

# Unit Transfer Method

## Primary 5

### Lesson 8: Equal Concept

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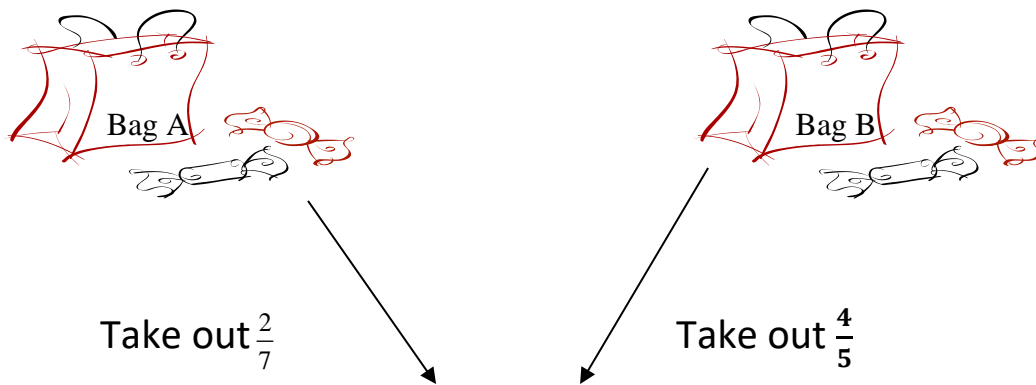
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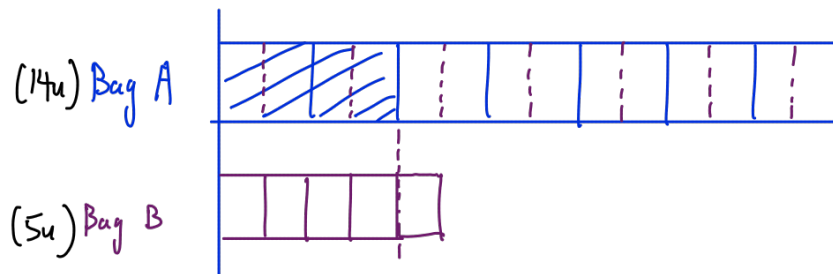
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**LESSON 8: EQUAL CONCEPT SCENARIOS**

- When  $\frac{2}{7}$  of the total number of sweets in Bag A is equal to  $\frac{4}{5}$  of the total number of sweets in Bag B ...



The model will look like this:



The table will look like this:

	compared portion (Equal)	Total
Bag A	$2 \times 2$ 4u ↙	$7 \times 2$ 14u ↙
Bag B	4 4u ↙	5 5u ↙

**GUIDED EXAMPLE 1**

$\frac{1}{4}$   
25% of Peter's savings is the same as  $\frac{1}{3}$  of Alvin's savings.

$$25\% = \frac{25}{100} = \frac{1}{4}$$

- a) Who had more money, Peter or Alvin?
- b) They had a total savings of \$350. How much money did Peter have?

a) Peter

b)  $7u = 350$   
 $1u = 350 \div 7$   
 $= 50$   
 $4u = 4 \times 50$   
 $= 200$

	(same) compared portion	Total
Peter	1u	4u (b)
Alvin	1u	3u
Total		7u

Ans : a) Peter  
 b) \$200

**GUIDED EXAMPLE 2**

$\frac{3}{8}$  of Benson's savings is the same as  $\frac{1}{3}$  of Ray's savings.  
 [Ray had \$90 more than Benson in savings.]  
 How much did Benson have?

	(same) compared portion	Total
Benson	3 3u ↘	8 8u ↘
Ray	1 × 3 3u ↘	3 × 3 9u ↘
Diff		1u

$1u = 90$   
 $8u = 8 \times 90$   
 $= 720$

Ans : \$720

**GUIDED EXAMPLE 3**

$\frac{3}{5}$  of Abby's money is equal to  $\frac{4}{9}$  of Betty's money.

Betty has \$140 more than Abby.

How much money does Betty have?

	(same) Compared portion	Total
Abby	$3 \times 4$ $12u$ ↙	$5 \times 4$ $20u$ ↙
Betty	$4 \times 3$ $12u$ ↙	$9 \times 3$ $27u$ ↙
Diff		$7u$

$$7u = 140$$

$$1u = 140 \div 7$$

$$= 20$$

$$27u = 27 \times 20$$

$$= 540$$

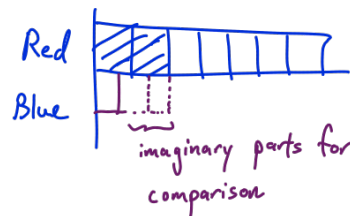
Ans : \$540

**GUIDED EXAMPLE 4**

$\frac{2}{7}$  of the red pens in a drawer is  $\frac{3}{1}$  times as many as all the blue pens in it.

