Worksheet: Empirical Rule and Z-Scores **Name**_____

1.) A new line of cars has gas mileage represented by random variable X that is normally distributed with a mean of 32 mpg with a standard deviation of 4 mpg. Use the Empirical Rule to answer questions below.

A.) What is the notation for this distribution?

B.) The middle 68% of cars gets between how many mpg?

C.) The middle 95% of cars gets between how many mpg?

D.) 2.5% of all cars get no more than how many mpg?

E.) 0.15% of all cars get no more than how many mpg?

F.) Only 16% of all cars get more than how many mpg?

G.) Only 0.15% of all cars get more than how many mpg?

H.) What is the approximate probability of obtaining gas mileage between 24 and 32 mpg?

I.) What is the approximate probability of obtaining gas mileage between 32 and 36 mpg?

J.) What is the approximate probability of obtaining gas mileage between 24 and 44 mpg?

2.) Let x denote an observation from a normal distribution with a mean of 50 and a standard deviation of 10. For any given x-values, find the corresponding z-score. For any given z-score, find the corresponding x-value from the distribution. Interpret each z-score/x-value.

A.) What is the "normal distribution" notation for this distribution?

B.) $x = 33$

C.) $x = 8$

D.) $x = 49$

E.) $x = 63$

F.) $x = 72$

G.) $Z = 3.4$

H.) $Z = 1.2$

I.) $Z = 0$

J.) $Z = -2.7$

K.) $Z = -0.4$