Questions on pages 3-8?

We will be taking our second content mastery quiz shortly. Look over pages 3-8.

Aug 28-8:34 AM

Content Mastery Quiz #2

You will need a ruler

Aug 28-8:36 AM

PAGE 9 OF STUDENT TEXT

As the sample size continues to increase and the interval size continues to decrease, the shape of each relative frequency histogram will likely start to resemble a *normal curve*. A **normal curve** is a bell-shaped curve that is symmetric about the mean of the data.

A normal curve models a theoretical data set that is said to have a normal distribution.

> The vertical axis for a graph of a normal curve represents relative frequency, but normal curves are often displayed without a vertical axis.

The normal curves for the E-Phone and Unlimited cell phone battery lives are shown. In order to display normal curves for each data set, different intervals were used on the horizontal axis in each graph.
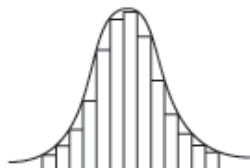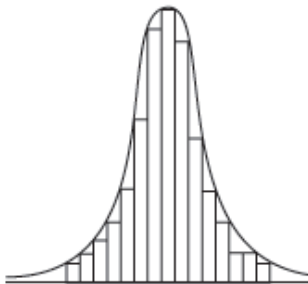
relative freq.

mean, median, mode

E-Phone
8.5 9.0 9.5 10.0 10.5 11.0 11.5

Unlimited
8.8 9.2 9.6 10.0 10.4 10.8 11.2
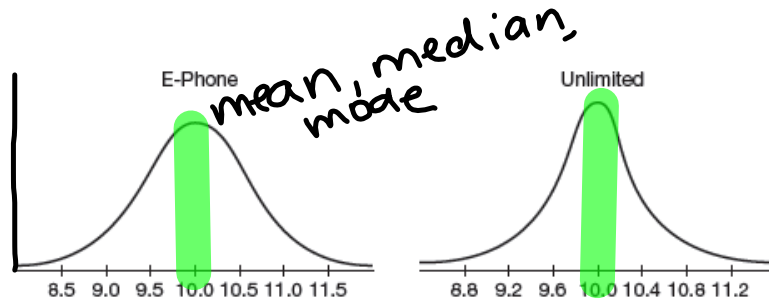
Although normal curves can be narrow or wide, all normal curves are symmetrical about the mean of the data.

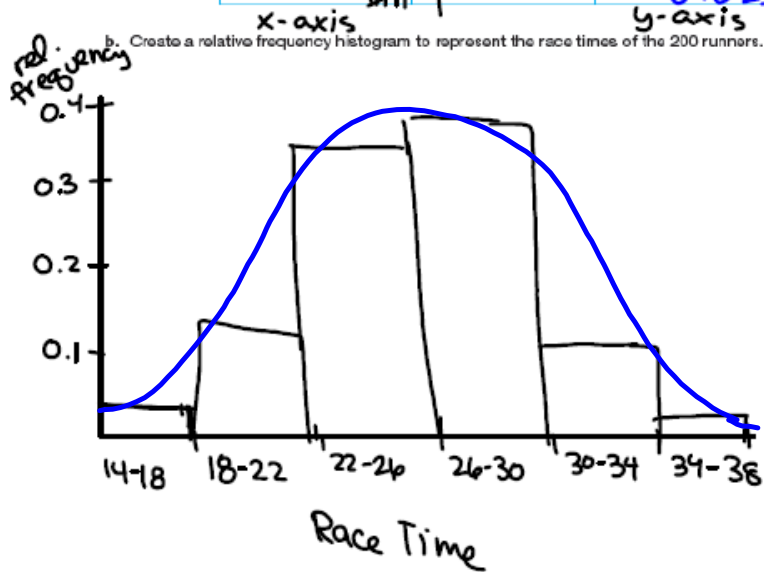**Normal Distributions**   **Not Normal Distributions**

NOT IN YOUR BOOK, COPY PROBLEM INTO NOTES

1. Two hundred runners completed the annual Burgoo Festival 5K race.

   a. The table displays the race times for the 200 runners. Complete the table by determining the relative frequency for each interval of race times.

TALLY

Race Time (minutes)		Number of Runners	Relative Frequency
14–18	HIT II	7	$7/200 = 0.035$
18–22		28	$28/200 = 0.14$
22–26		65	0.325
26–30		71	0.355
30–34		24	0.12
34–38	IIHT	5	0.025

x-axis   y-axis

   b. Create a relative frequency histogram to represent the race times of the 200 runners.

rel. frequency

0.4

0.3

0.2

0.1

14-18   18-22   22-26   26-30   30-34   34-38

Race Time

c. Does the distribution of the race time data appear to be a normal distribution? Explain your reasoning.

Yes, it appears to be normally distributed, with symmetry about the mean.

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You already know a lot about the mean. With normal curves, the **mean of a population** is represented with the symbol μ. The mean of a sample is represented with the symbol $\bar{x}$. The **standard deviation** of data is a measure of how spread out the data are from the mean. The symbol used for the standard deviation of a population is the sigma symbol σ. The standard deviation of a sample is represented with the variable s. When interpreting the standard deviation of data:

- A lower standard deviation represents data that are more tightly clustered near the mean.

