

## P6 Maths Problem Solving Class 2018 Sample questions

### Skill Set 7 (Whole Numbers) – 2 Unknowns & 2 set of information ★★★★★

There are 40 students in class.  $\frac{1}{4}$  of the girls and  $\frac{2}{3}$  of the boys are in track and field. In total, 15 students are in track and field. How many girls are there in the class?

1 unit of girls + 2 units of boys ---- 15 students

3 units of girls + 1 unit of boys ---- 25 students

Thus,

6 units of girls + 2 units of boys ---- 50 students

Comparing 6 units of girls + 2 units of boys with 1 unit of girls + 2 units of boys,

5 units of girls ----  $50 - 15 = 35$

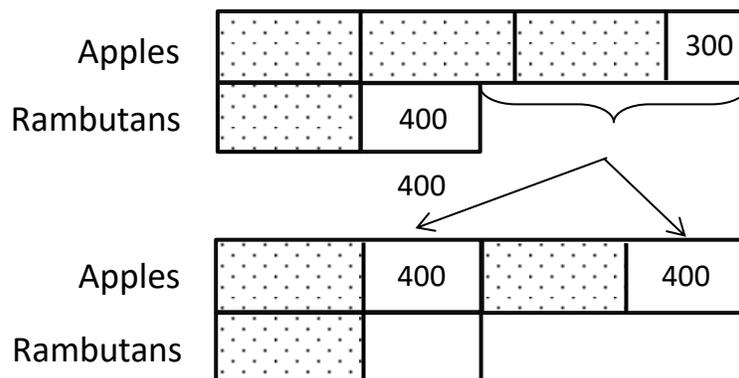
1 unit of girls ----  $35 \div 5 = 7$

Number of girls in the class =  $7 \times 4 = 28$

There are **28** girls in the class

### Skill Set 9 (Whole Numbers) – Change in base unit comparison ★★★★★

There were thrice as many apples as rambutans in a shop. After the shop owner purchased another 400 rambutans and 300 apples, the number of rambutans was  $\frac{1}{2}$  the number of apples. Find the number of apples and rambutans in the shop at first.



$$400 + 400 = 800$$

$$800 - 300 = 500$$

1 shaded unit ---- 500

3 shaded units ----  $500 \times 3 = 1500$

Number of apples at first = **1500**

Since there were thrice as many apples as rambutans at first,

Number of rambutans at first =  $1500 \div 3 = 500$

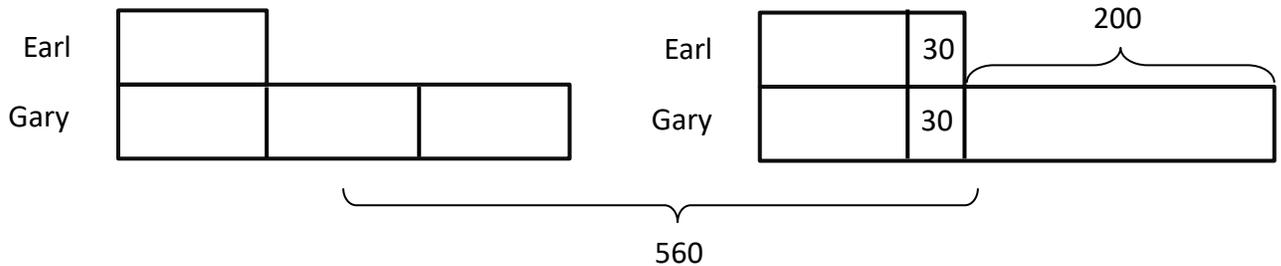
There were **1500** apples and **500** rambutans at first.

**Skill Set 10 (Whole Numbers) – Side by side modeling ★★★★★**

Gary and Earl had 560 cards together. During a competition, both Gary and Earl lost some of their cards. Earl lost 30 cards more than what he had left. Gary lost 200 more cards than Earl. The amount of cards Earl had left is  $\frac{1}{3}$  the number of cards Gary had left. Find the number of cards Gary had at first?

