2.27-2 Data Handling and Averages Depth Set 2: 30-minute Pack

GL ASSESSMENT EP.M38 · Calculators not allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

Data Handling and Averages Depth Set 2

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A second 11+ statistics and data-handling paper for scholarship-level preparation, complementing EP.M7 (Averages) and EP.M27 (Data Handling and Averages Depth). It covers reading and interpreting pictograms, tally charts, bar charts, line graphs, frequency tables, timetables and pie charts, calculating the mean, median, mode and range, and simple probability, including probability from two-way tables. Questions are ramped from straightforward reading-off items to demanding multi-step and reverse-reasoning problems designed to stretch the strongest candidates.

1 Six runners recorded these times, in seconds, for a 100m sprint: 14.2, 13.8, 15.1, 14.6, 13.5, 14.9.

Find the median time.

(2)

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2 A jar contains 6 red sweets, 4 yellow sweets and 5 green sweets. Priya picks one sweet from the jar at random.

What is the probability that it is yellow?

- ☐ A) 2/5
- ☐ B) 1/3
- ☐ C) 4/15
- ☐ D) 11/15
- ☐ E) 4/11

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3 A cafe in Leeds sold the following number of hot drinks during one morning: Latte 18, Americano 12, Hot chocolate 8, Tea 22.

(a) A drink is chosen at random from those sold. What is the probability that it is an Americano? **(1)**

.....

(b) What is the probability that a drink chosen at random is NOT a latte? **(2)**

.....

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4 A survey of 72 pupils at Millbrook Academy asked about their favourite sport. The results are shown in a pie chart. The sector for 'swimming' has an angle of 45 degrees at the centre.

What fraction of the pupils chose swimming?

- ☐ A) 1/8
- ☐ B) 1/6
- ☐ C) 1/4
- ☐ D) 1/3
- ☐ E) 1/9

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5 In a survey of the colours of 90 cars parked in a supermarket car park, 21 cars were silver.

Calculate the angle needed to represent 'silver' cars on a pie chart.

(3)

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6 Using the same bar chart of lengths completed by swimmers (Ffion 6, Daniel 9, Aaliyah 4, Ryan 7, Meera 8, Tomasz 5), answer the following.

(a) How many lengths did Meera complete? **(1)**

.....

(b) What was the total number of lengths completed by all six swimmers? **(2)**

.....

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7 The line graph shows the number of visitors to Riverside Museum, recorded every hour during opening hours: 9am 5, 10am 12, 11am 18, 12pm 25, 1pm 30, 2pm 22, 3pm 14.

How many visitors were recorded at 12pm?

- ☐ A) 18
- ☐ B) 22
- ☐ C) 25
- ☐ D) 30
- ☐ E) 14

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8 The frequency table shows the number of house points earned in a week by 24 pupils in Miss Farrelly's class. House points: 0, 1, 2, 3, 4. Frequency: 3, 6, 9, 4, 2.

(a) How many pupils earned exactly 2 house points? **(1)**

.....

(b) How many pupils earned 3 or more house points? **(2)**

.....

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9 The table shows the departure and arrival times of buses from Elmswood to Castleford on a Saturday morning: Bus A departs 08:15, arrives 08:55. Bus B departs 08:40, arrives 09:25. Bus C departs 09:05, arrives 09:50. Bus D departs 09:30, arrives 10:05.

(a) How many minutes does the journey on Bus B take? **(1)**

.....

(b) Nadia arrives at the bus stop at 08:50. Which bus should she catch, and how many minutes will she need to wait? **(2)**

.....

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10 Using the same line graph of visitors to Riverside Museum (9am 5, 10am 12, 11am 18, 12pm 25, 1pm 30, 2pm 22, 3pm 14), by how many did the number of visitors fall between 1pm and 3pm?

(2)

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11 A pie chart shows the favourite school subject of a group of pupils surveyed by Mrs Ibrahim. The sector for 'art' has an angle of 40 degrees, and 15 pupils chose art.

How many pupils took part in the survey in total?

(2)

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12 The frequency table shows the number of goals scored per match by Elmswood Town over a 20-match season. Goals scored: 0, 1, 2, 3, 4, 5. Frequency: 3, 5, 6, 4, 1, 1.

Calculate the mean number of goals scored per match.

(4)

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13 A list of 6 whole numbers has mean 10, median 9.5, mode 8 and range 12.

Find a set of six numbers that satisfies all four conditions.

(4)

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Mark scheme · 2.27-2 Data Handling and Averages Depth Set 2: 30-minute Pack

Question 1

values correctly ordered (13.5, 13.8, 14.2, 14.6, 14.9, 15.1) and middle pair 14.2 and 14.6 identified — **M1**

14.4 cao — **A1**

Answer: 14.4 seconds

Question 2

C (4/15) cao — **B1**

Answer: C) 4/15

Question 3

(a) 1/5 oe cao — **B1**

(a) Answer: 1/5

(b) not latte = 12 + 8 + 22 = 42, or 60 - 18 — **M1**

(b) 7/10 oe — **A1**

(b) Answer: 7/10

Question 4

A (1/8) cao — **B1**

Answer: A) 1/8

Question 5

360 div 90 = 4 degrees per car — **M1**

dependent on the previous mark: 21 x 4 — **dM1**

84 degrees cao — **A1**

Answer: 84 degrees

Question 6

(a) 8 cao — **B1**

(a) Answer: 8 lengths

(b) all six values identified and added, allow partial sum — **M1**

(b) 39 cao — **A1**

(b) Answer: 39 lengths

Question 7

C (25) cao — **B1**

Answer: C) 25 visitors

Question 8

(a) 9 cao — **B1**

(a) Answer: 9 pupils

(b) 4 and 2 identified and added oe — **M1**

(b) 6 cao — **A1**

(b) Answer: 6 pupils

Question 9

(a) 45 minutes cao — **B1**

(a) Answer: 45 minutes

(b) identifies Bus C as the next bus departing after 08:50 (Bus A and Bus B have already left) — **M1**

(b) 15 minutes cao — **A1**

(b) Answer: Bus C, waiting 15 minutes

Question 10

1pm = 30 and 3pm = 14 identified oe — **M1**

16 cao — **A1**

Answer: 16 visitors

Question 11

40/360 simplified to 1/9, or sets up 15 divided by (40/360) — **M1**

135 cao — **A1**

Answer: 135 pupils

Question 12

each number of goals multiplied by its frequency: 0, 5, 12, 12, 4, 5 — **M1**

dependent on the previous mark: sum of these products = 38 — **dM1**

total frequency = 20 used — **B1**

1.9 (cao, oe 38/20) — **A1**

Answer: 1.9 goals per match

Question 13

six whole numbers with a total of 60 (satisfying mean = 10) — **B1**

middle pair (when ordered) averaging to 9.5 (satisfying median = 9.5) — **B1**

value 8 appearing more often than any other value (satisfying mode = 8) — **B1**

difference between highest and lowest value equal to 12 (satisfying range = 12); ft any other valid set meeting all four conditions — **B1**

Answer: 4, 8, 8, 11, 13, 16 (or any other valid set satisfying all four conditions)

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