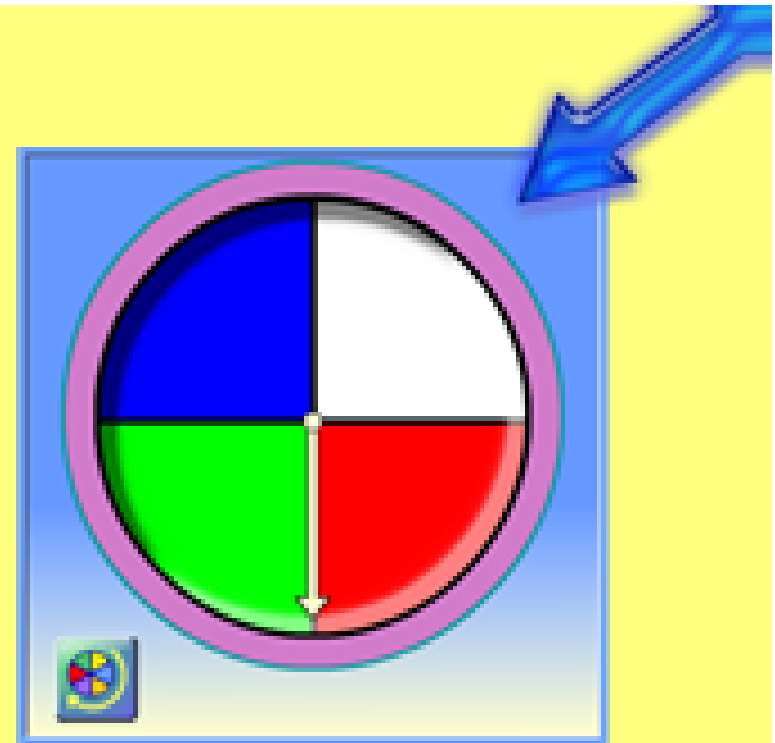


PROBABILITY
What are my chances?



What is probability?

- Probability is the measure of how likely an event or outcome is.
- Different events have different probabilities!

[Click here to watch video on BASIC Probability](#)



NEXT

How do we describe probability?



- You can describe the probability of an event with the following terms:
 - certain (the event is definitely going to happen)
 - likely (the event will probably happen, but not definitely)
 - unlikely (the event will probably not happen, but it might)
 - impossible (the event is definitely not going to happen)
- Can you think of examples of each type of event?



NEXT

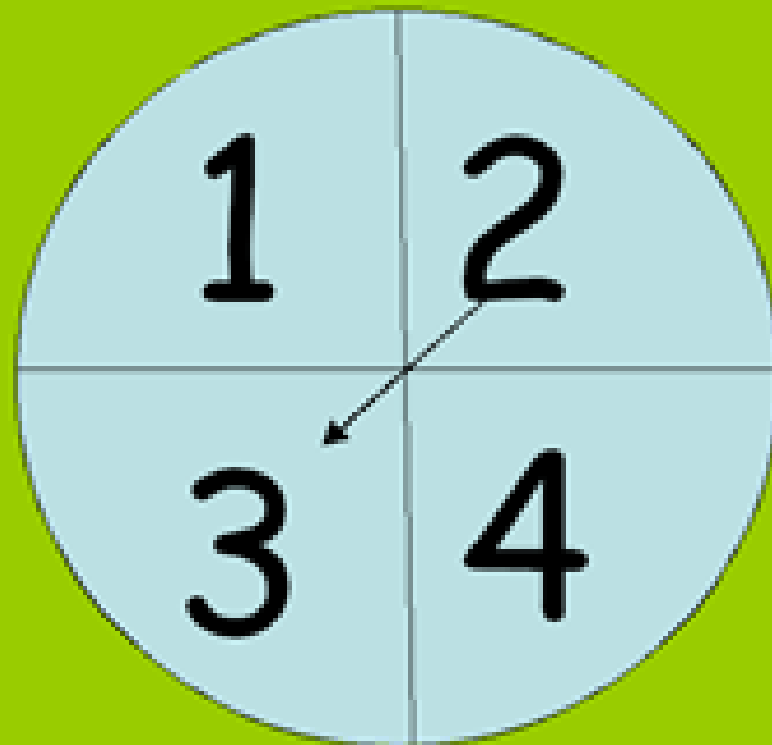
How do we express probabilities?

