Human Graph II

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Summary	Students graph the functions k x 2 \$/h and k x 3 \$/h. The idea is to show that for each linear function the points fall onto a straight line.
Goals	1. Introduce linear function graphs. 2. Label x, y with units. 3. Clarify how the exchange function plays out in graphs. 4. Draw attention to the slope as indicating rate of pay.
Materials	Handouts, Twine Rope, Measuring Tapes or Large Paper Number Lines, 3 x 5 Index Cards
Keywords	Compare/Contrast Functions Contextualized Situations Coordinate Pairs Full Class Discussion Hands-On Activity Interpretation of Algebraic Expressions Interpretation of Graphs Production of Graphs
Note	Give each student a large card with a place for an ordered pair: (x, y), where x refers to hours worked, and y refers to amount earned.

Activity Plan:

1. Graphing the function *k* x 2 $/h [Whole Class]

Lay out two number lines in the classroom, in perpendicular position. Refer to the ordinate or *x* axis as the **hours (number) line**. Refer to the abscissa or *y* axis as the **pay (number) line**.

Leave 3x5 cards numbered at each foot notch so that the value is visible to all.

Two students will be pointers, one on each axis: they help line up the other students. For example, if the hours value is 3, one pointer will stand at value 3 on the *x*-axis, the other at the pay value 6 on the y-axis.

The remaining students are the dish washers. Hand each of them a 3x5 card with the number of hours they worked and the number of dollars they received: e.g., 3hs, $6.00 on one side and 3, 6 on the other side of the card. Explain that just the numbers are enough to know where to go.

For each pay stub ask one pointer to stand on the hour value on the *x*-axis, and the second pointer to represent the pay on the *y*-axis. Then ask the dish washer to find the point where the two projection lines meet. At first some students may need help to find the intersection points. Ask other students to judge whether or not a dish washer is in the right place and where s/he should move to, if necessary.

A pay stub shows how many hours you worked and what you got paid.

Sample values of dish washer pay stubs.

(3h, $6.00)

(4h, $8.00)

(10h, $20.00)

(15h, $30.00)

Ask students to say what they are observing. [Don't tell them that the kids are lining up; let them realize this.] Do they see that the kids are lining up?

Are the results fair? Do all dish washers have the same deal? Did someone make a different amount for each hour they worked. (Note the tension between total pay and rate of pay).

Use the string to show that the students are standing in a relatively straight line. Do they understand that any other dish washers (contracted at the same rate) will stand on the same line?

2. Another job: the Gardeners

If you have more time, you can ask the children to plot the triple points on the graph. E.g., (2,6), (3,9), (4,12):

A pay stub shows how many hours you worked and what you got paid.

Sample values of gardener pay stubs.

(3h, $3.00)

(8h, $8.00)

(10h, $10.00)

(15h, $15.00)

Ask students to state what they are noting. Do they see that the kids are lining up?

Are the results fair? (among the gardeners?) (between dish washers and gardeners?)

Do they all have the same deal? Did someone get a different amount for each hour they worked.

Use the string to show that the students are standing in a relatively straight line. Do they understand that any other gardener (contracted at the same rate) will stand on the same line?

3. Homework (Page 1)

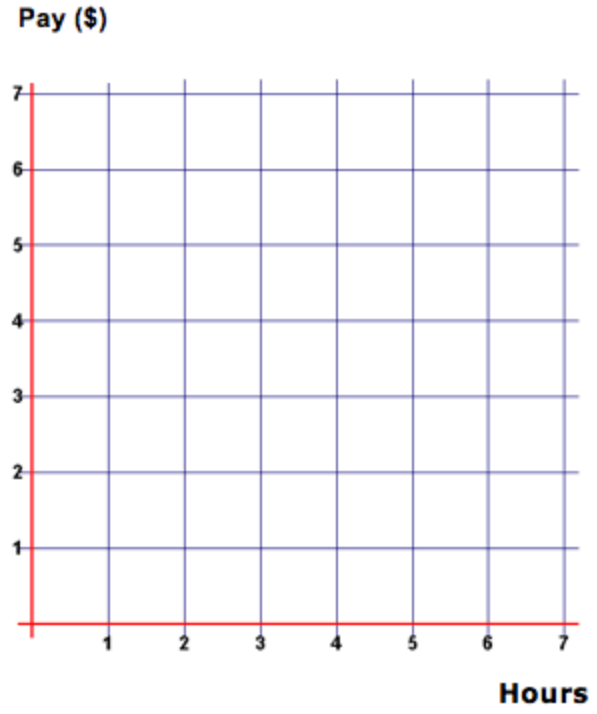
The students will have a handout that deals with similar tasks they performed during class.

Overhead and Homework: Graphing a Linear Function for Washing Dishes **(Page 1)**

Name: _____ Date: _____

Four students work as dish washers. They make $2.00 an hour.
Complete the table.
Draw a point showing the **time worked** and **pay** for Joe.
Then do the same for Anita, Nancy, Dan, and Lu.

	Time Worked (in hours) (k)	**Pay** (in dollars) (k x 2 $/h)
Joe	3	6
Anita	1	2
Nancy	2	
Dan	1.5	
Lu		7



1. Who received the most money?
2. Who worked the most hours?
3. Who got the best pay for each hour of work?
4. Extra credit: Draw a line that goes through each of the points. What does it mean when a person's point lies on the line you drew?