

Human Graph I

Human Graph I

Click [here](#) to download lesson.

To see a video clip of this lesson being implemented in a fourth grade classroom go to [The Human Graph - Fourth Grade](#).

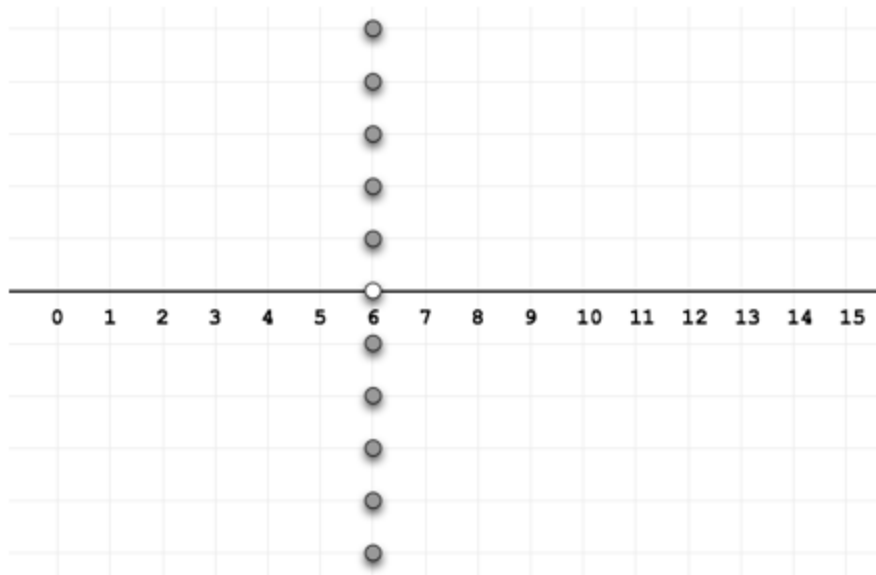
Summary	Students plot themselves on a Cartesian plane. Each student will get a large card with a place for an ordered pair: (x, y) , where x refers to hours worked, and y refers to amount earned. The students must name the coordinate pair for the point they themselves are standing on.
Goals	<ol style="list-style-type: none">1. Introduce projections from axes.2. Introduce two-dimensional graphs.3. Label x, y with units.4. Clarify how the exchange function plays out in graphs.
Materials	Overheads, Handouts, Tape or Stickers, Measuring Tapes or Large Paper Number Lines, 3 x 5 Index Cards
Keywords	Contextualized Situations Coordinate Pairs Full Class Discussion Hands-On Activity Interpretation of Graphs Linear Functions Mapping Number Lines Production of Graphs Production of Tables

Activity Plan:

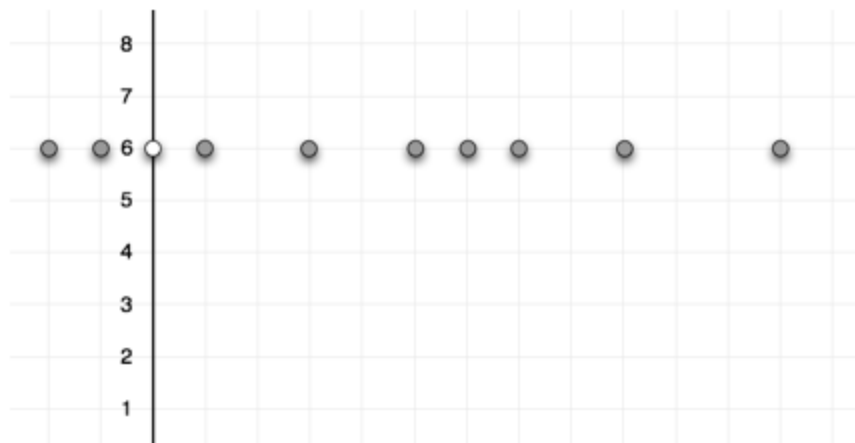
1. Projection Lines (from single number lines) [Whole Class]

Lay out one number line in the classroom floor and ask students to show a few points as measures for hours and for pay. Introduce a new idea: you don't have to stand on top of the "number line" to indicate an amount or quantity: More than one student can display the same value (6) without occupying the same place.

So, for example, in the diagram below (overhead on page 1), each of the dots shown represents "six", not only the white one that is located on the line.



Similarly, each of the following dots in the number line (also an overhead on page 2) represents six.



2. Transitioning the Layout of the Number Lines [Whole Class]

Lay out a second number line in the classroom floor, parallel to the first one and aligned, number-wise. Call one line the **hours (number) line**, the other the **pay (number) line**.

Ask some students, one by one, to keep track on the two parallel number lines of pairs of values that would correspond to each of two variables in the statement "For each hour of work you get \$2". They had to point at the same time to the two points in a pair, an easy task for smaller number pairs, which became increasingly difficult with larger numbers.

