GCSE Foundation Mathematics
Practice Test 3: 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) $8, 3, 11, 8, 6, 8, 9, 5$

   (b) $24, 18, 21, 24, 27, 20, 24, 25$

   (c) $3.4, 1.9, 2.7, 1.9, 4.3, 1.9, 3.8$

   (d) $56, 63, 52, 56, 68, 59, 54, 56, 65$

2. The ages (in years) of 10 people at a birthday party are:

   $$28, 31, 26, 33, 29, 35, 30, 27, 32, 34$$

   Calculate:

   (a) The mean age

   (b) The median age

   (c) The range

3. The monthly rainfall amounts (in mm) are:

   $$78, 85, 62, 91, 74, 88, 67, 82, 76, 94, 69, 84$$

   Find:

   (a) The mean rainfall

   (b) The median rainfall

   (c) How many months had above average rainfall

4. A set of 7 numbers has a mean of 26. Six of the numbers are 18, 22, 28, 32, 24, and 30. Find the seventh number.

5. The mean of 12 numbers is 35. When a thirteenth number is added, the mean becomes 36. Find the thirteenth number.

6. In a data set, the mean is 45, the median is 41, and the range is 32. If the smallest value is 28, find the largest value.

Section B: Frequency Tables

7. The frequency table shows the number of books read by students in a month:

Number of books	Frequency
0	4
1	16
2	22
3	12
4	8
5	3

Calculate:

(a) The total number of students

(b) The mode

(c) The median

(d) The mean number of books

(e) The range

8. The frequency table shows the heights of trees (in metres):

Height group	Frequency
2-6	12
7-11	28
12-16	35
17-21	22
22-26	8

Find:

(a) The total number of trees

(b) The modal height group

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

(d) The percentage of trees taller than 16 metres

9. Complete this frequency table for the data:

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

Value	Frequency
4	
5	
6	
7	
8	
9	

Then find the mode and median.

Section C: Charts and Graphs

10. The bar chart shows the favourite colours of primary school children.

    [Imagine a bar chart with: Red-24, Blue-30, Green-18, Yellow-15, Purple-13]

    (a) How many children chose Blue?
    (b) Which colour is the most popular?
    (c) How many children were surveyed in total?
    (d) What percentage chose Green?
    (e) Draw a pie chart for this data (calculate the angles)

11. The pie chart shows how 180 teenagers spend their weekend.

    [Imagine a pie chart with: Gaming-100°, Sports-80°, Shopping-60°, Friends-90°, Study-30°]

    Calculate:

    (a) How many teenagers spend time gaming
    (b) How many teenagers play sports
    (c) How many teenagers go shopping
    (d) How many teenagers study
    (e) The percentage who spend time with friends

12. The histogram shows the time (in hours) people spend watching TV daily.

    [Imagine a histogram with time intervals: 0-2 (frequency 6), 2-4 (frequency 15), 4-6 (frequency 20), 6-8 (frequency 9), 8-10 (frequency 4)]

    Find:

    (a) The total number of people surveyed
    (b) The modal time interval
    (c) An estimate of the mean viewing time
    (d) How many people watch TV for more than 6 hours daily

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

    $$46, 52, 38, 47, 61, 43, 55, 39, 58, 44, 49, 63, 41, 56, 48$$

    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) Years of experience vs. Salary
    (b) Distance from equator vs. Average temperature
    (c) Shoe size vs. IQ
    (d) Hours of sleep vs. Test performance
    (e) Lottery number vs. Amount won

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

Advertising	10	15	20	25	30	35	40	45
Sales	180	220	260	300	340	380	420	460

(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 for £32,000 advertising spend

(e) Use your line to estimate the advertising spend needed for £250,000 sales

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

(a) Price of house and number of rooms

(b) Age of mobile phone and battery life

(c) Student ID number and exam grade

(d) Hours of practice and musical skill

Section E: Basic Probability

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

(a) Must occur

(b) Will never occur

(c) Fifty-fifty chance

(d) Almost certain

(e) Very rare

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

(a) A 7

(b) A multiple of 3

(c) A number greater than 8

(d) A number less than 5

(e) A 13

(f) A prime number

19. A bag contains 9 silver coins, 5 gold coins, and 4 bronze coins. A coin is picked at random. Find the probability of picking:

