

Q1

1

Find 15% of 240 students by using a multiplier of 0.15

$$240 \times 0.15 = 36 \text{ students want to go to college}$$

[1]

Find $\frac{3}{4}$ of 240 students

$$\frac{3}{4} \times 240 = 180 \text{ students want to stay at school}$$

[1]

Find the total of the students so far

$$36 + 180 = 216 \text{ students}$$

There are 240 students in total, and the rest do not know

$$240 - 216$$

[1]

24 [1]

Q2-3

2

Find 62 out of 80 as a percentage

$$\frac{62}{80} \times 100 = 77.5\%$$

[1]

This is in the middle row of the table

Merit [1]

3

Find 32 out of 80 as a percentage

$$\frac{32}{80} \times 100 = 40\%$$

[1]

Compare the percentage in English and Maths

$$40\% > 38\%$$

Higher percentage in Maths [1]

Q4

4

Find 65% of 80 minutes

$$0.65 \times 80 = 52 \text{ minutes}$$

[1]

Celina sings for 52 minutes

Find $\frac{5}{8}$ of 80 minutes, can type the below straight into your calculator

$$\frac{5}{8} \times 80 = 50$$

[1]

Zoe sings for 50 minutes

Find the difference

$$52 - 50$$

[1]

2 minutes [1]

Q5

5

Let x be the recurring decimal

$$x = 0.2555555555\dots$$

Multiply both sides by 10

$$10x = 2.5555555555\dots$$

Multiply both sides by 10 again

$$100x = 25.5555555555\dots$$

These two equations both contain the trail of recurring 5s, so we can find $100x - 10x$ to eliminate the recurring part

$$100x - 10x = 25.555555\dots - 2.555555\dots$$

[1]

Simplifying

$$90x = 23$$

Divide both sides by 90

$$x = \frac{23}{90} \quad [1]$$

Q6

6

Let x be the recurring decimal

$$x = 0.177777...$$

Multiply both sides by 10

$$10x = 1.777777...$$

Multiply both sides by 10 again

$$100x = 17.777777....$$

These two equations both contain the trail of recurring 7s, so we can find $100x - 10x$ to eliminate the recurring part

$$100x - 10x = 17.777777... - 1.777777...$$

[]

Simplifying

$$90x = 16$$

Divide both sides by 90

$$x = \frac{16}{90}$$

Simplify the fraction by dividing the top and bottom by 2

$$x = \frac{8}{45} \quad []$$

Q7

7

Let x be the recurring decimal

$$x = 0.388888...$$

Multiply both sides by 10

$$10x = 3.88888...$$

Multiply both sides by 10 again

$$100x = 38.888888....$$

These two equations both contain the trail of recurring 8s, so we can find $100x - 10x$ to eliminate the recurring part

$$100x - 10x = 38.88888... - 3.88888...$$

[]

Simplifying

$$90x = 35$$

Divide both sides by 90

$$x = \frac{35}{90}$$

Simplify the fraction by dividing the top and bottom by 5

$$x = \frac{7}{18} \quad []$$

Q8

Let x be the recurring decimal

$$x = 0.266666\dots$$

Multiply both sides by 10

$$10x = 2.66666\dots$$

Multiply both sides by 10 again

$$100x = 26.66666\dots$$

These two equations both contain the trail of recurring 6s, so we can find $100x - 10x$ to eliminate the recurring part

$$100x - 10x = 26.66666\dots - 2.66666\dots$$

[1]

Simplifying

$$90x = 24$$

Divide both sides by 90

$$x = \frac{24}{90}$$

Simplify the fraction by dividing the top and bottom by 6

$$x = \frac{4}{15} \quad [1]$$

Q9

For now, ignore the 4 and consider how we can write 0.57 as $\frac{\quad}{33}$

Let x be the recurring decimal

$$x = 0.575757\dots$$

Multiply both sides by 10

$$10x = 5.75757\dots$$

Multiply both sides by 10 again

$$100x = 57.57575\dots$$

The two equations for $100x$ and x both contain the trail of $.575757\dots$, so we can find $100x - x$ to eliminate the recurring part

$$100x - x = 57.57575\dots - 0.575757\dots$$

[1]

Simplifying

$$99x = 57$$

Divide both sides by 99

$$x = \frac{57}{99}$$

Simplify the fraction by dividing the top and bottom by 3

$$x = \frac{19}{33}$$

Now add on the whole part, the 4, again

$$4.\dot{5}7 = 4\frac{19}{33} \quad [1]$$

Q10

10

Use the ratio 3:5 to find how many girls and boys there are

There are 8 parts in total; 3 parts out of 8 are girls, and 5 parts out of 8 are boys

$$\frac{3}{8} \times 120 = 45 \text{ girls}$$

$$\frac{5}{8} \times 120 = 75 \text{ boys}$$

[2]

$\frac{16}{25}$ of the boys go climbing, which means $\frac{9}{25}$ of the boys go sailing $\left(1 - \frac{16}{25} = \frac{9}{25}\right)$

$$\frac{9}{25} \times 75 = 27 \text{ boys go sailing}$$

[1]

Twice as many girls go sailing as go climbing, so the 45 girls are divided in the ratio 2:1, with the 2-part representing the number who went sailing
This means 2 thirds of the girls went sailing

$$\frac{2}{3} \times 45 = 30 \text{ girls go sailing}$$

[1]

We can now find the total number of children who go sailing

$$27 + 30$$

[1]

57 children go sailing [1]

Q11

11

The shaded area of rectangle B is equal to one whole rectangle, minus the white area of rectangle A, minus the white area of rectangle C
So if we can find the white areas of rectangles A and C, we can find the shaded area of B

$\frac{5}{8}$ of rectangle A is shaded, therefore

$$1 - \frac{5}{8} = \frac{3}{8} \text{ of rectangle A is white}$$

80% of rectangle C is shaded, therefore

$$100\% - 80\% = 20\% \text{ of rectangle C is white (or } \frac{1}{5}\text{)}$$

Either $\frac{3}{8}$ or $\frac{1}{5}$ found [1]

Therefore the shaded area of rectangle B is

$$1 - \frac{3}{8} - \frac{1}{5}$$

[1]

Use a common denominator of 40 (8x5) to evaluate this

$$\frac{40}{40} - \frac{3 \times 5}{8 \times 5} - \frac{1 \times 8}{5 \times 8} = \frac{40}{40} - \frac{15}{40} - \frac{8}{40} = \frac{17}{40}$$

$\frac{17}{40}$ [1]

Q12

12

To compare the numbers, we could write them in a column and examine the value of the second and third decimal places.

$$\begin{array}{r} 0.\dot{5} = 0.5555\dots \\ 0.55 \\ 0.545 \\ 0.5\dot{4}\dot{5} = 0.5454545\dots \end{array}$$

We can see that $0.\dot{5}$ has the highest value in the second and third decimal places (it is 0.005 higher than the second option, 0.55).

The first option is correct, $0.\dot{5}$ [1]