

Fully-Worked Solutions

PRACTICE 12

Section A

- 1 M has the highest frequency.

Answer: B

- 2 23, 29, 31, 37, 39, 42, 51, 60

$$\begin{aligned}\text{Median} &= \frac{37 + 39}{2} \\ &= \frac{76}{2} \\ &= 38\end{aligned}$$

Answer: C

- 3 Total frequency = $6 + 4 + 5 + 3 + 1$
= 19

Median is the 10th term.

$$\begin{array}{ccccccc} T_1, & \dots, & T_9, & \textcircled{T_{10}}, & T_{11}, & \dots, & T_{19} \\ \leftarrow & & \leftarrow & & \leftarrow & & \leftarrow \\ 9 \text{ terms} & & & & 9 \text{ terms} \end{array}$$

$$T_{10} = 20 \text{ kg}$$

Answer: C

- 4 Total frequency
= $4 + 3 + 4 + 3 + 2 + 1$
= 17

$$\text{Median} = T_9$$

$$T_9 = 3$$

Answer: A

- 5 Total frequency = $3 + 5 + 6 + 4 + 3$
= 21

$$\text{Median} = T_{11}$$

$$T_{11} = 15$$

Answer: B

- 6 Mean =
$$\frac{(2 \times 30) + (3 \times 40) + (4 \times 50) + (2 \times 60) + (1 \times 70) + (1 \times 80)}{2 + 3 + 4 + 2 + 1 + 1}$$

=
$$\frac{60 + 120 + 200 + 120 + 70 + 80}{13}$$

=
$$\frac{650}{13}$$

= 50 minutes

Answer: D

- 7 Mean =
$$\frac{(4 \times 10) + (6 \times 15) + (5 \times 20) + (2 \times 25) + (3 \times 30)}{4 + 6 + 5 + 2 + 3}$$

=
$$\frac{40 + 90 + 100 + 50 + 90}{20}$$

=
$$\frac{370}{20}$$

= 18.5

Answer: A

- 8 25 is an extreme value because 25 is too small.

Answer: A

- 9 Class interval 25 – 29 has the highest frequency.

Answer: C

- 10 Mean of original data = 12
New mean of data = 4×12
= 48

Answer: D

- 11 Median =
$$\frac{T_5 + T_6}{2}$$

=
$$\frac{74 + 76}{2}$$

=
$$\frac{150}{2}$$

= 75

Answer: C

- 12 Answer: B

- 13 Mean = 9
$$\frac{5 + 8 + 10 + x + 13 + 7}{6} = 9$$

$$x + 43 = 6 \times 9$$

$$x = 54 - 43$$

= 11

Answer: D

Section B

- 1 (a) 115
(b) 54, 60, 63, 63, 63, 67, 68, 68, 69, 75

$$\text{Mode} = 63$$

$$\begin{aligned}\text{Median} &= \frac{63 + 67}{2} \\ &= \frac{130}{2} \\ &= 65\end{aligned}$$

$$\begin{aligned}\text{Mean} &= \frac{54 + 60 + 63 + 63 + 63 + 67 + 68 + 68 + 69 + 75}{10} \\ &= \frac{650}{10} \\ &= 65\end{aligned}$$

- 2 (a) (i) ✗
(ii) ✓
(b) Mode = 70, Median = 60

- 3 (a) (i) 5
(ii) Mathematics
(b) Median =
$$\frac{28 + 28}{2}$$

= 28°C

Section C

1 (a) (i) 4 hours

$$(ii) \text{ Median} = \frac{T_{20} + T_{21}}{2}$$

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

$$= 3 \text{ hours}$$

$$(iii) \text{ Mean} = \frac{(5 \times 1) + (7 \times 2) + (9 \times 3) + (11 \times 4) + (8 \times 5)}{5 + 7 + 9 + 11 + 8}$$

$$= \frac{5 + 14 + 27 + 44 + 40}{40}$$

$$= \frac{130}{40}$$

$$= 3.25 \text{ hours}$$

(b) (i)

Savings (RM)	Tally	Frequency
21 – 30		3
31 – 40		6
41 – 50		6
51 – 60		7
61 – 70		8

$$(ii) \text{ Percentage} = \frac{8}{3 + 6 + 6 + 7 + 8} \times 100\%$$

$$= \frac{8}{30} \times 100\%$$

$$= 26.67\%$$

(iii)

Savings (RM)	Frequency (f)	Midpoint (x)	f × x
21 – 30	3	25.5	76.5
31 – 40	6	35.5	213
41 – 50	6	45.5	273
51 – 60	7	55.5	388.5
61 – 70	8	65.5	524
	30		1 475

$$\text{Mean} = \frac{1\,475}{30}$$

$$= \text{RM}49.17$$

2 (a) Mean = 12

$$\frac{6 + 10 + 7 + 15 + x + 13 + 12 + 8}{8} = 12$$

$$x + 71 = 12 \times 8$$

$$x = 96 - 71$$

$$= 25$$

$$6, 7, 8, \boxed{10, 12}, 13, 15, 25$$

$$\text{Median} = \frac{10 + 12}{2}$$

$$= \frac{22}{2}$$

$$= 11$$

(b) (i) 30 – 39

(ii)

Water bill (RM)	Frequency (f)	Midpoint (x)	f × x
10 – 19	5	14.5	72.5
20 – 29	9	24.5	220.5
30 – 39	14	34.5	483
40 – 49	10	44.5	445
50 – 59	2	54.5	109
	40		1 330

$$\text{Mean} = \frac{\text{RM}1\,330}{40}$$

$$= \text{RM}33.25$$

$$(c) \frac{x_1 + x_2 + x_3 + \dots + x_8}{8} = 12$$

$$x_1 + x_2 + x_3 + \dots + x_8 = 12 \times 8$$

$$= 96$$

$$\text{New total} = 96 - (14 + x)$$

$$= 96 - 14 - x$$

$$= 82 - x$$

$$\text{New mean} = 10$$

$$\frac{82 - x}{6} = 10$$

$$82 - x = 60$$

$$x = 82 - 60$$

$$= 22$$