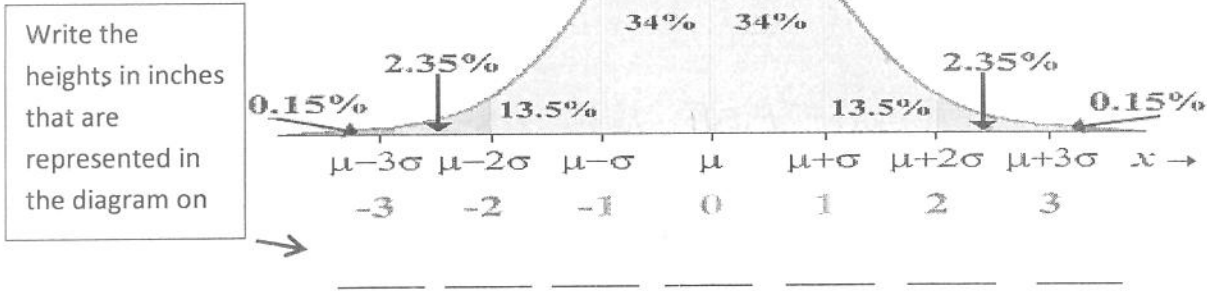


MATH 123 Homework Section 14 Normal Distribution

Section: _____

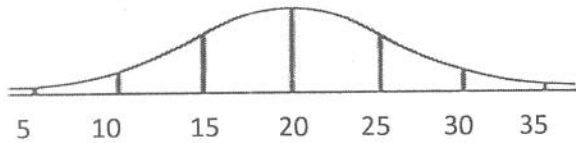
Name: _____

1. **Women's Stature:** Consider the data from the Anthropology 105 class. The mean is 163.4 cm and the standard deviation is 6.7 cm. Convert the mean and standard deviation to inches, rounded to two decimal places. Label the heights at $\mu, \mu + \sigma, \mu - \sigma, \mu + 2\sigma$ etc. at the bottom of the normal curve in inches below.



- What is the average height in inches?
- What is the standard deviation in inches?
- The middle 68% of women represented have a stature between what two heights? (Give a range)
- The middle 95% of women represented have a stature between what two heights?
- The average height of men in the US is approximately 5ft 7in. What proportion of women represented here are shorter than the average man?
- Professional volleyball players who are women are at least 6 foot tall. What proportion of the population could even hope to be a professional volleyball player? How many is that out of 100,000?

2. Data from Ivy Tech's advising center shows that their wait times follow a normal distribution.



- What percent of students will wait between 15 and 25 minutes?
- How many will wait less than 20 minutes?
- What proportion of students will wait more than 35 minutes?

MATH 123 Homework Section 14 Normal Distribution

3. Professor Pete's calculus class has the following scores:

19 21 31 32 37 45 52 55 62 63 63 65 65 77 78

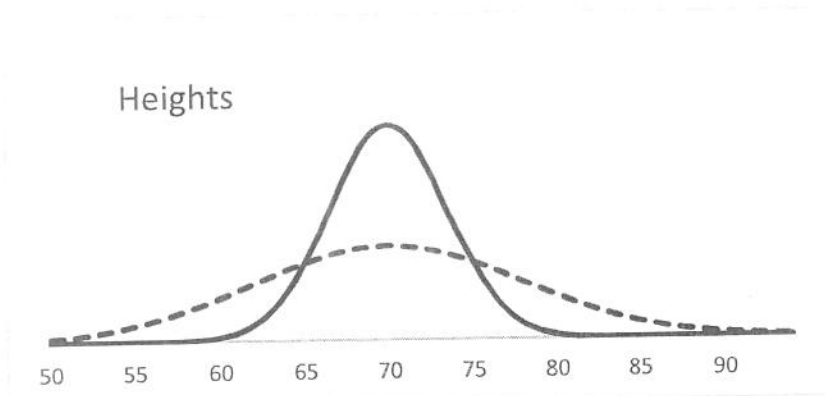
As you can see, more than half of the class would fail the class if a standard grade scale were used. That is why he is going to pass anyone who scores higher than 1 standard deviation below the mean.

- Use Excel to find the standard deviation and mean and write them here.
- Find the new passing grade for the class.

4. The Ivy modeling agency decides that it only wants women within one standard deviation of their current models heights which are: 66, 68, 70, 69, 65, 72, 70, 68, 69, 70, 68

- Use Excel to find the standard deviation and mean.
- Find the heights of models which they will hire.

5. Professor Ivy decides to compare her families' heights to the heights of her husband's family and is able to model this with the 2 normal curves below. Her family is the dotted line. His is the solid.



- Which curve has a higher standard deviation?
- Describe how Professor Ivy's family heights are distributed.
- Describe how her husband's family heights are distributed.