Higher Order Thinking Skills

Primary 5

Lesson 2:
Unit Transfer Method (II)

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LESSON 2: UNIT TRANSFER METHOD (II)

GUIDED EXAMPLE 1

Excess and Shortage

Miss Ng prepared some bags of cubes for an activity in her class.

Case 1: She tried placing 12 bags of cubes on each table but found that the last table had only 1 bag of cubes. * short of 11 bags to fill the last table

Case 2: If she placed 8 bags of cubes on each table, she would have 33 bags of cubes left. +33

How many bags of cubes did she have?

1u → no. tables

	Want to put	Excess/Shortage	Total bags
Case 1	12u	− 11	12u − 11
Case 2	8u	+ 33	8u + 33

$12u - 11 = 8u + 33$

$12u - 8u = 33 + 11$

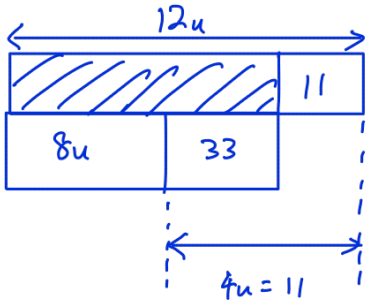
$4u = 44$

$1u = 44 \div 4$

$= 11$

$12u - 11 = 12 \times 11 - 11$

$= 121$



Ans: 121

GUIDED EXAMPLE 2

Excess and Shortage

Mrs Dewi has some sweets for pupils in the Math Club.

case 1 If she gives each pupil 2 sweets, she will 3 sweets left. (2u, +3)

case 2 If she gives each pupil 3 sweets, she will need 42 more sweets. (3u, −42)

How many sweets does she have?

1u → no. pupils

	Want to give	E/S	Total sweets
case 1	2u	+3	2u + 3
case 2	3u	− 42	3u − 42

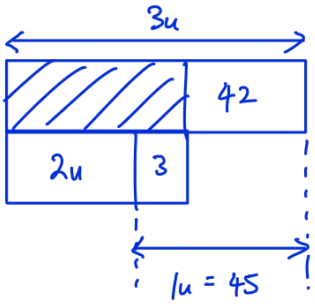
$2u + 3 = 3u - 42$

$3u - 2u = 42 + 3$

$1u = 45$

$2u + 3 = 2 \times 45 + 3$

$= 93$



Ans : 93

GUIDED EXAMPLE 3

Repeated Identity

The mass of a packet of jelly beans is $\frac{1}{6}$ of the mass of a bottle of oil.
The mass of a bag of rice is thrice that of the mass of the bottle of oil.
Given that the mass of the bag of rice is 1080 g more
than the mass of the bottle of oil, what is the total mass of the 3 items?

(Repeated)

J	O	R	R - O	Total
1	6			
	1 × 6	3 × 6		
1u	6u	18u	12u	25u

12u = 1080

25u = 25 × $\frac{1080}{12}$

= 2250

Ans : 2250 g

GUIDED EXAMPLE 4

Repeated Identity

Wendy, Jenny and Marcus share a bag of marbles.
The number of marbles owned by Wendy is $\frac{1}{3}$ of the total of Jenny's and Marcus' marbles.
The total number of marbles owned by Jenny and Wendy is $\frac{1}{2}$ of what Marcus has.
If Wendy has 90 marbles more than Jenny, how many marbles does Marcus have?

W	J + M	(Repeated) W + J + M
1 ×3 → 3u	3 ×3 → 9u	4 ×3 → 12u
J + W	M	W + J + M
1 ×4 → 4u	2 ×4 → 8u	3 ×4 → 12u

Jenny's no. units = 4u − 3u
= 1u

3u − 1u = 90
2u = 90
8u = 8 × $\frac{90}{2}$
= 360

Ans : 360

GUIDED EXAMPLE 5

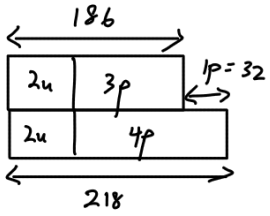
Two Variable

There was a total of 186 local and foreign stamps in a stamp album.
After $\frac{1}{2}$ of the local stamps and $\frac{1}{3}$ of the foreign stamps were sold, 1u, 1p
There were 109 stamps left.

a) How many foreign stamps were sold?
b) How many local stamps were left?

