GCSE Foundation Mathematics
Practice Test 2: 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) $4, 9, 6, 4, 8, 4, 7, 10$

   (b) $16, 19, 13, 16, 22, 18, 16, 21$

   (c) $1.8, 2.5, 3.2, 2.5, 4.1, 2.5, 3.6$

   (d) $38, 42, 35, 38, 44, 41, 36, 38, 43$

2. The weights (in kg) of 10 athletes are:

   $$72, 68, 75, 71, 66, 73, 69, 74, 67, 70$$

   Calculate:

   (a) The mean weight

   (b) The median weight

   (c) The range

3. The quiz scores of a group are:

   $$48, 55, 62, 49, 58, 51, 60, 53, 56, 64, 47, 59$$

   Find:

   (a) The mean score

   (b) The median score

   (c) How many students scored below the mean

4. A set of 6 numbers has a mean of 18. Five of the numbers are 12, 15, 20, 24, and 17. Find the sixth number.

5. The mean of 8 numbers is 22. When a ninth number is added, the mean becomes 24. Find the ninth number.

6. In a data set, the mean is 32, the median is 28, and the range is 24. If the largest value is 44, find the smallest value.

Section B: Frequency Tables

7. The frequency table shows the number of siblings students have:

Number of siblings	Frequency
0	6
1	14
2	18
3	9
4	4
5	2

Calculate:

(a) The total number of students

(b) The mode

(c) The median

(d) The mean number of siblings

(e) The range

8. The frequency table shows the weights of parcels (in kg):

Weight group	Frequency
0-4	18
5-9	32
10-14	28
15-19	15
20-24	7

Find:

(a) The total number of parcels

(b) The modal weight group

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

(d) The percentage of parcels weighing less than 10kg

9. Complete this frequency table for the data:

$$6, 4, 8, 6, 3, 4, 9, 6, 5, 4, 8, 6, 7, 5, 6$$

Value	Frequency
3	
4	
5	
6	
7	
8	
9	

Then find the mode and median.

Section C: Charts and Graphs

10. The bar chart shows the favourite sports of Year 9 students.

    [Imagine a bar chart with: Football-18, Basketball-22, Tennis-16, Rugby-14, Cricket-10]

    (a) How many students chose Basketball?

    (b) Which sport is the most popular?

    (c) How many students were surveyed in total?

    (d) What percentage chose Tennis?

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

11. The pie chart shows how 150 people travel to work.

    [Imagine a pie chart with: Car-120°, Train-96°, Bus-72°, Walk-48°, Cycle-24°]

    Calculate:

    (a) How many people travel by car

    (b) How many people travel by train

    (c) How many people travel by bus

    (d) How many people walk to work

    (e) The percentage who cycle

12. The histogram shows the daily rainfall (in mm) over 30 days.

    [Imagine a histogram with rainfall intervals: 0-5 (frequency 8), 5-10 (frequency 12), 10-15 (frequency 7), 15-20 (frequency 2), 20-25 (frequency 1)]

    Find:

    (a) The total number of days recorded

    (b) The modal rainfall interval

    (c) An estimate of the mean rainfall

    (d) How many days had more than 10mm of rain

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

    $$32, 41, 36, 29, 44, 33, 38, 31, 45, 34, 39, 42, 37, 28, 40$$

    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) Engine size vs. Fuel consumption

    (b) Hours of sunshine vs. Beach visitors

    (c) Age of washing machine vs. Reliability

    (d) Study time vs. Exam results

    (e) House number vs. House price

15. The table shows the temperature (°C) and ice cream sales (£) for 8 days:

Temperature	12	15	18	21	24	27	30	33
Sales	45	60	75	90	105	120	135	150

(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 the sales when temperature is 25°C

(e) Use your line to estimate the temperature when sales are £80

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

(a) Hours of exercise and fitness level

(b) Age of a car and its value

(c) Phone number and height

(d) Altitude and air pressure

Section E: Basic Probability

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

(a) Definitely will happen

(b) Cannot happen

(c) Equal chance

(d) Highly probable

(e) Highly improbable

18. A fair eight-sided die is rolled. Find the probability of getting:

(a) A 5

(b) An odd number

(c) A number greater than 6

(d) A number less than 4

(e) A 9

(f) A number from 1 to 8

19. A box contains 7 yellow balls, 4 purple balls, and 3 orange balls. A ball is picked at random. Find the probability of picking:

