GCSE Foundation Mathematics
Practice Test 9: Statistics

Instructions:
Answer all questions. Show your working clearly.
Calculators may be used unless stated otherwise.
Time allowed: 90 minutes

Section A: Averages and Range

1. Find the mean, median, mode, and range for these data sets:

   (a) $47, 42, 51, 47, 39, 47, 45, 43$

   (b) $93, 86, 99, 93, 104, 81, 93, 90$

   (c) $13.8, 9.4, 11.7, 9.4, 15.2, 9.4, 12.5$

   (d) $158, 145, 151, 158, 132, 147, 140, 158, 154$

2. The fuel consumption (miles per gallon) of 10 cars tested are:

   $$32.5, 28.7, 35.2, 31.8, 39.6, 33.4, 29.1, 37.3, 34.0, 30.9$$

   Calculate:

   (a) The mean fuel consumption

   (b) The median fuel consumption

   (c) The range

3. The number of social media followers (in hundreds) for influencers are:

   $$18, 14, 26, 21, 12, 31, 17, 24, 15, 33, 22, 13, 35, 28$$

   Find:

   (a) The mean number of followers

   (b) The median number of followers

   (c) How many influencers have more than the mean

4. A set of 9 numbers has a mean of 85. Eight of the numbers are 78, 91, 76, 89, 82, 87, 79, and 93. Find the ninth number.

5. The mean of 22 numbers is 107. When a twenty-third number is added, the mean becomes 109. Find the twenty-third number.

6. In a data set, the mean is 118, the median is 112, and the range is 84. If the smallest value is 71, find the largest value.

Section B: Frequency Tables

7. The frequency table shows the number of streaming services subscribed to by households:

Number of services	Frequency
0	8
1	16
2	32
3	24
4	14
5	6

Calculate:

(a) The total number of households

(b) The mode

(c) The median

(d) The mean number of services

(e) The range

8. The frequency table shows the battery life of smartphones (in hours):

Battery life	Frequency
8-11	12
12-15	26
16-19	38
20-23	32
24-27	18

Find:

(a) The total number of phones tested

(b) The modal battery life group

(c) An estimate of the mean battery life (use midpoints)

(d) The percentage of phones with battery life of 20 hours or more

9. Complete this frequency table for the data:

$$4, 6, 8, 4, 7, 6, 10, 4, 5, 6, 8, 4, 9, 5, 4$$

Value	Frequency
4	
5	
6	
7	
8	
9	
10	

Then find the mode and median.

Section C: Charts and Graphs

10. The bar chart shows the types of renewable energy used in a region.

    [Imagine a bar chart with: Solar-220, Wind-195, Hydro-140, Biomass-105, Geothermal-80, Tidal-60]

    (a) How much hydro energy is used?

    (b) Which energy type is least used?

    (c) What is the total renewable energy?

    (d) What percentage is solar energy?

    (e) Draw a pie chart for this data (calculate the angles)

11. The pie chart shows how 280 office workers spend their lunch hour.

    [Imagine a pie chart with: Eating-135°, Walking-81°, Shopping-72°, Gym-45°, Socializing-27°]

    Calculate:

    (a) How many workers spend time eating

    (b) How many workers go walking

    (c) How many workers go to the gym

    (d) How many workers go shopping

    (e) The percentage who socialize

12. The histogram shows the ages of people attending a concert.

    [Imagine a histogram with age intervals: 15-25 (frequency 14), 25-35 (frequency 32), 35-45 (frequency 28), 45-55 (frequency 18), 55-65 (frequency 8)]

    Find:

    (a) The total number of people at the concert

    (b) The modal age interval

    (c) An estimate of the mean age

    (d) How many people are aged 45 or over

13. Draw a stem-and-leaf diagram for this data:

    $$34, 51, 37, 68, 35, 54, 43, 75, 39, 57, 50, 44, 53, 41, 62$$

    From your diagram, find:

    (a) The median

    (b) The range

    (c) The mode (if any)

Section D: Scatter Graphs and Correlation

14. Describe the type of correlation shown in these scatter graphs:

    (a) Hours of sleep vs. Academic performance

    (b) Distance from city center vs. Property prices

    (c) Credit card number vs. Annual income

    (d) Daily water intake vs. Energy levels

(e) Lucky number vs. Test scores

15. The table shows the monthly rent (£) and distance from city center (km) for 8 apartments:

Distance (km)	2	4	6	8	10	12	14	16
Rent (£)	1400	1250	1100	950	800	650	500	350

(a) Plot this data on a scatter graph

(b) Describe the correlation

(c) Draw a line of best fit

(d) Use your line to estimate rent for an apartment 7km from center

(e) Use your line to estimate distance for £1000 rent

16. State whether you would expect positive, negative, or no correlation between:

(a) Hours of practice and skill improvement

(b) Age of car and resale value

(c) Social security number and IQ

(d) Class size and individual attention

Section E: Basic Probability

17. Express these probabilities as fractions, decimals, and percentages:

(a) Absolutely will happen

(b) Cannot occur

(c) Equal probability

(d) Highly probable

(e) Unlikely event

18. A fair eighteen-sided die (numbered 1-18) is rolled. Find the probability of getting:

(a) A 13

(b) A factor of 18

(c) A number greater than 14

(d) A number less than 8

(e) A 19

(f) A multiple of 6

19. A prize box contains 22 gold tickets, 20 silver tickets, and 16 bronze tickets. A ticket is picked at random. Find the probability of picking:

