

Probability



of Simple

Events



TRY IT YOURSELF

answer these questions



Roll a dice

You must calculate the probability of getting:

- a smaller number of 5

$$P(<5)=$$

- a number greater than or equal to 2

$$P(\geq 2)=$$

- an odd number

$$P(\text{odd})=$$

- a greater number of 6

$$P(>6)=$$



Answers

Roll a dice

- a smaller number of 5

$$P(<5) = 4/6$$

- a number greater than or equal to 2

$$P(\geq 2) = 5/6$$

- an odd number

$$P(\text{odd}) = 3/6$$

- a greater number of 6

$$P(>6) = 0$$



Pick a card from a Deck of 52 Cards

What is the probability of picking:

- a King ?

$$P(\text{King}) = \dots\dots$$

- an Ace ?

$$P(\text{Ace}) = \dots\dots$$

- a King **AND** an Ace ?

$$P(\text{King and Ace}) =$$

- a King **OR** an Ace ?

$$P(\text{King or Ace}) =$$

Pick a card from a Deck of 52 Cards

Answers

- The probability of picking a King is $1/13$, so $P(\text{King})=1/13$
- The probability of picking an Ace is $1/13$, so $P(\text{Ace})=1/13$
- The probability of a card being a King AND an Ace is $= 0$, $P(\text{King AND Ace}) = 0$
- The probability of picking a King OR an Ace is $P(\text{King OR Ace})=(1/13) + (1/13) = 2/13$

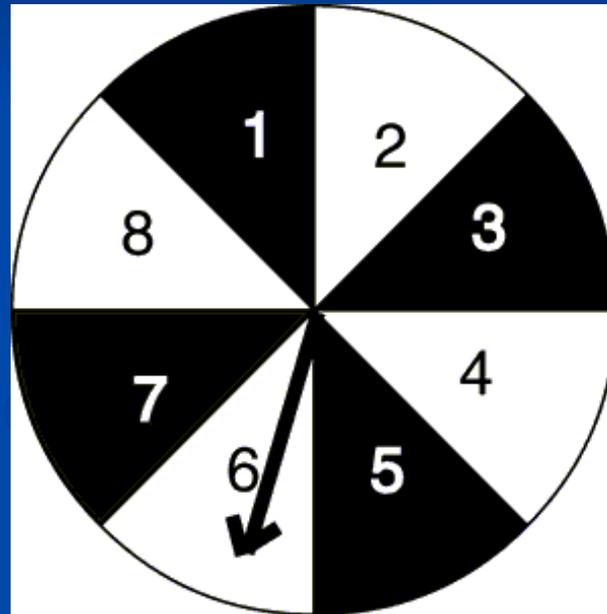
spinner: Calculate the probability of each independent events:

1) $P(\text{black}) =$

2) $P(1) =$

3) $P(\text{odd}) =$

4) $P(\text{prime}) =$



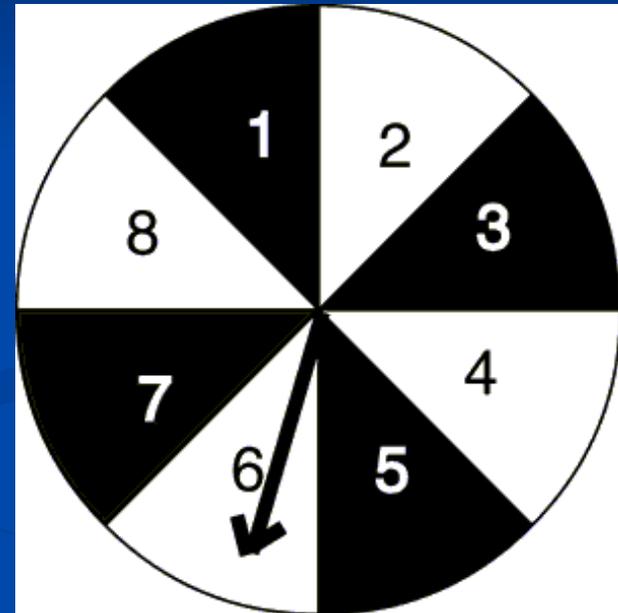
spinner: Answers.

