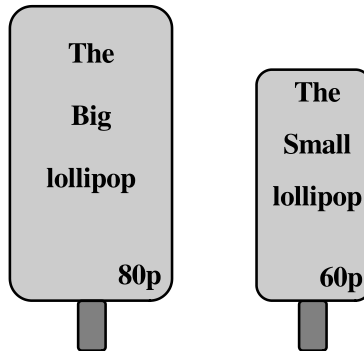


Question 1

A shop sells two types of lollipops.



The shop sells Big lollipops at 80p each and Small lollipops at 60p each.
Henry buys x big lollipops

- (a) Write down an expression, in terms of x , for the cost of Henry's lollipops. **(1 mark)**

Lucy buys r Big lollipops and t Small lollipops

- (b) Write down an expression, in terms of r and t , for the total cost of Lucy's lollipops. **(1 mark)**

The cost of g Big Lollipops and 2 Small lollipops is £10.80

- (c) Write this as an equation in terms of g . **(2 marks)**
(d) Use your equation to find the value of g . **(2 marks)**

Question 2

Fred has a recipe for 30 biscuits.
Here is a list of ingredients for 30 biscuits.

Self-raising flour	: 230g
Butter	: 150g
Caster sugar	: 100g
Eggs	: 2

Fred wants to make 45 biscuits.

(a) Complete his new list of ingredients for 45 biscuits. **(3 marks)**

Self-raising flour	:
Butter	:
Caster sugar	:
Eggs	:

The recipe gives the baking temperature as 350° Fahrenheit, F.
A modern oven shows baking temperature in Celsius, C.

(b) Use the formula $C = \frac{5(F-32)}{9}$

to change 350° Fahrenheit to Celsius.

Give your answer correct to the nearest degree. **(3 marks)**

Gill has only 1 kilogram of self-raising flour. She has plenty of the other ingredients.

(c) Work out the maximum number of biscuits that Gill could bake. **(3 marks)**

Question 3

Maureen thought of a number. She divided this number by 4. She then added 3. Her answer was 9.
What number did Maureen think of?

Question 4

Cheryl was working out the cost of hiring a van for a day.
First of all she worked out the mileage cost.
She used the formula

Mileage Cost = Mileage Rate \times Number of Miles Travelled

The mileage rate was 8 pence per mile.
Cheryl travelled 240 miles.
(a) Work out the mileage cost.

Then she worked out the total hire cost.
She used the formula

Total Hire Cost = Basic Hire Cost + Mileage Cost

The basic hire cost was £35.
(b) Work out the total hire cost.

Question 5

A coach has x passengers upstairs and y passengers downstairs.



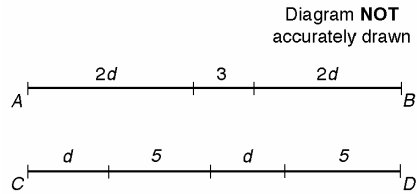
- (a) Write down an expression, in terms of x and y , for the total number of passengers on the coach.

Tickets for the journey on the coach cost £5 each.

- (b) Write down an expression, in terms of x and y , for the total amount of money paid by the passengers on the coach.

Question 6

The diagram shows two straight lines AB and CD .



Each line is cut into sections.

The length, in centimetres, of each section is shown in the diagram.

(a) Write down, in terms of d ,

- i) the length of AB ,
- ii) the length of CD

The length of AB is equal to length of CD

- (b) i) Write down an equation in d .
ii) Solve your equation to find the value of d .

Question 7

Buns cost 25 pence each.

Write down an algebraic formula to work out the cost C of b buns.

Question 8

- (a) Write, in symbols, the rule "To find y , multiply k by 3 and then subtract 1"
- (b) Work out the value of k when $y = 14$.

Question 9

Bhavna uses this formula to work out her Electricity bill.

Cost of Electricity = Number of units used \times Cost for each unit + Meter hire

Bhavna uses 350 units

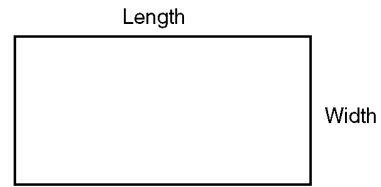
The cost for each unit is 7.5p

The Meter hire is £15.50.

Work out the cost of Bhavna's Electricity bill.

Question 10

The width of the rectangle is x cm.
The length of the rectangle is 4 cm more than the width.



(a) Write down an expression in terms of x for the length of the rectangle.

The perimeter of the rectangle is P cm.

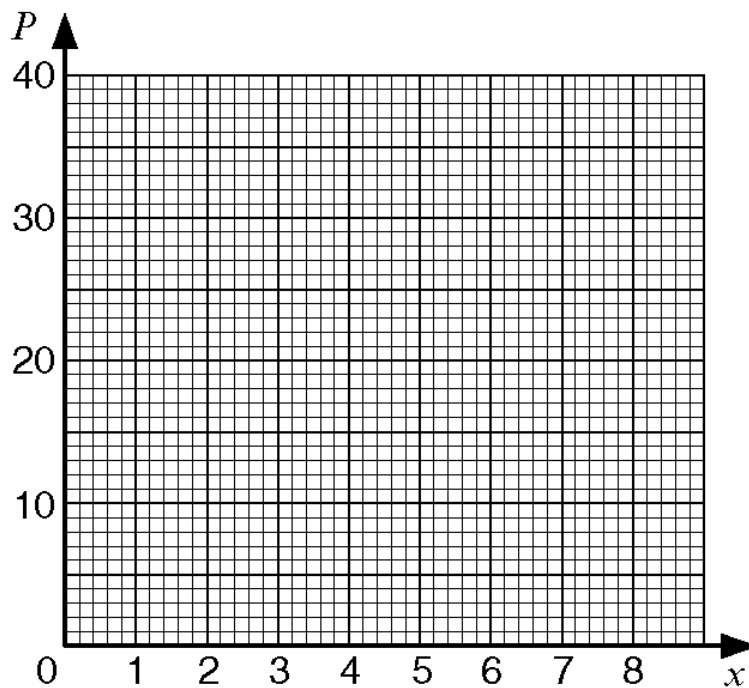
(b) Write down a formula for P in terms of x .