In the end

Cards Lost



$$30 + 30 + 200 = 260$$

$$560 - 260 = 300$$

$$6 \text{ units ---- } 300$$

$$1 \text{ unit ---- } 300 \div 6 = 50$$

$$4 \text{ units ---- } 50 \times 4 = 200$$

$$\text{Number of cards Gary had at first} = 200 + 30 + 200 = \mathbf{430}$$

Gary had **430** cards at first.

**Skill Set 12 (Speed) – Inverse proportion ★★★★★  $\frac{1}{2}$**

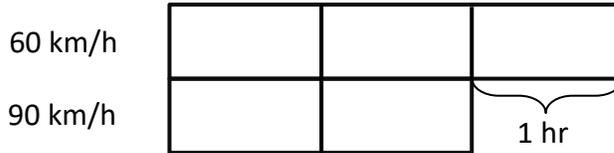
Mr Lim travels from Kuala Lumpur to Perak at 60 km/h. He will save 1 hr of travelling time if he increases his speed by 30 km/h. Find the distance between Kuala Lumpur to Perak?

***\*Inverse Proportion - As the speed increases, there is less time taken to cover the same distance.***

Normal speed – 60 km/h

Faster speed –  $60 + 30 = 90$  km/h

$$\frac{60}{90} = \frac{2}{3}$$



1 unit ---- 1 hr

2 units ----  $1 \times 2 = 2$  hrs

Distance between Kuala Lumpur to Perak =  $90 \times 2 = 180$  km

The distance between Kuala Lumpur to Perak is **180 km**.

**Skill Set 17 (Patterns) – Increasing difference ★★★★★**

Sequence number	Value
1	3
2	7
3	13
4	21
5	
6	

(i): Find the value for Sequence number 5 and 6.

(ii): Find the Sequence number with the value of 507.

(i): Sequence number 5 =  $21 + 10 = 31$

Sequence number 6 =  $31 + 12 = 43$

(ii): To find the value of each Sequence number, the general pattern is:

Value of Sequence number = (Sequence number)(Sequencer number + 1) + 1

(Sequence number)(Sequencer number + 1) + 1 = 507

By guess and check,

$$(30)(31) + 1 = 931$$

$$(20)(21) + 1 = 421$$

$$(22)(23) + 1 = 507$$

507 corresponds to Sequence number **22**.

**Skill Set 19 (Percentage) – Comparison of % between unknowns ★★★★★**

There are 10 cents, 20 cents and 50 cents coins in a metal container. There are 25% less 20 cents coins than 10 cents coins. The number of 20 cents coins is  $\frac{1}{3}$  the number of 50 cents coins. There are 800 coins in the container. How many 20 cents

coins are there in the container?

Number of 10 cents coins ---- 100%

$$\frac{25}{100} \times 100 = 25\%$$

Number of 20 cents coins ----  $100\% - 25\% = 75\%$

Number of 50 cents coins ----  $75\% \times 3 = 225\%$

Total number of coins ----  $100\% + 75\% + 225\% = 400\%$

400% ---- 800

1% ----  $800 \div 400 = 2$

75% ----  $75 \times 2 = \mathbf{150}$

There are **150** 20 cents coins in the container.

### **Skill Set 22 (Ratio) – Constant Difference/Constant total ★★**

A box of sweets was shared between Rachel and Anne in the ratio of 5:2. After Anne gave 80 sweets to Rachel, the ratio of sweets that Rachel had to that of Anne was 6:1. How many sweets were there in total?

*The total number of sweets that Rachel and Anne have before and after is the same, thus, the total number of units will be the same.*

#### **Before:**

Rachel : Anne

5 : 2 (Total units :  $5 + 2 = 7$ )

#### **After:**

Rachel : Anne

6 : 1 (Total units :  $6 + 1 = 7$ )

$6 - 5 = 1$  unit

1 unit ---- 80

7 units ----  $80 \times 7 = \mathbf{560}$

There were **560** sweets in total.

About Breeze Education:

Breeze Education offers Maths and Science tuition to Upper Primary and Secondary students. Lessons are structured to address the key bottlenecks in learning experienced by students which include lack of clarity on topic focus and how to apply those concepts in solving examination questions. Some classes are tailored to have a particular focus on areas that are commonly faced by students such as the P6 Maths Problem Solving Class. Tuition sessions are conducted by Dr Francis who has a PhD in Biomedical Science from National University of Singapore and has been conducting tuition since 2000.