1) $P(\text{black}) = \frac{4}{8}$

2) $P(1) = \frac{1}{8}$

3) $P(\text{odd}) = \frac{1}{2}$

4) $P(\text{prime}) = \frac{1}{2}$



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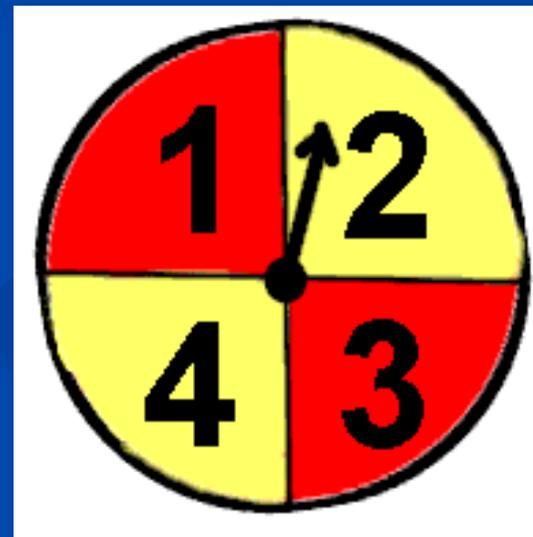
spinner: Calculate the probability of each independent event:

1) $P(\text{red}) =$

2) $P(2) =$

3) $P(\text{not red}) =$

4) $P(\text{even}) =$



TRY IT YOURSELF

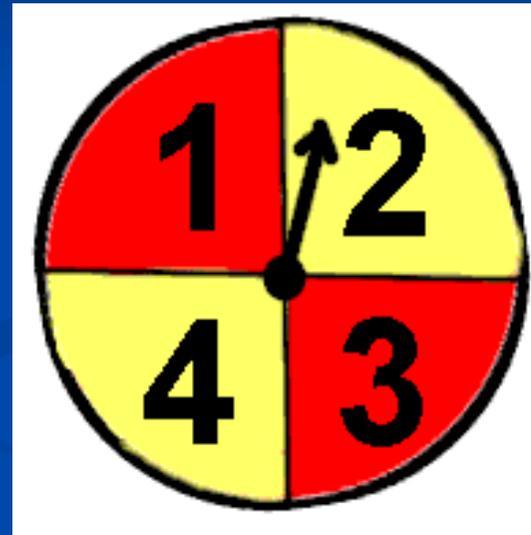
spinner: Answers.

1) $P(\text{red}) = \frac{1}{2}$

2) $P(2) = \frac{1}{4}$

3) $P(\text{not red}) = \frac{1}{2}$

4) $P(\text{even}) = \frac{1}{2}$



Choose at random a ball from a box

A box contains :

3 green , 7 yellow and 5 blue balls.

What is the probability of choose at random :

- a) a green ball?
- b) a yellow ball?
- c) Not a yellow ball?
- d) a red ball?

Answers

chose at random a ball from a box

A box contains :

3 green , 7 yellow and 5 blue balls.

a) $P(\text{green ball}) = \frac{3}{15}$

b) $P(\text{yellow ball}) = \frac{7}{15}$

c) $P(\text{Not a yellow ball}) = 1 - \frac{7}{15} = \frac{8}{15}$

complementary event

a) $P(\text{red ball}) = \frac{0}{15} = 0$

impossible event

A box contains:

4 red balls, 6 black balls, 8 blue balls
and 12 white balls.

What is the probability of choose at
random a ball

- a) black
- b) red or blue

Answers

4 red balls, 6 black balls, 8 blue balls
and 12 white balls.

Number of possible outcomes
= Total number of balls = 30

a) $P(\text{black balls}) = \frac{6}{30} = \frac{1}{5}$

b) $P(\text{red or blue}) = \frac{12}{30} = \frac{2}{5}$

Real World Example:

A computer company manufactures 2,500 computers each day.

An average of 100 of these computers are returned with defects.

What is the probability that the computer you purchased is not defective?

Answer

Real World Example:

Manufactures = 2,500 computers each day.
An average of 100 of these computers are returned with defects

$$P(\text{not defective}) = \frac{\# \text{ not defective}}{\text{total } \# \text{ manufactured}} = \frac{2,400}{2,500} = \frac{24}{25}$$

Real World Example:

Best Buy is having an IPOD giveaway. They put all the IPOD Shuffles in a bag.

Customers may choose an IPOD without looking at the color. Inside the bag are 4 orange, 5 blue, 6 green, and 5 pink IPODS.

If Maria chooses one IPOD at random, what is the probability she will choose an orange IPOD?

Answers

Inside the bag are 4 orange, 5 blue, 6 green, and 5 pink IPODS.

The probability of choose an orange IPOD is

$$P(\text{orange}) = \frac{4}{20} = \frac{2}{10} = \frac{1}{5} \text{ or } 20\%$$