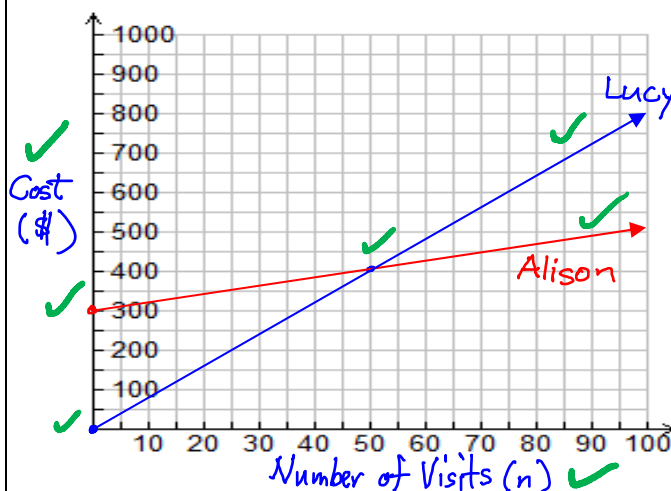


1. Alison and Lucy belong to different fitness clubs. Alison has a membership that cost her \$300 and she pays \$2 each time she visits the club. Lucy has a pay-as-you-go membership and she pays \$8 each time she visits her club.

- (a) Let  $n$  represent the number of visits to the fitness club, let  $C_A$  represent Alison's cost and let  $C_L$  represent Lucy's cost. Complete the following table: (4/4)

$n$	$C_A$	$C_L$
0	300	0
10	320	80
20	340	160
30	360	240
40	380	320
50	400	400

- (b) On the same grid, graph the relations between  $C_A$  and  $n$  and  $C_L$  and  $n$ . Don't forget to label the axes! (7/7)



- (c) Write equations relating  $C_A$  to  $n$  and  $C_L$  to  $n$ . (4/4)

$C_A$  to  $n$ :

$$C_A = 2n + 300$$

$C_L$  to  $n$ :

$$C_L = 8n$$

- (e) Alison paid a total of \$566.00. How many times did she visit the gym? (3/3)

$$C_A = 566, n = ?$$

$$566 = 2n + 300$$

$$\therefore 566 - 300 = 2n + 300 - 300$$

$$\therefore 266 = 2n$$

$$\therefore \frac{266}{2} = \frac{2n}{2}$$

$$\therefore 133 = n$$

Alison visited the gym 133 times.

- (d) For each of the relations identify the following: (5/5)

	Alison ( $C_A$ to $n$ )	Lucy ( $C_L$ to $n$ )
Slope	2	8
Constant of Variation	2	8
Rate of Change	\$2/visit	\$8/visit
Vertical Intercept	300	0
Initial (Fixed) Value	300	0

- (f) Complete the following table: (4/4)

	Alison ( $C_A$ to $n$ )	Lucy ( $C_L$ to $n$ )
Partial or Direct Variation?	Partial	Direct
Why?	Initial value is 300	Initial value is zero

- (g) Who has a better deal, Alison or Lucy? Explain. (3/3)

This depends on the number of visits. For fewer than 50 visits, Lucy has a better deal. For more than 50 visits, Alison has a better deal.