

Activity 11

The Ordinary Man



Teacher Notes

Concept

- ◆ Estimating and converting heights, constructing a scattergram
- ◆ Statistics and Graphing

Skill

- ◆ Converting measurements in feet and inches to inches
- ◆ Constructing a Scattergram

Applicable Calculator Functions

- ◆ [FracMode], \square , $[A\frac{b}{c}\leftrightarrow d\frac{e}{f}]$

Materials

- ◆ Student Activity Sheets (page 107)
- ◆ Graph paper; colored pencils
- ◆ TI-30X IIS/TI-34 II calculator

Objective

- ◆ Students will estimate the heights of famous people and compare their estimates to the actual heights in a scattergram, using the \square key and $[A\frac{b}{c}\leftrightarrow d\frac{e}{f}]$

Prerequisites

No prior calculator use is required: experience with \square key and $[A\frac{b}{c}\leftrightarrow d\frac{e}{f}]$ would be helpful.

Problem

1. Estimate the heights of famous people listed in the chart.
2. Convert your estimates and each person's actual heights to inches.
3. Plot your data in a scattergram.
4. Analyze your scattergram.

Activity

Have each student bring to class and share the height of a famous person before you introduce this activity. This sharing allows students to begin thinking about relative heights and provides at least one benchmark for each student to keep in mind when estimating in the actual activity.

If possible, read aloud the encounter between Milo and the Ordinary Man in Chapter 10 of *The Phantom Tollbooth* by Norman Juster (Random House; New York; 1996; ISBN: 0-394-82037-1). If the book is unavailable, recount the incident and/or focus on the quote from the book at the top of the Student Activity Sheet. Lead a discussion about heights and personal perspective. Wrap up the discussion and focus students' attention by having a student read aloud the questions following the quote on the Student Activity sheet.

Choose famous people to use in the chart. You may want to use heights your students found, national/international leaders, entertainers, etc. The list below provides some possibilities.

Fill in the names in the first column of the chart before duplicating the Student Activity Sheet or call each name for students to list. Have each student write in his/her estimates for each celebrity in the second column. It works best if you read each celebrity's name aloud and have a volunteer student identify that person before students enter their estimates.

Have a student volunteer his/her estimate for each celebrity before you give the actual height in feet and inches. Note that actual heights are entered in the first column. Usually, students like to share when they guess a height exactly.

Possible Celebrities:

Name	Height	Height in Inches
Bill Clinton	6'2"	74"
Hillary Clinton	5'6"	66"
Michael Jordan	6'6"	78"
Tara Lipinski	4'10"	58"
Tiger Woods	6'2"	74"
Madonna	5'6"	66"
Andre Agassi	5'11"	71"
Oprah Winfrey	5'7"	67"
Brad Pitt	6'0"	72"
Queen Elizabeth	5'4"	65"
Mark McGuire	6'5"	77"
Sammy Sosa	6'0"	72"
Dikembe Mutumbo	7'2"	86"
Prince Charles	5'11"	71"
Prince William	6'2"	74"
Michael Jackson	5'11"	71"
Celine Dion	5'8"	68"
Shania Twain	5'4"	64"

Next, students should convert both the actual heights and their estimates from feet and inches to inches, using the calculator, if needed, to check their conversions. Then lead a discussion about the range of values for both the estimates and actual heights to establish the labels needed on the x (actual height) and y (estimate) axes.

