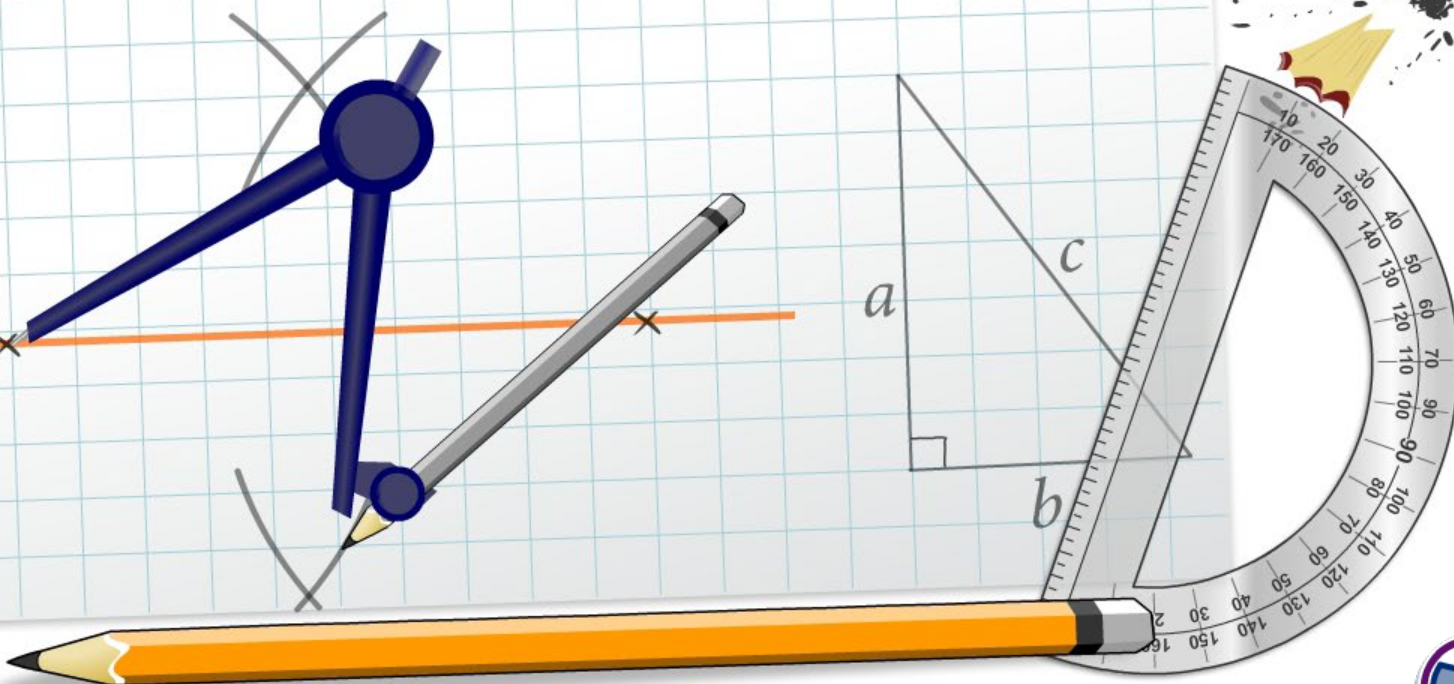


Single Events



Common core icons



This icon indicates a slide where the Standards for Mathematical Practice are being developed. Details of these are given in the Notes field.



Slides containing examples of mathematical modeling are marked with this stamp.



This icon indicates an opportunity for discussion or group work.

The **Standards for Mathematical Practice** outlined in the Common Core State Standards for Mathematics describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

These are:

- 1) **Make sense of problems and persevere in solving them.**
- 2) **Reason abstractly and quantitatively.**
- 3) **Construct viable arguments and critique the reasoning of others.**
- 4) **Model with mathematics.**
- 5) **Use appropriate tools strategically.**
- 6) **Attend to precision.**
- 7) **Look for and make use of structure.**
- 8) **Look for and express regularity in repeated reasoning.**



This icon indicates that the slide contains activities created in Flash. These activities are not editable.



This icon indicates teacher's notes in the Notes field.



When talking about how **probable** it is that something will happen, we use a range of words to describe the **possibility** of the event taking place.



“It’s **unlikely** that I’ll go to school tomorrow because of the snow storm.”



