GCSE Foundation Mathematics
Practice Test 8: 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) $41, 36, 45, 41, 33, 41, 39, 37$

   (b) $86, 79, 92, 86, 97, 74, 86, 83$

   (c) $11.2, 7.5, 9.8, 7.5, 12.6, 7.5, 10.9$

   (d) $142, 129, 135, 142, 116, 131, 124, 142, 138$

2. The prices (in £) of 10 items in a shopping basket are:

   $$3.20, 2.85, 4.50, 3.75, 5.60, 4.20, 2.95, 5.25, 3.80, 4.10$$

   Calculate:

   (a) The mean price

   (b) The median price

   (c) The range

3. The number of hours worked by part-time employees in a week are:

   $$16, 12, 24, 18, 10, 28, 15, 22, 13, 30, 20, 11, 32, 25$$

   Find:

   (a) The mean hours worked

   (b) The median hours worked

   (c) How many employees worked more than the mean

4. A set of 5 numbers has a mean of 78. Four of the numbers are 72, 81, 69, and 85. Find the fifth number.

5. The mean of 15 numbers is 92. When a sixteenth number is added, the mean becomes 94. Find the sixteenth number.

6. In a data set, the mean is 105, the median is 98, and the range is 72. If the largest value is 136, find the smallest value.

Section B: Frequency Tables

7. The frequency table shows the number of apps downloaded by smartphone users in a month:

Number of apps	Frequency
0	6
1	14
2	25
3	22
4	11
5	7

Calculate:

(a) The total number of users

(b) The mode

(c) The median

(d) The mean number of apps downloaded

(e) The range

8. The frequency table shows the waiting times at a doctor's surgery (in minutes):

Waiting time	Frequency
0-9	16
10-19	28
20-29	34
30-39	22
40-49	12

Find:

(a) The total number of patients

(b) The modal waiting time group

(c) An estimate of the mean waiting time (use midpoints)

(d) The percentage of patients who waited 30 minutes or more

9. Complete this frequency table for the data:

$$1, 3, 5, 1, 4, 3, 7, 1, 2, 3, 5, 1, 6, 2, 1$$

Value	Frequency
1	
2	
3	
4	
5	
6	
7	

Then find the mode and median.

Section C: Charts and Graphs

10. The bar chart shows the number of books borrowed from different sections of a library.

    [Imagine a bar chart with: Fiction-180, Non-fiction-145, Children's-120, Reference-95, Magazines-85, DVDs-75]

    (a) How many children's books were borrowed?

    (b) Which section was most popular?

    (c) How many items were borrowed in total?

    (d) What percentage were fiction books?

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

11. The pie chart shows how 200 students get to school.

    [Imagine a pie chart with: Walk-126°, Bus-108°, Car-72°, Bicycle-36°, Train-18°]

    Calculate:

    (a) How many students walk to school

    (b) How many students take the bus

    (c) How many students come by car

    (d) How many students cycle

    (e) The percentage who take the train

12. The histogram shows the distances (in km) people run in a weekly parkrun.

    [Imagine a histogram with distance intervals: 0-2 (frequency 10), 2-4 (frequency 22), 4-6 (frequency 28), 6-8 (frequency 20), 8-10 (frequency 12)]

    Find:

    (a) The total number of runners

    (b) The modal distance interval

    (c) An estimate of the mean running distance

    (d) How many people ran more than 6km

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

    $$26, 43, 29, 54, 27, 46, 35, 61, 31, 49, 42, 36, 45, 33, 57$$

    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) Amount of exercise vs. Fitness level

    (b) Years of driving experience vs. Insurance premiums

    (c) Library card number vs. Reading speed

    (d) Daily screen time vs. Sleep quality

(e) Shoe size vs. Favorite color

15. The table shows the price of a product (£) and the number sold for 8 different prices:

Price	10	15	20	25	30	35	40	45
Number sold	95	85	75	65	55	45	35	25

(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 number sold at £28

(e) Use your line to estimate price needed to sell 70 items

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

(a) Temperature and heating bill

(b) Study hours and test scores

(c) National ID number and height

(d) Car engine size and fuel consumption

Section E: Basic Probability

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

(a) Guaranteed outcome

(b) Never happens

(c) Fifty-fifty chance

(d) Almost always occurs

(e) Seldom happens

18. A fair twenty-sided die (numbered 1-20) is rolled. Find the probability of getting:

(a) A 15

(b) A factor of 20

(c) A number greater than 15

(d) A number less than 7

(e) A 21

(f) A multiple of 5

19. A container holds 20 chocolate bars, 18 fruit bars, and 14 cereal bars. A bar is picked at random. Find the probability of picking:

