down what £9.80 would be after a 52% reduction.

$$48 \times 98 = \begin{array}{r} 48 \\ \times 98 \\ \hline 3684 \\ 4720 \\ \hline 4704 \end{array}$$

$$0.48 \times 9.8 = \mathbf{4.704}$$

(b) 52% reduction = 48% of £9.80 = $0.48 \times 9.8 = \mathbf{£4.70}$

16th May

I think of a number. I multiply it by 3 and subtract 8. The answer is 13.
 What number did I think of?

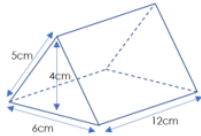
$$\begin{aligned} 3x - 8 &= 13 \\ 3x &= 21 \\ \mathbf{x} &= \mathbf{7} \end{aligned}$$

17th May

- Solve the following equations
 (a) $5x = 60$
 (b) $8x - 3 = 29$
 (c) $5x + 2 = 9x - 11$

$$\begin{aligned} \text{(a) } x &= \mathbf{12} \\ \text{(b) } 8x &= 32 \quad \mathbf{x} = \mathbf{4} \\ \text{(c) } 2 &= 4x - 11 \quad 13 = 4x \quad \mathbf{x} = \mathbf{13/4} \end{aligned}$$

18th May



The diagram shows an isosceles triangular prism.
 Find the volume and surface area of the prism.

$$\begin{aligned} \text{Cross Section} &= \frac{1}{2} \times 6 \times 4 = 12\text{cm}^2 & \text{Volume} &= 12 \times 12 = \mathbf{144\text{cm}^3} \\ \text{Surface area} &= 2(12) + 2(12 \times 5) + (12 \times 6) = \mathbf{216\text{cm}^2} \end{aligned}$$

19th May

Estimate the answer to
 $\frac{891 \times 6.33}{0.481}$

$$\begin{aligned} 891 &\approx 900 & 6.33 &\approx 6 & 0.481 &\approx 0.5 \\ \frac{900 \times 6}{0.5} &= \frac{5400}{0.5} = \mathbf{10800} \end{aligned}$$

Showing clearly how you came by your estimate.

20th May

- (a) Round 89491 to the nearest 100.
 (b) Round 12.4591 to 2 decimal places.
 (c) Round 37.19 to 1 significant figure.

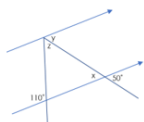
- (a) 89500
 (b) 12.46
 (c) 40

21st May

7 packets of biscuits cost £3.85. How much will 3 packets cost?

$$\begin{aligned} 1 \text{ packet} &= \pounds 3.85 \div 7 = 55\text{p} \\ 3 \text{ packets} &= 3 \times 55\text{p} = 165\text{p} = \mathbf{\pounds 1.65} \end{aligned}$$

22nd May



Find the size of angles x, y and z giving correct geometrical reasons each time. (Diagram not drawn accurately)

$$\begin{aligned} x &= \mathbf{50^\circ} \text{ (Vertically opposite angles are equal)} \\ y &= \mathbf{50^\circ} \text{ (Corresponding angles are equal)} \\ z &= 110 - 50 = \mathbf{60^\circ} \text{ (Alternate angles are equal)} \end{aligned}$$

23rd May

Evaluate:

(a) $8 + 2 \times 3 + 5$

(b) 6^{-2}

(c) $(3 \times 10^3) \times (1.5 \times 10^5)$ (give your final answer in standard form)

(a) $8 + 6 + 5 = 19$

(b) $\frac{1}{6^2} = \frac{1}{36}$

(c) $(3 \times 1.5) \times (10^3 \times 10^5) = 4.5 \times 10^8$

25th May

(a) 8km = 5 miles.

The ratio of km to miles can be written in the form $\frac{1}{n}$.

What would the value of n be?

(b) A map uses the scale $\frac{1}{200,000}$. A distance on a map measures 8.1cm.

How far is this in real life?

Give your answer in miles.

(a) $8 : 5 = 1 : \frac{5}{8} = 1 : 0.625$

(b) $8.1 \times 200000 = 1620000\text{cm} = 16200\text{m} = 16.2\text{km}$

$1\text{km} = 0.625\text{ miles}$

$16.2\text{km} = 16.2 \times 0.625 = 10.125\text{ miles}$

26th May

A bag has 5 red balls, 3 white balls and 4 black balls.

