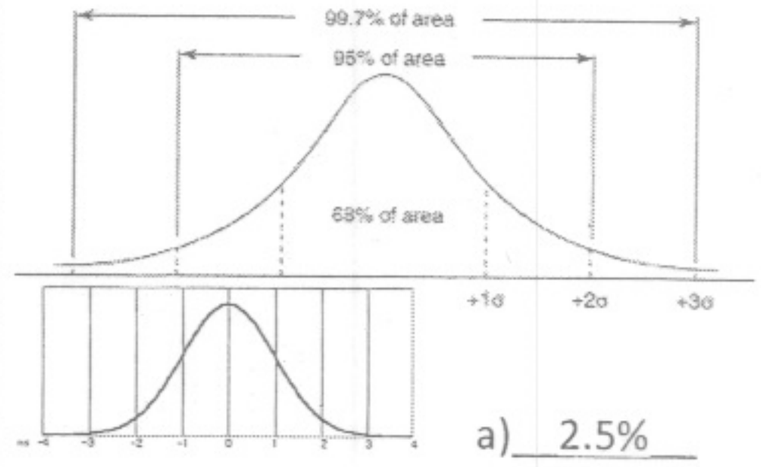
LT 1B→Normal Curve Name:

Shade the labeled normal curve as indicated for the problem



1) The waiting time in a hospital emergency room is normally distributed with a mean of 25 minutes and a standard deviation of 8 minutes.

a) What is the probability that a person will wait 9 minutes or less?

b) What is the probability that a person will wait 33 minutes or more?

c) What is the probability that a person will wait between 25 and 41 minutes?

d) What is the probability that a person will wait between 9 and 25 minutes?

e) What is the probability that a person will wait less than 17 minutes or more than 41 minutes?

f) According to the Empirical Rule approximately 68% of the people will wait between what two times?

2) At a high school, classes begin at 7:30. The average arrival time is 7:25 with a standard deviation of 2.5 minutes.

a) On an ordinary day, what percent of the students are late?

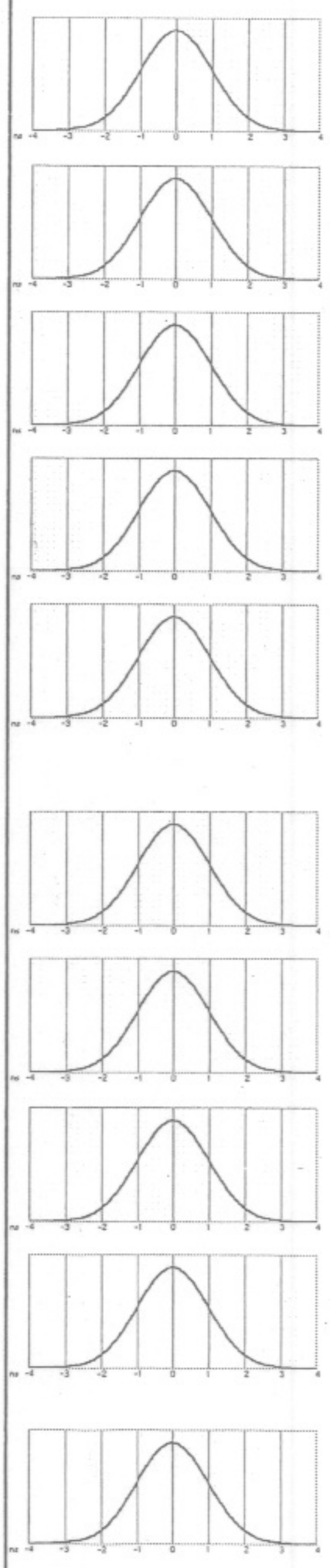
b) What percent of the students arrive before 7:20?

c) Gahr High School's student population is 1,900. How many students arrive between 7:20 and 7:30?

d) How many students arrive by 7:25?

e) 68% of the students at Gahr arrive between what two times?

f) 57 students arrive before or after what two times?



