

Q.1 During a sale, 20% discount was given for all brands of handphones. Will paid \$496.48 for his phone, inclusive of 7% GST. What was the selling price of the phone before the discount?

With GST: 107% → \$496.48

Before GST: 100% → \$464

Selling Price at 20% discount: 80% → \$464

Selling Price before discount: 100% → **\$580**

Q.2 There are some black and red pens in a bag. If 3 black pens are removed, the number of black pens becomes $\frac{1}{5}$ of the total number of pens left. If 10 red pens are removed, the number of black pens become $\frac{1}{3}$ of the total number of pens left. How many pens are in the bag?

Case 1

Black	Red
$1u+3$	$4u$
-3	
$1u$	$4u$

Case 2

Black	Red
$1u+3$	$4u$
	-10
1	2

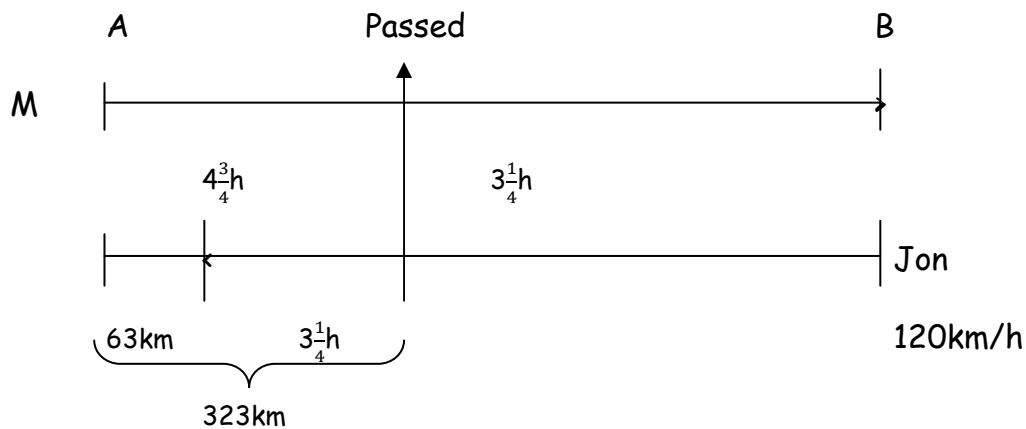
$$4u - 10 = 2u + 6$$

$$2u = 16$$

$$1u = 8$$

Ans. No. of pens = $5u + 3 = \mathbf{43}$

Q.3 Mark was travelling from Town A to B while Jon was travelling from Town B to A at a constant speed of 120 km/h. Mark arrived $3\frac{1}{4}$ hours after passing Jon while Jon is still 63 km away from his destination. Jon reduced his speed to $\frac{2}{3}$ of his original speed after he passed Mark. If Mark took 8 hours for the entire journey, what was the distance between the 2 towns?



$$\text{Jon's reduced speed} = \frac{2}{3} \times 120 = 80 \text{ km/h}$$

$$D \rightarrow 80 \times 3\frac{1}{4} + 63 = 323 \text{ km}$$

$$\text{Mark's speed} = 323 \div (8 - 3\frac{1}{4})$$

$$= 68 \text{ km/h}$$

$$\text{Distance between both towns} = 68 \times 8$$

$$= \underline{\underline{544 \text{ km}}}$$

Q.4 Pupils from School X and Y attended a combined graduation party. The number of pupils from School X were 12 fewer than the number of pupils from Y. $\frac{4}{7}$ of the pupils who attended from School X were boys. $\frac{1}{4}$ of the pupils who attended from School Y were girls. There were a total of 83 boys from both schools who attended the party. Find the total number of girls from both schools who attended the party.

After

	X		Y		
Boys	4u		3p	-->	83
Girls	3u		1p		
<hr style="width: 50%; margin: 10px auto;"/>					
Total	7u		4p		
				↙	12 more
			x 3		
	7u + 12	-->	4p	-->	21u + 36 --> 12p
			x 4		
	4u + 3p	-->	83	-->	16u + 12p --> 332
				↓ substitution	
				↓	16u + 21u + 36 --> 332
				↓	37u + 36 --> 332
				↓	296
				↓	1u --> 8
				↓	3p --> 83 - 4x8 = 51
				↓	1p --> 17

Ans. All the girls = $3u + 1p = 3 \times 8 + 17 = \underline{41}$

Q.5 Alex, Bill, Calvin and Dan shared the cost of a present for their friend. The ratio of the amount paid by Alex to the amount paid by the rest of them was 3:7. The ratio of the amount paid by Bill to the amount paid by the rest of them was 1:6. The ratio of the amount paid by Calvin to that paid by Dan was 5:8. Alex paid \$72 more than Calvin. (a) What was the cost of the present? (b) How much did Bill and Dan pay altogether?

$$\begin{array}{rclcl}
 \frac{A}{A+B+C+D} & = & \frac{3}{10} & = & \frac{21}{70} & \rightarrow & 21u \\
 \frac{B}{A+B+C+D} & = & \frac{1}{7} & = & \frac{10}{70} & \rightarrow & 10u \\
 & & & & & & \left. \begin{array}{l} 21u \\ 10u \end{array} \right\} 31u \\
 C & : & D & & & & \\
 5 & : & 8 & & \rightarrow & 39u & \\
 15u & & 24u & & & & \\
 A - C & \rightarrow & 21u - 15u = 6u & \rightarrow & \$72 & & \\
 & & 1u & \rightarrow & \$12 & & \\
 & & & & & & \left. \begin{array}{l} 31u \\ 39u \end{array} \right\} 70u
 \end{array}$$

Ans. (a) $70 \times \$12 = \underline{\underline{\$840}}$

(b) $10u + 24u = 34 \times \$12 = \underline{\underline{\$408}}$

Q.6 Basket A contains 125 chocolate cupcakes and 275 plain cupcakes. Basket B contains 400 chocolate cupcakes and 120 plain cupcakes. Some chocolate and plain cupcakes are moved from Basket B to A. As a result, the percentage of chocolate cupcakes in Basket A becomes 50% and the percentage of chocolate cupcakes in Basket B becomes 75%. What is the total number of cupcakes moved from Basket B to A?

After

	A	B	Total
Chocolate	50% → 1u	75% → 3p	125+400 = 525
Plain	50% → 1u	25% → 1p	275+120 = 295
		2p ----→	230
		1p ----→	115

At first, B: $400+120 = 520$

T last, B: $4 \times 115 = 460$

Cupcakes moved: **60**