To make the task easier, propose to rotate the pay line by 90 degrees. The number lines are thus transformed into the axes of a coordinate space on the classroom floor, where a single point could represent two values.

3. Perpendicular Number lines [Whole Class]

Two students will be pointers: they help line up the other students. A student has to stand on the correct hours (projection) line and the other on the correct salary (projection) line. (We can place markers at each hour and dollar number to make it easier to align a point with the two number lines.)

Let one child select a place to stand on the floor. Give the child a round sticker (or a piece of tape) with their initial on it to mark "their spot". Ask the child how many hours they worked. Then ask them what they got paid. Register this on the blackboard in table form.

Also, register this on their "pay stub", a 3x5 card such as (4hs, \$5.00).

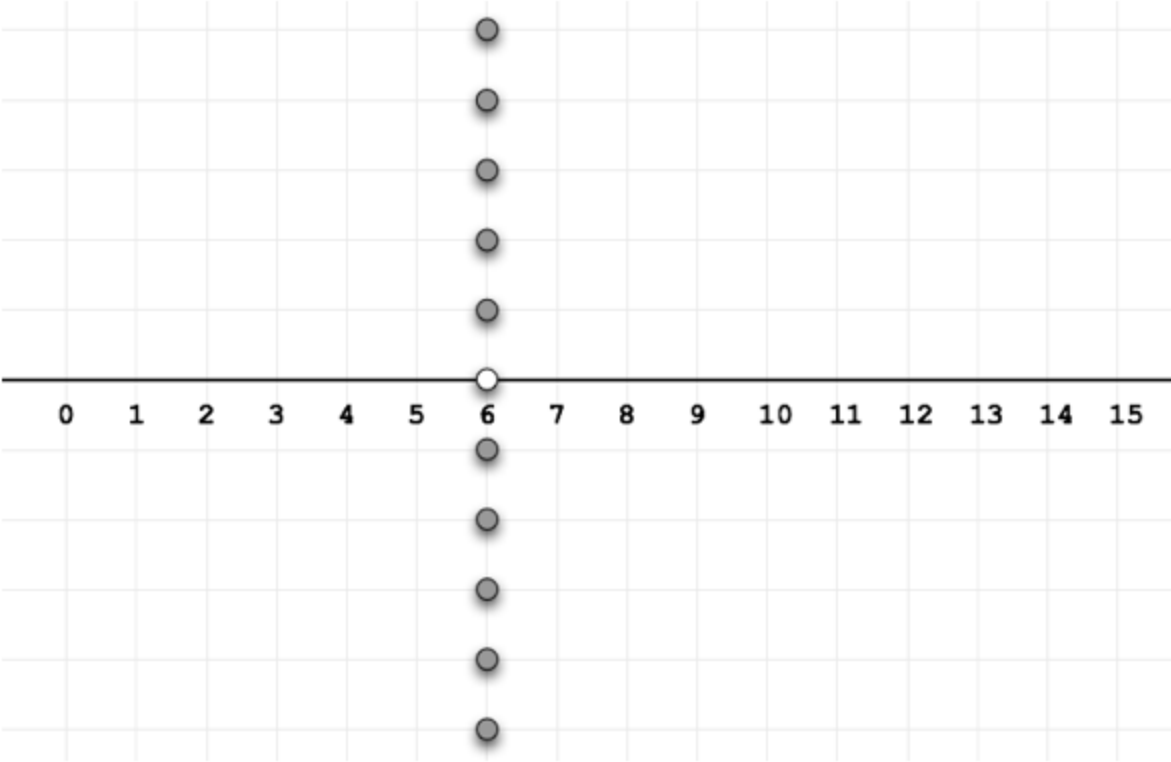
Then go to another student and ask her to choose a point somewhere on the floor.

After a while students will tend to "gravitate" towards those jobs that offered higher pay for less work. In order to avoid congestion, ask someone to show that they worked "for nothing". Ask some other student to show what it would mean to get paid for no work. Plot those people on the graph.