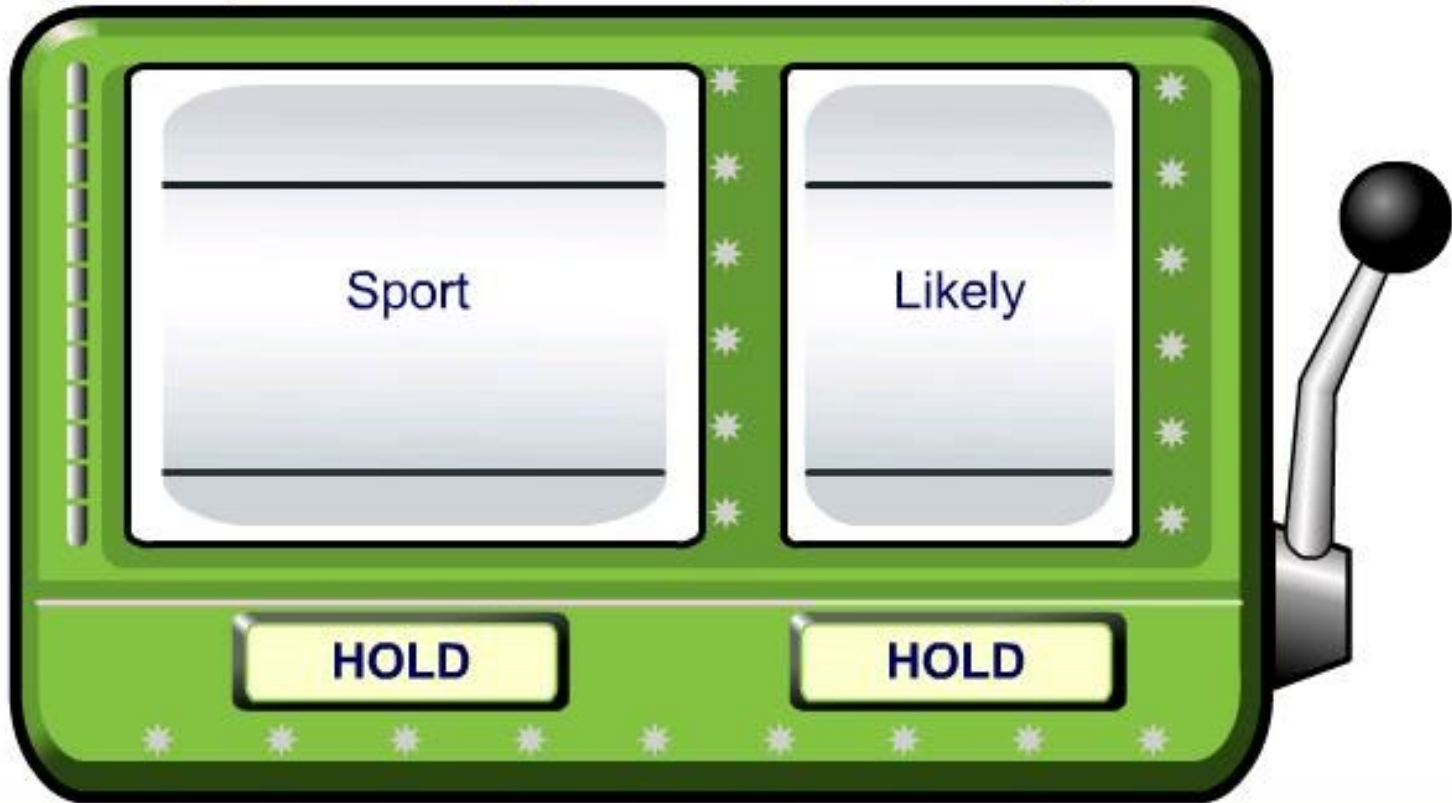
“There’s a **good chance** I’ll go to college after I leave school.”



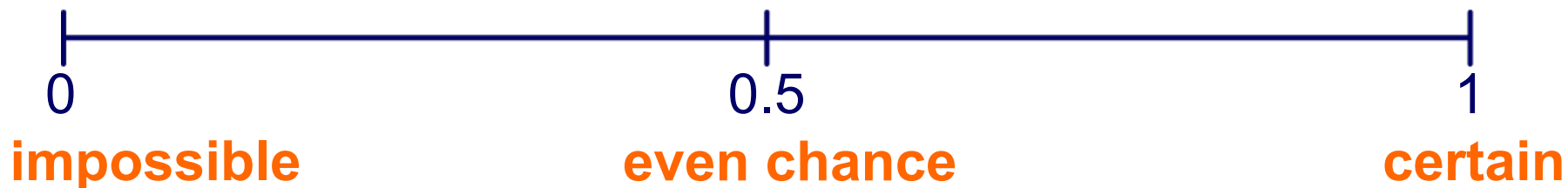
“I’m **likely** to go to on vacation this summer. My family have gone the last 4 years.”