The table gives the value of P when $x = 6$.

x	2	4	6	8
P			32	

(c) Complete the table for $x = 2, 4$ and 8 .

(d) On the grid below draw the graph of P against x for values of x from 2 to 8.



Question 11

Natasha uses this formula to work out her Total pay.
Total pay = Rate per hour \times Number of hours + Bonus
Her Rate per hour is £3.50.
She works for 35 hours.
She has a Bonus of £5.50.
Work out her Total pay.

(2 marks)

Question 12

Powder can be mixed with water to make a milk drink.
This rule is used:

$$\text{number of spoonfuls} = \text{amount of water (ml)} \div 30$$

A glass contains 180 ml of water.

(a) How many spoonfuls are needed?

(1 mark)

There are 20 spoonfuls of powder in a jug.

(b) How much water is needed?

(2 marks)

Question 13

A pie costs 65 pence. Pam buys n pies. The total cost is C pence.
Write down a formula connecting C and n .

(2 marks)

Question 14

$$C = 180R + 2000$$

The formula gives the capacity, C litres, of a tank needed to supply water to R hotel rooms.

$$R = 5.$$

(a) Work out the value of C .

$$C = \dots\dots\dots \quad \quad \quad \textbf{(2 marks)}$$

$$C = 3440$$

(b) Work out the value of R .

$$R = \dots\dots\dots \quad \quad \quad \textbf{(2 marks)}$$

A water tank has a capacity of 3200 litres.

(c) Work out the greatest number of hotel rooms it could supply **(3 marks)**

Question 15

This rule is used to work out take home pay.

$\text{Take home pay} = \text{hours worked} \times \text{hourly rate} - \text{deductions}$
--

Kirsty worked 17 hours.
Her hourly rate was £4.50.
Her deductions were £8.25.

- (a) Work out her take home pay.

£

(2 marks)

Mary's hourly rate was £5.
Her deductions were £7.
Her take home pay was £68.

- (b) Work out the number of hours she worked.

..... hours

(3 marks)

Question 16

Daniel buys n books at £4 each.
He pays for them with a £20 note.
He receives C pounds in change.

Write down a formula for C in terms of n .

(3 marks)

Question 17

Here is a formula for working out a printing cost.

$$\boxed{\begin{array}{c} \text{printing} \\ \text{cost} \end{array}} = \boxed{\begin{array}{c} \text{price per sheet} \\ \text{of paper} \end{array}} \times \boxed{\begin{array}{c} \text{number of sheets} \\ \text{of paper} \end{array}} + \boxed{\begin{array}{c} \text{fixed charge} \end{array}}$$

The price per sheet of paper is £0.04

2500 sheets of paper are used

The fixed charge is £45.50

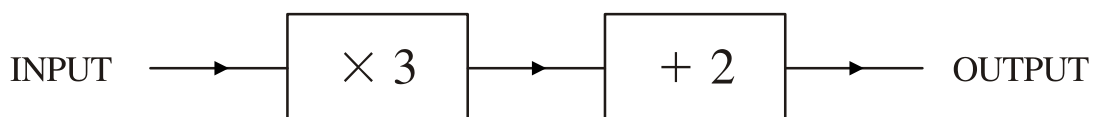
Work out the printing cost.

£

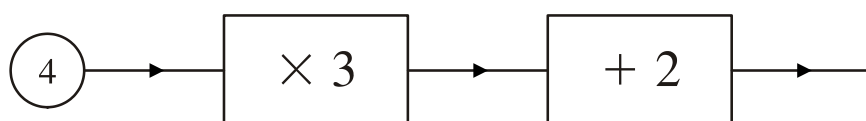
(3 marks)

Question 18

The diagram shows a mathematical rule.

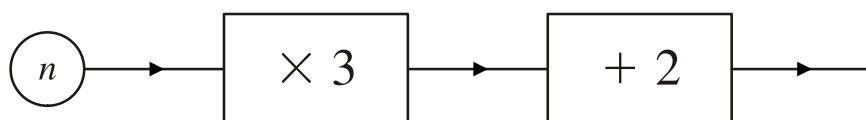


(a) Work out the output.



(1 mark)

(b) Write down an expression, in terms of n , for the output.



(1 mark)

(c) $y = 3x + 2$

(i) Find y when $x = 3$.

(ii) Find x when $y = 17$.

(3 marks)

Question 19



This rule is used to find how far apart to plant two bushes.

<p>Add the heights of the bushes Divide your answer by 3.</p>

Marie is going to plant two bushes.
The heights of the bushes are 46 cm and 20 cm.

- (a)** Use the rule to work out how far apart Marie should plant the bushes.

..... cm
(2 marks)

Ben is going to plant two different bushes.
He should plant them 50 cm apart.
The height of one of the bushes is 90 cm.

- (b)** Work out the height of the other bush. **(3 marks)**

The heights of two different bushes are a cm and b cm.
The two bushes should be planted d cm apart.

- (c)** Write down a formula for d in terms of a and b . **(3 marks)**