(a) A gold ticket

(b) A silver ticket

(c) A bronze ticket

(d) A gold or silver ticket

(e) Not a bronze ticket

20. A fair spinner has 42 equal sections: 18 red, 14 blue, and 10 green. Find the probability of spinning:

(a) Red
(b) Blue
(c) Green
(d) Red or green
(e) Not blue

21. The probability of a delivery arriving on time is $\frac{7}{15}$. What is the probability it will be late?

22. In a photography club of 96 members, 64 own digital cameras. If a member is chosen at random, what is the probability they:

(a) Own a digital camera
(b) Do not own a digital camera

Section F: Two-Way Tables and Combined Events

23. The two-way table shows information about customers' payment preferences:

	Cash	Card	Mobile Pay	Total
Under 30	12	38	25	75
30 and over	28	42	15	85
Total	40	80	40	160

If a customer is chosen at random, find the probability they:

(a) Pay by card
(b) Are under 30 and use mobile pay
(c) Are 30 and over
(d) Use cash, given they are under 30
(e) Are under 30, given they pay by card

24. A card is drawn from a standard pack of 52 cards. Find the probability of drawing:

(a) A 5
(b) A heart
(c) A red card
(d) The ace of clubs
(e) A jack or queen
(f) A black 7

25. Two fair dice are rolled. Find the probability of getting:

(a) A total of 9
(b) Both dice showing odd numbers
(c) A total less than 6
(d) The first die showing 4 and the second showing 6

26. A bag contains 4 red counters and 14 blue counters. Two counters are drawn without replacement. Find the probability of drawing:

(a) Two red counters
(b) Two blue counters
(c) One red and one blue counter
(d) At least one blue counter

Section G: Experimental Probability

27. A biased spinner is spun 350 times. It lands on yellow 119 times.

    (a) What is the experimental probability of getting yellow?

    (b) What is the experimental probability of not getting yellow?

    (c) If the spinner is spun 500 more times, estimate how many yellows you would expect

28. A ticket machine is tested 280 times with these results: Ticket printed: 196 times, Coin returned: 56 times, Out of order: 28 times

    Calculate:

    (a) The experimental probability of each outcome

    (b) Which outcome is most likely to occur next

    (c) If the machine is used 700 times, estimate how many will be out of order

29. The table shows the results of testing a new app 240 times:

Performance	Excellent	Good	Fair	Poor
Frequency	72	96	48	24

    (a) Calculate the experimental probability of each performance level

    (b) Which performance level occurred most frequently?

    (c) If the app is tested 480 times, estimate how many fair performances you would expect

    (d) If performance was equally distributed, what frequency would you expect for each level in 240 tests?

Section H: Problem Solving

30. A fitness center survey asked 450 members about their favorite workout. The results were: Cardio: 135 members, Weights: 108 members, Swimming: 81 members, Classes: 72 members, Yoga: 54 members

    (a) Draw a bar chart for this data

    (b) Calculate the angles needed for a pie chart

    (c) What percentage chose cardio?

    (d) If 1800 people joined the center, estimate how many would choose weights

31. The box plot shows the distribution of house prices (£1000s) in a town:

    [Imagine a box plot with: Minimum 180, Q1 240, Median 290, Q3 350, Maximum 420]

    From the box plot, find:

    (a) The median house price

    (b) The interquartile range

    (c) The range

    (d) What percentage of houses cost more than £350,000?

    (e) What percentage of houses cost between £240,000 and £350,000?

32. A board game uses dice with different colors. The probability of rolling red is $\frac{4}{9}$ and the probability of rolling blue is $\frac{1}{6}$.

(a) What is the probability of rolling green?

(b) If there are 18 faces in total, how many of each color are there?

33. The mean salary of 35 managers is £45,000. The mean salary of 25 assistants is £28,000. Calculate the mean salary for all 60 employees.

34. A bakery produces 12,000 pastries. 288 are found to be below standard.

(a) What is the probability that a randomly chosen pastry is below standard?

(b) In a batch of 30,000 pastries, estimate how many would be below standard

(c) What is the probability that a randomly chosen pastry meets the standard?

35. Compare these two data sets: Set R: 28, 32, 36, 40, 44, 48, 52 Set S: 25, 34, 38, 41, 43, 46, 55

Calculate the mean and range for each set, and comment on which set is more consistent.

Answer Space

Use this space for your working and answers.

END OF TEST

Total marks: 100

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