

M7H

MAY 4, 2012

NOTHING DUE SINCE IT'S A SHORT DAY!



5/4 - Theoretical Probability



???

the·o·ret·i·cal

[thee-uh-ret-i-kuhl]

adjective

1. of, pertaining to, or consisting in theory; not practical (distinguished from applied).
2. existing only in theory; hypothetical.
3. given to, forming, or dealing with theories; speculative.

Work with your partner and come up with an easy definition for "theoretical"...

Theoretical Probability

When all possible outcomes are equally likely, the **theoretical probability** of an event is the ratio of the number of favorable outcomes to the number of possible outcomes. The probability of an event is written as $P(\text{event})$.

$$P(\text{event}) = \frac{\text{number of favorable outcomes}}{\text{number of possible outcomes}}$$

Examples of experiments that have outcomes which are equally likely:

flipping a coin $P(\text{even})$
rolling even on a die
picking a marble w/ 5 blues / 5 reds
same size sections on a spinner



You randomly choose one of these letters. What is the theoretical probability of:

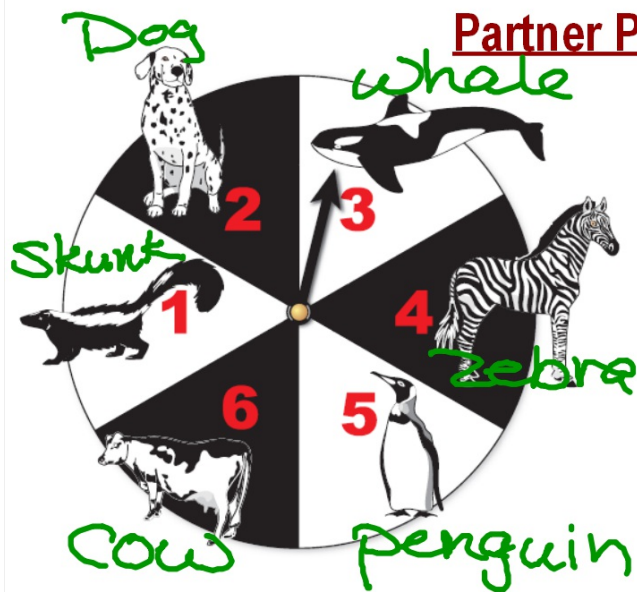
$$P(\text{vowel}) = \frac{3}{7}$$

$$P(\text{blue}) = \frac{3}{7}$$

$$P(E) = \frac{2}{7}$$

$$P(\text{not red}) = \frac{4}{7}$$

$$P(\text{red or blue}) = \frac{6}{7}$$



Partner Problem:

If all 6 sections are equal in size, create 5 questions you could ask using different events.

for example:

$P(\text{animal with a furry tail})$

If the letters of Butler Middle were separately printed on cards and one card was randomly drawn, find each theoretical probability:

$$P(\text{vowel}) = \frac{4}{12} = \frac{1}{3}$$

$$P(\text{not B}) = \frac{11}{12}$$

$$P(\text{a letter in the word Butler}) = \frac{8}{12} = \frac{2}{3}$$

In the remaining time, work with your partner to create 4 different experiments then create 3 questions, with different desired outcomes, for each experiment. (*What you don't finish in class will be homework.*)

Provide the
answers !