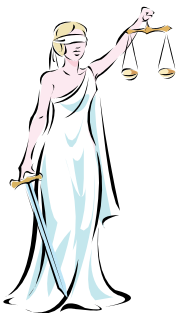


3

data analysis

complete yearly solutions
0008



PSLE MATHEMATICS SYLLABUS

Topics / Sub-topics	Content
Primary 2	
5 DATA ANALYSIS	
Picture graphs	Include: <ul style="list-style-type: none"> • making picture graphs with scales, • reading and interpreting picture graphs with scales, • solving problems using information presented in picture graphs. Exclude use of an incomplete symbol/picture.
Primary 3	
5 DATA ANALYSIS	
Bar graphs	Include: <ul style="list-style-type: none"> • reading and interpreting bar graphs in both horizontal and vertical forms, • reading scales, • completing a bar graph from given data, • solving problems using information presented in bar graphs.
Primary 4	
6 DATA ANALYSIS	
Tables	Include: <ul style="list-style-type: none"> • completing a table from given data, • reading and interpreting tables, • solving problems using information presented in tables.
Line graphs	Include: <ul style="list-style-type: none"> • reading and interpreting line graphs, • solving problems using information presented in line graphs. Exclude the distance-time graph.
Primary 5 (Calculator is allowed unless otherwise stated.)	
8 DATA ANALYSIS	
Average of a set of data	Include: <ul style="list-style-type: none"> • interpretation of average as "total amount ÷ number of items", • calculation of the average number/quantity, • finding the total amount given the average and the number of items, • solving word problems involving average.
Primary 6 (Calculator is allowed unless otherwise stated.)	
7 DATA ANALYSIS	
Pie charts	Include: <ul style="list-style-type: none"> • reading and interpreting pie charts, • solving 1-step problems using information presented in pie charts. Exclude use of degrees for calculation.

3 Data Analysis

MCQs

2006 – 2009

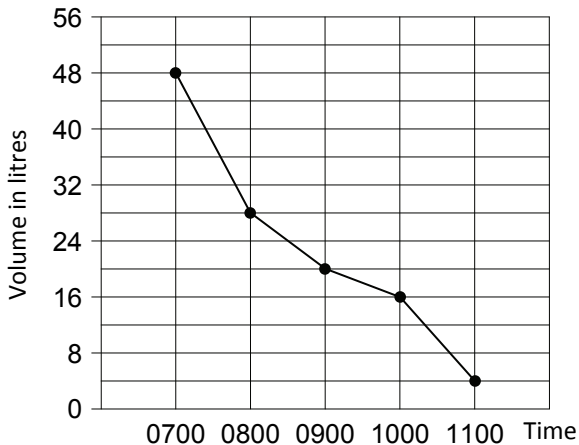
Start of 2006–2009

1. [Data Analysis] [2006–2009]

Solution

Approach 1 – line graph

In school, at 0700h, a water tank is measured and filled with 48 ℓ of water. Water then flows out of the tank from 0700h to 1100h. The line graph below shows the amount of water still in the tank from 0700 to 1100.



(a) ∴ Let P be the one-hour period that the decrease in the volume of water the greatest.

Between each pair of the adjacent large marks, the interval is 8 ℓ .

Between each large mark and its adjacent small mark, the interval is 8 ℓ / 2, *i.e.*, 4 ℓ .

The greatest decrease within a one-hour period is when it shows the longest line segment, *i.e.*, between 0700h and 0800h.

∴ The one-hour period that the decrease in the volume of water the greatest is

Between 0700h and 0800h (ans)

- Between 0800h and 0900h
- Between 0900h and 1000h
- Between 1000h and 1100h
- Between 0700h and 0800h

(1) (ans)

(b) ∴ Let A be the average decrease in the volume of water in litres per hour from 0700h to 1100h.

At the start of decrease (*i.e.*, 0700h), the amount of water left in the tank is 48 ℓ .

At the end of decrease (*i.e.*, 1100h), the amount of water left in the tank is 4 ℓ .

