

Q5(a)

Adam buys 3 chocolate cupcakes and 5 plain vanilla cupcakes. He pays \$19. A chocolate cupcake is \$1 more than a vanilla cupcake.

Form 2 simultaneous equations and solve them to find the cost of a chocolate cupcake.

$c = \text{chocolate}$

$p = \text{plain}$

$c = p + 1$ (2)

$$3c + 5p = 19 \quad (1)$$

since $c = p + 1$, substitute into (1)

$$3(p + 1) + 5p = 19$$

$$3p + 3 + 5p = 19$$

$$8p = 16$$

$$p = 2 \quad \therefore p = \$2 \text{ and } c = \$3$$

(b) Kelly answered 25 multichoice questions. Each correct question was worth 5 marks. Each incorrect question was worth -2 marks. Kelly scored 83. How many questions did Kelly get wrong?

One equation could be

$$5C - 2I = 83, \text{ where } C = \text{correct} \\ I = \text{incorrect.}$$

Write another equation from the information given to help calculate 'I'.

$$5C - 2I = 83 \quad (1)$$

$$C + I = 25$$

$$C = 25 - I \quad (2)$$

sub (2) into (1)

$$5(25 - I) - 2I = 83$$

$$125 - 5I - 2I = 83$$

$$125 - 7I = 83 \Rightarrow -7I = -42, I = \underline{\underline{6}} \text{ wrong}$$