

Exploring Basic Probability

outcome

- one possible result of a probability experiment

favourable outcome

- an outcome that counts for the probability being calculated

probability

- the chance that something will happen
- often expressed as a proper fraction, a percent, or a decimal between 0 and 1

Nov 20-18:34

In your table groups, we are going to play a game. Each table needs two dice and you **each** need to make a table that looks something like this:



Jan 8-12:58

Instructions for GREED

- Stand up.
- The leader rolls two number cubes.
- Record the sum of the numbers rolled in the appropriate column. For example, the sums for round 1 are recorded in the G column.
- Choose to remain standing or sit down until the next round.
- Continue to record the sum of the numbers rolled until you choose to sit down.
- The round is finished when a double is rolled. If you are standing when a double is rolled, then you get 0 points for that letter. Otherwise, your score is the sum of all the numbers for that letter.
- The game has five rounds, one for each letter in the title.
- The person with the most points at the end wins.

Jan 8-13:01

Once you have finished all five rounds consider the following:

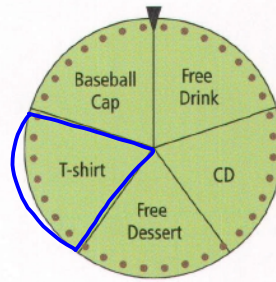
- a) Explain why you think rolling a double is an important **outcome**.
- b) Do you think that a certain number of rolls will happen before a double? Explain.
- c) If you played the game again, how would you change your strategy to increase your chances of winning? Explain.

- a) It ends the game/round.
- b) No. There is no way of predicting when a double will be rolled although it should be one in every six rolls.
- c) Maybe count how many rolls there have been and how many doubles.

Jan 8-13:02

Example 1: Spinner Probabilities

Alicia is celebrating her birthday at her favourite restaurant. The server spins the spinner to determine what prize Alicia will get.



- How many possible outcomes are there?
- Alicia is hoping for the T-shirt. How many favourable outcomes are there?
- What is the probability of the spinner landing on T-shirt?
- For 100 guests, how many T-shirts should the restaurant buy?

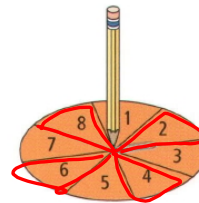
- a) 5 outcomes.
- b) 1 favourable outcomes.
- c) 20 T-shirts. This is the expected number. However, we don't know for sure!

Jan 8-13:08

Example 2: Compare Probabilities

Find each probability. How likely is each probability?

- What is the probability of spinning an even number?
- What is the probability of spinning a 9?
- What is the probability of spinning any number from 1 to 8?
- What is the probability of spinning a factor of 24?



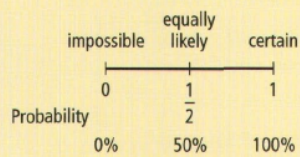
- a) $\frac{4}{8}$ — favourable outcomes — total outcomes reduces to $\frac{1}{2}$
- b) 0 — cannot happen!
- c) 1 — certain to happen!
- d) Factors of 24: 1, 2, 3, 4, 6, 8, 12, 24
Favourable outcomes are: 1, 2, 3, 4, 6, 8
 $\Rightarrow \frac{6}{8} = \frac{3}{4}$

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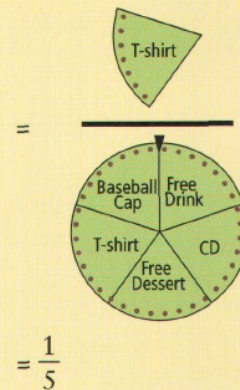
Copy the Key Ideas box into your notes
(you don't need to do the pie chart fraction)

Key Ideas

- An outcome is one possible result. For example, spinning T-shirt is one outcome on the spinner.
- Probability can be described on a number line with a scale from *impossible* to *certain*. Impossible is a probability of 0 and certain is a probability of 1.



$$\text{Probability(T-shirt)} = \frac{\text{favourable outcomes}}{\text{all outcomes}}$$



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