

Questions from Pranathi (13 Mar)

1. John planned to buy 12 shirts and 15 ties as Christmas gifts. These items cost a total of \$390.

However, John made a mistake by purchasing 15 shirts and 12 ties instead and had to pay an extra \$30.

What is the price of each shirt and each tie?

Solution:

	Shirt	Tie	Total Cost
	12	15	\$390
+3	15	12	\$420
+3	18	9	\$450
+3	21	6	\$480
+3	24	3	\$510
+3	27	0	\$540

Annotations for the first table:
 - From 12 shirts to 15 shirts: +3
 - From 15 ties to 12 ties: -3
 - From \$390 to \$420: +\$30
 - From 15 shirts to 27 shirts: +3
 - From 12 ties to 0 ties: -(3×4)
 - From \$420 to \$540: +(\$30×4)

27 shirts → \$540

1 shirt → \$20

	Shirt	Tie	Total Cost
	12	15	\$390
-3	9	18	\$360
-3	6	21	\$330
-3	3	24	\$300
-3	0	27	\$270

Annotations for the second table:
 - From 15 shirts to 12 shirts: -3
 - From 15 ties to 18 ties: +3
 - From \$390 to \$360: -\$30
 - From 15 shirts to 0 shirts: -(3×3)
 - From 15 ties to 27 ties: +(3×3)
 - From \$360 to \$270: -(\$30×3)

27 ties → \$270

1 tie → \$10

Ans: Each shirt costs \$20 and each tie costs \$10.

2. Mrs Chew bought some **apples** and **gave half** of them to Mrs Liew. Mrs Liew bought some bananas and gave half of them to Mrs Chew. Mrs Chew used **6 of her apples** to bake apple pies while Mrs Liew used **a dozen bananas** to make banana split.

The ratio of Mrs **Chew's apples** to **bananas** became **1 : 6**.
Mrs **Liew** had **four times as many bananas as apples**.

- (a) How many apples did Mrs Chew buy?
(b) How many bananas did Mrs Liew buy?

Solution:

Mrs Chew	<u>Apples</u>	:	<u>Bananas</u>
Before	1 unit + 6	:	6 units
	-6		

After	1 unit	:	6 units

Mrs Liew	<u>Apples</u>	:	<u>Bananas</u>
Before	1 unit + 6	:	6 units
			-12

After	1	:	4

$$4 \times (1 \text{ unit} + 6) \rightarrow 6 \text{ units} - 12$$

$$4 \text{ units} + 24 \rightarrow 6 \text{ units} - 12$$

$$2 \text{ units} \rightarrow 36$$

$$1 \text{ unit} \rightarrow 18$$

$$2 \times (1 \text{ unit} + 6) \rightarrow 48 \text{ (apples)}$$

$$12 \text{ units} \rightarrow 216 \text{ (bananas)}$$

Ans: (a) Mrs Chew bought 48 apples.

(b) Mrs Liew bought 216 bananas.

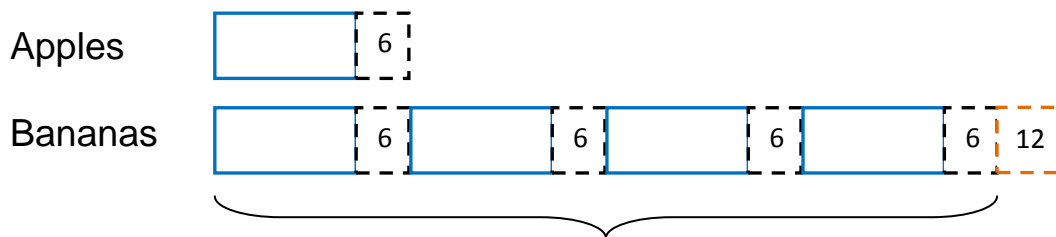
Alternative:

Mrs Chew (at first)



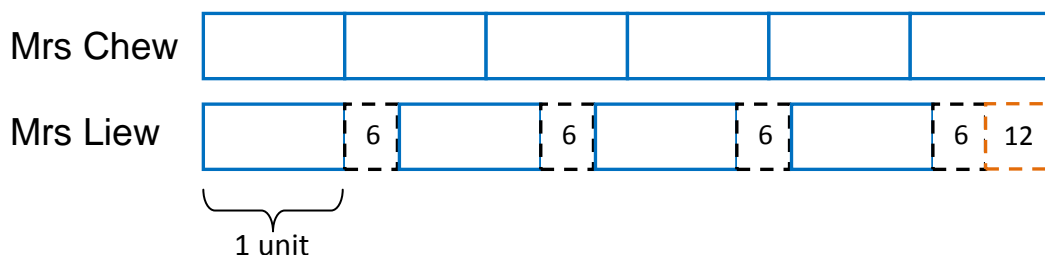
Using the same number of apples as Mrs Chew had at first,

Mrs Liew (at first)

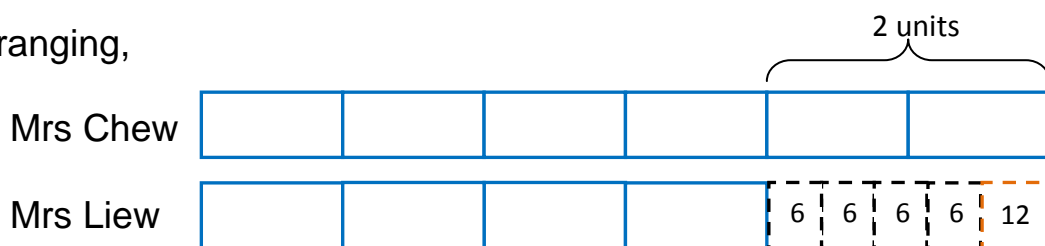


In the end, ratio of apples to bananas = 1 : 4

Mrs Chew and Mrs Liew had **same** number of **bananas** at first:



Rearranging,



2 units $\rightarrow 6 \times 4 + 12 = 36$
1 unit $\rightarrow 18$
2 \times (1 unit + 6) $\rightarrow 48$ (apples)
12 units $\rightarrow 216$ (bananas)

Ans: (a) Mrs Chew bought 48 apples.

(b) Mrs Liew bought 216 bananas.