(a) A silver coin

(b) A gold coin

(c) A bronze coin

(d) A silver or gold coin

(e) Not a bronze coin

20. A roulette wheel has 12 equal sections: 5 black, 4 red, and 3 white. Find the probability of spinning:

(a) Black

(b) Red

(c) White

(d) Black or white

(e) Not red

21. The probability of winning a game is $\frac{4}{9}$. What is the probability of losing?

22. In a choir of 50 people, 32 are women. If a person is chosen at random, what is the probability they are:

    (a) A woman

    (b) A man

Section F: Two-Way Tables and Combined Events

23. The two-way table shows information about students' lunch choices:

	Sandwich	Pasta	Salad	Total
Year 10	38	26	16	80
Year 11	42	32	21	95
Total	80	58	37	175

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

    (a) Choose pasta

    (b) Are in Year 11 and choose salad

    (c) Are in Year 10

    (d) Choose sandwich, given they are in Year 11

    (e) Are in Year 10, given they choose pasta

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

    (a) A queen

    (b) A club

    (c) A red card

    (d) The jack of diamonds

    (e) A number card (2-10)

    (f) A black queen

25. A coin is flipped three times. List all possible outcomes and find the probability of getting:

    (a) Three heads

    (b) At least two tails

    (c) Exactly two heads

    (d) No tails

26. A box contains 8 red marbles and 7 blue marbles. Two marbles are drawn without replacement. Find the probability of drawing:

    (a) Two red marbles

    (b) Two blue marbles

    (c) One red and one blue marble

    (d) At least one red marble

Section G: Experimental Probability

27. A biased spinner is spun 120 times. It lands on red 42 times.

    (a) What is the experimental probability of landing on red?

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

    (c) If the spinner is used 300 more times, estimate how many reds you would expect

28. A lottery machine is tested 180 times with these results: Gold: 48 times, Silver: 72 times, Bronze: 36 times, Nothing: 24 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 times it will give silver

29. The table shows the results of spinning a wheel 200 times:

Colour	Red	Blue	Green	Yellow	Purple
Frequency	45	52	38	41	24

    (a) Calculate the experimental probability of each colour

    (b) Which colour appeared most frequently?

    (c) If the wheel is spun 400 times, estimate how many times you would expect green

    (d) If the wheel was fair with 5 equal sections, what frequency would you expect for each colour in 200 spins?

Section H: Problem Solving

30. A music festival survey asked 250 people about their favourite genre. The results were: Rock: 68 people, Pop: 62 people, Jazz: 45 people, Classical: 38 people, Electronic: 37 people

    (a) Draw a bar chart for this data

    (b) Calculate the angles needed for a pie chart

    (c) What percentage chose Rock?

    (d) If 1000 people attended the festival, estimate how many would choose Jazz

31. The box plot shows the distribution of daily temperatures (°C):

    [Imagine a box plot with: Minimum 8, Q1 18, Median 24, Q3 32, Maximum 42]

    From the box plot, find:

    (a) The median temperature

    (b) The interquartile range

    (c) The range

    (d) What percentage of days had temperatures above 32°C?

    (e) What percentage of days had temperatures between 18°C and 32°C?

32. A bag contains red, yellow, and blue marbles. The probability of drawing red is $\frac{5}{12}$ and the probability of drawing yellow is $\frac{1}{4}$.

    (a) What is the probability of drawing blue?

(b) If there are 36 marbles in total, how many of each colour are there?

33. The mean height of 15 basketball players is 195cm. The mean height of 20 football players is 178cm. Calculate the mean height for all 35 players.

34. A quality control test examines 1500 items. 63 are found to be faulty.

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

    (b) In a batch of 6000 items, estimate how many would be faulty

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

35. Compare these two data sets: Set P: 22, 25, 28, 30, 33, 36, 39 Set Q: 18, 26, 29, 31, 32, 34, 42

    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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