

There are 2 lessons to complete for this assignment :

- Probability and Statistics
- Independent Events

Probability and Statistics

You've already learned that **probability** and **statistics** are 2 branches of math, but let's review definitions for these 2 terms:

Probability:

Probability is the branch of math which deals with the chance of an 'event happening'

Statistics:

The branch of math which deals with organizing data, and drawing meaningful conclusions from this data.

In this lesson you'll be looking at some practical examples of how probabilities and statistics can provide useful information for people. You'll see once again that members of the media, such as newspapers use stats and probabilities to convey information, but as consumers, we need to dig beneath the surface of what is presented to us, to find out whether the way in which information was collected and presented was done using proper methods.

Survey: Communication poor between patients, doctors

May 2, 2000

Web posted at: 2:40 PM EDT (1840 GMT)

ATLANTA (AP) -- Fewer than a third of prostate cancer patients believe their doctors discussed all available treatments, and 49 percent of urologists consider patients ill-prepared to make such decisions, according to a survey released Monday.

REVIEW

The probability of an event occurring can be expressed as:

1. a decimal (between 0 & 1)
2. a percent (between 0% and 100%)

An event which is **impossible** will be:

0 or 0%

An event which is **certain** to occur will be:

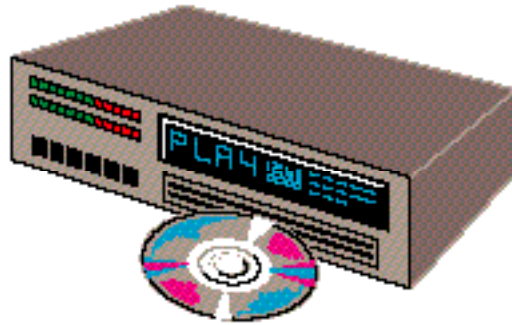
1.0 or 100%

Example:

If research had been done on how many families owned radios and it was found that the probability of owning one was .98

This means the **percentage** of families owning radios was **98%** and the **fraction** of families owning a radio was $\frac{98}{100}$

Using Probability to Made Predictions



If you knew that 32% of families owned a CD player, how many out of 700 families would own one ?

Solution:

Think of the 'English' question you are asking yourself:

32 per cent is what out of 700 ?

Translate the English to Math and solve:

32 per cent is what out of 700 ?

$$\frac{32}{100} = \frac{x}{700}$$

Do the Math:

$$\frac{32}{100} = \frac{x}{700}$$

$$100x = 22400$$

$$\frac{100x}{100} = \frac{22400}{100}$$

$$x = 224$$

Answer the Question:

If you knew that 32% of families owned a CD player, **224** out of 700 families would own one.

Discover magazine has calculated the odds of all the things you do in a normal day becoming the last thing you do or putting a serious crimp in your life.

Here are some of the risks you face:

-
- Dying from an earthquake or volcano: **1 in 11 million**
 - Dying from leaking gas: **1 in 12 million**
 - Dying from a dog bite: **1 in 20 million**
 - Dying from a snakebite: **1 in 36 million**
 - Drinking detergent and dying: **1 in 23 million**
 - Getting out of bed, falling, suffering a fatal skull fracture: **1 in 20,000**
 - Contracting an infection during a stay at a U.S. hospital: **1 in 15**
 - Injuring yourself while shaving seriously enough to require medical attention: **1 in 7,000**
 - If you're a minor, being kidnapped by a stranger: **1 in 560**
 - If you're a minor, being kidnapped by a family member: **1 in 180**
 - Having your car stolen: **1 in 145**
 - Having your bicycle stolen: **1 in 280**
 - Having your wallet or purse stolen: **1 in 1,560**

The good news is you can stop worrying about that fatal elevator ride: The odds are **1 in 6 million**. But steer clear of any trucks carrying new cars: Nobody's calculated those odds yet.

Independent Events

This lesson focusses on **Independent Events**. As you begin the lesson on the CD, you'll be taken into the wonderful world of pizza making, and seeing how you can calculate the probability of pizzas with different topping combinations being chosen.

When we calculate the chance of Independent Events occurring:

- **We multiply probabilities together**

In this lesson, we see a difference between **independent** events and **dependent** events.

Independent Event

If the outcome of 1 event has no effect on the outcome of another event.

Dependent Event

If the outcome of an event CAN effect the outcome of another event.

HOW TO DETERMINE THE PROBABILITY OF INDEPENDENT EVENTS

In general:

If A & B are Independent Events,
then

$$P(A,B) = P(A) \times P(B)$$

Examples:

1.



.... deal with them, one at a time.

<p style="color: green;">P (Cutting Ace Hearts)</p> <p>=</p> $\frac{\text{Favourable Outcomes}}{\text{Possible Outcomes}} =$ <div style="text-align: center; margin-top: 20px;"> $\frac{1}{52}$ </div>	<p style="color: green;">P (Rolling a 2) =</p> <p>=</p> $\frac{\text{Favourable Outcomes}}{\text{Possible Outcomes}} =$ <div style="text-align: center; margin-top: 20px;"> $\frac{1}{6}$ </div>
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Take the individual probabilities and ...

