

3

data analysis

extreme drill 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

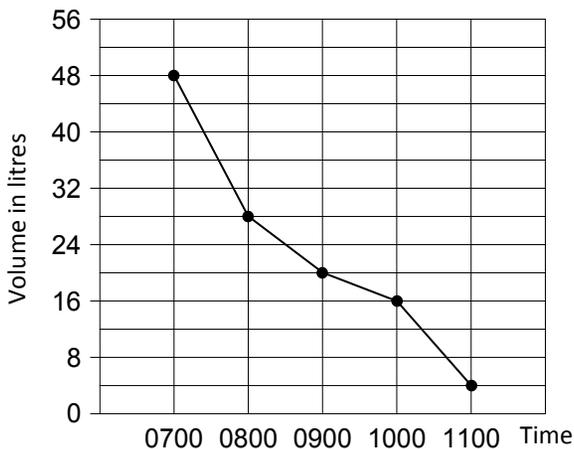
Start of 2006–2009

1. [Data Analysis] [Examined in 2006–2009]

Solution

Approach I – 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 $8 \ell / 2$, 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

(A) (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 $1100\text{h} - 0700\text{h}$
 $= 4\text{h}$

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

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

- 9.8
 12
 23.2
 11

(B) (ans)

☺ **CheckBack**

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

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

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

(checked)

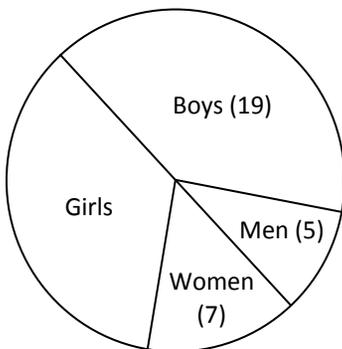
☺ **Exam Report**

A good majority of candidates gave the correct answers.

2. [Data Analysis] [Examined in 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**

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

$$= 24 - 7$$

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

12

19

27

17

(B) (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)**

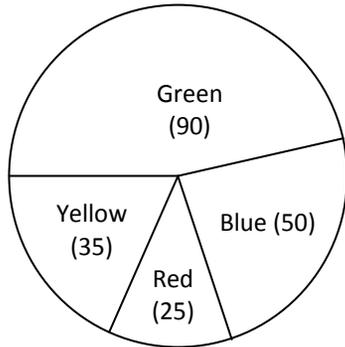
☺ **Exam Report**

This question was well–answered.

3. [Data Analysis] [Examined in 2006–2009]

Solution

Approach I – 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

(A) (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] [Examined in 2006–2009]

Solution

Approach I – 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

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

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.

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

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

$$= M + 5 - 7$$

$$= M - 2$$

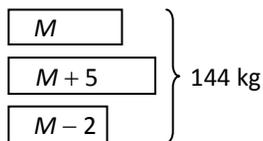
Total mass of Jona, Lancaster and Michael

$$= 48 \times 3$$

$$= 144 \text{ kg}$$

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

The model based on the information is shown below.



Guess:

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

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

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

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

\therefore The Michael's mass is

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

45 kg

50 kg

56 kg

47 kg

(B) (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

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

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

😊 Exam Report

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



End of 2006–2009