	L	F	Total
Total	2u	3p	186
Sold	1u	1p (a)	
Left	1u (b)	2p	109
		64	

$[2u + 3p = 186]$
$1u + 2p = 109 \quad (\times 2)$
$[2u + 4p = 218]$



$4p - 3p = 218 - 186$

a) $1p = 32$

b) $2 \times 32 = 64$

$1u = 109 - 64$
$= 45$

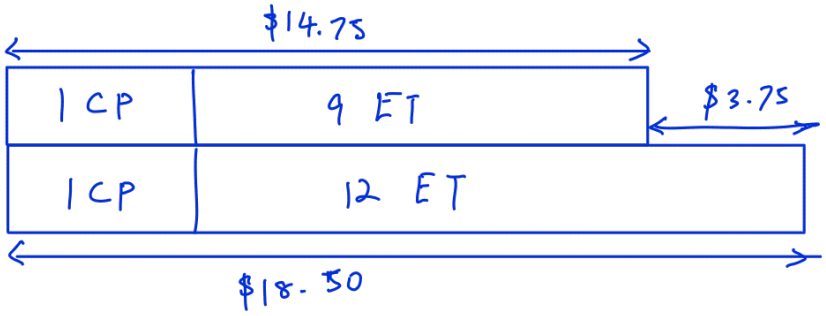
Ans: a) 32

b) 45

GUIDED EXAMPLE 6

Two Variable

At a bakery, Janice paid $14.75 for 1 chicken pie and 9 egg tarts.
Belle paid $18.50 for 1 chicken pie and 12 egg tarts.
Find the cost of 5 chicken pies.



$18.50 - 14.75 = 3.75

$3.75 \div 3 = 1.25$

$14.75 - 9 \times 1.25 = 3.50$

$5 \times 3.50 = 17.50$

Ans: $17.50

GUIDED EXAMPLE 7

Equal Concept

$\frac{1}{4}$ of Abullah's age is equal to $\frac{2}{3}$ of Hussein's age.
The ratio of Hussein's age to Siti 's age is 2: 3.
Abdullah is 42 years older than Siti.
How old is Hussein?

Fraction of a set = Fraction of another set

(Equal) Compared portion | Total

	(Equal) Compared portion	Total
A	1 ×2 → 2u	4 ×2 → 8u
H	2u	3u

(Repeated)

A	H	S	A ~ S
8 ×2	3 ×2		
	2 ×3	3 ×3	
16p	6p	9p	7p

7p = 42

6p = 6 × $\frac{42}{7}$

= 36

Ans : 36 years old

GUIDED EXAMPLE 8

Equal Concept

Three sisters, Nancy, Tracy and Lancy,
gave an equal amount of money to buy a present for their mother. Tracy used $\frac{3}{5}$ of her money. Nancy used $\frac{1}{2}$ of her money and Lancy used $\frac{2}{3}$ of her money.
They had a total of $1395 at first.
How much money did each sister give for the present?

	N	T	L	Total
Total	2 x 6 → 12u	5 x 2 → 10u	3 x 3 → 9u	31u
Gave (Equal)	1 x 6 → 6u =	3 x 2 → 6u =	2 x 3 → 6u =	
Remain	1 x 6 → 6u	2 x 2 → 4u	1 x 3 → 3u	

31u = 1395

1u = 1395 ÷ 31

= 45

6u = 6 × 45

= 270

Ans : $270

BUILD YOUR UNDERSTANDING

1. Miss Heng had a packet of stickers for a group of pupils.
   After giving each pupil 8 stickers, she had 2 stickers left.
   If she had given only 5 stickers to each pupil, she would have 17 stickers left.
   How many pupils were in that group?

