

Unit Transfer Method

Primary 5

Lesson 9: Two Variables Concept

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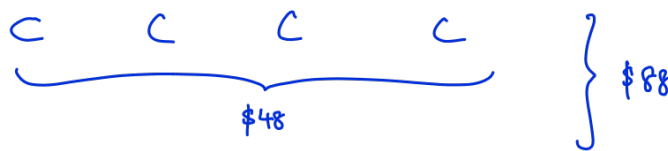
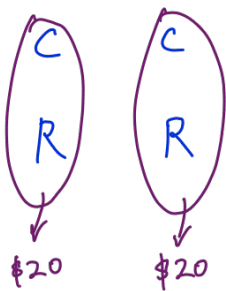
LESSON 9: TWO VARIABLE CONCEPT

GUIDED EXAMPLE 1

[6 identical cushion covers and 2 identical rugs cost \$88.]
 [1 such cushion cover and 1 such rug costs \$20.]
 What is the cost of 1 cushion cover?

* Get rid of 1 item to find the other item's value *

P4 Model



$$88 - 2 \times 20 = 48$$

$$48 \div 4 = 12$$

Ans : \$12

P5 VTM

$$[6C + 2R = 88]$$

$$1C + 1R = 20 \quad (\times 2)$$

To find C, make R the same.

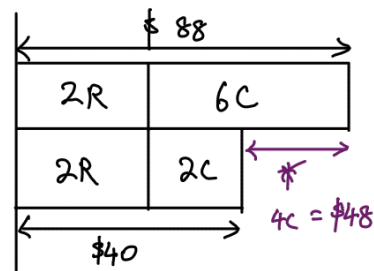
$$[2C + 2R = 40]$$

$$6C - 2C = 88 - 40$$

$$4C = 48$$

$$C = 48 \div 4$$

$$= 12$$



Ans : \$12

GUIDED EXAMPLE 2

April and May went shopping for clothes.

[April bought 4 dresses and 3 blouses for \$252.]

[May bought 3 dresses and 6 blouses for \$279.]

Find the cost of each item?

$$4D + 3B = 252 \quad (\times 2)$$

$$[3D + 6B = 279]$$

To find D, make B the same

$$[8D + 6B = 504]$$

$$8D - 3D = 504 - 279$$

$$5D = 225$$

$$D = 225 \div 5$$

$$= 45$$

$$4 \times 45 + 3B = 252$$

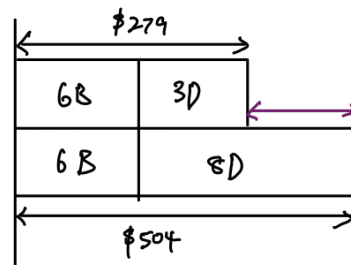
$$180 + 3B = 252$$

$$3B = 252 - 180$$

$$= 72$$

$$B = 72 \div 3$$

$$= 24$$



Ans: Dress : \$45
Blouse : \$24

GUIDED EXAMPLE 3

Alpha and Charlie weigh 178 kg.

Alpha and Bernard weigh 164 kg.

Bernard and Charlie weigh 186 kg.

Find the total weight of the three men.

$$\begin{array}{rclcl}
 A & & + C & = & 178 \\
 A + B & & & = & 164 \\
 & B & + C & = & 186 \\
 \text{sum} & 2A & + 2B & + 2C & = 178 + 164 + 186 \\
 \text{everyone} & & & & = 528 \\
 (\div 2) & A & + B & + C & = 528 \div 2 \\
 & & & & = 264
 \end{array}$$

Ans : 264 kg

GUIDED EXAMPLE 4

$\frac{1}{5}$ [Two objects weigh 12.2 kg.] Total
 $\frac{2}{5}$ 20% of the weight of first object $5u$
 and 50% of the weight of the second object $2p$ adds up to 2.5 kg. } compared portion
 Find the weight of the first object?

	compared portion	Total
1st	$1u$	$5u$
2nd	$1p$	$2p$

Total: $[5u + 2p = 12.2]$

CP: $1u + 1p = 2.5 \quad (\times 2)$

To find u , make p the same.

$[2u + 2p = 5.0]$

$5u - 2u = 12.2 - 5.0$

$3u = 7.2$

$1u = 7.2 \div 3$

$= 2.4$

$5u = 5 \times 2.4$

$= 12.0$

Ans : 12 kg

GUIDED EXAMPLE 5

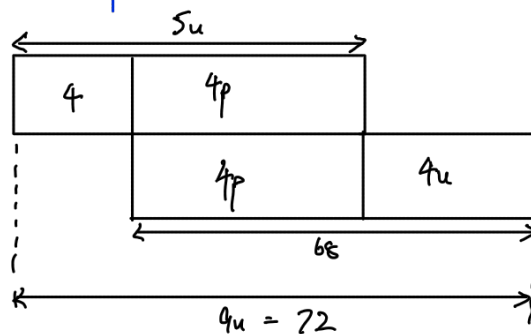
[There were 4 more men than women in a seminar.] *Diff*
 $\frac{4}{5}$ of the men ^{$5u$} and $\frac{3}{4}$ the women ^{$4p$} did not wear spectacles. ^{$4u$, $3p$}
 [17 of the adults wore spectacles.] *wore specs*
How many adults were there in the seminar?

