1

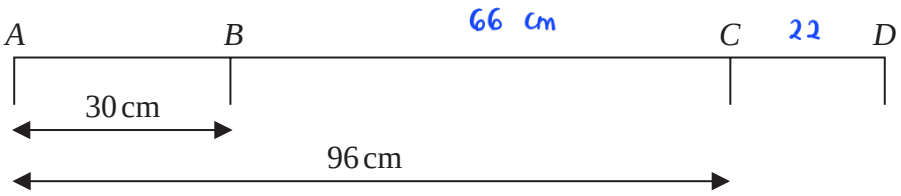

Diagram **NOT** accurately drawn

In the diagram, *A*, *B*, *C* and *D* are points on a straight line.

AB = 30 cm *AC* = 96 cm *BC* = 3*CD*

Work out the length of *AD*.

BC = AC − AB

= 96 − 30

= 66 cm (1)

BC = 3CD

66 = 3CD

$CD = \frac{66}{3}$

= 22 cm

AD = AC + CD

= 96 + 22 (1)

= 118 cm (1)

118 cm

(Total for Question 1 is 3 marks)

2 Three tins, *A*, *B* and *C*, each contain buttons.

Tin *A* contains *x* buttons.
Tin *B* contains 4 times the number of buttons that tin *A* contains.
Tin *C* contains 7 fewer buttons than tin *A*.

The total number of buttons in the three tins is 137

Work out the number of buttons in tin *C*.

$A = x$

$B = 4x$ (1)

$C = x - 7$

$\text{Total} = A + B + C$

$= x + 4x + (x - 7) = 137$ (1)

$6x = 137 + 7$

$6x = 144$

$x = \frac{144}{6} = 24$ (1)

$C = 24 - 7$

$= 17$ (1)

17

(Total for Question 2 is 4 marks)

3 In a shop, pens cost 34 cents each.

The shop has a special offer on the pens.

Special offer

Pay for 2 pens and get 1 free


34 cents


34 cents


Free

Moritz wants 25 pens.

Work out how much Moritz has to pay for 25 pens.

$\frac{25}{3} = 8.333\ldots$ (1)

∴ Moritz needs to buy 8 sets of 3 pens on offer

1 set = 34 cents + 34 cents
= 68 cents

8 sets = 68 cents × 8
= 544 cents

∴ To get 25 pens, Moritz needs to buy 8 set of 3 pens + 1 pen

544 cents + 34 cents (1)
= 578 cents (1)

578 cents

(Total for Question 3 is 3 marks)

4 Mariana sells bags of bird food.

The bags that Mariana sold last week each contained 12 kg of seeds.

The bags that she is going to sell next week will each contain a mixture of nuts and seeds where for each bag

weight of nuts : weight of seeds = 4 : 5

↳ Total proportion = 9

seeds = $\frac{5}{9}$ of bag

The total weight of the nuts and the seeds in each bag will be 19.35 kg

The weight of seeds in each bag that Mariana sells next week will be less than the weight of seeds in each bag that Mariana sold last week.

Work out this decrease as a percentage of the weight of seeds in each bag that Mariana sold last week.
Give your answer correct to one decimal place.

Weight of seeds in next week's bag :

$\frac{5}{9} \times 19.35 = 10.75$ kg (2)

Decrease in percentage : $\frac{10.75 - 12}{12} \times 100\%$ (1)

$= -10.4\%$ (1)

∴ decrease of 10.4 % from last week

10.4 ..... %

(Total for Question 4 is 4 marks)

5 Here is a list of the ingredients needed to make 12 chocolate brownies.

Chocolate brownies
Ingredients for 12 brownies
150 g flour
250 g chocolate spread
3 eggs

Thalia buys exactly enough of these ingredients to make 120 of these brownies.

1.5 kg of flour costs £1.30
500 g of chocolate spread costs £2.60
6 eggs cost £1.10

Thalia sells all 120 brownies at £0.40 each.

Work out the profit that she makes.

To make 120 brownies :

flour : 150 g × 10
= 1500 g

chocolate : 250 g × 10
= 2500 g

egg : 3 × 10
= 30 eggs

Cost :

flour : 1500 g = £1.30 (1)

chocolate : $\frac{2500\text{ g}}{500\text{ g}}$ × £2.60
= 5 × £2.60
= £13 (1)

egg : $\frac{30}{6}$ × £1.10
= £5.50

Total cost : 1.30 + 13 + 5.50
= 19.80

Total sold : 120 × 0.40 (1)
= 48

Profit : 48 - 19.80 (1)
= 28.20 (1)

£ 28.20

(Total for Question 5 is 5 marks)

6 In a box, there are only green sweets, orange sweets and yellow sweets.

There are 280 sweets in the box so that

the number of green sweets : the number of orange sweets = 2 : 3

and

the number of orange sweets : the number of yellow sweets = 1 : 5

Work out how many green sweets there are in the box.

G : O : Y

2 3

1×3 5×3

2 : 3 : 15 (1)

$\frac{2}{2+3+15} \times 280$

$= \frac{2}{30} \times 280^{14}$ (1)

= 28 (1)

28

(Total for Question 6 is 3 marks)

Bernard makes currant buns.

For every 400 g of flour he uses, he uses 125 g of currants.

Bernard uses 2000 g of flour.

7 (b) Work out the weight of currants he uses.

weight of currants used : $\frac{2000}{400} \times 125$ g (1)

= 625 g (1)

625 ..... g

(2)

(Total for Question 7 is 2 marks)