Warm-Up

According to data collected at BHS, 70% of Grade 9 students spend at least one hour a day playing video games.

1. Next year most of my grade 9 students will spend 1 hour a day playing video games. What assumptions am I making?

Assumptions:

* The current grade 8 play video games
* The current grade 9's represent typical gr 9 student
* I am assuming I will teach grade 9.

2. Based on this statistic is it likely or unlikely that a student in grade 9 would play video games? likely

Theoretical Probability -the number of favorable outcomes written as a fraction of the total number of possible outcomes
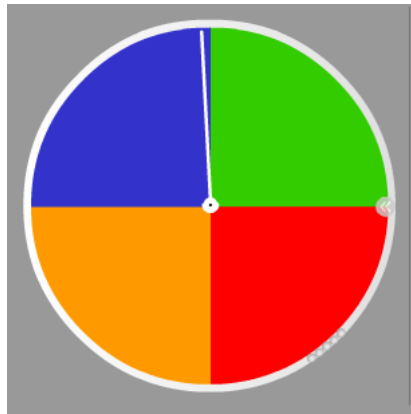
$$\frac{1}{4}$$

Experimental Probability: Probability of an event calculated from experimental results.

Subjective judgement [usually based on feelings or opinions]- spinning the wheel chance of getting red is 1/4 but you may feel strongly that the spinner will always land on red

Theoretical vs experimental Probability

Theoretical   **Experimental**

Probability of getting a head $0.5, 50\%, \frac{1}{2}$

$\frac{22}{40}, \frac{20}{40}, \frac{19}{40}, \boxed{\frac{15}{40}}$ *37.5%*

$\frac{21}{40}, \frac{17}{40}, \frac{22}{40}$

Based on the data you collected when you flip a coin are you more likely to get a head?

Examples: How will your decision be affected???

Experimental probability- choose red checkers because I usually win when I play the red pieces

Theoretical probability- odd of winning a prize is 1 in 2000

1 in 10

Subjective judgement-When flipping a coin I choose heads because I think/feel it will be heads.

Probabilities are based on assumptions...

This season, Haley made 44 out of 50 basketball shots she attempted.

1. **What is the probability that Haley will make the next shot? Likely or unlikely?**

$$\frac{44}{50} = 88\%$$ Likely

B. **What assumptions did you make?**

* Playing a team at the same level.
* Not injured
* Assuming she will get a shot

2. **Is it possible Haley has missed two shots in a row this season? Is it likely?**

Unlikely

3. **What might increase Haley's chance of making the shot?**
 [practice more, move closer if allowed.]

4. **What might decrease her chances of making the shot?**
[injured, distracted, tired]

Bill noticed that, in the last month, 70% of the time the bus was 3 minutes late. So, he takes his time with breakfast today. Experimental

Reasons why the bus could be late?
Icy roads, road construction, day of the week...

Is it likely the bus will be late?
Yes 70 % chance

Is it worth it to expect the bus will be late? what if its not late?
May miss the bus and have to find another way to school

How did Bill notice the bus was late 70% of the time?
Personal experience

Who might benefit from knowing this probability?
Person in charge of making bus schedule

Jon wants to learn how to snowboard but does not want to take lessons. His mother insists that Jon take lessons. Jon and his mother find an article that claims:

68% of snowboarding injuries occur during beginner lessons

Explain how both Jon and his mother can use this statistic to support their opinions.

In past baseball games, Alice made 2 hits for every 5 times she went up to bat.

a) In the next game, suppose Alice goes up to bat. What is the probability that she will get a hit? What assumptions are you making?

b) For each assumption, explain how the predicted outcomes might change if the assumption changes.

A. Experimental probability is 2/5
   Assumptions
   - assuming the next team will be of equal ability
   - Alice is equally prepared for the game

B. IF the assumptions change then

Car Insurance

Car insurance for teenagers is more expensive than for adults because the probability of an accident is greater for teenage drivers. What assumptions is an insurance company making when it charges a teenage driver more for insurance?

Homework

Page 427   3-6
Page 428   7,8,11