(a) A chocolate bar

(b) A fruit bar

(c) A cereal bar

(d) A chocolate or fruit bar

(e) Not a cereal bar

20. A lottery wheel has 35 equal sections: 15 gold, 12 silver, and 8 bronze. Find the probability of spinning:

(a) Gold
(b) Silver
(c) Bronze
(d) Gold or bronze
(e) Not silver

21. The probability of a flight being cancelled is $\frac{3}{16}$. What is the probability the flight will operate?

22. In a dance class of 84 students, 56 are beginners. If a student is chosen at random, what is the probability they are:

(a) A beginner
(b) Not a beginner

Section F: Two-Way Tables and Combined Events

23. The two-way table shows information about employees' work arrangements:

	Office Only	Hybrid	Remote Only	Total
Full-time	45	38	22	105
Part-time	15	12	18	45
Total	60	50	40	150

If an employee is chosen at random, find the probability they:

(a) Work hybrid
(b) Are part-time and work remotely
(c) Work full-time
(d) Work from office only, given they are part-time
(e) Work full-time, given they work hybrid

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

(a) An 8
(b) A spade
(c) A black card
(d) The king of hearts
(e) A 9 or 10
(f) A red queen

25. A spinner with 4 equal sections (red, blue, green, yellow) is spun twice. Find the probability of getting:

(a) Red both times
(b) Two different colors
(c) At least one blue
(d) Yellow then green (in that order)

26. A bag contains 5 white balls and 13 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 black ball

Section G: Experimental Probability

27. A biased coin is flipped 400 times. It lands on heads 156 times.

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

    (b) What is the experimental probability of getting tails?

    (c) If the coin is flipped 600 more times, estimate how many heads you would expect

28. A production line is tested 320 times with these results: Perfect product: 224 times, Minor defect: 64 times, Major defect: 32 times

    Calculate:

    (a) The experimental probability of each outcome

    (b) Which outcome is most likely to occur next

    (c) If the line produces 800 items, estimate how many minor defects you would expect

29. The table shows the results of rolling a special die 180 times:

Face	Star	Circle	Square	Triangle	Diamond
Frequency	42	38	35	34	31

    (a) Calculate the experimental probability of each face

    (b) Which face appeared most frequently?

    (c) If the die is rolled 360 times, estimate how many squares you would expect

    (d) If the die was fair, what frequency would you expect for each face in 180 rolls?

Section H: Problem Solving

30. A gaming survey asked 300 teenagers about their favorite gaming platform. The results were: Console: 108 teens, PC: 84 teens, Mobile: 66 teens, Tablet: 30 teens, Handheld: 12 teens

    (a) Draw a bar chart for this data

    (b) Calculate the angles needed for a pie chart

    (c) What percentage chose console gaming?

    (d) If 1200 teenagers were surveyed, estimate how many would choose PC gaming

31. The box plot shows the distribution of daily step counts (in thousands):

    [Imagine a box plot with: Minimum 3, Q1 6, Median 8, Q3 11, Maximum 15]

    From the box plot, find:

    (a) The median step count

    (b) The interquartile range

    (c) The range

    (d) What percentage of people walked more than 11,000 steps?

    (e) What percentage of people walked between 6,000 and 11,000 steps?

32. A raffle uses numbered tickets. The probability of winning a major prize is $\frac{2}{9}$ and the probability of winning a minor prize is $\frac{1}{3}$.

    (a) What is the probability of winning no prize?

    (b) If there are 18 tickets in total, how many lead to each outcome?

33. The mean age of 25 marathon runners is 38 years. The mean age of 15 spectators is 52 years. Calculate the mean age for all 40 people.

34. A quality check examines 8000 electronic devices. 192 are found to be defective.

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

    (b) In a batch of 25000 devices, estimate how many would be defective

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

35. Compare these two data sets: Set M: 15, 18, 21, 24, 27, 30, 33 Set N: 12, 19, 22, 25, 26, 29, 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

For more resources and practice materials, visit:
stepupmaths.co.uk