

GCSE Mathematics (Grade 9-1)

Problem Solving – (Sample 3) Solutions

1. ABCD is a rectangle



The length AB of the rectangle is 6 cm longer than the width BC
Given that the perimeter of the rectangle is 41 cm,
calculate the area of the rectangle.

Give your answer to 3 significant figures

Solution

Let the width of the rectangle be x

Then, the length will be $x + 6$

Therefore, the perimeter of the rectangle in terms of x will be given as

$$2(x + 6) + 2x = 4x + 12 \quad [1\text{mark}]$$

$$\text{Hence, } 4x + 12 = 41 \quad \{\text{Subtract 12 from both sides}\} \quad [1\text{mark}]$$

$$4x = 29$$

$$x = 7.25 \quad [1\text{mark}]$$

Therefore,

The width of the rectangle is 7.25 cm

The length will be $6 + 7.25 = 13.25$ cm [1mark]

Hence, the area of the rectangle will be $7.25 \times 13.25 = 96.0625$

That is 96.1 cm^2 (3sf) [1mark]

2. Zara, Amelia and Jaik shared some money in the ratio 3 : 5 : 8
20% of Jaik's share was £350
How much more did Amelia received than Zara?

Solution

Let Jaik's share be x

Then, 20% of $x = 350$

Therefore, Jaik's share will be $\frac{350}{0.2} = 1750$ [1mark]

From the ratio, 8 parts corresponds to £1750

Therefore, 1 part will be $1750 \div 8 = 218.75$ [1mark]

The difference between, Amelia's and Zara's ratio is 2 parts [1mark]

Therefore, $2 \times 218.75 = 437.50$ [1mark]

Therefore, Amelia had £ 437.50 more than Zara

3. Mr Anderson is 10 times as old as his daughter Sally
In 32 years, the ratio of Mr Anderson's age to Sally's age will be 2 : 1
How old is Mr. Anderson now?

Solution

Let Sally's age be x

Then Mr. Anderson will $10x$ years old

In 32 years,

Sally will be $x + 32$ years old

Mr Anderson will $10x + 32$ years old

Therefore, $10x + 32 : x + 32 = 2 : 1$ [1mark]

So, we have $\frac{10x+32}{x+32} = \frac{2}{1}$ {Cross multiply} [1mark]

$$10x + 32 = 2x + 64$$

$$8x = 32$$

Therefore, $x = 4$ [1mark]

So, Sally is 4 years old, therefore Mr Anderson must be 40 years old.

[1mark]

4. William is 170 cm tall
Adam is $\frac{7}{8}$ as tall as William
Noah is $\frac{5}{4}$ as tall as Adam
Who is the tallest of the three?

Solution

$$\frac{7}{8} \text{ of } 170 = 148.75$$

Therefore, Adam is 148.75 cm [1mark]

$$\frac{5}{4} \text{ of } 148.75 = 185.94$$

Therefore, Noah is 185.94 cm (2dp) [1mark]

Therefore, Noah is the tallest of the three

5. Amy buys some packs of sweets for £3.90
If Amy had £4.50, she could buy two more packs of the same sweets than she had with £3.90
How many packs did Amy buy with £3.90?

Solution

$$4.50 - 3.90 = 0.60 \quad [1mark]$$

Therefore, Amy could buy 2 more packs of sweet with 60p

So, 1 pack of sweets will be $60p \div 2 = 30p$ [1mark]

$$3.90 \div 0.3 = 13 \quad [1mark]$$

Hence, Amy bought 13 packs of sweets