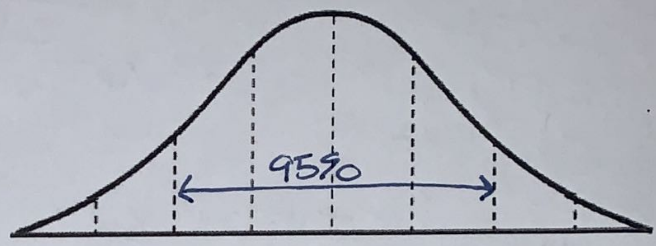
Name ______________________ Date __________

1. Use the normal curve to find the following:



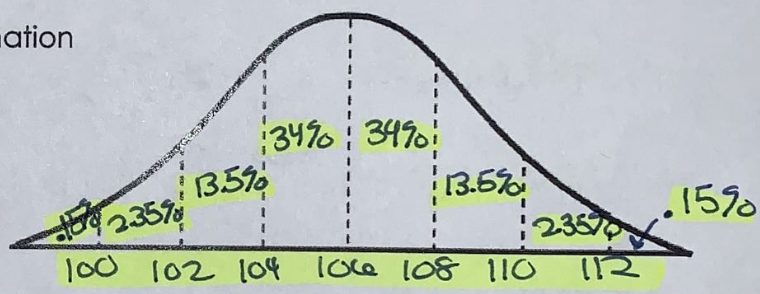
a. mean 32

b. standard deviation 7

c. Between what 2 data values does the middle 95% of the data fall?
18 + 46

2. A machine is used to put bolts into 1000 boxes. It does so such that the actual number of bolts in a box is normally distributed with a mean of 106 and a standard deviation of 2.

a. Draw & label the normal curve for the information



b. What percentage of boxes contain more than 104 bolts? 84%

c. What percentage of boxes contain less than 102 bolts? 2.5%

d. Approximately how many boxes have between 104 and 110 bolts? 775 boxes
.775(1000)

e. Approximately how many boxes have no more than 108 bolts? 840 boxes
84% → .84(1000)

~~f. Approximately how many boxes have between 104 and 110 bolts?~~ ______

3. The number of participants in a XC race is normally distributed throughout the season. If the mean number of runners is 87 with a standard deviation of 8. If the z-score for the region meet is -2.75, how many people raced in the region meet?

$\mu = 87$
$\sigma = 8$
$z = -2.75$

$$-2.75 = \frac{x - 87}{8}$$

65 runners

4. If the daily temperature in Marietta in May has a standard deviation on 2.1 degrees. If May 18th had a high of 75 degrees and a z-score of 1.7, what is the mean high temperature?

$\sigma = 2.1$
$x = 75$
$z = 1.7$

$1.7 = \frac{75-\mu}{2.1}$

$3.57 = 75 - \mu$

$\mu = 71.43°F$

5. The ACT scores are normally distributed with a mean of 18 and a standard deviation of 6. If Jill has a z-score of 2.1 and Jack has a z-score of 1.7, how many points higher is Jill's ACT score compared to Jack's?

$\mu = 18$
$\sigma = 6$

Jill: $2.1 = \frac{x-18}{6}$
Jill: $x = 36.6$

Jack: $1.7 = \frac{x-18}{6}$
Jack: $x = 28.2$

$36.6 - 28.2$

2.4 points higher

6. You have a set of data. The mean of the data is 32 with a standard deviation of 3.2. Find the following probabilities:

a. 0.894 $P(z \geq -1.25)$ lower

b. 0.0062 $P(X \leq 24)$ $\frac{24-32}{3.2}$ $z = -2.5$ $P(z \leq -2.5)$ upper

c. 0.8944 P(X is at most 36) less than $z_{36} = \frac{36-32}{3.2} = 1.25$ upper

d. 0.0062 $P(z \leq -2.5)$ upper

e. 0.9876 $P(24 \leq X \leq 40)$ $z_{24} = \frac{24-32}{3.2} = -2.5$ lower $z_{40} = \frac{40-32}{3.2} = 2.5$ upper

f. about 7-8 If there are 20 data values, approximately how many will be more than 33?

$z_{33} = \frac{33-32}{3.2} = .31$

$P(z > .31) = .3783\ (20) = 7.566$ lower

7. The scores on the midterm exam are normally distributed with a mean of 72.3 and a standard deviation of 8.9. What percentage of the students in the class can be expected to receive a score between 82 and 90?

$z_{82} = \frac{82-72.3}{8.9} = 1.09$ lower

$z_{90} = \frac{90-72.3}{8.9} = 1.99$ upper

$P = 0.1146$

11.46 %

8. A group of 625 students has a mean age of 15.8 years with a standard deviation of 0.6 years. The ages are normally distributed. How many students are younger than 16.2 years?

$z_{16.2} = \frac{16.2-15.8}{.6} = .67$

$P(z < .67) = .7486$

$.7486(625) = 467.875$

about 467 students