GCSE Foundation Mathematics
Practice Test 6: 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) $26, 23, 31, 26, 19, 26, 28, 24$

   (b) $63, 58, 67, 63, 72, 55, 63, 61$

   (c) $8.4, 5.7, 7.2, 5.7, 9.3, 5.7, 8.1$

   (d) $108, 95, 103, 108, 87, 99, 92, 108, 101$

2. The weights (in kg) of 10 dogs at a veterinary clinic are:

   $$24, 18, 29, 22, 31, 26, 20, 27, 25, 23$$

   Calculate:

   (a) The mean weight

   (b) The median weight

   (c) The range

3. The number of books read by students in a month are:

   $$6, 3, 8, 5, 2, 9, 4, 7, 3, 10, 6, 1, 11, 8$$

   Find:

   (a) The mean number of books

   (b) The median number of books

   (c) How many students read more than the mean

4. A set of 8 numbers has a mean of 56. Seven of the numbers are 52, 59, 48, 61, 54, 58, and 49. Find the eighth number.

5. The mean of 16 numbers is 73. When a seventeenth number is added, the mean becomes 75. Find the seventeenth number.

6. In a data set, the mean is 82, the median is 79, and the range is 52. If the largest value is 105, find the smallest value.

Section B: Frequency Tables

7. The frequency table shows the number of goals scored by a football team in matches:

Number of goals	Frequency
0	8
1	15
2	22
3	12
4	7
5	3

Calculate:

(a) The total number of matches
(b) The mode
(c) The median
(d) The mean number of goals per match
(e) The range

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

Weight group	Frequency
0-4.9	18
5-9.9	35
10-14.9	42
15-19.9	28
20-24.9	12

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 15kg or more

9. Complete this frequency table for the data:

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

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 number of visitors to a museum by day of the week.

    [Imagine a bar chart with: Monday-120, Tuesday-85, Wednesday-95, Thursday-110, Friday-140, Saturday-180, Sunday-170]

    (a) How many visitors came on Wednesday?

    (b) Which day had the most visitors?

    (c) How many visitors came in total for the week?

    (d) What percentage of visitors came on Friday?

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

11. The pie chart shows how 300 teenagers spend their free time.

    [Imagine a pie chart with: Gaming-108°, Social Media-90°, Sports-72°, Reading-54°, Music-36°]

    Calculate:

    (a) How many teenagers spend time gaming

    (b) How many teenagers play sports

    (c) How many teenagers listen to music

    (d) How many teenagers use social media

    (e) The percentage who read

12. The histogram shows the time (in minutes) students spend on homework.

    [Imagine a histogram with time intervals: 0-20 (frequency 12), 20-40 (frequency 25), 40-60 (frequency 32), 60-80 (frequency 18), 80-100 (frequency 8)]

    Find:

    (a) The total number of students surveyed

    (b) The modal time interval

    (c) An estimate of the mean homework time

    (d) How many students spend more than 60 minutes on homework

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

    $$39, 52, 41, 65, 38, 58, 44, 71, 46, 53, 67, 42, 59, 48, 64$$

    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) Study time vs. Exam grades

    (b) Car age vs. Fuel efficiency

    (c) Student ID number vs. Height

    (d) Outdoor temperature vs. Heating bills

(e) Lottery number vs. Prize amount

15. The table shows the engine size (litres) and fuel consumption (miles per gallon) for 8 cars:

Engine size	1.2	1.6	2.0	2.4	2.8	3.2	3.6	4.0
Fuel consumption	52	48	44	40	36	32	28	24

(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 fuel consumption for a 2.2 litre engine

