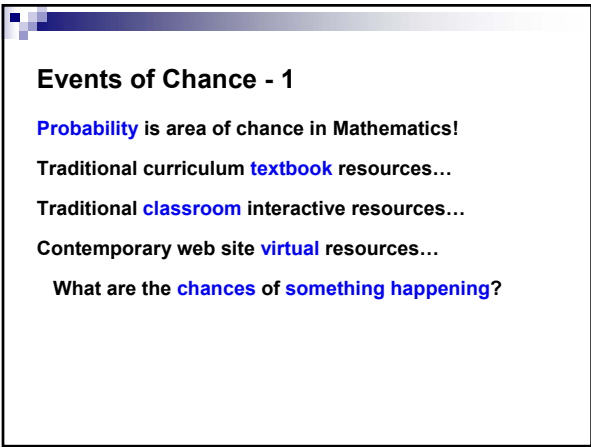
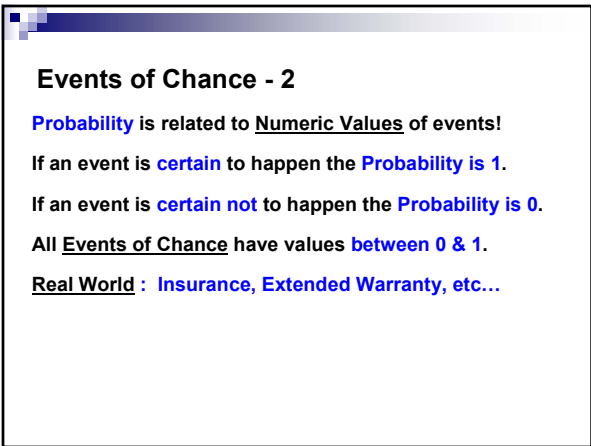


Data Analysis: Probability & Odds
Mathematics and Millennials – 6th



Events of Chance - 1

Probability is area of chance in Mathematics!
Traditional curriculum **textbook** resources...
Traditional **classroom** interactive resources...
Contemporary web site **virtual** resources...
What are the **chances** of **something happening**?



Events of Chance - 2

Probability is related to **Numeric Values** of events!
If an event is **certain** to happen the **Probability is 1**.
If an event is **certain not** to happen the **Probability is 0**.
All Events of Chance have values **between 0 & 1**.
Real World : **Insurance, Extended Warranty, etc...**

Events of Chance - 3

Uncertain events or happenings of chance!

Probabilities are normally represented as **fractions**:

$\frac{2}{3}$ or $\frac{4}{5}$ or $\frac{1}{6}$

Scale of Probability:

Impossible=(0) Maybe Certain=(1)
|-----|-----|
Low 1/2 High

Probability - 1

Sample Space (Listing of All Possible Events).

Specific Event (Listing of a specific group of events).

Simple (single event) or **Non-Simple** (multiple events).

Events to study: **Marbles, Coins, Cards, Cubes...**

Symbols: **P** = (will occur) **P*** = (will not occur)

Probability - 2

Event: Draw a Marble from a box with (9) marbles.

[Blue Blue Blue Blue Red Red Red Green Green]

Probability of Success = $P(\text{Success} / \text{Total})$

Probability of Failure = $P^*(\text{Failure} / \text{Total})$

The **Sum of All Probabilities:** $P + P^* = 1$

Probability - 3

Marbles: [BlueBlueBlueBlue RedRedRed GreenGreen]

Probability of Drawing 1 Marble and it is Red:

$P(\text{Red}) = 3/9$ $P^*(\text{Red}) = 6/9$

Probability of Drawing 1 Marble and it is Green:

$P(\text{Green}) = 2/9$ $P^*(\text{Green}) = 7/9$

Probability of Drawing 1 Marble and it is Blue:

$P(\text{Blue}) = 4/9$ $P^*(\text{Blue}) = 5/9$

Odds & Probability

Odds: Ratio: (P / P^*) [B,B,B,B, R,R,R G,G]

Odds in favor Red: $O(R) = 3/9 : 6/9 = 3 : 6$ or 3 to 6

Odds against Red: $O(R) = 6/9 : 3/9 = 6 : 3$ or 6 to 3

Odds in favor Blue: $O(B) = 4/9 : 5/9 = 4 : 5$ or 4 to 5

Odds against Blue: $O(B) = 5/9 : 4/9 = 5 : 4$ or 5 to 4

Odds in favor Green: $O(G) = 2/9 : 7/9 = 2 : 7$ or 2 to 7

Odds against Green: $O(G) = 7/9 : 2/9 = 7 : 2$ or 7 to 2

Conclusion
