**1) Probabilities**

A fair coin was tossed 3 times. Calculate the probabilities of the following 6 events.

* 1. Three heads were observed
  2. Two heads were observes
  3. One head were observed
  4. At least two heads were observed
  5. No more than two tails were observed

**2) A variable Z is normally distributed with µ=54 and σ=12.3. Find the following probabilities:**

* 1. P(40 < Z ≤ 55.7)
  2. P(Z = 64.9)
  3. P(Z > 54)
  4. P(Z < 48.1)
  5. P(Z ≠ 63.4)
  6. P( Z ≤ 70)
  7. P(Z < 38.2 OR Z > 57.3)

**3) Using Excel’s standard functions,** - calculate the mean, variance and standard deviation of the students’ grades presented bellow.   
 - Also, use the descriptive statistics tool and calculate various statistical measures.

**90 93 63 55 93 85 79 95 83 61 82 95 66 51 99 50 95 63 69 90 59 57 63 77 75 54 69 67 79 52**

**4. Application Problems.**

1. The life of an electronic transistor is normally distributed with a mean of 500 hours and a standard deviation of 80 hours. Determine the probability that
   1. A transistor will last for more than 400 hours?
   2. A transistor will last for less than 350 hours?
   3. A transistor will last exactly 501 hours?
2. The weight of bags of fertilizer is normally distributed with a mean of 50 pounds and standard deviation of 6 pounds. What is the probability that a bag of fertilizer will weigh:
   1. between 45 and 55 pounds?
   2. At least 56 pounds?
   3. At most 49 pound?

**5) Studying for MATH course**

The amount of time devoted to studying MATH each week by students who achieve grade A in the course is normally distributed with mean of 7.5 hours and standard deviation of 2.1 hours. Find the probability that an A student study time per week is

1. between 7 and 9 hours?
2. less than 5 hours?
3. exactly 6 hours?