Allow each student to construct his/her own scattergram on graph paper. The follow-up discussion is critical. Ask the following questions to guide discussion:

- ◆ *For how many celebrities did you estimate the exact height? Describe the location for the coordinates for those estimates.*
- ◆ *For how many celebrities was your estimate too high? Too low? Describe the location for the coordinates for those estimates.*
- ◆ *Overall, are you a good or not-so-good estimator based on this activity? Explain your answer.*
- ◆ *If you did not estimate well, is there a trend in your estimates (consistently high or low)? If so, how might you estimate better?*

Now, ask students what their scattergram would look like if they guessed every celebrity's height correctly. Have them use a colored pencil to plot points as if they made all estimates accurately. Of course, this line represents $y = x$ and for many classes this can be elicited from the students. If they are not yet ready to provide that function rule, valuable discussion can still follow by asking the following questions:

- ◆ *How do your results compare to the set of matching data?*
- ◆ *If your estimate was too high for a particular celebrity, where will the coordinate for that celebrity be in relation to the new line we just plotted? (above the line)*
- ◆ *If your estimate was too low for a particular celebrity, where will the coordinate for that celebrity be in relation to the new line we just plotted? (below the line)*

This discussion foreshadows for students later work with functions and helps them establish a real-world model for $y = x$ situations.

Wrap-Up

Have students share their paragraphs about what they found and what they learned. Be sure these questions are answered:

- ◆ *Where would the coordinates for exact estimates be found on a scattergram?*
- ◆ *What does the scattergram for a person who can estimate heights very well look like?*

Assessment

Use students' paragraphs as an assessment tool to check their understanding. Also, a similar activity in which students plot each student's height versus his/her armspan in a scattergram is appropriate.

Extensions

- ◆ Ask a group of adults to estimate the heights of the people listed in this activity. Have students compare the class's estimates with those of the adults, using box-and-whisker or bar graphs.
- ◆ Have students find the heights of familiar people in the school or community (principal, mayor, newscaster, etc.). Repeat the activity using the new list. Compare to see whether the new estimates are more accurate and explain why this might happen.

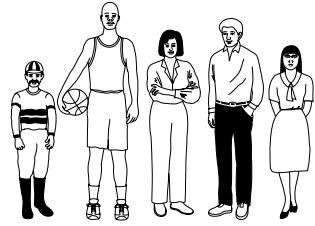


Name _____

Date _____

Activity 11

The Ordinary Man



Objective: You will estimate the heights of famous people and compare their estimates to the actual heights in a scattergram.

Problem: How much do you and your classmates really observe? How good are you at estimating the heights of famous people? Use this activity to help you explore these questions.

"You see, to tall men, I'm a midget, and to short men I'm a giant; to the skinny ones, I'm a fat man, and to the fat ones, I'm a thin man."

