

I. Draw a histogram of each given table. Determine the type of distribution for each table.

1.)

U.S. Population	
Age	Percent
0–19	28.7
20–39	29.3
40–59	25.5
60–79	13.3
80–99	3.2
100+	0.0

positively skewed

2.)

Record Low Temperatures in the 50 States	
Temperature (°F)	Number of States
–80 to –65	4
–64 to –49	12
–48 to –33	19
–32 to –17	12
–16 to –1	2
0 to 15	1

normally distributed

3.)

GPA	Frequency
0.0–0.4	4
0.5–0.9	4
1.0–1.4	2
1.5–1.9	32
2.0–2.4	96
2.5–2.9	91
3.0–3.4	110
3.5–4.0	75

negatively skewed**II. For the following: a.) Draw a normal curve – label mean and 3 sets of standard deviations. b.) Answer each question – you must show how obtained answer!**

- 4.) The vending machine in the school cafeteria usually dispenses about 6 ounces of soft drink. Lately, it is not working properly, and the variability of how much of the soft drink it dispenses has been getting greater. The amounts are normally distributed with a standard deviation of 0.2 ounces.

a.) What percent of the time will you get more than 6 ounces of soft drink?

$$34 + 13.5 + 2.35 + .15 = 50\%$$

b.) What percent of the time will you get less than 6.2 ounces of soft drink?

$$.15 + 2.35 + 13.5 + 34 + 34 = 84\%$$

c.) What percent of the time will you get between 5.8 ounces and 6.4 ounces of soft drink?

$$34 + 34 + 13.5 = 81.5\%$$

- 5.) A company manufactures 1000 compact discs per hour that are supposed to be 120 millimeters in diameter. These CDs are made for drives 122 millimeters wide. The sizes of CDs made by this company are normally distributed with a standard deviation of 1 millimeter.

a.) In one hour, how many CDs would you expect to be between 119 and 122 millimeters?

$$34 + 34 + 13.5 = 81.5\% \rightarrow .815(1000) = 815 \text{ CDs}$$

b.) About how many CDs per hour will be too large to fit in the drives?

$$2.35 + .15 = 2.5\% \rightarrow .025(1000) = 25 \text{ CDs}$$

- 6.) A recent study showed that the systolic blood pressure of high school students ages 14 – 17 is normally distributed with a mean of 120 and a standard deviation of 12. Suppose a high school has 800 students.

a.) About what percent of the students have blood pressure below 108?

$$.15 + 2.35 + 13.5 = 16\% \rightarrow .16(800) = 128 \text{ students}$$

b.) About how many students have blood pressure between 108 and 144?

$$34 + 34 + 13.5 = 81.5\% \rightarrow .815(800) = 652 \text{ students}$$

c.) About what percent of the students have blood pressure between 96 and 156?

$$13.5 + 34 + 34 + 13.5 + 2.35 = 97.35\% \rightarrow .9735(800) = 778 \text{ students}$$

d.) About how many students have blood pressure above 144?

$$2.35 + .15 = 2.5\% \rightarrow .025(800) = 20 \text{ students}$$

- 7.) Mrs. Shields gave a test in her Trigonometry class. The scores were normally distributed with a mean of 85 and a standard deviation of 3.

a.) If 32 were present that day to take the test, then how many students scored at least 79?

$$13.5 + 34 + 34 + 13.5 + 2.35 + .15 = 97.5\% \rightarrow .975(32) = 31 \text{ students}$$

b.) How many students were present for the test if 23 students scored between 82 and 91?

$$34 + 34 + 13.5 = 81.5\% \rightarrow .815x = 23 \rightarrow 28 \text{ students}$$

c.) How many students were present for the test if 21 students scored below 88?

$$.15 + 2.35 + 13.5 + 34 + 34 = 84\% \rightarrow .84x = 21 \rightarrow 25 \text{ students}$$

Adv Functions - 3.4 WS: Normal Distribution