Create a sentence about the subject in the left column using the probability word from the right column.



Probability is measured on a scale from 0 to 1.



If an event:

- is **impossible** or has no chance of occurring, then the probability is 0
- has an **even chance** of occurring, the probability is 0.5
- is **certain** it has a probability of 1.

Probabilities can be written as fractions, decimals, ratios or percentages.





Choose the correct probability words to accurately complete these sentences.

- It is that the North Pole will be cold next year.
- This coin is not biased; heads tails.
- It is that a randomly chosen swan is black.
- There is that smoking causes lung cancer.
- It is for ice-cream sales to go up when it snows.
- It is to see a rich man pass through airport



An **event** can have several **outcomes**.

How many possible outcomes are there when throwing a ten-sided die?

There are ten elements in the set of outcomes:
one for each side of the die.

The outcomes can be written in set notation:
 $A = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$



Can you think of an event that has exactly two outcomes?

One possibility is a coin toss. The coin
will either show heads or tails.

$B = \{\text{head, tail}\}$



Each outcome of a given event has a **probability** or a **chance of occurring**.

**What are the chances of rolling a 2 on a ten-sided die?
Write the probability as a fraction, decimal, percentage
and ratio.**

If the dice is fair, it has an equal chance of landing on any of its ten sides.

Therefore, the probability it will land on a specific side is 1 in 10, 0.1, 10% or $\frac{1}{10}$.



Can you think of an event that has two outcomes which have probabilities that are not equal?



Is there an even chance of these events occurring or not?

even chance

not an even chance

When a dice is thrown, it will show a square number.



Are these probability statements true or false?

Question 1/7

It is impossible for a coin to land on its edge.

true

false



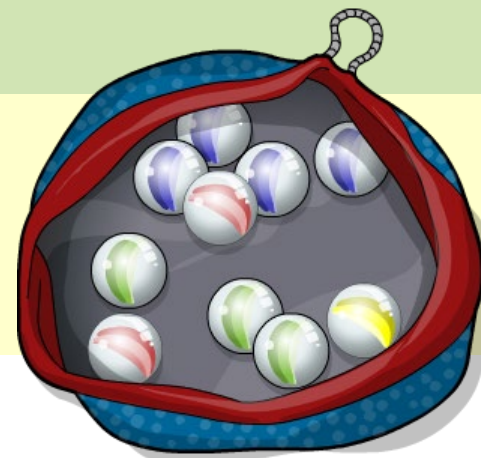
If the **outcomes** of an event are **equally likely** then we can calculate the probability using the formula:

$$\text{probability of an event} = \frac{\text{number of possible successful outcomes}}{\text{total number of possible outcomes}}$$

A bag contains 10 marbles: 1 yellow, 3 green, 4 blue and 2 red marbles.

What is the probability of pulling a green marble from the bag without looking?

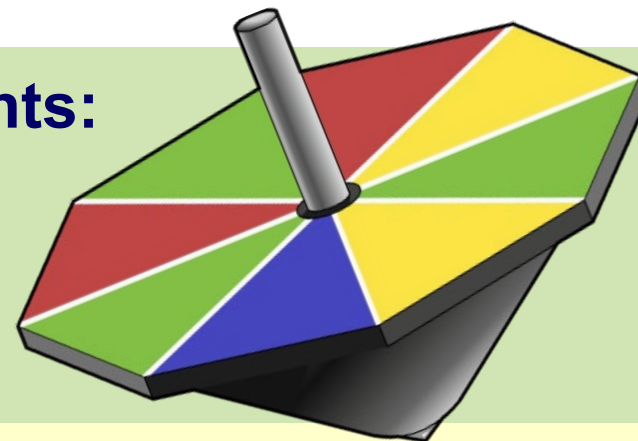
$$P(\text{green}) = \frac{3}{10} \quad \text{or} \quad 0.3 \quad \text{or} \quad 30\%$$



This spinner has eight equal divisions.

