

Sample Spaces, Combined Events and Tree Diagrams

Year 8 · Probability · y8-prob

Name: _____

Date: _____

Class: _____

Score: ____ / ____

Instructions

Answer every question in Practice. Try the Challenge section once Practice is complete. 10 questions in total.

Practice

1. A coin is flipped and a dice is rolled. What is the probability of getting heads AND a 6, as a fraction? (multiply $\frac{1}{2} \times \frac{1}{6}$)

2. A bag has 3 red and 7 blue balls. A ball is picked, replaced, then picked again. What is the probability of picking red both times? ($\frac{3}{10} \times \frac{3}{10}$)

3. Two mutually exclusive events: $P(A) = 0.3$, $P(B) = 0.4$. What is $P(A \text{ or } B)$?

4. A tree diagram shows two branches for flipping a coin twice: $P(\text{head then head}) = \frac{1}{2} \times \frac{1}{2}$. What is this probability?

5. In a class of 30, 18 play football and 12 play tennis, with 5 playing both. Using a Venn diagram, how many play only football?

6. For independent events happening together (AND), multiply the probabilities. A spinner has a $\frac{1}{4}$ chance of red and a dice has a $\frac{1}{6}$ chance of six. What is $P(\text{red AND six})$?

7. Multiply along the branches of a tree diagram to find a combined probability. $P(\text{rain}) = 0.2$, and given rain, $P(\text{late bus}) = 0.5$. What is $P(\text{rain AND late bus})$?

8. For mutually exclusive events (cannot happen together), add the probabilities for 'either/or'. $P(\text{rolling a 2}) = \frac{1}{6}$, $P(\text{rolling a 5}) = \frac{1}{6}$. What is $P(\text{rolling a 2 OR a 5})$?

Challenge

1. A bag has 5 red and 5 blue balls. Two balls are picked WITHOUT replacement. What is $P(\text{both red})$? ($\frac{5}{10} \times \frac{4}{9}$)

2. Events A and B are independent: $P(A) = 0.5$, $P(B) = 0.4$, so $P(A \text{ and } B) = 0.2$. What is $P(A \text{ or } B)$ using $P(A) + P(B) - P(A \text{ and } B)$?