- Usually, we express probabilities as fractions, percents, or decimals.
 - The numerator is the number of ways the event can occur.
 - The denominator is the number of possible events that could occur.
- Let's look at an example!



NEXT

What is the probability the spinner will land on the number 2?

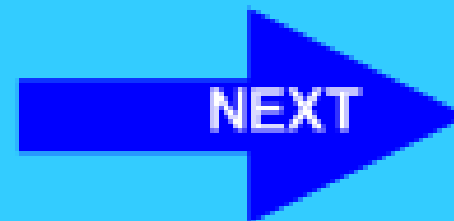
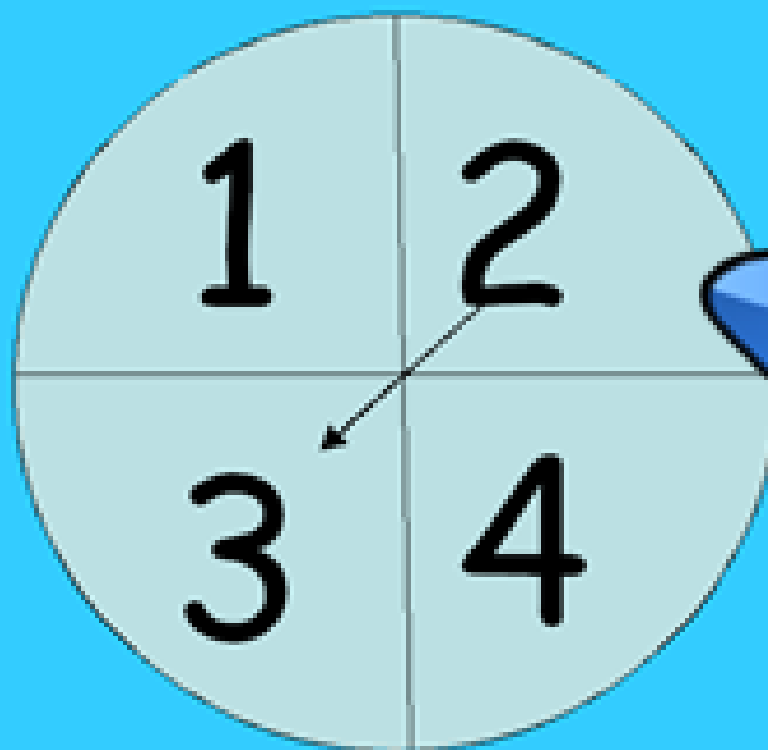




Ask yourself the following questions:

1. How many 2's are on the spinner?
2. How many possible numbers could the spinner land on?

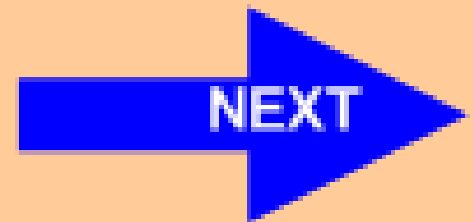
$$\frac{1}{4}$$



What is the probability the die will land on an even number?



Remember, a die has six sides. Numbers 1, 2, 3, 4, 5, and 6 are each depicted once on the die.



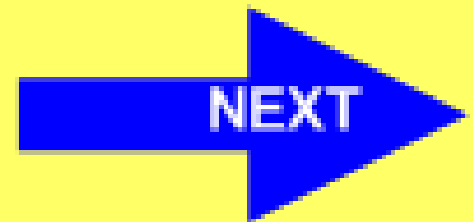
Ask yourself the following questions:

1. How many even numbers are on the die?
2. How many possible numbers could the die land on?

$$\frac{3}{6} = \frac{1}{2}$$



Can you reduce this FRACTION?



What is the probability that I will choose a green marble?



