Monday, October 22, 2012 TISK Problems

- $Add \cdot \frac{1}{2} + \frac{3}{2}$
- 2. Multiply: $\frac{5}{8}\left(\frac{1}{6}\right)$
- = Evaluate: $\frac{5}{6} \left(\frac{6}{6}\right) = \frac{1}{2}$

We will have 3 Mental Math Questions today

Homework: Theoretical Probability Practice worksheet

§9-3 Theoretical Probability

- Theoretical (also called Simple) Probability is based on equally likely outcomes of random events.
- When a random-number or random-outcome generator is called "fair" it means that all outcomes are equally likely.
- To compute Theoretical Probability use the formula:
 - $P(\text{event}) = \frac{\text{number of favorable outcomes}}{\text{number of possible outcomes}}$

§9-3 Theoretical Probability

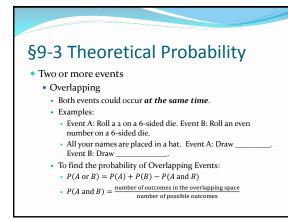
Two or more events

- Disjoint or Mutually Exclusive
 - If one event occurs the other CANNOT occur in the same trial.
 - Examples:
 - Event A: Roll a 3 on a 6-sided die. Event B: Roll a 4 on a 6-sided die.
 - All your names are placed in a hat. Event A: Draw ______
 Event B: Draw ______.
 - To find probability of Disjoint Events:
 - $P(A \mbox{ or } B) = P(A) + P(B)$
 - *P*(*A* and *B*) = 0

§9-3 Theoretical Probability

Complementary Events.

- If the first event is event A then its complementary event is "not A".
- For example:
 - What is the probability that if I place all your names in a hat, I draw a girl's name?
 - P(girl's name)
 - The complementary event would be...
 - P(boy's name)<u>**OR**</u> P(not girl's name)
- The probability of complementary events is always equal to one.
- $P(A) + P(\operatorname{not} A) = 1$



§9-3 Theoretical Probability							
 Examples An experiment consists of 	D#1 D#2	1	2	3	4	5	6
rolling two fair 6-sided dice.	1	2	3	4	5	6	7
 P(total shown = 4 or you roll a 1) 	2	3	4	5	6	7	8
 Can you roll a 1 and have a 	3	4	5	6	7	8	9
total of 4?	4	5	6	7	8	9	10
 Yes, then these are 	5	6	7	8	9	10	11
OVERLAPPING events!	6	7	8	9	10	11	12
• $P(A \text{ or } B) = P(A) +$ P(B) - P(A and B)							
• $P(A \text{ and } B) = \frac{2}{36}$ $P(A) = \frac{3}{36}$ $P(B) = \frac{11}{36}$							
$P(A \text{ or } B) = \frac{3}{36} + \frac{11}{36} - \frac{2}{36} = \frac{12}{36} = \frac{1}{36}$							

Homework

- #1-4: No work necessary. Write your answers carefully to the right.
- #5-17: Show your work. You may use an additional paper if necessary, or number your work as you do it across the page.
- #15-17: Write your answer as a complete sentence.