Big Ideas Math®

Foot and Forearm Examination Activity

▶ Materials:

- Paper
- Pencil
- Shoe size and forearm length table
- Shoe size conversion chart
- Grid paper
- Ruler

▶ Directions:

Students work as a group. Have a student record the shoe size and forearm length of each student in your class in a table like the one provided. Let x be the shoe size (European size) and let y be the forearm length (inches). Note: European sizes are used here because there is no difference between male and female sizes, like in U.S. sizes. See the chart provided to convert from a U.S. standard size to a European size.

Have each student draw a scatter plot of the data in the table on grid paper. Then have them sketch a best-fitting line for the data. Students then choose two points on the line to find an equation of the best-fitting line and write the equation in slope-intercept form.

Students should ask you for your shoe size. Have students use their equation of the best-fitting line to predict your forearm length. Measure your forearm length, but don't tell the students until all of them have a prediction.

▶ Who Wins?

The student with the prediction closest to the actual lenth of your forearm wins.

▶ Discuss:

Discuss why the predictions vary. Why are some predictions close to the real answer while some are far away?

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Student	Shoe size x (European size)	Forearm length y (inches)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		

Student	Shoe size x (European size)	Forearm length y (inches)
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		

Size Conversion Chart for Women's Shoes	
U.S. Shoe Size	European Shoe Size
4	35
4½	35
5	35–36
5½	36
6	36–37
6½	37
7	37–38
7½	38
8	38–39
8½	39
9	39–40
9½	40
10	40–41
10½	41
11	41–42
11½	42
12	42–43

Size Conversion Chart for Men's Shoes	
U.S. Shoe Size	European Shoe Size
6	39
6½	39
7	40
7½	40–41
8	41
8½	41–42
9	42
9½	42–43
10	43
10½	43–44
11	44
11½	44–45
12	45
13	46
14	47
15	48
16	49