What is the probability of these events:

- a) $P(\text{blue})$?
- b) $P(\text{red} \cup \text{green})$?
- c) $P(\text{blue} \cup \text{yellow} \cup \text{green})$?



$$\text{a) } P(\text{blue}) = \frac{1}{8}$$

In this case you can add $P(A)$ and $P(B)$ to find $P(A \cup B)$:

$$\text{b) } P(\text{red} \cup \text{green}) = \frac{2}{8} + \frac{3}{8} = \frac{5}{8}$$

$$\text{c) } P(\text{blue} \cup \text{yellow} \cup \text{green}) = \frac{1}{8} + \frac{3}{8} + \frac{2}{8} = \frac{6}{8} = \frac{3}{4}$$



The complement of an event includes all the outcomes that are not in the event.

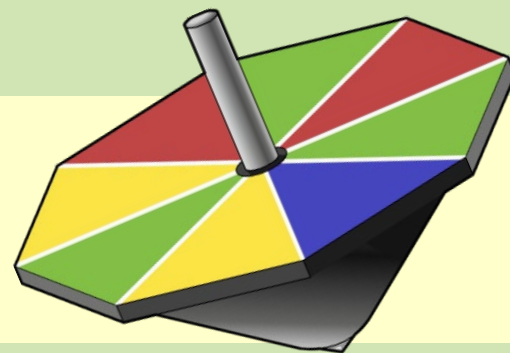
$$\text{probability of an event not occurring} = 1 - p$$

when p is the probability of the event occurring

The spinner has equal sections. What is the probability of not landing on yellow, $P(\text{not yellow})$?

$$P(\text{yellow}) = \frac{2}{8} = 0.25$$

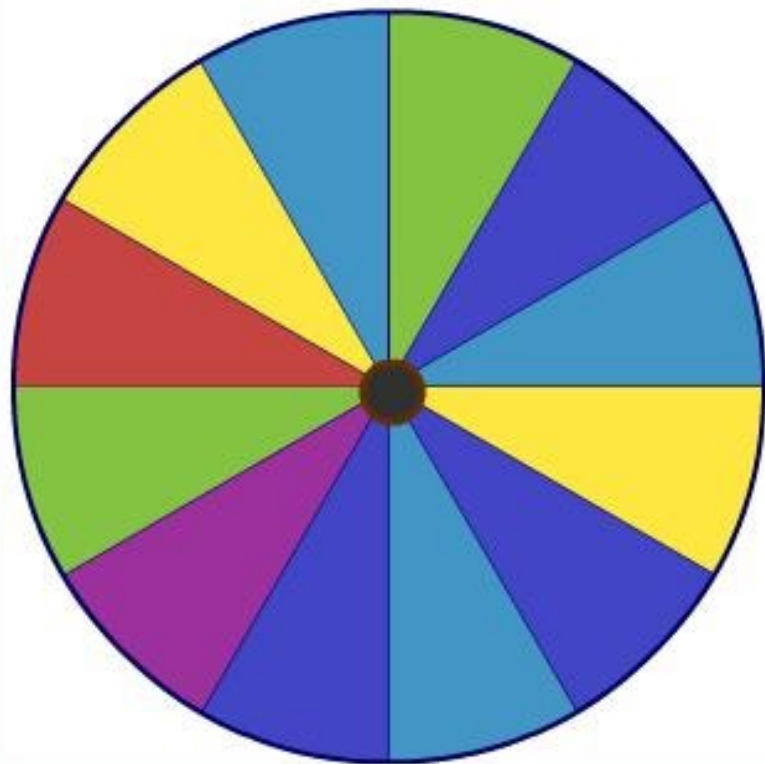
$$P(\text{not yellow}) = 1 - 0.25 = 0.75$$



What is $P(\text{not green})$ and $P(\text{not green or yellow})$?



Change the number and color of sections in the spinner and identify the probability of landing on a particular color



Number of sections: ◀ 12 ▶

What is the probability of this spinner landing on yellow?

reveal



An unfair spinner has green, red and blue sections. Landing on red is twice as likely as landing on green.

Fill in the missing probabilities.

green	red	blue
0.26	0.52	0.22



Another spinner has pink, orange and black sections only.

$$P(\text{pink or orange}) = 0.5$$

$$P(\text{pink or black}) = 0.75$$

What is the probability of landing on each section?