(a) A yellow ball

(b) A purple ball

(c) An orange ball

(d) A yellow or purple ball

(e) Not an orange ball

20. A wheel has 10 equal sections: 4 green, 3 red, and 3 blue. Find the probability of spinning:

(a) Green

(b) Red

(c) Blue

(d) Green or red

(e) Not green

21. The probability of snow tomorrow is $\frac{2}{7}$. What is the probability that it will not snow?

22. In a group of 40 people, 24 wear glasses. If a person is chosen at random, what is the probability they:

    (a) Wear glasses

    (b) Do not wear glasses

Section F: Two-Way Tables and Combined Events

23. The two-way table shows information about students' pet preferences:

	Dogs	Cats	Fish	Total
Year 7	32	18	10	60
Year 8	28	22	15	65
Total	60	40	25	125

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

    (a) Prefer dogs

    (b) Are in Year 8 and prefer cats

    (c) Are in Year 7

    (d) Prefer fish, given they are in Year 8

    (e) Are in Year 7, given they prefer dogs

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

    (a) A king

    (b) A diamond

    (c) A black card

    (d) The queen of hearts

    (e) A court card (Jack, Queen, King)

    (f) A red king

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

    (a) A total of 7

    (b) A total greater than 9

    (c) Two identical numbers

    (d) A total less than 5

26. A jar contains 6 white counters and 4 black counters. Two counters are drawn without replacement. Find the probability of drawing:

    (a) Two white counters

    (b) Two black counters

    (c) One white and one black counter

    (d) At least one white counter

Section G: Experimental Probability

27. A biased die is rolled 80 times. It shows a 6 on 24 occasions.

    (a) What is the experimental probability of rolling a 6?

    (b) What is the experimental probability of not rolling a 6?

    (c) If the die is rolled 200 more times, estimate how many 6s you would expect

28. A spinner is tested 150 times with these results: Orange: 35 times, Purple: 55 times, Pink: 40 times, White: 20 times

    Calculate:

    (a) The experimental probability of each colour

    (b) Which colour is most likely to come up next

    (c) If the spinner is used 300 times, estimate how many times it will land on purple

29. The table shows the results of drawing cards from a deck 120 times:

Suit	Hearts	Diamonds	Clubs	Spades
Frequency	35	28	32	25

    (a) Calculate the experimental probability of drawing each suit

    (b) Which suit appeared most frequently?

    (c) If cards are drawn 240 times, estimate how many hearts you would expect

    (d) Compare these results with a fair deck - which suits appear more/less often than expected?

Section H: Problem Solving

30. A cinema survey asked 200 customers about their favourite film genre. The results were: Action: 52 customers, Comedy: 48 customers, Drama: 44 customers, Horror: 36 customers, Romance: 20 customers

    (a) Draw a bar chart for this data

    (b) Calculate the angles needed for a pie chart

    (c) What percentage chose Action?

    (d) If 800 customers visited the cinema, estimate how many would choose Comedy

31. The box plot shows the distribution of exam marks:

    [Imagine a box plot with: Minimum 15, Q1 40, Median 55, Q3 70, Maximum 90]

    From the box plot, find:

    (a) The median mark

    (b) The interquartile range

    (c) The range

    (d) What percentage of students scored above 70?

    (e) What percentage of students scored between 40 and 70?

32. A spinner has red, blue, and green sections. The probability of spinning red is $\frac{3}{8}$ and the probability of spinning blue is $\frac{1}{3}$.

    (a) What is the probability of spinning green?

(b) If there are 24 sections in total, how many of each colour are there?

33. The mean score of 18 boys in a test is 82. The mean score of 12 girls is 76. Calculate the mean score for the whole class.

34. A company produces 2000 mobile phones. 45 are found to be defective.

    (a) What is the probability that a randomly chosen phone is defective?

    (b) In a batch of 8000 phones, estimate how many would be defective

    (c) What is the probability that a randomly chosen phone is not defective?

35. Compare these two data sets: Set X: 15, 18, 20, 22, 25, 28, 32 Set Y: 12, 19, 21, 23, 24, 26, 35

    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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