Warm Up

Find the equation of the trend line and describe the

$y = .76x + 2.36$

Find the mean, median, mode, and range.

# of hours Practicing Shooting	# shots made in a game
0	3
4	5
20	19
10	8
11	9
8	5
7	13

100 97 106 110 108 99
105 101 107 106 103

$\bar{x} = 103.82$

med: 105

mode: 106

R: 13

2.6

Probability

Theoretical and Experimental

Words you need to know...

Probability: Tells you how likely it is that something will occur

Outcome: The result of a single trial

Favorable outcome: the outcome you are wanting

Sample Space: All of the possible outcomes

Event: Any outcome or group of outcomes

Example: How these terms apply to rolling and even number

Event: rolling and even number

Sample Space: 1, 2, 3, 4, 5, 6

Favorable Outcome: 2, 4, 6

Theoretical Probability

$$P(\text{event}) = \frac{\#\text{ of Favorable Outcomes}}{\#\text{ of Possible Outcomes}}$$

Example:

$$P(\text{rolling an even number}) = \frac{3}{6} = \frac{1}{2} = 50\%$$

You must remember: the probability of an event ranges from 0-1, where 0 is an impossible even and 1 is a certain event

Your turn-

Suppose you write the days of the week on separate peices of paper. Find P(picking a day that starts with the letter T)

Find P(picking a day that starts with the letter T) =

Complement of an event: the outcomes not in the favorable outcome

The sum of the probability of an event and its complement is 1

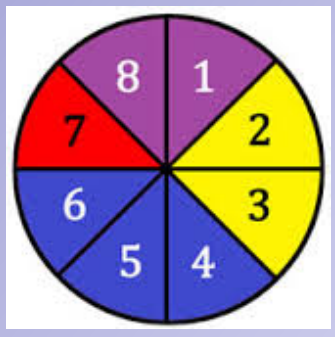
Complement Formula: P(event) + P(not event) = 1

Example:

Find P(not picking a day that starts with the letter T)

Odds: Describes the likelihood of an event by comparing favorable and unfavorable outcomes

Find the odds in favor of the spinner landing on a number greater than or equal to 4



$\frac{5}{8}$

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

Experimental Probability: Express this number as a percent

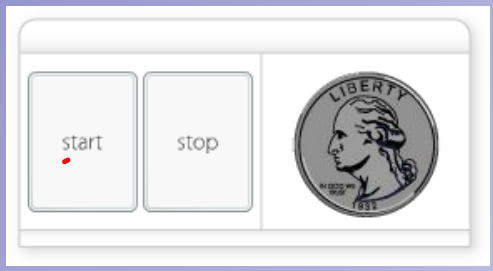
Example: A skateboard manufacturer inspected 1000 skateboards at random. They found 992 to not be defective. What is the probability that a skateboard selected at random will not have any defects?

99.2% .8%

.992 +.008

Experimental Probability: Express this number as a percent

What is the theoretical probability of the coin landing on tails if you flip the coin 20 times?



What is the experimental probability of the coin landing on tails if you flip the coin 20 times?

	Heads	Tails
T	10	10
E	𝍸 𝍸 |	𝍸 | | 𝍸 𝍸 |

HW: Pg 96 # 1-55 odd

Probability of Compound Events

Independent Events: Events that do not influence one another

Dependent Events: Events that do influence each other. The occurrence of one event affects the probability of the second event.

Independent Events:

Example: You have two cubes, one red and one blue. What is the probability of rolling a 3 on the red cube and an even number on the blue cube?

P(3 on red) = $\frac{1}{6}$

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

P(3 on red AND blue even) = P(3 on red) • P(blue even)

↑ Multiply

$\frac{1}{6} \cdot \frac{1}{2} = \frac{1}{12}$

Independent Events:

Example: You have two cubes, one red and one blue. What is the probability of rolling a 3 on the red cube or an even number on the blue cube?

P(3 on red) = $\frac{1}{6}$

P(blue even) = $\frac{3}{6}$

P(3 on red OR blue even) = P(3 on red) + P(blue even)

↑ +

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

Selecting with Replacement

Example: There are letter tiles in a bag. You pick one tile, then replace it. You pick another tile. What is the probability that you select an m and then an h?

$$\frac{1}{26} \cdot \frac{1}{26} = \frac{1}{676}$$

Dependent Events

Example: Your choosing letter tiles again, but this time you do not replact the first tile. What is the probability that you choose an r and then a t?

$$\frac{1}{26} \cdot \frac{1}{25} = \frac{1}{650}$$

HW: Pg 104 #1-41 odd