1) **Fractions**

<u>Primary 5</u>

   a. Common denominators – change to common denominators when the fractions refer to the same total.

   Example 1 – Change to common denominators

Referring to the same total/whole

There are some cookies in a bag. $\frac{1}{4}$ of the cookies are chocolate chip cookies. $\frac{2}{5}$ of the cookies are almond cookies. The rest are butter cookies. What fraction of the cookies are butter cookies?

$$\text{Butter} = 1 - \frac{1}{4} - \frac{2}{5}$$
$$= \frac{7}{20} \text{ (Ans)}$$

$$\text{Ans}: \frac{7}{20}$$

   Example 2 – Part of a part (different denominator)

Different total/whole

$\frac{5}{7}$ of the students in a Computer Club are boys. $\frac{1}{4}$ of the girls in the Computer Club are in Primary 6. What fraction of the students in the Computer Club are ~~not Primary 6 girls?~~

girls who are not Primary 6   ** Please note typo.*

$$\text{Girls out of total} = 1 - \frac{5}{7}$$
$$= \frac{2}{7}$$

$$\text{Girls not in P6} = 1 - \frac{1}{4}$$
$$= \frac{3}{4}$$

$$\text{Girls not in P6 in computer club out of total}$$
$$= \frac{3}{4} \times \frac{2}{7} = \frac{3}{14} \text{ (Ans)}$$

$$\text{Ans}: \frac{3}{14}$$

b. Remainder in the answer – dividing fractions

Example 1

A jug contains 4 ℓ of water. Mr Tay uses the water to fill some identical glasses to the brim. The capacity of each glass is $\frac{5}{8}$ ℓ. How much water is left?

No. of glasses $= 4 \div \frac{5}{8}$

$= 6\frac{2}{5}$

6 complete glasses

$\frac{2}{5}$ of a glass

Amt of water left

$= \frac{2}{5}$ of a glass

$= \frac{\overset{1}{\cancel{2}}}{\cancel{5}_1} \times \frac{\overset{1}{\cancel{5}}}{\cancel{8}_4}$

$= \frac{1}{4}$ (Ans)

Ans: $\frac{1}{4}\ell$

Example 2

Joyce added $\frac{4}{5}$ ℓ of water to $\frac{1}{10}$ ℓ of orange syrup to prepare a drink.

Then she poured $\frac{1}{8}$ ℓ of the drink into identical glasses.

(a) What was the greatest number of glasses that contained $\frac{1}{8}$ ℓ of drink?

(b) How much drink did she have left?

Total $= \frac{4}{5} + \frac{1}{10}$

$= \frac{9}{10}$

(a) No. of glasses $= \frac{9}{10} \div \frac{1}{8}$

$= 7\frac{1}{5}$

7 complete glasses

$\frac{1}{5}$ of a glass

≈ 7 (Ans)

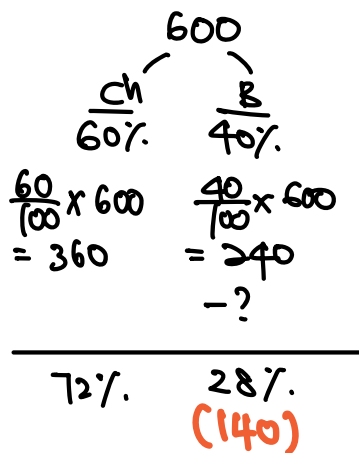(b) left $= \frac{1}{5} \times \frac{1}{8}$

$= \frac{1}{40}$ (Ans)

Ans: (a) 7

(b) $\frac{1}{40}\ell$

2) **Percentage**

Are the percentages referring to the same whole?

Example 1

Refering to 600

Mrs King baked 600 cookies. 60% of them were chocolate cookies and the rest were butter cookies. She sold some butter cookies and the percentage of chocolate cookies increased to 72%. How many butter cookies did she sell?

Refering to new total.

$$600$$

Ch	B
60%	40%
$\frac{60}{100} \times 600$	$\frac{40}{100} \times 600$
$= 360$	$= 240$
	$-?$

_____

72%	28%
	(140)

72% of new total
$= 360$
28% of new total
$= \frac{360}{72} \times 28$
$= 140$

Butter sold
$= 240 - 140$
$= 100$ (Ans)

Ans: 100

Example 2

$\rightarrow 100\% = $ ALL Fruits $\rightarrow 100\% = $ Remainder.

At a fruit stall, 60% of the fruits are durians. 60% of the remaining fruits are mangoes and the rest are watermelons. There are 112 watermelons. How many durians are there?

All
(100%)

Durians	Remainder
60%	40%
?	(100%)

	Mangoes	Watermelons
	60%	40%
		112
		(16%)
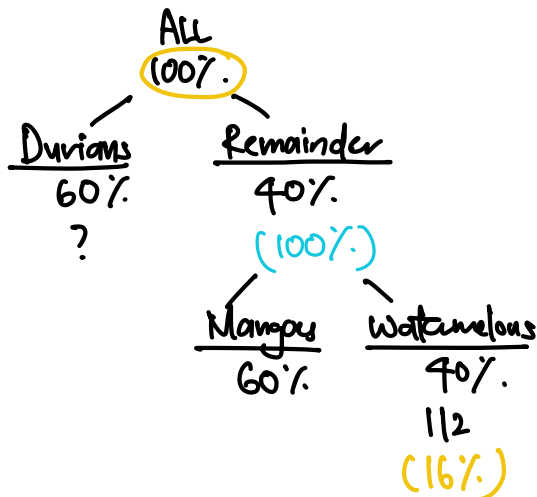
40% of Remainder = watermelons
$= \frac{40}{100} \times 40$
$= 16\%$

16% of total = 112
Durians $= \frac{112}{16} \times 60$
$= 420$ (Ans)

Ans: 420

3) **Algebra**

Algebra vs Model – Which is better?

Mrs Loke had some red, green and yellow buttons. She had 80 more green buttons than yellow buttons and 15 more red than green buttons. She used $\frac{3}{4}$ of her green buttons and $\frac{1}{2}$ of her yellow buttons to sew on some dresses. She had 290 buttons left. How many buttons did Mrs Loke have at first?

Model

Group green into 4 equal groups

$$7u + 80 + 20 + 15 = 290$$
$$7u + 115 = 290$$
$$7u = 290 - 115$$
$$= 175$$
$$12u = \frac{175}{7} \times 12$$
$$= 300$$
At first = 300 + 80 + 80 + 15
$$= 475 \ (Ans)$$

Ans: 475

Algebra

Let x be no. of yellow *Children must be able to select the correct unknown to be x.*
$$G = x + 80$$
$$Y = x$$
$$R = x + 80 + 15$$
$$= x + 95$$

$\dfrac{G}{x+80}$

used $= \frac{3}{4}x + \frac{3}{4} \times 80$ *Outside primary syllabus*
$$= \frac{3}{4}x + 60$$
Left $= x - \frac{3}{4}x + 80 - 60$
$$= \frac{1}{4}x + 20$$

$\dfrac{Y}{x}$
used $= \frac{1}{2}x$
Left $= \frac{1}{2}x$

$$x + 95 + \frac{1}{2}x + \frac{1}{4}x + 20 = 290$$
$$1\frac{3}{4}x + 115 = 290$$
$$1\frac{3}{4}x = 290 - 115$$
$$= 175$$
$$x = 175 \div 1\frac{3}{4}$$
$$= 100$$
At first = 100 + 80 + 100 + 100 + 95
$$= 475 \ (Ans)$$
Ans: 475