The total time elapsed is 1100h – 0700h
= 4h

∴ The average decrease in the volume of water in litres per hour from 0700h to 1100h is

$$\begin{aligned}
 A &= \frac{\text{total volume decrease}}{\text{total time elapsed}} \\
 &= \frac{(48 - 4)\ell}{4\text{h}} \\
 &= \frac{44}{4} \\
 &= \frac{\cancel{44}11}{\cancel{4}1} \\
 &= 11 \text{ litres / hour (ans)}
 \end{aligned}$$

- 8.8
 12
 23.2
 11

(2) (ans)

😊 **CheckBack**

(a) There is no convenient CheckBack option for this question.

(b) If the answer is $11 \ell / h$,
 For the 4-hour duration, the total decrease = $11 \times 4 = 44 \ell$.

If the end volume is 4ℓ , the start state must be $44 \ell + 4 \ell = 48 \ell$.

(checked)

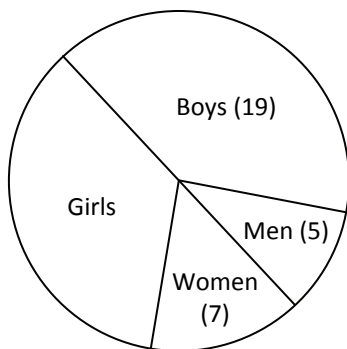
😊 **Exam Report**

A good majority of candidates gave the correct answers.

2. [Data Analysis] [2006–2009]

Solution

Approach 1 – pie chart



The figure above shows a pie chart representing the number of people visiting a park. Half of them are boys and men.

\therefore Let G be the number of girls visiting the park.

Since half of them are boys and men, the total number representing the half

$$= 19 + 5$$

$$= 24$$

\Rightarrow The same applies to the number of girls and women.

\therefore **The number of girls visiting the park is**

$$G = \text{half of people} - \text{number of women}$$

$$= 24 - 7$$

$$= 17 \text{ (ans)}$$

12

19

24

17

(2) (ans)

😊 **CheckBack**

If the answer is 17 girls,

The total number of people visiting the park = $17 + 7 + 19 + 5 = 48$, which is double that of men and boys. (checked)

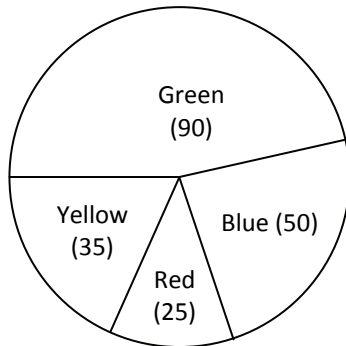
😊 **Exam Report**

This question was well-answered.

3. [Data Analysis] [2006–2009]

Solution

Approach 1 – pie chart



The figure above shows a survey of a group of 200 students on their favourite colours. The pie chart shows only 4 choices and the number of students who chose each of these 4 colours.

∴ Let C be the colour chosen by 25% of the students.

For 25%, the number of students

$$\begin{aligned}
 &= \frac{25}{100} \times \text{total number of students} \\
 &= \frac{25}{100} \times 200 \\
 &= \frac{25}{\cancel{100}1} \times \cancel{200}2 \\
 &= 25 \times 2 \\
 &= 50
 \end{aligned}$$

∴ The colour chosen by 25% of the students is

$G = \text{Blue}$ (ans)

- Green
- Red
- Yellow
- Blue

(1) (ans)

☺ CheckBack

If the answer is Blue,

- Blue represents 50 students.

$$\begin{aligned}
 \text{Percentage} &= \frac{50}{200} \times 100\% \\
 &= \frac{\cancel{50}25}{\cancel{200}2} \times \cancel{100}1\% = 25\%
 \end{aligned}$$

(checked)

☺ Exam Report

This question was well-answered.



4. [Data Analysis] [2006–2009]

Solution

Approach 1 – algebra

The average mass of Jona, Lancaster and Michael is 48 kg. Jona is 7 kg heavier than Lancaster. Jona is also 5 kg heavier than Michael.