1u → no. pupils

	want to give	E/S	Total stickers
case 1	8u	+2	8u + 2
case 2	5u	+17	5u + 17

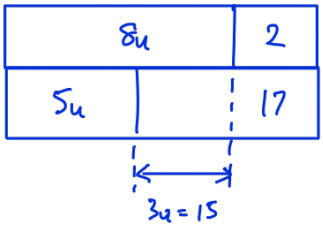
$8u + 2 = 5u + 17$

$8u - 5u = 17 - 2$

$3u = 15$

$1u = 15 \div 3$

$= 5$



Ans : 5

2. There are some boys and girls in the indoor sports hall.
$\frac{1}{2}$ of the number of boys in the indoor sports hall is
the same as ~~60~~ $\frac{3}{5}$ of the number of girls.
If there are 25 more boys than girls in the indoor sports hall,
how many children are there altogether?

	(Equal) Compared portion	Total
B	1 ×3 → 3u	2 ×3 → 6u
G	3u	5u
Diff		1u
Total		11u

1u = 25

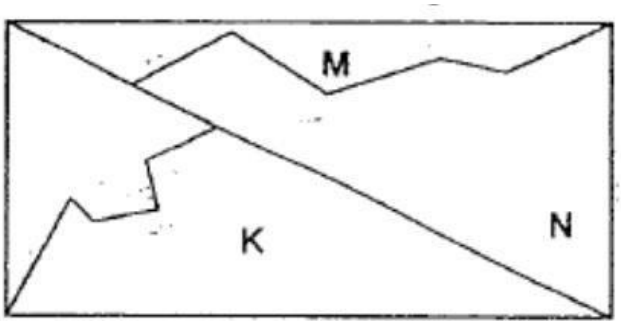
11u = 11 × 25

= 275

Ans: 275

3. Amos' salary is 20% more than Steve's but 20% less than Joe's.
If their total salary is $2220, find Amos' salary.

4. The rectangle below is divided into four parts K, L, M and N.



The ratio of Part K to Part L is 5 : 3
and the ratio of Part L to Part M is 2 : 1

a) Find the ratio of Part K to Part M.

b) Given that Part N is 26 cm^2, find the area of the rectangle.

5. A book and a pen costs $3.
An eraser and a book costs $2.50.
Find the total cost of a book, a pen and an eraser if a pen and eraser costs $1.50.

6. There were 32 tourists on a bus.
$\frac{2}{5}$ of the men and $\frac{1}{4}$ of the women were from Singapore.
The total number of tourists who came from Singapore was 11.
How many men came from Singapore?

7. Randy brought along a certain amount of money to buy files.
If he bought them at $1.50 each, he would have $17.50 left.
If he bought the same number of files at $2.70 each,
he would have $9.10 left.
How much money did he bring along?

8. In a fun fair, Mathew and John sold 368 balloons.
John and Keith sold 112 balloons altogether.
Mathew sold 9 times as many balloons as Keith.
How many balloons did the three boys sell altogether?

9. Andy, Ben and Carol shared a sum of money.
Ben had $\frac{4}{7}$ of the sum of money.
Andy's share was $\frac{1}{5}$ of Carol's share.
Andy and Ben together received $300 more than Carol.
How much money did Carol receive?

10. There were 910 people in the hall.
$\frac{3}{5}$ of the males and $\frac{1}{4}$ of the females were children.
There were thrice as many women as men.
How many more females than males are there?

11. The ratio of the shaded area to the area of the square ABCD is 5: 12.
The ratio of the shaded area to the area of triangle EFG is 3: 8.
Given that the area of the shaded part is 60 cm^2,
find the area of the entire figure.