

Dr Oliver Mathematics
Worked Examples
Ratio 3

From: Edexcel 2022 June Paper 2H (Calculator)

1. Carlo puts tins into small boxes and into large boxes.

(5)

He puts 6 tins into each small box.

He puts 20 tins into each large box.

Carlo puts a total of 3 000 tins into the boxes so that

$$\text{number of tins in small boxes} : \text{number of tins in large boxes} = 2 : 3.$$

Carlo says that less than 30% of the boxes filled with tins are large boxes.

Is Carlo correct?

You must show all your working.

Solution

Well,

$$\frac{3\,000}{2+3} = \frac{3\,000}{5} = 600.$$

That means

$$2 \times 600 = 1\,200$$

in small boxes and

$$3 \times 600 = 1\,800$$

in large boxes. He puts 6 tins into each small box:

$$\frac{1\,200}{6} = 200.$$

He puts 20 tins into each large box:

$$\frac{1\,800}{20} = 90.$$

So, the percentage of the boxes filled with tins are large boxes is

$$\left(\frac{90}{200+90} \right) \times 100\% = 31.034\dots\%$$

Hence, Carlo is incorrect.