Experimental Probability _____

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Example 1) In Lions home opener against St. Louis, Matthew Stafford completed 32 passes out of 48 attempts. Find the experimental probability of Stafford completing a pass. $\frac{32}{48} = \frac{2}{3} = 66.7\%$	Your Turn 1) In the NFC Championship game, Colin Kaepernick completed 16 passes out of 21 attempts. Find the experimental probability of Kaepernick completing a pass. $\frac{16}{21} = 0.76$ $= 76.2\%$
Example 2) A class tossed coins & recorded 161 heads and 179 tails. What is the experimental probability of heads? Total: $161 + 179 = 340$ $\frac{161}{340} = 47.3\%$	Your Turn 2) A class tossed coins & recorded 150 heads and 100 tails. What is the experimental probability of tails? $P(\text{tails}) = \frac{100}{250} = \frac{2}{5}$ $= 40\%$

Theoretical Probability _____

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Example 3) Find the theoretical probability of getting an even number when you roll a number cube.

2, 4, 6

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

Your Turn 3) A jar contains 30 red marbles and 50 blue marbles. You pick one marble from the jar at random. Find the theoretical probability that you will chose a red marble.

$P(\text{red}) = \frac{30}{80} = \frac{3}{8} = 37.5\%$

Example 4) A jar contains 30 red marbles, 50 blue marbles, and 20 white marbles. You pick one marble from the jar at random. Find the theoretical probability that you will chose a red or blue marble.

$P(\text{red or blue}) = \frac{80}{100} = \frac{4}{5}$

$= 80\%$

Your Turn 4) Suppose you roll a number cube. Find the theoretical probability of rolling a number less than 5.

1, 2, 3, 4

$P(<5) = \frac{4}{6} = \frac{2}{3} = 66.7\%$

Example 1) Fold your hands so your fingers interlace. Do you naturally place your left or right thumb on top? Placing your left thumb on top is a dominant genetic trait.
Suppose a child has parents who both have just one dominant gene. Make a table. Let G represent the dominant gene (left thumb on top) & let g represent the recessive gene (right thumb on top). What is the theoretical probability that a child will naturally place the left thumb on top?

$P(\text{Left Thumb}) = \frac{3}{4} = 75\%$

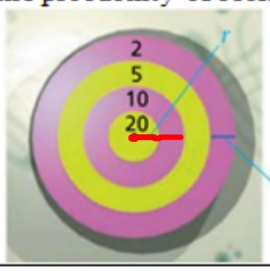
		Gene from Mother	
		G	g
Gene from Father	G	GG	Gg
	g	Gg	gg

Your Turn 1)
Suppose a child has a father whose gene pair is gg and the mother has Gg. Make a table. What is the theoretical probability that a child will naturally place the left thumb on top?

$P(\text{left thumb}) = \frac{2}{4} = \frac{1}{2} = 50\%$

		Gene from Mother	
		G	g
Gene from Father	g	Gg	gg
	g	Gg	gg

Example 2) Suppose all the points on the dartboard are equally likely to be hit by a dart you have thrown. Fin
the probability of scoring at least ten points.



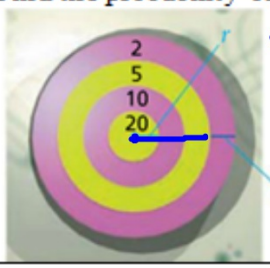
10 pts or higher.

$$P(\geq 10) = \frac{\text{area of 10, 20}}{\text{area of dartboard}} = \frac{\pi(2r)^2}{\pi(4r)^2} = \frac{4\pi}{16\pi}$$

$$= \frac{1}{4} = 25$$

Area of a circle $= \pi r^2$

Your Turn 2) Suppose all the points on the dartboard are equally likely to be hit by a dart you have thrown.
Find the probability of scoring five points.



$$P(5) = \frac{\text{area of 5}}{\text{total area}} = \frac{\pi(3r)^2 - \pi(2r)^2}{\pi(4r)^2}$$

$$= \frac{9\pi r^2 - 4\pi r^2}{16\pi r^2}$$

$$= \frac{5\pi r^2}{16\pi r^2}$$

$$= 5/16 = 31\%$$