

# Conditional Probability, Relative Frequency and Expected Outcomes

Year 9 · Probability · y9-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.  $P(A \text{ and } B) = 0.24$  and  $P(B) = 0.4$ . Using  $P(A|B) = P(A \text{ and } B) \div P(B)$ , what is  $P(A \text{ given } B)$ ?
2. A bag has 5 red and 5 blue balls (10 total). A red ball is picked and NOT replaced. What is the probability the second pick is also red? ( $\frac{4}{9}$ )
3. A dice is rolled twice. What is the probability of getting at least one 6? (1 minus probability of no 6s:  $1 - (\frac{5}{6})^2$ )
4. A spinner is spun 90 times and lands on blue 63 times. What is the relative frequency (experimental probability) of blue, as a decimal?
5. A dice is rolled 300 times. The probability of rolling a 6 is  $\frac{1}{6}$ . How many times would you expect to roll a 6?
6. Conditional probability  $P(A|B)$  means the probability of A GIVEN that B has already happened:  $P(A|B) = P(A \text{ and } B) \div P(B)$ .  $P(A \text{ and } B) = 0.1$  and  $P(B) = 0.25$ . What is  $P(A|B)$ ?
7. Without replacement, the total number of items decreases after each pick, and so does the count of the item removed. A bag has 3 red and 7 blue balls (10 total). A red ball is picked and not replaced. What is the probability the next pick is also red? ( $\frac{2}{9}$ )
8. Relative frequency estimates probability from experimental results: relative frequency = number of successes  $\div$  total trials. A coin is flipped 200 times and lands heads 140 times. What is the relative frequency of heads, as a decimal?

## Challenge

1.  $P(A \text{ and } B) = 0.18$  and  $P(A) = 0.3$ . Using  $P(B|A) = P(A \text{ and } B) \div P(A)$ , what is  $P(B|A)$ ?

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2. A bag has 4 red and 6 blue balls (10 total). Two balls are picked WITHOUT replacement. What is the probability both are red? ( $\frac{4}{10} \times \frac{3}{9}$ )

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