(There are 38 more red pens than blue pens in the drawer.)

How many pens are there in the drawer?



	(same) Compared portion	Total
Red	$2 \times 3$ $6u$ ↙	$7 \times 3$ $21u$ ↙
Blue	$3 \times 2$ $6u$	$1 \times 2$ $2u$ ↙
Diff		$19u$
Total		$23u$

$$19u = 38$$

$$1u = 38 \div 19$$

$$= 2$$

$$23u = 23 \times 2$$

$$= 46$$

Ans : 46

**GUIDED EXAMPLE 5**

Mrs Lim baked 76 chocolate cakes and strawberry cakes.  
 After she gave away  $\frac{1}{4}$  of the chocolate cakes and  $\frac{3}{5}$  of the strawberry cakes,  
 she was left with the same number of chocolate cakes and strawberry cakes.

How many cakes had she left?  $25\% = \frac{25}{100} = \frac{1}{4}$ ,  $80\% = \frac{80}{100} = \frac{4}{5}$

	Total	Gave	(same) Remain
Chocolate cakes	4 4u	1 1u	3 3u
Strawberry cakes	5 x 3 15u	4 x 3 12u	1 x 3 3u
Total	19u		6u

$$19u = 76$$

$$1u = 76 \div 19$$

$$= 4$$

$$6u = 6 \times 4$$

$$= 24$$

Ans : 24

**GUIDED EXAMPLE 6**

Irene and Mary shared a sum of money.  
 Irene spent  $\frac{2}{5}$  of her share and Mary spent  $\frac{3}{4}$  of hers.  
 In the end, [Irene had 6 times as much money as Mary.]  
 [Given that Mary had \$270 less than Irene at first,]  
 find the amount of money Irene had at first.

	Total	Spent	(compared) Remain
Irene	5 x 2 10u	2 x 2 4u	3 x2 → 6u ← 6
Mary	4 4u	3 3u	1 ↓ ↓ 1 1u
Diff	6u		

$$6u = 270$$

$$1u = 270 \div 6$$

$$= 45$$

$$10u = 10 \times 45$$

$$= 450$$

Ans : \$450

**GUIDED EXAMPLE 7**

A box contained some red marbles and some blue marbles.

$\frac{1}{4}$  of the red marbles and  $\frac{3}{7}$  of the blue marbles were removed.

In the end, there were 1.5 times as many red marbles as there were blue marbles.

Given that there were 20 fewer blue marbles than red marbles at first,

find the number of red marbles in the box at first.

$1.5 = \frac{3}{2}$

	Total	Removed	(compared) Remain
Red	$4 \times 2 \downarrow$ $8u$	$1 \times 2 \downarrow$ $2u$	$3$ $x2 \rightarrow 6u \leftarrow x2$
Blue	$7$ $7u \downarrow$	$3$ $3u \downarrow$	$4$ $\rightarrow 4u \leftarrow x2$
D: ff	$1u$		

$1u = 20$   
 $8u = 8 \times 20$   
 $= 160$

Ans : 160

**BUILD YOUR UNDERSTANDING**

1.  $\frac{2}{3}$  of Julie's number of cards was equal to  $\frac{2}{7}$  of her number of stamps.  
 [ Julie had 32 fewer cards than stamps in her collection. ]  
 How many stamps did she have?

	(same) compared portion	Total
Cards	2u	3u
Stamps	2u	7u
Diff		4u

$$4u = 32$$

$$1u = 32 \div 4$$

$$= 8$$

$$7u = 7 \times 8$$

$$= 56$$

Ans : 56

2.  $\frac{3}{8}$  of the chocolates in Box A is  $4\frac{4}{5}$  times as many as all the chocolates in Box B.  
 [ Given that there are 116 more chocolates in Box A than in Box B, ]  
 find the number of chocolates in Box B.

	(same) compared portion	Total
Box A	3 x 4 12u ↓	8 x 4 32u ↓
Box B	4 x 3 12u ↓	1 x 3 3u ↓
Diff		29u

$$32u - 3u = 116$$

$$29u = 116$$

$$1u = 116 \div 29$$

$$= 4$$

$$3u = 3 \times 4$$

$$= 12$$

Ans : 12



3. (There are 44 students in Class 5A.)  
 $\frac{2}{3}$  of the number of girls is the same as  $\frac{1}{4}$  the number of boys.

- a) How many girls are there in Class 5A?
- b) How many more boys than girls are there in Class 5A?