	Total	DWS	wore specs
men	$5u$ ↘ 40	$4u$	$1u$
women	$4p$ ↘ 36	$3p$	$1p$

Diff : $[5u - 4p = 4]$
 WS : $1u + 1p = 17$ ($\times 4$)
 $[4u + 4p = 68]$

$5u + 4u = 4 + 68$
 $9u = 72$
 $1u = 72 \div 9$
 $= 8$
 $5u = 5 \times 8$
 $= 40$

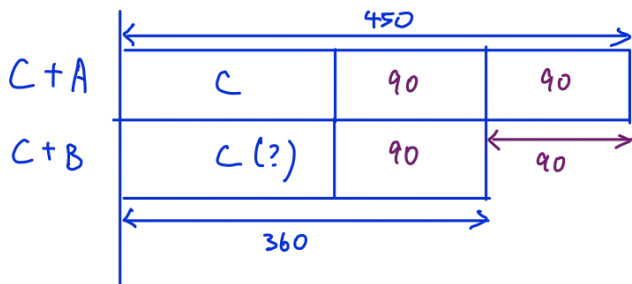
$40 - 4 = 36$
 $40 + 36 = 76$



Ans : 76

GUIDED EXAMPLE 6

Aloysius, Ben and Carl had some marbles.
 Ben and Carl had a total of 360 marbles.
 Aloysius and Carl had a total of 450 marbles.
 Ben had half the number of marbles that Aloysius had.
 How many marbles did Carl have?



$$450 - 360 = 90$$

$$360 - 90 = 270$$

Ans : 270

BUILD YOUR UNDERSTANDING

1. The mass of 2 identical packets of salt and 3 identical packets of sugar is 3.862 kg.
The mass of 15 such packets of salt and 3 such packets of sugar is 8.49 kg.
- a) What is the mass of one such packet of salt?
b) What is the mass of one such packet of sugar?

$$\begin{cases} 3 S_u + 2 S_a = 3.862 \\ 3 S_u + 15 S_a = 8.49 \end{cases}$$

$$15 S_a - 2 S_a = 8.49 - 3.862$$

$$13 S_a = 4.628$$

$$\begin{aligned} \text{a) } 1 S_a &= 4.628 \div 13 \\ &= 0.356 \end{aligned}$$

$$\begin{aligned} \text{b) } 2 S_a &= 2 \times 0.356 \\ &= 0.712 \end{aligned}$$

$$\begin{aligned} 3 S_u &= 3.862 - 0.712 \\ &= 3.15 \end{aligned}$$

$$\begin{aligned} 1 S_u &= 3.15 \div 3 \\ &= 1.05 \end{aligned}$$

$$\begin{aligned} \text{Ans : a) } &\underline{0.356 \text{ kg}} \\ \text{b) } &\underline{1.05 \text{ kg}} \end{aligned}$$

2. 3 identical books and 2 identical files cost \$78.
1 such book and 3 such files cost \$40.
What was the price of a book?

$$3B + 2F = 78 \quad (\times 3)$$

$$1B + 3F = 40 \quad (\times 2)$$

To find B, make F the same.

$$\begin{bmatrix} 9B + 6F = 234 \\ 2B + 6F = 80 \end{bmatrix}$$

$$\begin{bmatrix} 9B + 6F = 234 \\ 2B + 6F = 80 \end{bmatrix}$$

$$9B - 2B = 234 - 80$$

$$7B = 154$$

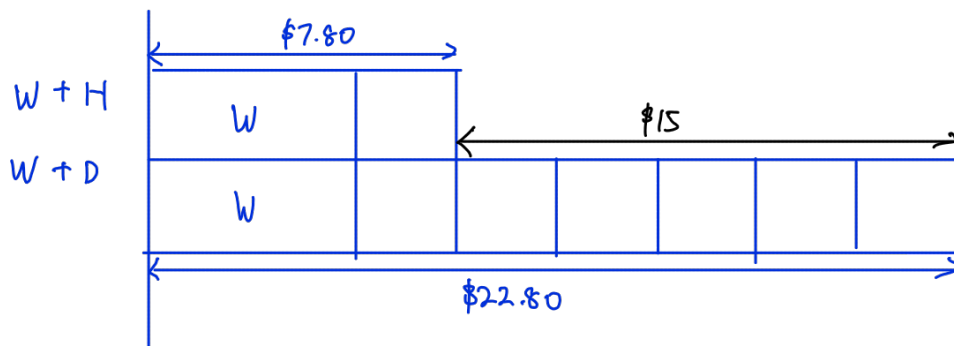
$$1B = 154 \div 7$$

$$= 22$$

Ans: \$22

3. Zen bought a watermelon, a honeydew and a durian.
 The watermelon and the honeydew costs \$7.80.
 The watermelon and the durian costs \$22.80.
 The durian costs 6 times as much as the honeydew.
 How much did Zen pay for the durian?