a) 2.5%

b) 16%

c) 47.5%

d) 47.5%

e) 18.5%

f) 17 & 33 minutes

a) 2.5%

b) 2.5%

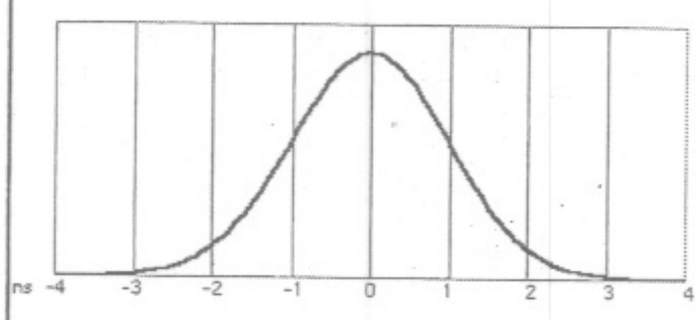
c) 1,805

d) 950

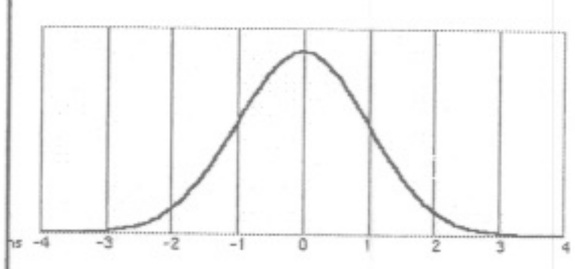
e) 7.22.5 and 7.27.5

f) Before 7.17.5 and After 7.32.5

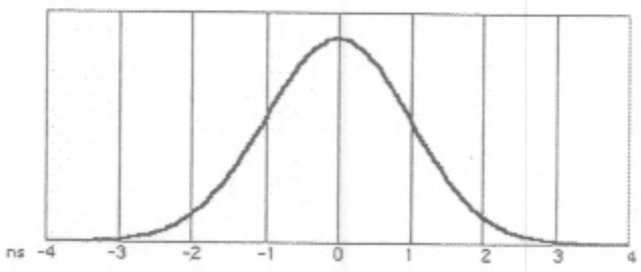
3) The amount of mustard dispensed from a machine at *The Hotdog Emporium* is *normally distributed* with a mean of 0.9 ounce and a standard deviation of 0.1 ounce. If the machine is used 500 times, *approximately* how many times will it be expected to dispense 1 or more ounces of mustard.



4) Professor Halen has 184 students in his college mathematics lecture class. The scores on the midterm exam are *normally distributed* with a mean of 72.3 and a standard deviation of 9.7. How many students in the class can be expected to receive a score between 82 and 91.7? Express answer to the *nearest student.*



5) A machine is used to fill soda bottles. The amount of soda dispensed into each bottle varies slightly. Suppose the amount of soda dispensed into the bottles is normally distributed. If at least 99% of the bottles must have between 585 and 595 milliliters of soda, find the greatest standard deviation, to the *nearest hundredth*, that can be allowed.



6) Residents of upstate New York are accustomed to large amounts of snow with snowfalls often exceeding 6 inches in one day. In one city, such snowfalls were recorded for two seasons and are as follows (in inches):

8.6, 9.5, 14.1, 11.5, 7.0, 8.4, 9.0, 6.7, 21.5, 7.7, 6.8, 6.1, 8.5, 14.4, 6.1, 8.0, 9.2, 7.1

What are the mean and the population standard deviation for this data, to the *nearest hundredth*?

7) Neesha's scores in Chemistry this semester were rather inconsistent: 100, 85, 55, 95, 75, 100. For this population, how many scores are within one standard deviation of the mean?

8) The number of children of each of the first 41 United States presidents is given in the accompanying table. For this population, determine the mean and the standard deviation to the *nearest tenth.*
How many of these presidents fall within one standard deviation of the mean?

Number of Children (x_i)	Number of Presidents (f_i)
0	6
1	2
2	8
3	6
4	7
5	3
6	5
7	1
8	1
10	1
15	1

Answers:

3) 80 times

4) 87 students

5) 1.67 milliters

6) $\mu = 9.46$

$\sigma = 3.74$

7) 5 scores

8) $\mu = 3.6$

$\sigma = 2.9$

31 presidents