

## What is certain? What is possible? What is impossible?

1. What would a die have to look like to make it certain you will roll a 6?

**Answer:** A 6 would have to appear on all sides.

2. What is more likely, to roll a 1 with a die or to get a tails when you toss a coin?

**Answer:** It is more likely to toss a tails with a coin (50 percent chance).

With a die, the chance is 1 in 6.

3. Steve tosses a coin several times. What is more likely: HHHHHHHHHH or HTHHTTHTH (H = heads, T = tails)?

**Answer:** HTHHTTHTH is more likely.

4. Max and Laura are playing a game: A lottery drum holds 49 tickets with the numbers 1 to 49. Max wins if an even number is drawn, and Laura wins for an odd number. Is this game fair?

**Answer:** Laura has a higher chance of winning because there are more odd numbers in the drum.

5. A die is rolled. What is the probability that the rolled number will be even?

**Answer:** The probability is 50 percent (three even, three odd numbers on the die).

6. For fast students: How likely is it that the first number drawn in a lottery will be a 7?

**Answer:** 1 in 49.

7. **For fast students:** What is more likely: Rolling a double with two dice or rolling a triple with three dice?

**Answer:** It is more likely to roll a double with two dice.