

m8 = 8 days to go!

8 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

$$3t + 5c = £10.50$$

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

$$4t + 4c = £10$$

On Wednesday she bought 2 teas and 6 coffees.

$$2t + 6c = ?$$

What was the total bill on Wednesday?

A solution by trial and improvement will not be accepted.

$$3t + 5c = £10.50$$

x 4

$$12t + 20c = £42 \quad \textcircled{1}$$

$$4t + 4c = £10$$

x 5

$$20t + 20c = £50 \quad \textcircled{2}$$

② - ①

$$\begin{array}{r} 20t = £50 \\ -12t = £42 \\ \hline 8t = £8 \\ t = £1 \end{array}$$

$$3t + 5c = £10.50$$

$$£3 + 5c = £10.50$$

$$5c = £7.50$$

$$c = £1.50$$

$$\begin{array}{r} 2 \times £1 = £2 \\ 6 \times £1.50 = £9 \\ \hline £11 \end{array}$$

Answer £ £11 [6]

Expand and simplify $(\sqrt{3} + \sqrt{5})^2$

$$(\sqrt{3} + \sqrt{5})(\sqrt{3} + \sqrt{5})$$

$$9 + \sqrt{15} + \sqrt{15} + 5$$

$$14 + 2\sqrt{15}$$

$$\underline{\underline{14 + 2\sqrt{15}}}$$

(2)

CRAB
CLAWS

14 A line has equation $y = 2x + 3$

A curve has equation $y^2 = 8x + 33$

The line and the curve meet at the points A and B.

Calculate the length of AB, leaving your answer in the form $\underline{\underline{p\sqrt{q}}}$ where p and q are integers.

quadratic formula

$y^2 = y^2$
 $(2x+3)^2$

$(2x+3)(2x+3)$

$4x^2 + 6x + 6x + 9$

$4x^2 + 12x + 9 = 8x + 33$

$4x^2 + 12x - 8 = 8x + 33 - 33 = 0$

$4x^2 + 4x - 24 = 0$

$\div 4$
 $x^2 + x - 6 = 0$

$(x+3)(x-2) = 0$

$x = -3 \quad x = 2$

$y = 2x + 3$

$y = 2x + 3$

$y = -6 + 3$
 $y = -3$

$y = 4 + 3$
 $y = 7$

$(-3, -3)$

$(2, 7)$

Answer $\underline{5\sqrt{5}}$ [7]

Length of line - Pythagoras

Draw sketch!

$10^2 + 5^2 = c^2$

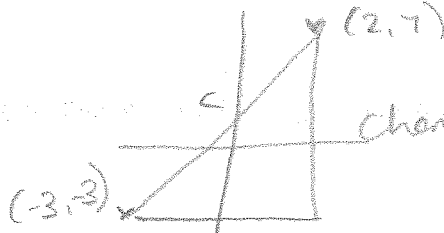
$100 + 25 = c^2$

$c^2 = 125$

$c = \sqrt{125}$

$= \sqrt{5} \times \sqrt{25}$

$= 5\sqrt{5}$



change in $y = 10$

change in $x = 5$