$$\begin{aligned} 1p + 1u &= 7.80 \\ 1p + 6u &= 22.80 \\ &\vdots \end{aligned}$$



$$22.80 - 7.80 = 15$$

$$15 \div 5 = 3$$

$$6 \times 3 = 18$$

Ans : \$18

4. (There are 73 sweets in Box A and Box B.) Total
 Given that $\frac{2}{3}$ of the sweets in Box A is 6 more
 than $\frac{2}{5}$ of the sweets in Box B.
 How many sweets are there in Box B?

Refer to GES

	Compared portion	Total
Box A	$2u$	$3u$
Box B	$2p$	$5p$

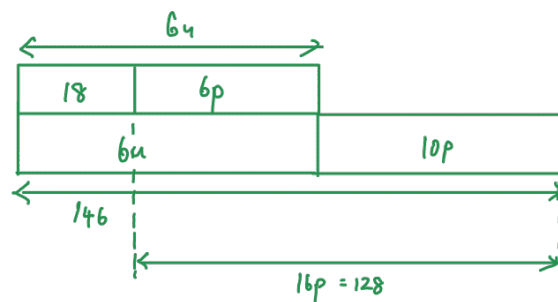
Total : $3u + 5p = 73$ (X2)

compared portion : $2u - 2p = 6$ (X3)

To find p , make u the same.

✓ $[6u + 10p = 146]$

✓ $[6u - 6p = 18]$



$10p + 6p = 146 - 18$

$16p = 128$

$p = 128 \div 16$
 $= 8$

$5p = 5 \times 8$
 $= 40$

Ans : 40

5. [Mrs Tan baked 68 cupcakes and muffins altogether.] Total
 She gave $\frac{3}{4}$ of the cupcakes and $\frac{1}{2}$ of the muffins to her friends.
 [She was left with 21 cupcakes and muffins.] Remain
 How many muffins did she bake?

	Total	Gave	Remain
Cupcakes	$4u$	$3u$	$1u$
Muffins	$2p$	$1p$	$1p$

$$\begin{array}{l} \text{Total} \quad [4u + 2p = 68] \\ \text{Remain} \quad 1u + 1p = 21 \quad (\times 4) \end{array}$$

To find p , make u the same.

$$[4u + 4p = 84]$$

$$4p - 2p = 84 - 68$$

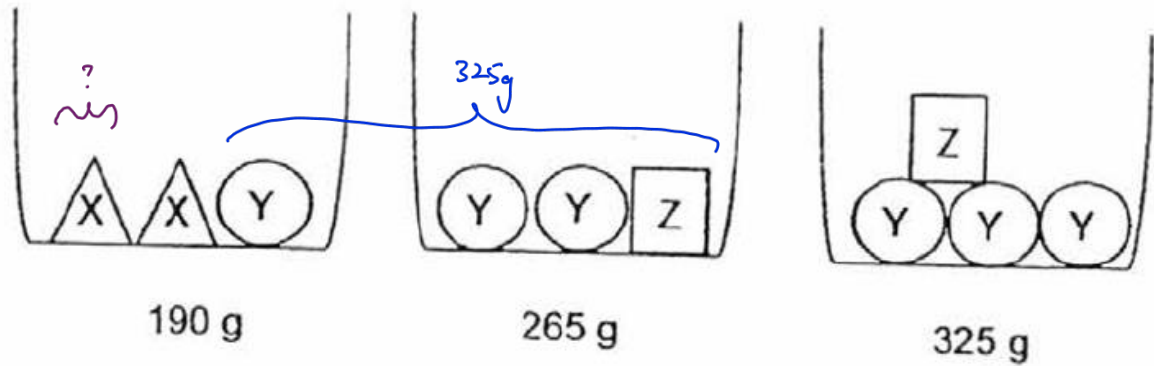
$$2p = 16$$

$$\text{Ans : } \underline{16}$$

CHALLENGE YOURSELF

3 objects, X, Y and Z were placed in identical containers and their mass was recorded as shown below. It has been recorded in such a way that the container's mass is not included.

What was the mass of X?



$$(190 + 265 - 325) \div 2 = 65$$

Ans : 65g