	(same) Compared portion	Total
Girls	2 2u ↘	3 3u ↘ (a)
Boys	1 × 2 2u ↘	4 × 2 8u ↘
Total		11u
Diff		5u (b) =

11u = 44

1u = 44 ÷ 11  
 = 4

a) 3u = 3 × 4  
 = 12

b) 5u = 5 × 4  
 = 20

Ans : a) 12  
 b) 20

4. (Mrs Lim bought 248 more white chocolates than dark chocolates.)  
 After she gave away  $\frac{5}{7}$  of the white chocolate and  $\frac{1}{3}$  of the dark chocolates,  
 there is an equal number of white chocolates and dark chocolates remaining.  
 How many white chocolates did she give away?

GES

	Total	Gave	(same) Remain
White	7u	5u //	2u
Dark	3u	1u	2u
Diff	4u		

4u = 248

1u = 248 ÷ 4  
 = 62

5u = 5 × 62  
 = 310

Ans : 310

5. Daniel had 1000 apples and pears.  
He sold equal numbers of apples and pears.  
 He then found that he had  $\frac{1}{10}$  of the apples and  $\frac{2}{5}$  of the pears left.  
 Find the number of apples left.

	Total	(equal) Sold	Remain
Apples	10 10u ↓	9 9u ↓	1 1u ↓
Pears	5 × 3 15u ↓	3 × 3 9u ↓	2 × 3 6u ↓
Total	25u		

$$25u = 1000$$

$$1u = 1000 \div 25$$

$$= 40$$

Ans : 40

6. (Alice had \$237 more than Betty.)  
 Alice spent 80% of her money and Betty spent 25% of her money.  
 In the end, (Betty had 6 times as much money as what Alice had left.)  
 Find the amount of money Alice had at first.

$$80\% = \frac{80}{100} = \frac{4}{5}, \quad 25\% = \frac{25}{100} = \frac{1}{4}$$

	Total	Spent	(Compared) Remain
Alice	5 5u ↓	4 4u ↓	1 1u ↓
Betty	4 × 2 8u ↓	1 × 2 2u ↓	3 6 x2 ↓ 6u ↓
Diff	3u		

$$3u = 237$$

$$1u = 237 \div 3$$

$$= 79$$

$$5u = 5 \times 79$$

$$= 395$$

Ans : \$395

7. There were  $2.5$  times as many girls in Class 5X as in Class 5Y.  
 $\frac{1}{4}$  of the pupils in Class 5X are girls and  $\frac{6}{7}$  of the pupils in Class 5Y are boys.  
 Given that there is a total of 49 girls in the two classes,  
 how many pupils are there in Class 5X?  $2.5 = \frac{5}{2}$

	Total	Girls	Boys
5X	$4 \times 5$ $20u$	$1 \times 5$ $5u$	$3 \times 5$ $15u$
5Y	$7 \times 2$ $14u$	$1 \times 2$ $2u$	$6 \times 2$ $12u$
Total		$7u$	

$$7u = 49$$

$$1u = 49 \div 7$$

$$= 7$$

$$20u = 20 \times 7$$

$$= 140$$

Ans: 140

**CHALLENGE YOURSELF**

[ Andy, Ben and Kelvin shared a winning of \$27000 cash from a lottery. ] Total  
 Andy spent  $\frac{3}{5}$  of his share,  
 Ben spent  $\frac{3}{4}$  of his share  
 and Kelvin spent  $\frac{2}{3}$  of his share.

Given that the three boys each spent the same amount of money,  
 find the total amount of money they had left.

	Total	(same) Spent	Remain
Andy	$5 \times 2$ $10u$	$3 \times 2$ $6u$	$2 \times 2$ $4u$
Ben	$4 \times 2$ $8u$	$3 \times 2$ $6u$	$1 \times 2$ $2u$
Kelvin	$3 \times 3$ $9u$	$2 \times 3$ $6u$	$1 \times 3$ $3u$
Total	$27u$		$9u$

$$27u = 27000$$

$$1u = 27000 \div 27$$

$$= 1000$$

$$9u = 9 \times 1000$$

$$= 9000$$

Ans : \$9000

**CHALLENGE YOURSELF**

Madam Ong had a total of 741 red and blue buttons.

She used  $\frac{4}{7}$  of her red buttons and  $\frac{3}{5}$  of her blue buttons to sew a quilt.

In the end, she had thrice as many red as blue buttons remaining.

How many buttons did Madam Ong use altogether?

	Total	Used	(Compared) Remain
Red	7 $\times 2$ 14u ↙	4 $\times 2$ 8u ↙	3 $\times 2$ → 6u    3 ↙ $\times 2$
Blue	5 5u ↙	3 3u ↙	2 → 2u    1 ↙ $\times 2$
Total	19u	11u	

$$19u = 741$$

$$1u = 741 \div 19$$

$$= 39$$

$$11u = 11 \times 39$$

$$= 429$$

Ans : 429