Susan picks a ball at random,

notes the colour and puts it back in the bag. She then picks another ball.

What is the probability that she picks two balls that are the same colour?

Both Red = $\frac{5}{12} \times \frac{5}{12} = \frac{25}{144}$ Both White = $\frac{3}{12} \times \frac{3}{12} = \frac{9}{144}$

Both Black = $\frac{4}{12} \times \frac{4}{12} = \frac{16}{144}$

P(Same Colour) = $\frac{25}{144} + \frac{9}{144} + \frac{16}{144} = \frac{50}{144}$

27th May

A supermarket sells three different sizes of the same brand of cereal.

A 250g box costs £1.08

A 700g box costs £2.95

A 900g box costs £3.95

Which is the better value?

Show how you came by your answer.

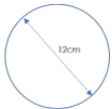
Cost per gram: $250\text{g} = 108\text{p} \div 250 = 0.432\text{p}$

$700\text{g} = 295\text{p} \div 700 = 0.421\text{p}$

$900\text{g} = 395\text{p} \div 900 = 0.439\text{p}$

700g is better value – cheaper per gram

28th May



Find the area and circumference of this circle.

Give your final answers correct to 2 decimal places.

Radius = 6cm

Area = $\pi \times 6^2 = 113.10\text{cm}^2$

Circumference = $2 \times \pi \times 6 = 37.70\text{cm}$

29th May

Pauline, Rachael and Susan share

some money in the ratio 4 : 3 : 5.

Rachael gets £270.

How much do Pauline and Susan each get?

Rachael = 3 parts 1 part = $\pounds 270 \div 3 = \pounds 90$

Pauline = $4 \times \pounds 90 = \pounds 360$

Susan = $5 \times \pounds 90 = \pounds 450$

30th May

(a) Increase £27.50 by 18%

(b) Ian bought a car for £12,640.

Two years later he sold it for

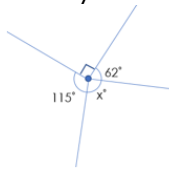
£9,950. Work out the

percentage loss he made.

(a) $27.5 \times 1.18 = \pounds 32.45$

(b) % loss = $\frac{12640 - 9950}{12640} \times 100 = 21.3\%$

31st May



Find the size of an angle x

$$x = 360 - 90 - 62 - 115 = 93^\circ$$

1st June

Mr and Mrs Smith are taking their three children on a train journey.

Adult return tickets are £4.50 more expensive than child tickets. To total cost of all the return tickets is £72.50.

What is the cost of each type of ticket?

$$\text{Child ticket} = x \quad \text{Adult ticket} = x + 4.5$$

$$2(x + 4.5) + 3x = 72.5$$

$$2x + 9 + 3x = 72.5 \quad 5x = 63.5$$

$$x = 12.7 \quad \text{Child Ticket} = \mathbf{£12.70} \quad \text{Adult Ticket} = \mathbf{£17.20}$$

2nd June

Paul is going on a trip to Europe. He takes with him £800. He is staying for 3 days and his travel and accommodation has already been paid for. He spends €80 each day for food and drink. He spends another €250 at the airport on duty free. If the exchange rate is £1 = €1.21, how many pounds does he receive when he converts his money back again?

$$£800 = 800 \times 1.21 = €968$$

$$\text{Euro's Left} = 968 - 3(80) - 250 = €478$$

$$\text{Pounds} = 478 \div 1.21 = \mathbf{£395.04}$$

3rd June

A recipe for Shortbread biscuits makes 20 biscuits:

125g butter
55g caster sugar
180g plain flour.

(a) How much of each ingredient is required for 12 biscuits?

(b) I have 240g of plain flour and loads of butter and caster sugar. What is the largest number of shortbread biscuits I could make?

$$(a) \text{ Scale Factor} = 12 \div 20 = 0.6$$

$$\text{Butter} = 125 \times 0.6 = \mathbf{75g}$$

$$\text{Caster Sugar} = 55 \times 0.6 = \mathbf{33g}$$

$$\text{Plain Flour} = 180 \times 0.6 = \mathbf{108g}$$

$$(b) 240 \div 180 = 4/3 (1.333) \times 20 = 26.66... = \mathbf{27 \text{ biscuits}}$$