- A higher standard deviation represents data that are more spread out from the mean.

The symbol for mean, μ, is spelled mu and pronounced "myoo."

· SAMPLE
mean: $\bar{x}$
Standard deviation: S

used most often

POPULATION
mean: μ
Standard deviation: σ
↑
lower case sigma

measures of center
mean
median
mode

measures of spread
range
Interquartile range
standard deviation
mean absolute deviation

Aug 24-1:56 PM

NOT IN YOUR BOOK, COPY PROBLEM INTO NOTES

2. Wildlife biologists recorded the weights of grizzly bears in 2 different populations. The normal curves represent the weights of the bears in Population A and the weights of bears in Population B.

relative freq.

Population A

Population B

Weight of Bears
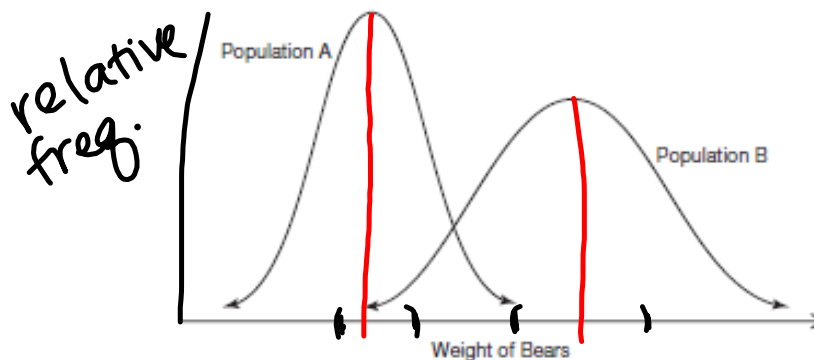
a. Which population has the greater mean weight? Explain your reasoning.

B, because it's to the right of A on the # line.

b. Which population has the greater standard deviation? Explain your reasoning.

B, it is more spread out.

c. Explain what the difference in the standard deviations means in terms of the problem situation.

B has a larger s.d. than A; A's weights vary less than B.

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d. Two years after the original data was recorded, the biologists recorded the weights of the bears in Population A again. The mean weight had increased by 5 pounds, but the standard deviation remained the same. Explain what the difference in the new data and the original data means in terms of the problem situation.
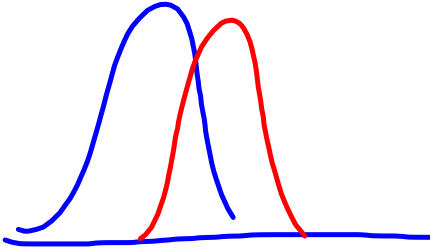
e. Two years after the original data was recorded, the biologists recorded the weights of the bears in Population B again. The mean weight was the same, but the standard deviation had decreased. Explain what the difference in the new data and the original data means in terms of the problem situation.

Aug 24-1:59 PM
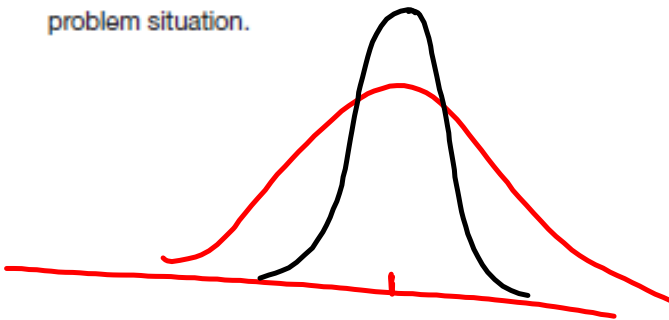
Individual Reflection #1

Homework

Finish pages 9-11 in student text

Aug 24-2:00 PM

Do You Fit In This Car?

Automobile manufacturers have to design the driver's seat area so that both tall and short adults can sit comfortably, reach all the controls and pedals, and see through the windshield. Suppose a new car is designed so that these conditions are met for people from 58 inches to 76 inches tall.

The heights of adult men in the US are approximately normally distributed with a mean of 70 inches and a standard deviation of 3 inches. Heights of adult women are approximately normally distributed with a mean of 64.5 inches and a standard deviation of 2.5 inches. What percentage of men in the US is this car not designed to accommodate? What percentage of women in the US is this car not designed to accommodate?

Aug 28-8:37 AM

Should We Send Out a Certificate?

Test scores on a statewide standardized test for a large population of students are normally distributed with mean = 9.44 and standard deviation = 1.75.

a) Approximately what percentage of the scores are between 7.69 and 11.19?

b) Certificates are given to students who score in the top 2.5% of those who took the test. Fred, a student who took the test, finds out that he earned a score of 13.1 on the test. He wonders if he should have received a certificate in the mail by now. He contacts the company that administers the test and asks if his score was high enough to earn a certificate.

Imagine that you work for this company that administers the test, and your supervisor (Chris) asks you to look into the matter. Complete the following note to Chris that **clearly states if Fred is to receive a certificate and includes a brief summary of your analysis that led you to that conclusion**. Assume that your supervisor, Chris, is familiar with z-scores, probabilities, normal curves, etc.

Chris:

Regarding your request about Fred's test score, ...