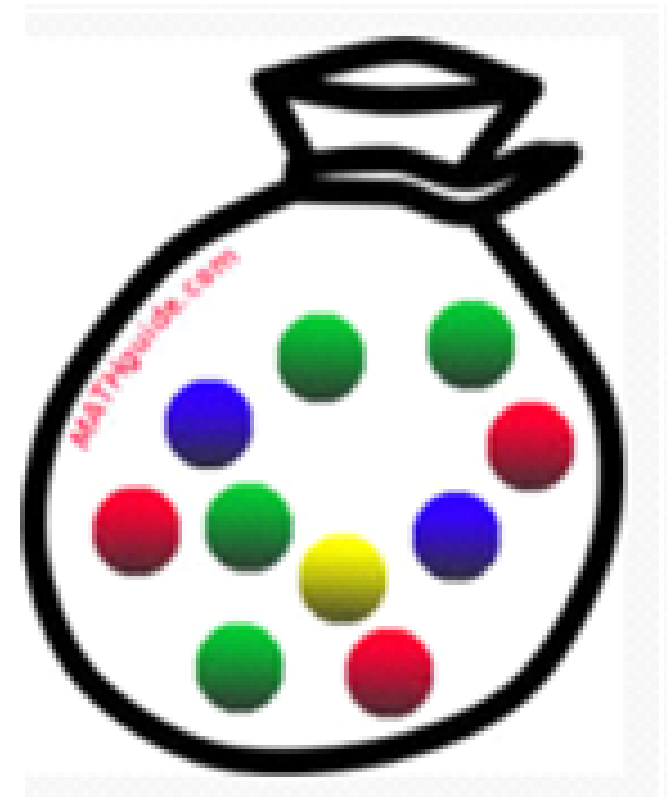
In this bag of marbles,
there are 4 green,
3 red, 2 blue
and 1 yellow marble.

Ask yourself the following questions:

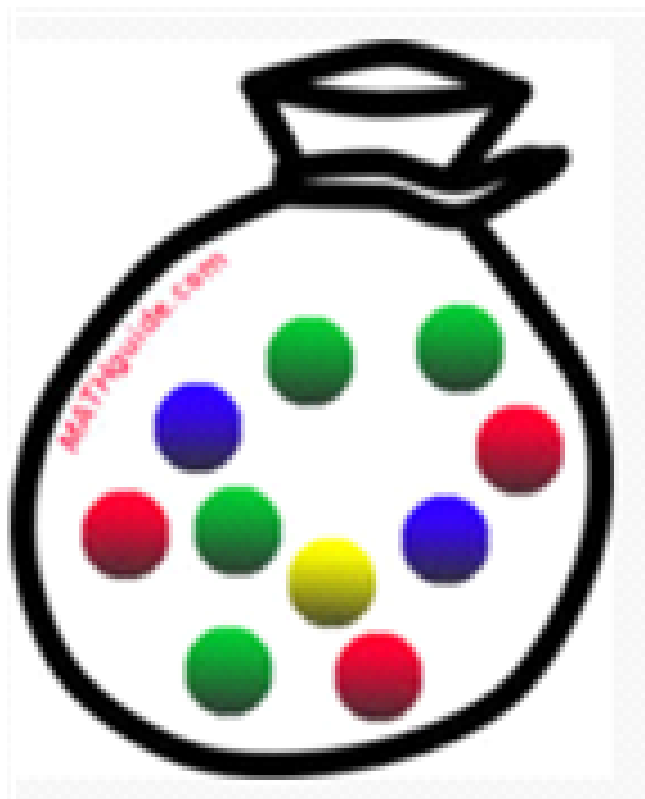
How many marbles are green?

$$\frac{4}{10} = \frac{2}{5}$$

How many total marbles are in the bag?



What is the probability of choosing a marble that isn't green?

