

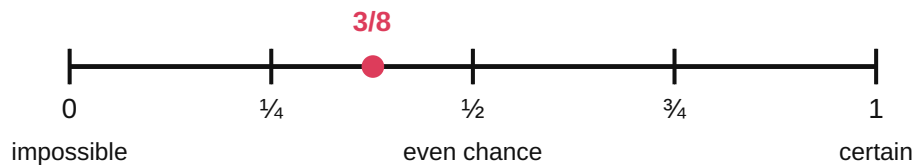
Boost Free Lessons - Year 6 Maths

Lesson 20: Probability as Fractions and Decimals

Name: _____ Grade: _____ Date: _____

Worked Example 1

A bag holds 3 red and 5 blue marbles. Find the probability of drawing red.



1. Probability is written as $\frac{\text{favourable outcomes}}{\text{total outcomes}}$.
2. There are 3 red marbles, so 3 outcomes are favourable.
3. There are $3 + 5 = 8$ marbles altogether, so there are 8 possible outcomes.
4. $P(\text{red}) = \frac{3}{8}$, which sits a little below the halfway point on the scale.

$P(\text{red}) = \frac{3}{8}$

Worked Example 2

Using the same bag, find the probability of not drawing red.

1. All the probabilities for one event must add to 1.
2. $P(\text{red}) = \frac{3}{8}$, so $P(\text{not red}) = 1 - \frac{3}{8}$.
3. $1 = \frac{8}{8}$, so $\frac{8}{8} - \frac{3}{8} = \frac{5}{8}$.
4. Check it directly: there are 5 blue marbles out of 8, which is also $\frac{5}{8}$.

$P(\text{not red}) = \frac{5}{8}$

Remember: Probability = $\frac{\text{favourable outcomes}}{\text{total outcomes}}$. Leave your answer as a **fraction** unless a decimal is asked for. Every probability sits between **0** and **1**.



Question 1: Write each probability as a fraction in simplest form.

1. A fair coin is tossed. $P(\text{heads})$?

2. A fair die is rolled. $P(\text{rolling a } 4)$?

3. A fair die is rolled. $P(\text{rolling an even number})$?

4. A bag has 2 red and 3 green counters. $P(\text{red})$?

5. A bag has 4 white and 4 black counters. $P(\text{white})$?

6. A spinner has 5 equal sections, one blue. $P(\text{blue})$?

7. A fair die is rolled. $P(\text{rolling a } 7)$?

8. A fair die is rolled. $P(\text{rolling less than } 7)$?



Question 2: Answer the following.

1. Write $\frac{1}{4}$ as a decimal.

2. Write $\frac{3}{5}$ as a decimal.

3. A bag has 6 red and 4 blue counters. Write $P(\text{red})$ as a fraction and a decimal.

4. If $P(\text{rain}) = 0.3$, what is $P(\text{no rain})$?

5. Why can a probability never be greater than 1?

6. What does a probability of 0 mean?



Question 3: Answer the following questions.

1. A bag has 5 red, 3 blue and 2 yellow counters. Find $P(\text{blue})$ as a fraction.

2. Using the same bag, find $P(\text{not yellow})$.

3. A spinner has 8 equal sections, 3 of them green. Write $P(\text{green})$ as a decimal.

4. In a class of 25, 15 are girls. Write $P(\text{choosing a girl})$ as a fraction in simplest form.

5. Explain why $P(\text{event}) + P(\text{not event})$ always equals 1.





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Answers: Probability as Fractions and Decimals**Question 1**

1. $\frac{1}{2}$
2. $\frac{1}{6}$
3. $\frac{3}{6} = \frac{1}{2}$
4. $\frac{2}{5}$
5. $\frac{4}{8} = \frac{1}{2}$
6. $\frac{1}{5}$
7. 0
8. 1

Question 2

1. 0.25
2. 0.6
3. $\frac{6}{10} = \frac{3}{5} = 0.6$
4. 0.7
5. 1 means certain, and nothing can be more certain than certain.
6. The event is impossible and can never happen.

Question 3

1. $\frac{3}{10}$
2. $\frac{8}{10} = \frac{4}{5}$
3. 0.375
4. $\frac{3}{5}$
5. Together they cover every possible outcome, and something must happen, which is a probability of 1.

