2.27 Data Handling and Averages Depth: 30-minute Pack

Total Marks

GL ASSESSMENT EP.M27 · Calculators not allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

Data Handling and Averages Depth

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An 11+ statistics and data-handling paper for scholarship-level preparation, complementing EP.M7 (Averages). It covers reading and interpreting pictograms, bar charts, line graphs, pie charts, tally charts and tables, 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 pupils in Mr Okafor's class recorded how many books they read last term: 6, 13, 8, 2, 10, 5.

Find the median number of books read.

(2)

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2 Amara has a bag containing 5 red counters, 3 blue counters and 2 green counters. She picks one counter from the bag at random.

What is the probability that it is blue?

- ☐ A) 1/5
- ☐ B) 1/2
- ☐ C) 3/10
- ☐ D) 3/5
- ☐ E) 7/10

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3 Mrs Adeyemi's school canteen sold the following packets of crisps during one break time: Ready salted 15, Cheese and onion 9, Salt and vinegar 6, Other flavours 10.

(a) A packet is chosen at random from those sold. What is the probability that it is cheese and onion? **(1)**

.....

(b) What is the probability that a packet chosen at random is NOT ready salted? **(2)**

.....

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4 A survey of 60 pupils at Elmwood Primary School asked how they travel to school. The results are shown in a pie chart. The sector for 'Car' has an angle of 90 degrees at the centre.

What fraction of the pupils travel by car?

- ☐ A) 1/6
- ☐ B) 1/4
- ☐ C) 1/3
- ☐ D) 1/2
- ☐ E) 1/8

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5 In a survey of 60 pupils' favourite school lunch, 15 pupils chose pasta. A pie chart is going to be drawn to show the results.

Calculate the angle needed to represent 'pasta' on the pie chart.

(3)

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6 The bar chart shows the number of goals scored by Greenfield Rovers, a junior football team, in their last 6 matches: Match 1: 2 goals, Match 2: 3 goals, Match 3: 1 goal, Match 4: 4 goals, Match 5: 2 goals, Match 6: 3 goals.

(a) How many goals were scored in Match 4? **(1)**

.....

(b) What is the difference between the number of goals scored in Match 4 and Match 3? **(2)**

.....

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7 Using the same bar chart of goals scored by Greenfield Rovers (Match 1: 2, Match 2: 3, Match 3: 1, Match 4: 4, Match 5: 2, Match 6: 3), what was the total number of goals scored over all 6 matches?

- ☐ A) 12
- ☐ B) 13
- ☐ C) 14
- ☐ D) 15
- ☐ E) 17

---

8 The frequency table shows the shoe sizes of 20 pupils in Mr Hughes's class. Shoe size: 3, 4, 5, 6, 7. Frequency: 2, 5, 7, 4, 2.

(a) How many pupils have a shoe size of 5? **(1)**

.....

(b) What is the modal shoe size, and how many pupils wear that size? **(2)**

.....

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9 The two-way table shows how 40 pupils at a primary school travel to school. Year 5: Walk 6, Bus 8, Car 4 (total 18). Year 6: Walk 5, Bus 9, Car 8 (total 22). Column totals: Walk 11, Bus 17, Car 12 (grand total 40).

(a) How many Year 6 pupils travel by car? **(1)**

.....

(b) How many more pupils in Year 6 travel to school by car than pupils in Year 5? **(2)**

.....

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10 The line graph shows the temperature (in °C) in a garden, recorded every 2 hours during one day: 6am: 8, 8am: 10, 10am: 13, 12pm: 16, 2pm: 18, 4pm: 15, 6pm: 11.

What was the temperature at 12pm?

- ☐ A) 11°C
- ☐ B) 13°C
- ☐ C) 15°C
- ☐ D) 16°C
- ☐ E) 18°C

---

11 Using the same line graph of garden temperature (6am: 8, 8am: 10, 10am: 13, 12pm: 16, 2pm: 18, 4pm: 15, 6pm: 11, all in °C), by how many degrees did the temperature fall between 2pm and 6pm?

