

Name _____

ACTIVITY 15-2 SHOE SIZE (FOOT SIZE) AND HEIGHT

Directions: Complete the steps of the activity listed in your textbook and record your results in the following tables. Then answer the questions below. You might want to refer to Figure 15-8 and Figure 15-9 as you complete the activity.

Data Table 1: Foot Length and Shoe Size

Questions	Your Measurements (inches)	Lab Partner's Measurements (inches)
Length of shoe		
Length of foot		
Shoe size according to Figure 15-8		
Actual shoe size		
Is your actual shoe size the same as size in Figure 15-8 in your textbook? (yes or no)		
Difference between actual size and estimated size (+ or -)		
Gender (male or female?)		

Data Table 2: Shoe Size and Height Comparison

Questions	Your Data (inches)	Your Partner's Data (inches)
Actual height		
Height according to Figure 15-9 in your textbook		
Are your actual height and the graph height the same (yes or no)?		
What is the difference between your actual height and the height according to the graph?		
Gender (male or female?)		

Questions:

Part A: Comparison of Shoe Size to Foot Size

1. Compare your results in Data Table 1 to the results of other members of the class. To make it a more valid comparison, compare all of the male results separately from all of the female results. *(Make two large classroom Data Graphs showing the results from each gender. The graph should show each individual foot length.)*
2. If you allow a plus or minus one- to two-inch difference, did you find that a majority of the students got their actual shoe size from Figure 15-8, or was the shoe size indicated in Figure 15-8 different from their actual shoe size?
3. List some of the experimental errors that may have been made in doing this study.
4. List ways to improve the reliability of your data.
5. Based on class results, how accurate is Figure 15-8 in estimating someone's shoe size based on his or her foot size? Support your answer with data from your experiment.
6. Why would data collected from teenagers give more variable results than data collected from adults?

Part B: Comparison of Height and Shoe Size

1. Compare all of the results for the males in the class. How accurate was Figure 15-9? *(Make two large classroom Data Graphs showing the results from each gender. The graph should show each individual height.)*

2. Compare all of the results for the females in the class. How accurate was Figure 15-9?

3. List the possible experimental errors in this study.

4. List ways to improve the reliability of your results.

5. Based on class results, how accurate is Figure 15-9, the graph that estimates someone's height based on shoe size? Support your answer using data.

6. Consider another formula to estimate someone's height based on shoe size:
Foot length (in inches) $\times$ 6.54 = height (in inches)
Use this formula to calculate your own height:
Your height based on this formula = _____ inches
Your actual height = _____ inches
Is this a more accurate correlation between foot size and height? Why or why not?

7. Based on your observations, can someone's height be estimated by measuring the size of their shoes? Explain your answer.

Inches and Decimal Equivalents

Decimal equivalents of eighths, sixteenths, thirty-seconds and sixty-fourths of an inch

Fraction to Decimal - Example

Convert $1/8$ " to decimal:

1. numerator is top number - numerator is 1
2. denominator is bottom number - denominator is 8
3. divide the top number with the bottom number - $1/8 = \underline{0.125}$

The table below can be used to convert inches to the decimal equivalents or vice versa.

Eighths

$1/8$	0.125
$1/4$	0.250
$3/8$	0.375
$1/2$	0.500
$5/8$	0.625
$3/4$	0.750
$7/8$	0.875

Sixteenths

$1/16$	0.0625
$3/16$	0.1875
$5/16$	0.3125
$7/16$	0.4375
$9/16$	0.5625
$11/16$	0.6875
$13/16$	0.8125
$15/16$	0.9375

Figure 15.8 Comparison of Foot Length and U.S. shoe sizing.

Foot Length (inches)		9	9 1/8	9 1/4	9 3/8	9 1/2	9 5/8	9 3/4	9 7/8	10	10 1/8	10 1/4	10 1/2	10 3/4	11	11 1/4	11 1/2
SHOE	M	3 1/2	4	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8	8 1/2	9	10 1/2	11 1/2	12 1/2	14
SIZE	W	5	5	6	6 1/2	7	7 1/2	8	8 1/2	9	9 1/2	10	10 1/2	12	13	14	15 1/2