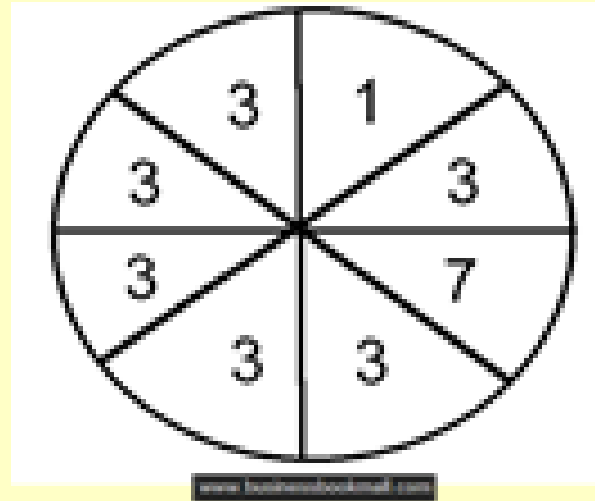


$$\frac{2}{10} = \frac{3}{10}$$



This is called the complement.
The 2 fractions add to 1

Probability Practice



What is the probability of spinning a 3?

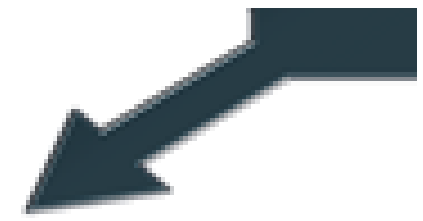
a. $\frac{5}{8}$

b. $\frac{6}{8}$

c. $\frac{3}{4}$

d. $\frac{7}{8}$

Think which is the best answer and why?



Which of these is not accurate?



equally likely to choose red or blue



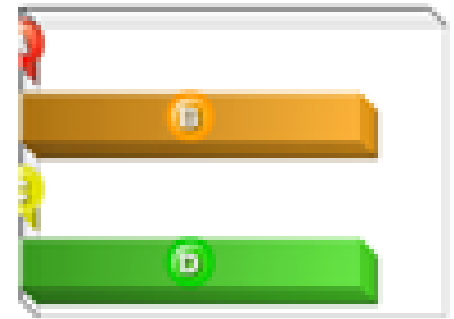
certain to choose red



impossible to choose red



likely to choose red



A

B

C

D

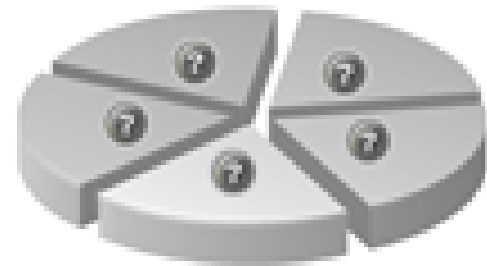
You can write probability as a fraction.



True



False



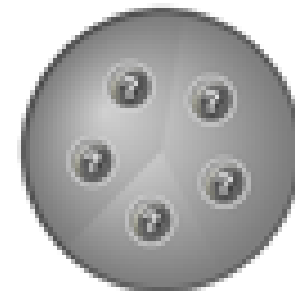
Probability can be zero.



Yes



No



Probability of flipping a coin and getting heads. (Best answer)

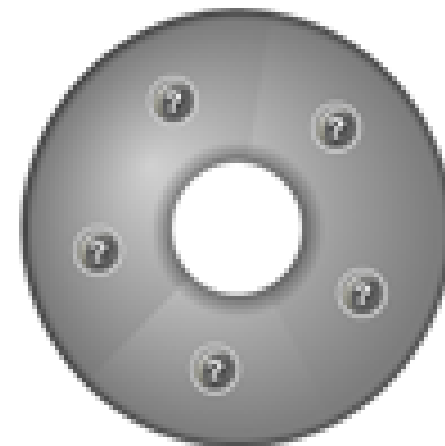
A $1/4$

B 0

C $2/4$

D 1

E $1/2$



Example

What is the difference between experimental & theoretical probability?

Toss the coin ten times. What is the experimental probability of getting Heads in this experiment? What is the theoretical probability?



Outcomes: H T H H T H T T H H

Write each outcome here

Write your calculations

Number of Heads: 6

Number of trials: 10

Probability = $6/10 = 0.6$

5.

Toss the coin 15 times. What is the experimental probability of getting Tails in this experiment? What is the theoretical probability?

$$\frac{1}{2}$$



Outcomes: T H H T T T T H T
T H H T H

Close to the theoretical

Write your calculations

Number of trials: 15
Number of Tails: 9

$$\text{Probability} = \frac{9}{15} = \frac{3}{5}$$

6.