(e) Use your line to estimate engine size for 38 mpg fuel consumption

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

(a) Daily sunshine hours and ice cream sales

(b) Distance from equator and average temperature

(c) National insurance number and shoe size

(d) Education level and income

Section E: Basic Probability

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

(a) Will definitely occur

(b) Cannot happen

(c) 50-50 chance

(d) Almost certain

(e) Rarely happens

18. A fair twelve-sided die (numbered 1-12) is rolled. Find the probability of getting:

(a) A 7

(b) A factor of 12

(c) A number greater than 9

(d) A number less than 5

(e) A 13

(f) A multiple of 3

19. A jar contains 16 orange sweets, 12 purple sweets, and 8 yellow sweets. A sweet is picked at random. Find the probability of picking:

(a) An orange sweet

(b) A purple sweet

(c) A yellow sweet

(d) An orange or purple sweet

(e) Not a yellow sweet

20. A spinner has 24 equal sections: 10 green, 8 red, and 6 blue. Find the probability of spinning:

(a) Green

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

21. The probability of a bus being late is $\frac{2}{9}$. What is the probability the bus will be on time?

22. In a choir of 45 members, 30 are female. If a member is chosen at random, what is the probability they are:

(a) Female
(b) Male

Section F: Two-Way Tables and Combined Events

23. The two-way table shows information about students' preferred learning style:

	Visual	Auditory	Kinesthetic	Total
Year 10	28	22	30	80
Year 11	32	18	25	75
Total	60	40	55	155

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

(a) Prefer visual learning
(b) Are in Year 11 and prefer auditory learning
(c) Are in Year 10
(d) Prefer kinesthetic learning, given they are in Year 11
(e) Are in Year 10, given they prefer visual learning

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

(a) A 7
(b) A diamond
(c) A black card
(d) The queen of hearts
(e) A jack or ace
(f) A red king

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

(a) Two heads
(b) One head and one tail
(c) At least one tail
(d) No heads

26. A bag contains 6 white balls and 9 black balls. Two balls are drawn without replacement. Find the probability of drawing:

(a) Two white balls
(b) Two black balls
(c) One white and one black ball
(d) At least one white ball

Section G: Experimental Probability

27. A biased die is rolled 300 times. It shows a 6 on 85 occasions.

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

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

    (c) If the die is rolled 450 more times, estimate how many 6s you would expect

28. A vending machine is tested 240 times with these results: Product dispensed: 168 times, Money returned: 48 times, Machine fault: 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 600 times, estimate how many faults you would expect

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

Color	Red	Blue	Green	Yellow	Orange
Frequency	45	52	38	35	30

    (a) Calculate the experimental probability of each color

    (b) Which color appeared most frequently?

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

    (d) If the spinner had equal sections, what frequency would you expect for each color in 200 spins?

Section H: Problem Solving

30. A library survey asked 400 people about their favorite book genre. The results were: Fiction: 112 people, Non-fiction: 84 people, Mystery: 76 people, Science Fiction: 68 people, Biography: 60 people

    (a) Draw a bar chart for this data

    (b) Calculate the angles needed for a pie chart

    (c) What percentage chose fiction?

    (d) If 1600 people used the library, estimate how many would choose mystery

31. The box plot shows the distribution of monthly rainfall (mm):

    [Imagine a box plot with: Minimum 25, Q1 45, Median 65, Q3 85, Maximum 120]

    From the box plot, find:

    (a) The median rainfall

    (b) The interquartile range

    (c) The range

    (d) What percentage of months had more than 85mm rainfall?

    (e) What percentage of months had between 45mm and 85mm rainfall?

32. A game uses three types of cards. The probability of drawing a power card is $\frac{1}{4}$ and the probability of drawing an action card is $\frac{2}{7}$.

(a) What is the probability of drawing a resource card?

(b) If there are 28 cards in total, how many of each type are there?

33. The mean height of 24 basketball players is 195cm. The mean height of 16 football players is 178cm. Calculate the mean height for all 40 players.

34. A quality control check tests 4000 electronic components. 96 are found to be defective.

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

(b) In a batch of 15000 components, estimate how many would be defective

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

35. Compare these two data sets: Set X: 18, 22, 26, 30, 34, 38, 42 Set Y: 15, 24, 28, 31, 33, 36, 45

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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stepupmaths.co.uk