

Hello! Here is the final set of exercises for the Year 7 Mathematics curriculum, covering **Statistics and Probability**.

These problems focus on interpreting and representing data, calculating measures of central tendency, and formalizing probability concepts.



Year 7 Statistics and Probability Practice

1. Data Representation (5 Problems)

1. A class took a test scored out of 10. The results were: 5, 7, 7, 8, 5, 9, 10, 7, 8, 7. Construct a **dot plot** to represent this data.
 2. The ages (in years) of staff at a small office are: 22, 25, 30, 31, 35, 37, 40, 41, 44. Create a **stem-and-leaf plot** for this data set.
 3. When collecting data on the **height** of students, is the data **discrete** or **continuous**?
 4. A **stem-and-leaf plot** has a stem of 4 and leaves of 0, 1, 5, 8. List the four data values this represents.
 5. Why is a **dot plot** generally more suitable than a bar graph for showing the frequency of small numerical data sets (like the test scores in Question 1)?
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2. Data Analysis (5 Problems)

Use the following data set of the number of hours students spent watching TV in one week: **3, 5, 6, 7, 7, 9, 10, 10, 10, 13**.

1. Calculate the **mean** (average) number of hours watched.
 2. Find the **median** (middle value) of the data set.
 3. Determine the **mode** (most frequent value) of the data set.
 4. Calculate the **range** (spread) of the data set.
 5. If one student watched 30 hours instead of 13, which measure—the **mean** or the **median**—would be affected the *most*?
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3. Probability/Chance (5 Problems)

1. A bag contains 3 red marbles, 4 blue marbles, and 3 green marbles. What is the probability of selecting a **blue** marble? Express your answer as a simplified fraction.
 2. List the **sample space** (all possible outcomes) for rolling a standard six-sided die.
 3. A coin is flipped. What is the probability of the coin landing on **heads**? Express your answer as a decimal.
 4. If the probability of rain tomorrow is $\frac{3}{10}$, what is the probability that it will **not** rain?
 5. In a bag, there are 20 tiles numbered 1 to 20. What is the probability of selecting a tile with an **even number**? Express your answer as a percentage.
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Answers

1. Data Representation

- Dot Plot:** The numbers on the axis should range from 5 to 10. There should be: two dots above 5, zero dots above 6, four dots above 7, two dots above 8, one dot above 9, and one dot above 10.
- Stem-and-Leaf Plot:

| Stem (Tens) | Leaf (Units) |

 | :---: | :---: |

 | 2 | 2, 5 |

 | 3 | 0, 1, 5, 7 |

 | 4 | 0, 1, 4 |
- Continuous** (Height can be any value within a range, not just a fixed whole number).
- 40, 41, 45, 48.
- A **dot plot** shows the **distribution** of individual data points and their frequency directly over the number line, making it easier to see gaps and clusters in small numerical sets.

2. Data Analysis

- Mean = 8** (Sum of all numbers is $3 + 5 + 6 + 7 + 7 + 9 + 10 + 10 + 10 + 13 = 80$. $80 \div 10 = 8$).
- Median = 8** (The middle two values are 7 and 9. The median is the average of these two: $(7 + 9) \div 2 = 8$).
- Mode = 10** (The value 10 appears most frequently, three times).
- Range = 10** (Maximum value - Minimum value: $13 - 3 = 10$).
- The **mean** would be affected the *most*. The mean uses every number in the calculation, so a very large value (an outlier) will pull the average up dramatically. The median, as the middle value, would only shift slightly (or perhaps not at all).

3. Probability/Chance

- $\frac{2}{5}$ (Total marbles: $3 + 4 + 3 = 10$. Probability of blue: $\frac{4}{10}$, which simplifies to $\frac{2}{5}$).
- Sample Space: **{1, 2, 3, 4, 5, 6}**
- 0.5** (There are two equally likely outcomes, so $\frac{1}{2} = 0.5$).
- $\frac{7}{10}$ (The sum of the probability of an event happening and not happening is 1: $1 - \frac{3}{10} = \frac{7}{10}$).
- 50%** {There are 10 even numbers (2, 4, 6, 8, 10, 12, 14, 16, 18, 20) out of 20 total. $\frac{10}{20} = \frac{1}{2} = 50\%$ }.