

# M7 = 16 days to go!

$t$   $c$  price in pence

easier than using decimals

16 Jill buys the tea and coffee for everyone in the office at break time.

On Monday she bought 3 teas and 5 coffees.  
The bill on Monday was £10.50

On Tuesday she bought 4 teas and 4 coffees.  
The bill on Tuesday was £10

On Wednesday she bought 2 teas and 6 coffees.

What was the total bill on Wednesday?

Simultaneous equations

Monday  $3t + 5c = 1050$

Tuesday  $4t + 4c = 1000$

A solution by trial and improvement will not be accepted

$$3t + 5c = 1050 \quad (\times 4)$$

$$4t + 4c = 1000 \quad (\times 5)$$

$$12t + 20c = 4200$$

$$20t + 20c = 5000$$

swap over

$$20t + 20c = 5000$$

$$12t + 20c = 4200$$

$$8t = 800$$

$$t = 100$$

Answer £ 11.00 [6]

Put in  $t=100$

in  $4t + 4c = 1000$

$$4 \times 100 + 4c = 1000$$

$$400 + 4c = 1000$$

$$4c = 600$$

$$c = 150$$

Tea = £1.00    Coffee = £1.50

Wed  $2 \times 1.00 + 6 \times 1.50$

$$2.00 + 9.00$$

Answer 11.00

6 Make  $n$  the subject of the formula

$$y + 8 = n - 4$$

$$y + 8 = n - 4$$

$$+4 \quad +4$$

$$y + 8 + 4 = n$$

$$y + 12 = n$$

or SWAP SIDES SWAP SIGNS

$$y + 8 = n - 4$$

$$y + 8 + 4 = n$$

Answer  $n = \underline{y + 12}$  [2]

11 Over a period of 8 hours, the temperature of a room follows the relationship

$$T = h^2 - 6h + 15$$

$T$  is the temperature in degrees Celsius,  $h$  hours after the experiment started.

(a) Complete the table below:

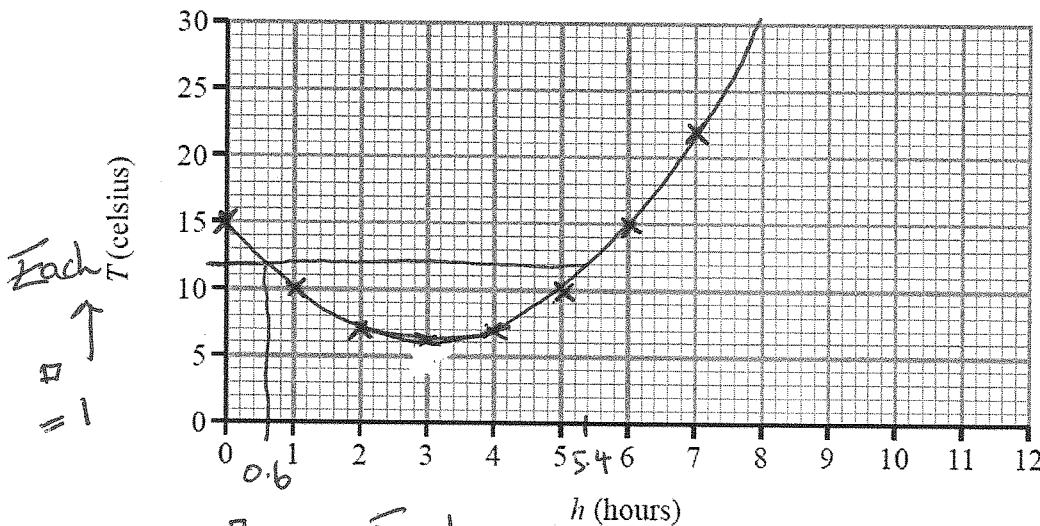
|     |    |    |   |   |   |    |    |    |    |
|-----|----|----|---|---|---|----|----|----|----|
| $h$ | 0  | 1  | 2 | 3 | 4 | 5  | 6  | 7  | 8  |
| $T$ | 15 | 10 | 7 | 6 | 7 | 10 | 15 | 22 | 31 |

$$2^2 - 12 + 15$$

$$5^2 - 30 + 15$$

[1]

(b) Plot your points on the graph below:



Smooth curve

Each square = 0.2 = 12 minutes

[2]

(c) Use your graph to find the times when the temperature in the room was 12 degrees Celsius.

$$0.6 \text{ hr} = 36 \text{ mins}$$

$$5.4 \text{ hr} = 5 \text{ hrs } 24 \text{ mins}$$

Answer \_\_\_\_\_ [1]