

WORKSHEET – NORMAL DISTRIBUTIONS

1. For each problem below draw a picture of the normal curve and shade the area you have to find. Let Z represent a variable following a standard normal distribution.
 - (a) Find the proportion that is less than $z=2.00$.

 - (b) Find the proportion that is between $z = -.13$ and $z = 1.75$.

 - (c) Find the proportion that is greater than $z=1.86$.

 - (d) Find the z -score for the 64th percentile.

 - (e) Find the z -scores that bound the middle 50% of all data

 - (f) Find the z -score for the 24th percentile.

2. Former ISU basketball player Kelvin Cato is 83 inches tall. Assuming that heights follow approximately a normal distribution with mean 70 and standard deviation $\sigma = 3$,
 - (a) what is his corresponding z -score?

 - (b) what proportion of men are taller than him?

3. Since the length of a downhill ski is related to the height of the individuals renting them, it is fair to assume that a normal distribution would describe the length of women's skis at rental outlets in Colorado. The mean of the distribution is 150 cm and the standard deviation is 10 cm.
- (a) What is the proportion of women's ski lengths that are less than 130 cm?

 - (b) What is the proportion of women's ski lengths that are greater than 125 cm?

 - (c) What is the proportion of women's ski lengths that are between 125 and 155?

 - (d) Very long skies are expensive and there are not many people who rent them. What is the longest women's ski a rental shop should carry so that only 2 percent of the costumers will ask to rent a longer ski?
4. The BMI for males age 20 to 74 is follows approximately a normal distribution with mean $\mu = 27.9$ and standard deviation $\sigma = 7.8$. Use the 68-95-99.7 rule to find
- (a) the percentage of males with BMI less than 20.1.

 - (b) the percentages of males with BMI greater than 12.3.

 - (c) the BMI values that correspond to the middle 99.7% of the distribution.

 - (d) the value such that 0.15% of males have BMI's greater than the value.