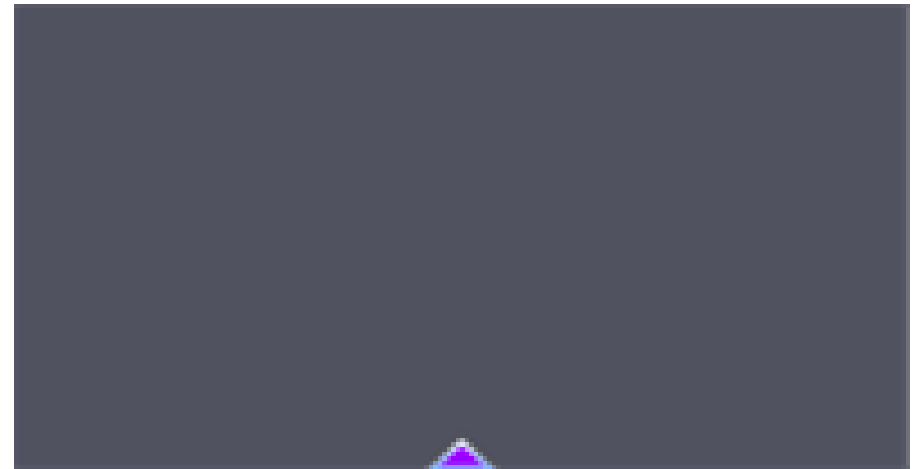
Roll the 6-sided die five times. What is the experimental probability of rolling an even number in this experiment? What is the theoretical probability?

Theoretical probability $\frac{3}{6} = \frac{1}{2}$



Outcomes: E E O E O

Write each outcome here



Write your calculations

Number of trials: 5

Number of even numbers: 3

Experimental
Probability = $\frac{3}{5} = .6$
or 60%

7.

Roll the 10-sided die ten times. What is the experimental probability of rolling an 1, 2, 3, or 4 in this experiment? What is the theoretical probability?

Theoretical

$$\frac{4}{10} = \frac{2}{5}$$



Outcomes

NNN4NN4NNN

Write each outcome here



Write your calculations

Number of times that a 1, 2, 3 or 4 was rolled: 2

Number of trials: 10

Probability = $\frac{2}{10} = \frac{1}{5}$

not close

8

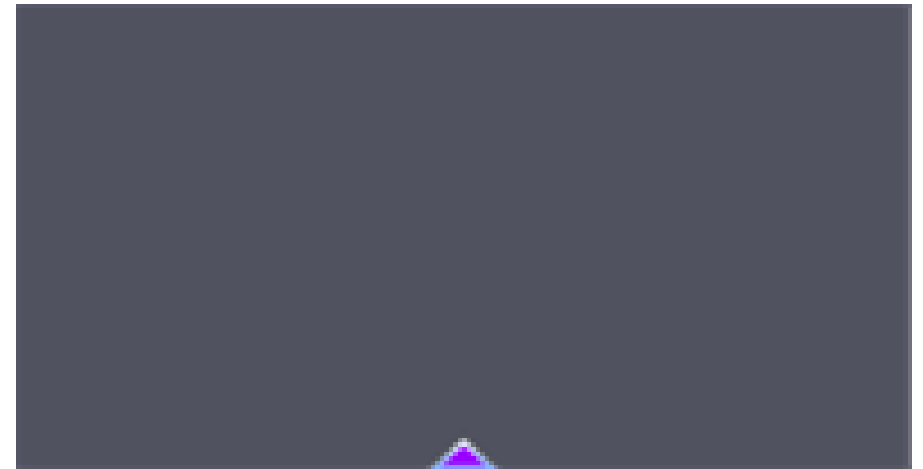
Toss the coin ten times. What is the experimental probability of getting Heads in this experiment? What is the theoretical probability?

Theoretical
 $\frac{5}{10} = \frac{1}{2}$



Outcomes: H T H H H T H H H

Write each outcome here



Write your calculations

Number of Heads: 7

Number of trials: 10

Probability = $\frac{7}{10}$

9

How many outcomes are possible if two coins are tossed together?

HH HT TH TT



4 different outcomes

Answer:

