GCSE Foundation Mathematics
Practice Test 5: 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) $18, 15, 22, 18, 14, 18, 20, 16$

   (b) $42, 38, 45, 42, 49, 36, 42, 41$

   (c) $6.2, 3.8, 5.4, 3.8, 7.1, 3.8, 6.0$

   (d) $95, 87, 92, 95, 76, 89, 83, 95, 91$

2. The heights (in cm) of 10 basketball players are:

   $$192, 188, 195, 184, 190, 186, 193, 187, 191, 189$$

   Calculate:

   (a) The mean height

   (b) The median height

   (c) The range

3. The daily temperatures (°C) for two weeks are:

   $$22, 19, 25, 23, 18, 26, 21, 24, 20, 27, 22, 17, 28, 25$$

   Find:

   (a) The mean temperature

   (b) The median temperature

   (c) How many days had temperatures above the mean

4. A set of 7 numbers has a mean of 42. Six of the numbers are 38, 44, 39, 47, 35, and 41. Find the seventh number.

5. The mean of 12 numbers is 65. When a thirteenth number is added, the mean becomes 67. Find the thirteenth number.

6. In a data set, the mean is 74, the median is 68, and the range is 48. If the smallest value is 42, find the largest value.

Section B: Frequency Tables

7. The frequency table shows the number of pets owned by families in a neighborhood:

Number of pets	Frequency
0	12
1	28
2	35
3	18
4	6
5	1

Calculate:

(a) The total number of families

(b) The mode

(c) The median

(d) The mean number of pets

(e) The range

8. The frequency table shows the ages of people at a concert:

Age group	Frequency
10-19	24
20-29	58
30-39	46
40-49	32
50-59	15

Find:

(a) The total number of people

(b) The modal age group

(c) An estimate of the mean age (use midpoints)

(d) The percentage of people aged 40 or over

9. Complete this frequency table for the data:

$$5, 7, 9, 5, 6, 7, 12, 5, 8, 7, 9, 5, 10, 8, 5$$

Value	Frequency
5	
6	
7	
8	
9	
10	
12	

Then find the mode and median.

Section C: Charts and Graphs

10. The bar chart shows the favorite sports of students in a school.

    [Imagine a bar chart with: Football-56, Basketball-34, Tennis-22, Swimming-28, Rugby-40]

    (a) How many students chose basketball?

    (b) Which sport is least popular?

    (c) How many students were surveyed in total?

    (d) What percentage chose football?

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

11. The pie chart shows how 180 employees commute to work.

    [Imagine a pie chart with: Car-144°, Bus-96°, Train-72°, Walk-36°, Cycle-12°]

    Calculate:

    (a) How many employees drive to work

    (b) How many employees take the bus

    (c) How many employees cycle

    (d) How many employees walk

    (e) The percentage who take the train

12. The histogram shows the weekly pocket money (in £) of students.

    [Imagine a histogram with money intervals: 0-5 (frequency 16), 5-10 (frequency 28), 10-15 (frequency 24), 15-20 (frequency 12), 20-25 (frequency 8)]

    Find:

    (a) The total number of students surveyed

    (b) The modal pocket money interval

    (c) An estimate of the mean pocket money

    (d) How many students receive more than £15 per week

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

    $$43, 67, 42, 58, 49, 61, 36, 74, 52, 46, 63, 55, 48, 69, 57$$

    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. Test performance

    (b) Price of product vs. Number sold

    (c) Shoe size vs. Intelligence

    (d) Temperature vs. Ice cream sales

    (e) Random number vs. Birth month

15. The table shows the advertising spend (£1000s) and sales (£1000s) for 8 companies:

Advertising	5	10	15	20	25	30	35	40
Sales	45	52	59	66	73	80	87	94

(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 sales for £18,000 advertising spend

