Algebra 4

Normal Probabilities

**For each of these problems you still need to do these:**

- Draw the normal curve
- Mark the mean and the x value or probability you have been given
- Shade the appropriate region
- Write the probability sentence and answer to 4 decimal places

**1.** If the mean age of students at LHS is 16 with a s.d. of 6 months, find the probability that a student chosen at random will be older than 17 years.

**P(x > 17) = 0.0227**

**2.** To screen employees for a proof reading job a publishing company gives new applicants a speed reading test. Only the top 15% get interviews. Assume a normal distribution with mean 600 words per minute and s.d. 100 words per minute. Find the minimum reading speed needed to be accepted for an interview.

**x = 703.6 wpm**

**3.** The quality control people at your factory tell you that your new product, the Wundafone, has a mean lifetime of 25 months, with s.d. of 5 months. If you have to offer a replacement guarantee, how many months should you allow if you don't want to replace more than 8% of your Wundafones?

**x = 17.97months**

**4.** The length of human pregnancies is normal with mean 266 days and s.d. 16 days.
**a**. What is the probability that a randomly selected pregnancy will last less than 260 days?

**P(x< 260)=0.3530**

**b**. What is the probability that a randomly selected pregnancy will last between 260 and 270 days?

**P(260 < x< 270) = 0.2448**

**5.** Since the 1900s the magnitude of earthquakes in California that measure 0.1 or higher on the Richter Scale is approx. normal with mean 6.2 and s.d. 0.5.
**a.** What range of Richter Scale values represent the 20% most powerful earthquakes in CA?

**6.62 and up**

**b.** Determine the range of Richter Scale values that make up the middle 85% of earthquake magnitudes.

**5.48025 < x < 6.91975**

**6.** IQ scores on the Standford-Binet intelligence tests are normally distributed with mean 100 and s.d. 16.
**a.** In order to qualify for Mensa, you must score in the top 2%. What IQ score is required to qualify for Mensa?

**x = 132.86**

**b**. What is the probability that a randomly chosen person will have an IQ less than 90?

**P(x < 90) = 0.266**

**c**. What is the probability that a randomly chosen person will have an IQ of exactly 110?

**P(x = 110) = 0**