

PROBABILITY



PROBABILITY



- Probability is a measure of how likely an event is to occur.
- For example –
 - Today there is a 60% chance of rain.
 - The odds of winning the lottery are a million to one.
 - What are some examples you can think of?



PROBABILITY



- Probabilities are written as:
 - Fractions from 0 to 1
 - Decimals from 0 to 1
 - Percents from 0% to 100%



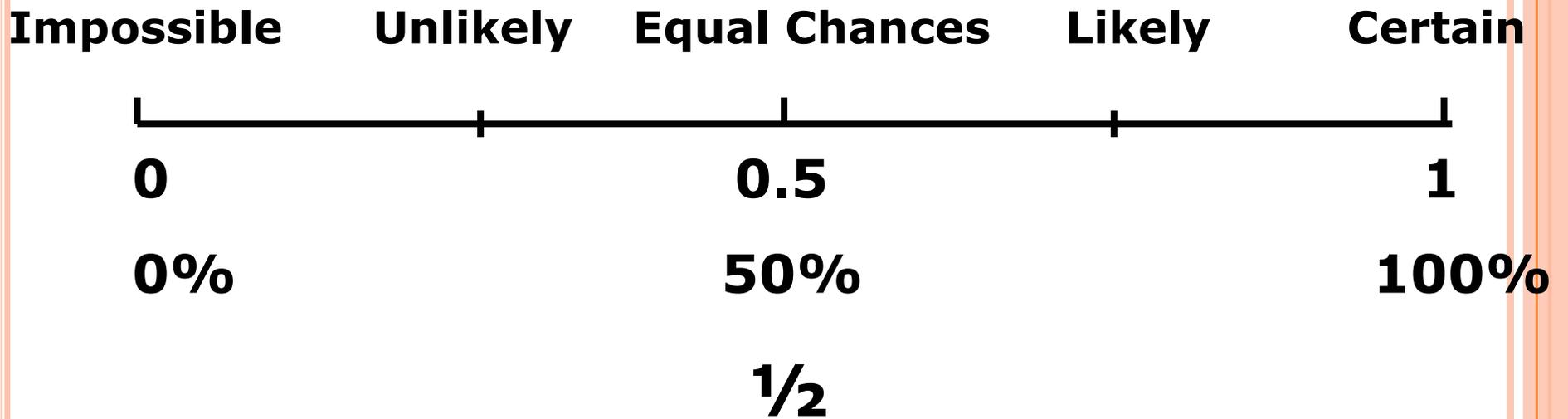
PROBABILITY



- If an event is certain to happen, then the probability of the event is 1 or 100%.
- If an event will NEVER happen, then the probability of the event is 0 or 0%.
- If an event is just as likely to happen as to not happen, then the probability of the event is $\frac{1}{2}$, 0.5 or 50%.



PROBABILITY



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- When a meteorologist states that the chance of rain is 50%, the meteorologist is saying that it is equally likely to rain or not to rain.
- If the chance of rain rises to 80%, it is more likely to rain.
- If the chance drops to 20%, then it may rain, but it probably will not rain.



PROBABILITY



- What are some events that will never happen and have a probability of 0%?
- What are some events that are certain to happen and have a probability of 100%?
- What are some events that have equal chances of happening and have a probability of 50%?



PROBABILITY



- The probability of an event is written:

$$P(\text{event}) = \frac{\text{number of ways event can occur}}{\text{total number of outcomes}}$$

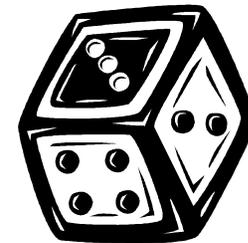


PROBABILITY



$$P(\text{event}) = \frac{\text{number of ways event can occur}}{\text{total number of outcomes}}$$

- An outcome is a possible result of a probability experiment
 - When rolling a number cube, the possible outcomes are 1, 2, 3, 4, 5, and 6



PROBABILITY



$P(\text{event}) = \frac{\text{number of ways event can occur}}{\text{total number of outcomes}}$

- An event is a specific result of a probability experiment



- When rolling a number cube, the event of rolling an even number is 3 (you could roll a 2, 4 or 6).



PROBABILITY



$$P(\text{event}) = \frac{\text{number of ways event can occur}}{\text{total number of outcomes}}$$

What is the probability of getting heads when flipping a coin?

$$P(\text{heads}) = \frac{\text{number of ways} = 1 \text{ head on a coin} = 1}{\text{total outcomes} = 2 \text{ sides to a coin} = 2}$$

$$P(\text{heads}) = \frac{1}{2} = 0.5 = 50\%$$



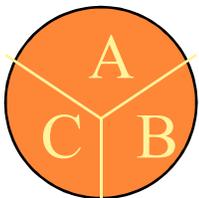
TRY THESE:



1. What is the probability that the spinner will stop on part A?



2. What is the probability that the spinner will stop on
(a) An even number?
(b) An odd number?



3. What is the probability that the spinner will stop in the area marked A?



PROBABILITY WORD PROBLEM:

- Lawrence is the captain of his track team. The team is deciding on a color and all eight members wrote their choice down on equal size cards. If Lawrence picks one card at random, what is the probability that he will pick blue?

Number of blues = 3

Total cards = 8

$\frac{3}{8}$ or 0.375 or 37.5%

blue

yellow

red

green

blue

blue

black

black



LET'S WORK THESE TOGETHER

- Donald is rolling a number cube labeled 1 to 6. What is the probability of the following?

a.) an odd number

odd numbers – 1, 3, 5

total numbers – 1, 2, 3, 4, 5, 6

$$3/6 = 1/2 = 0.5 = 50\%$$

b.) a number greater than 5

numbers greater – 6

total numbers – 1, 2, 3, 4, 5, 6

$$1/6 = 0.166 = 16.6\%$$

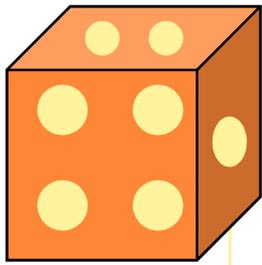


TRY THESE:



1. What is the probability of spinning a number greater than 1?

2. What is the probability that a spinner with five congruent sections numbered 1-5 will stop on an even number?



3. What is the probability of rolling a multiple of 2 with one toss of a number cube?