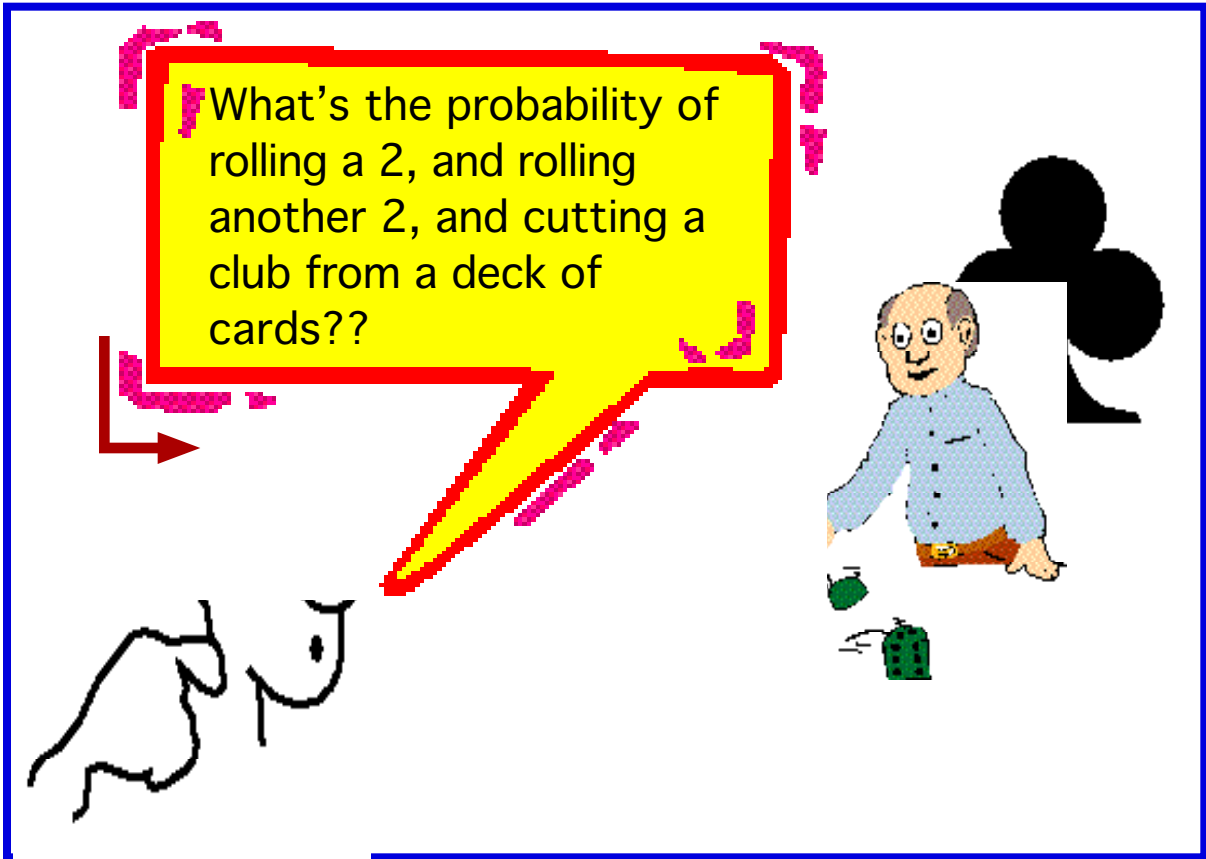
MULTIPLY THEM TOGETHER!!!!

$$\frac{1}{52} \times \frac{1}{6} = \frac{1}{312}$$

ANSWER THE QUESTION:

The P(Cutting Ace Hearts, Rolling 2) = $\frac{1}{312}$ or 0.32%

Let's look at another example of these kind of questions



Again, deal with them, one at a time.

$P(2) =$ $\frac{\text{Favourable}}{\text{Possible}} =$ $\frac{1}{6}$	$P(2) =$ $\frac{\text{Favourable}}{\text{Possible}} =$ $\frac{1}{6}$	$P(\clubsuit) =$ $\frac{\text{Favourable}}{\text{Possible}} =$ $\frac{1}{4}$
<p>Take the individual probabilities and</p>		

MULTIPLY THEM TOGETHER!!!!

$$\frac{1}{6} \times \frac{1}{6} \times \frac{1}{4} = \frac{1}{144}$$

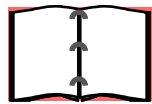
ANSWER THE QUESTION:

$$\text{The } P(2, 2, \clubsuit) = \frac{1}{144} \text{ or } 0.7\%$$

ASSIGNMENT

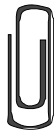


Mathpower



Page 351

1, 2,3



Mathpower

Page 357

6b,c,d **SHOW
ALL
WORK**

That's all the fun, for this week!!!!

Have a great week.

Peace. Mr. Robson :-)