Monday, October 22, 2012

TISK Problems

1. Add: $\frac{1}{5}+\frac{3}{4}$
2. Multiply: $\frac{3}{8}\left(\frac{1}{6}\right)$
3. Evaluate: $\frac{5}{9}\left(\frac{6}{20}\right)-\frac{1}{12}$

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:
      - $P(A \text{ or } B) = P(A) + P(B)$
      - $P(A \text{ and } B) = 0$

§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) **OR** *P*(not girl's name)
- The probability of complementary events is always equal to one.
- $P(A) + P(\text{not } A) = 1$

§9-3 Theoretical Probability

- Two or more events
  - Overlapping
    - Both events could occur ***at the same time***.
    - Examples:
      - Event A: Roll a 2 on a 6-sided die. Event B: Roll an even number on a 6-sided die.
      - All your names are placed in a hat. Event A: Draw _____. Event B: Draw _____.
    - To find the probability of Overlapping Events:
      - $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$
      - $P(A \text{ and } B) = \frac{\text{number of outcomes in the overlapping space}}{\text{number of possible outcomes}}$

§9-3 Theoretical Probability

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

$$P(A \text{ or } B) = \frac{3}{36} + \frac{11}{36} - \frac{2}{36} = \frac{12}{36} = \frac{1}{3}$$

D#1 / D#2	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

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.