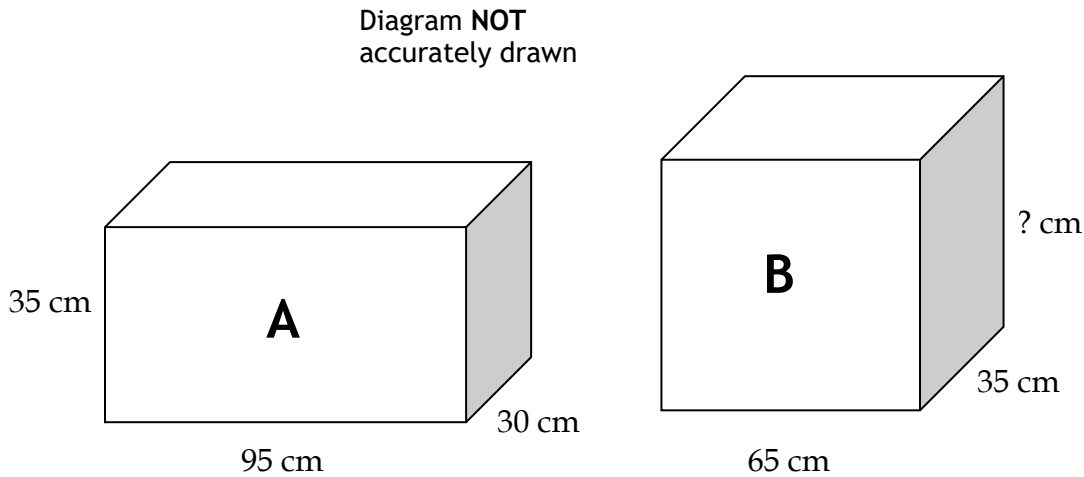




FA Problem Solving Questions – Set 3b

21b. The diagram shows two fish tanks, each in the shape of a cuboid.



Finley fills both fish tanks with water.
Both fish tanks hold the same amount of water.
How high is fish tank B?
You must show all your calculations.

(4 marks)

22b. A basic calculator costs £3
A scientific calculator costs £5
Julie spends exactly £100 on calculators.

Work out the greatest number of calculators that Julie could have bought. **(3 marks)**

23b. A customer who cancels a holiday with Funtours has to pay a cancellation charge.
The cancellation charge depends on the number of days before the departure date the customer cancels the holiday.

The cancellation charge is a percentage of the cost of the holiday.
The table shows the percentages.

| Number of days before the departure date the customer cancels the holiday | Percentage of the cost of the holiday |
|---|---------------------------------------|
| 29–55 | 30% |
| 22–28 | 55% |
| 15–21 | 65% |
| 4–14 | 85% |
| 3 or less | 100% |

The cost of Amy's holiday was £680
She cancelled her holiday 20 days before the departure date.

(a) Work out the cancellation charge she had to pay.

(2 marks)

The cost of Carol's holiday was £720

She cancelled her holiday and had to pay a cancellation charge of £396

(b) Give the range of the number of days in which Carol cancelled her holiday.

(3)

24b. This is a list of ingredients for making a pear & almond crumble for 4 people.

| |
|--|
| Ingredients for 4 people: 80 g plain flour 60 g ground almonds 90 g soft brown sugar 60 g butter 4 ripe pears |
|--|

Jessica wants to make a pear & almond crumble for as many people as possible.
Here is a list of the amount of each ingredient Jessica has in her cupboard.

320 g plain flour
300 g ground almonds
360 g soft brown sugar
270 g butter
16 ripe pears

How many people can Jessica make crumble for? You must show all of your working.

(4 marks)

25b. Peter works out the cost of the gas he used last year.

At the start of the year, the gas meter reading was 12989 units.

At the end of the year, the gas meter reading was 14143 units.

Each unit of gas he used cost 51p.

He used an average of £35 per month during the 6 warmer months from April to Sept.

Work out the mean cost per month of the gas he used in the colder months.

(5 marks)

26b. Stephen exports cars from the UK. He sells them in the USA.

He has just bought a car in the UK costing £18 000.

It cost him \$1200 to import the car to the USA.

The exchange rate is £1 = \$1.45

Stephen needs to make a profit of 20% on his total costs.

Work out the least amount that Stephen must sell the car for in the USA.

Give your answer in dollars.

(3 marks)

27b. Stuart and Helen play a game with red and blue cards.

Red cards are worth 4 points each.
Blue cards are worth 3 points each.

Stuart has r red cards and b blue cards.
Helen has 2 more red cards and twice as many blue cards as Stuart.

The total number of points of Stuart and Helen's cards is T .

Write down, in terms of r and b , a formula for T

(4 marks)

28b. The Hawshaw Summer Fete is running a competition.

You buy a scratch card with 9 squares covered up.
Under the 9 squares on each card, randomly placed
are 4 stars, 3 hearts and 2 LOSE.

Each scratch card costs £1

You scratch off two squares.
You win £1.50 if 2 stars are revealed.
You win £2 if 2 hearts are revealed.

Michelle buys a scratch card.
Work out the probability that this will be a winning scratch card.

(3)

There are 1440 tickets sold at the Fete.
All of the proceeds go to charity.

Estimate the amount of money raised for charity

(4)

29b. Angel Ltd manufacture components for washing machines. The probability that a component will be made within a tolerance of one tenth of a millimetre is 97%.

If it is estimated that 720 components will not be within the tolerance of one tenth of a millimetre each day, then how many components do Angel Ltd manufacture each day?

(3 marks)

30b. Here are two fractions, $\frac{3}{5}$ and $\frac{5}{7}$

Find a fraction that lies between these two?

You must show clearly how you got your answer.

(3 marks)