∴ Let M be the Michael's mass.

Jona's weight = $M + 5$

Lancaster's weight = Jona's weight – 7

$$= M + 5 - 7$$

$$= M - 2$$

Total mass of Jona, Lancaster and Michael

$$= 48 \times 3$$

$$= 144 \text{ kg}$$

$$\equiv M + (M + 5) + (M - 2) \quad \text{--- ①}$$

Solving ①:

$$M + (M + 5) + (M - 2) = 144$$

$$M + M + 5 + M - 2 = 144$$

$$3M + 5 - 2 = 144$$

$$3M + 3 = 144 \quad (-3 \text{ from both sides})$$

$$3M + 3 - 3 = 144 - 3$$

$$3M = 141 \quad (\div 3 \text{ from both sides})$$

$$3M \div 3 = 141 \div 3$$

$$\Rightarrow M = \frac{141}{3} = \frac{141}{3} = 47 \text{ kg}$$

\therefore The Michael's mass is

$$M = 47 \text{ kg} \quad (\text{ans})$$

Approach II – model

The average mass of Jona, Lancaster and Michael is 48 kg. Jona is 7 kg heavier than Lancaster. Jona is also 5 kg heavier than Michael.

\therefore Let M be the Michael's mass.

$$\text{Jona's weight} = M + 5$$

$$\text{Lancaster's weight} = \text{Jona's weight} - 7$$

$$= M + 5 - 7$$

$$= M - 2$$

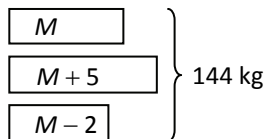
Total mass of Jona, Lancaster and Michael

$$= 48 \times 3$$

$$= 144 \text{ kg}$$

$$\equiv M + (M + 5) + (M - 2) \quad \text{--- ①}$$

The model based on the information is shown below.



Guess:

$$M = 48 \text{ kg,}$$

$$\Rightarrow 48 + 48 + 5 + 48 - 2 = 147 \text{ kg} \quad (\times)$$

$$M = 47 \text{ kg,}$$

$$\Rightarrow 47 + 47 + 5 + 47 - 2 = 144 \text{ kg} \quad (\checkmark)$$

\therefore The Michael's mass is

$$M = 47 \text{ kg} \quad (\text{ans})$$

45 kg

50 kg

52 kg

47 kg

(2) (ans)

😊 CheckBack

If answer is 47 kg,

- Muthu's weight = 47 kg
 - Joe's weight = $47 + 5 = 52$ kg
 - Leng's weight = $47 - 2 = 45$ kg
- Total weight = $47 + 52 + 45 = 144$ kg

$$\Rightarrow \text{Average weight} = 144 / 3$$

$$= 48 \text{ kg} \quad (\text{checked})$$

😊 Exam Report

Those candidates who used the model approach were more careless than those who did not.



End of 2006–2009



Short Questions

2006 – 2009

Start of 2006–2009

1. [Data Analysis] [2006–2009]

Solution

Approach I – mass

The total mass of 7 apples is 1 kg 50 g.

∴ Let A be the average mass of the apples.

$$1 \text{ kg} \equiv 1000 \text{ g}$$

$$\begin{aligned} 1 \text{ kg } 50 \text{ g} &\equiv 1000 \text{ g} + 50 \text{ g} \\ &= 1050 \text{ g} \end{aligned}$$

∴ The average mass of the apples is

$$\begin{aligned} A &= \frac{\text{total mass}}{\text{number of objects}} \\ &= \frac{1050 \text{ g}}{7} = \frac{\cancel{1050}150}{\cancel{7}1} \\ &= 150 \text{ g (ans)} \end{aligned}$$

☺ CheckBack

If the answer is 150 g,

The total mass of the apples

$$= 150 \text{ g} \times 7 = 1050 \text{ g} = 1000 \text{ g} + 50 \text{ g}$$

$$= 1 \text{ kg } 50 \text{ g (checked)}$$

☺ Exam Report

Most candidates gave the correct answer.



End of 2006–2009