(e) Use your line to estimate advertising spend needed for £85,000 sales

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

(a) Hours of exercise and fitness level

(b) Car age and car value

(c) Phone number and height

(d) Years of experience and salary

Section E: Basic Probability

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

(a) Certain to happen

(b) Impossible

(c) Even chance

(d) Highly likely

(e) Very unlikely

18. A fair eight-sided die (numbered 1-8) is rolled. Find the probability of getting:

(a) A 6

(b) A factor of 8

(c) A number greater than 5

(d) A number less than 4

(e) A 9

(f) An odd number

19. A box contains 14 red marbles, 8 blue marbles, and 6 green marbles. A marble is picked at random. Find the probability of picking:

(a) A red marble

(b) A blue marble

(c) A green marble

(d) A red or blue marble

(e) Not a green marble

20. A wheel has 20 equal sections: 8 red, 7 blue, and 5 yellow. Find the probability of spinning:

(a) Red

(b) Blue

(c) Yellow

(d) Red or yellow

(e) Not blue

21. The probability of rain tomorrow is $\frac{3}{8}$. What is the probability it will not rain?

22. In a class of 36 students, 24 have brown eyes. If a student is chosen at random, what is the probability they:

    (a) Have brown eyes

    (b) Do not have brown eyes

Section F: Two-Way Tables and Combined Events

23. The two-way table shows information about students' favorite subjects:

	Math	English	Science	Total
Boys	32	18	25	75
Girls	24	28	23	75
Total	56	46	48	150

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

    (a) Prefer math

    (b) Are a girl who prefers English

    (c) Are a boy

    (d) Prefer science, given they are a girl

    (e) Are a boy, given they prefer math

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

    (a) A queen

    (b) A heart

    (c) A red card

    (d) The ace of spades

    (e) A king or queen

    (f) A black ace

25. Two fair dice are rolled. List the total possible outcomes and find the probability of getting:

    (a) A total of 7

    (b) A double (both dice showing the same number)

    (c) A total less than 5

    (d) The second die showing a higher number than the first

26. A bag contains 8 red counters and 12 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 200 times. It lands on red 76 times.

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

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

    (c) If the spinner is spun 350 more times, estimate how many reds you would expect

28. A lottery machine is tested 180 times with these results: Win: 54 times, Small prize: 72 times, No prize: 54 times

    Calculate:

    (a) The experimental probability of each outcome

    (b) Which outcome is most likely to occur next

    (c) If the machine is used 360 times, estimate how many wins you would expect

29. The table shows the results of rolling a die 120 times:

Number	1	2	3	4	5	6
Frequency	18	22	16	25	21	18

    (a) Calculate the experimental probability of each number

    (b) Which number appeared most frequently?

    (c) If the die is rolled 240 times, estimate how many 3s you would expect

    (d) If the die was fair, what frequency would you expect for each number in 120 rolls?

Section H: Problem Solving

30. A fitness survey asked 250 people about their exercise preferences. The results were: Running: 68 people, Swimming: 52 people, Cycling: 45 people, Gym: 58 people, Walking: 27 people

    (a) Draw a bar chart for this data

    (b) Calculate the angles needed for a pie chart

    (c) What percentage chose running?

    (d) If 1000 people joined the fitness center, estimate how many would choose swimming

31. The box plot shows the distribution of student test scores:

    [Imagine a box plot with: Minimum 45, Q1 62, Median 75, Q3 86, Maximum 98]

    From the box plot, find:

    (a) The median test score

    (b) The interquartile range

    (c) The range

    (d) What percentage of students scored more than 86?

    (e) What percentage of students scored between 62 and 86?

32. A bag contains colored tokens. The probability of drawing yellow is $\frac{1}{3}$ and the probability of drawing red is $\frac{2}{5}$.

    (a) What is the probability of drawing blue?

    (b) If there are 15 tokens in total, how many of each color are there?

33. The mean age of 30 teachers is 42 years. The mean age of 20 students is 16 years. Calculate the mean age for all 50 people.

34. A factory produces 5000 light bulbs. 125 are found to be faulty.

    (a) What is the probability that a randomly chosen bulb is faulty?

    (b) In a batch of 8000 bulbs, estimate how many would be faulty

    (c) What is the probability that a randomly chosen bulb is not faulty?

35. Compare these two data sets: Set P: 32, 35, 38, 41, 44, 47, 50 Set Q: 28, 36, 39, 42, 45, 48, 54 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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