(2)

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12 Zara kept a record of how many books were borrowed from the school library each day last week. Her pictogram used a key where one full book symbol = 4 books and a half book symbol = 2 books. The pictogram showed: Monday 3 symbols, Tuesday 2 symbols and a half, Wednesday 1 symbol, Thursday 3 symbols and a half, Friday 2 symbols.

How many books were borrowed on Thursday?

- ☐ A) 10
- ☐ B) 12
- ☐ C) 14
- ☐ D) 15
- ☐ E) 16

---

13 Using the same pictogram of books borrowed from the school library (Monday 3 symbols, Tuesday 2 symbols and a half, Wednesday 1 symbol, Thursday 3 symbols and a half, Friday 2 symbols; key: 1 symbol = 4 books, half symbol = 2 books), answer the following.

(a) How many books were borrowed in total on Monday and Wednesday? **(2)**

.....

(b) How many more books were borrowed on Thursday than on Friday? **(2)**

.....

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14 A pie chart shows the favourite fruit of a group of pupils surveyed by Mr Thompson. The sector for 'apple' has an angle of 60 degrees, and 90 pupils took part in the survey in total.

How many pupils chose apple as their favourite fruit?

(2)

---

15 The frequency table shows the number of pets owned by each pupil in Miss Kaur's class of 25 pupils. Number of pets: 0, 1, 2, 3, 4. Frequency: 5, 8, 7, 3, 2.

Calculate the mean number of pets owned per pupil.

(4)

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

Question 1

scores correctly ordered (2, 5, 6, 8, 10, 13) and middle pair 6 and 8 identified **M1**

7 cao **A1**

Answer: 7

Question 2

C (3/10) cao **B1**

Answer: C) 3/10

Question 3

(a) 9/40 oe cao **B1**

(a) Answer: 9/40

(b) not ready salted = 40 - 15 = 25, or 9 + 6 + 10 **M1**

(b) 5/8 oe **A1**

(b) Answer: 5/8

Question 4

B (1/4) cao **B1**

Answer: B) 1/4

Question 5

360 div 60 = 6 degrees per pupil **M1**

dependent on the previous mark: 15 x 6 **dM1**

90 degrees cao **A1**

Answer: 90 degrees

Question 6

(a) 4 cao **B1**

(a) Answer: 4 goals

(b) Match 4 = 4 and Match 3 = 1 identified oe **M1**

(b) 3 cao **A1**

(b) Answer: 3 goals

Question 7

D (15) cao **B1**

Answer: D) 15

Question 8

(a) 7 cao **B1**

(a) Answer: 7 pupils

(b) modal shoe size = 5 **B1**

(b) frequency = 7 cao **B1**

(b) Answer: Shoe size 5, worn by 7 pupils

Question 9

(a) 8 cao **B1**

(a) Answer: 8 pupils

(b) Year 6 car = 8 and Year 5 car = 4 identified oe **M1**

(b) 4 cao **A1**

(b) Answer: 4 more pupils

Question 10

D (16°C) cao **B1**

Answer: D) 16°C

Question 11

2pm = 18 and 6pm = 11 identified oe **M1**

7 cao **A1**

Answer: 7°C

Question 12

C (14) cao **B1**

Answer: C) 14

Question 13

(a) Monday = 12 and Wednesday = 4 identified oe **M1**

(a) 16 cao **A1**

(a) Answer: 16 books

(b) Thursday = 14 and Friday = 8 identified oe **M1**

(b) 6 cao **A1**

(b) Answer: 6 books

Question 14

60/360 simplified to 1/6, or 90 x 60/360 set up **M1**

15 cao **A1**

Answer: 15 pupils

Question 15

each number of pets multiplied by its frequency: 0, 8, 14, 9, 8 **M1**

dependent on the previous mark: sum of these products = 39 **dM1**

total frequency = 25 used **B1**

1.56 (awrt 1.56) cao oe 39/25 **A1**

Answer: 1.56 pets per pupil

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