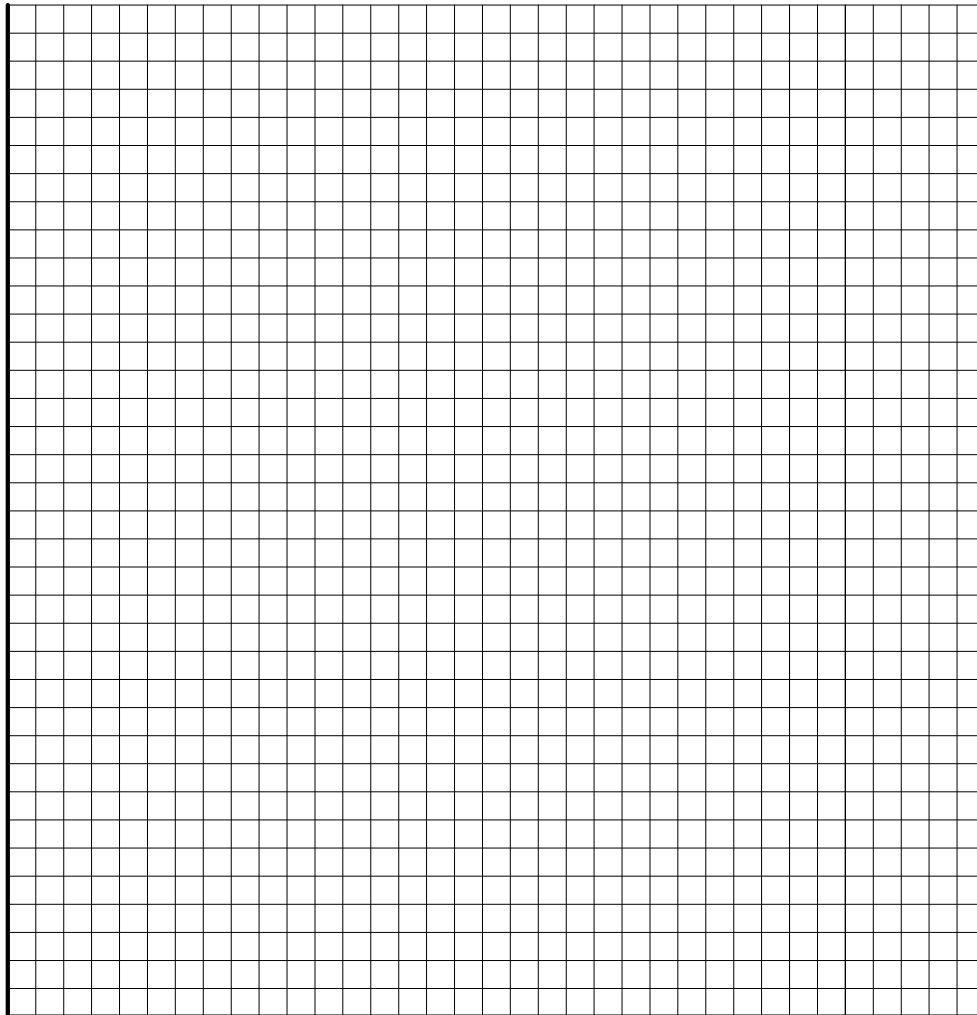
- from *The Phantom Tollbooth* by Norman Juster

1. After the class selects the names to go in this chart, estimate the height of each famous person and record it in the last column.

Name	Actual Height	Estimate

2. Write each celebrity's actual height in the middle column. Then convert your estimates and the actual heights to inches. Check, using your calculator.

3. Plot your data in a scattergram below. Use the horizontal (x) axis for the actual heights and the vertical (y) axis for your estimates. Label the axes.



ACTUAL HEIGHT

4. Analyze your results. How did you do? Use your scattergram to discuss your results with a classmate.
- a. What would the scattergram look like if you guessed every person's height correctly? Use a different mark or color and plot points as if you guessed every person's height correctly.
 - b. How do your results compare to the graph for matching data?

5. After your class or group discussion, write two paragraphs below about this activity.

a. What we found:

b. What I learned:

The Ordinary Man Keystrokes for the TI-34 II

Example: Change 78" to feet and inches

PRESS	DISPLAY
78 $\boxed{\div}$ 12	78/12
$\boxed{2nd}$ $\boxed{[Ab/c \leftrightarrow d/e]}$	78/12 \blacktriangleright A b/c \blacktriangleleft d/e
\boxed{ENTER}	78/12 \blacktriangleright A b/c \blacktriangleleft d/e 6 \blacktriangleright 6/12 N/D \rightarrow n/d

Note: This mixed number means $78'' = 6' 6''$

Example: Change 5' 3" to inches

PRESS	DISPLAY
5 $\boxed{\times}$ 12 $\boxed{+}$ 3 \boxed{ENTER}	5 \times 12 + 3 63

The Ordinary Man Keystrokes for the TI-30X IIS

Example: Change 78" to feet and inches.

PRESS	DISPLAY
78 \div 12	78/12
2nd $\left[\text{A b/c} \leftrightarrow \text{d/e} \right]$	78/12 \blacktriangleright A b/c \blacktriangleleft d/e
ENTER	78/12 \blacktriangleright A b/c \blacktriangleleft d/e 6.5

Note: 6.5 means 6 $\frac{1}{2}$ feet or 6'6".

Example: Change 5' 3" to inches

PRESS	DISPLAY
5 \times 12 $+$ 3 ENTER	5 *12 + 3 63