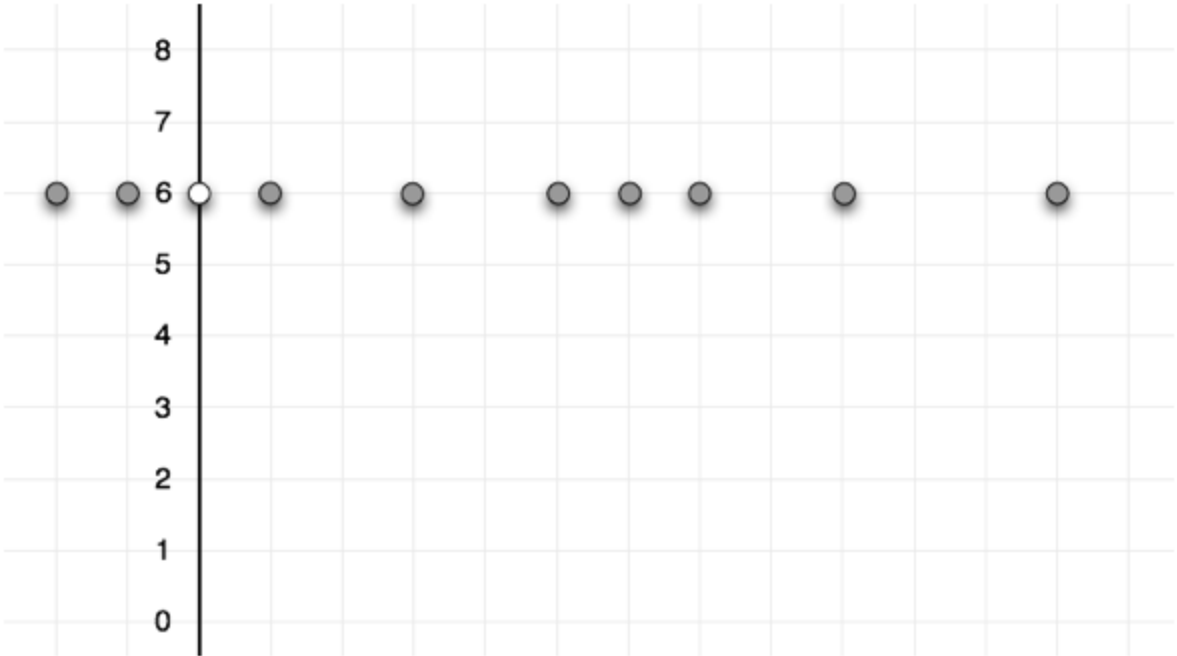
Ask whether someone could earn the same rate of pay as someone else, but work a different number of hours. Choose a particular child to exemplify.

Overhead: Projection Lines (from the Hours Line)

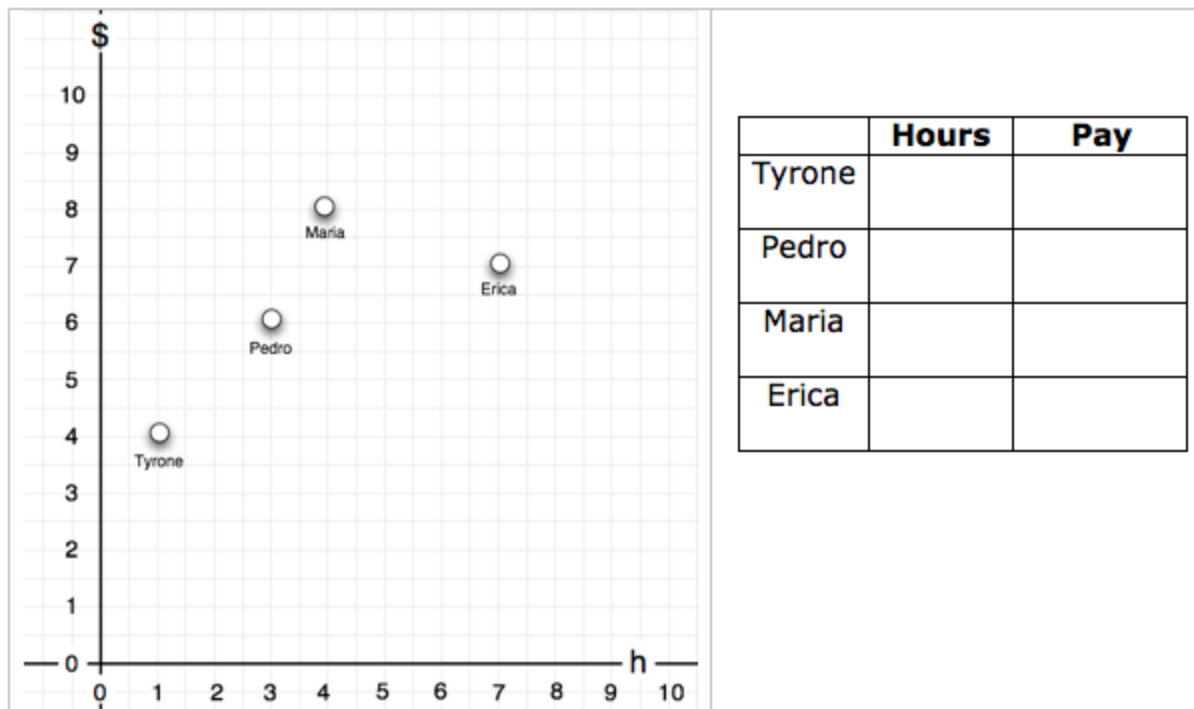
(Page 1)



Overhead: Projection Lines (from the Pay Line) (Page 2)



Name: _____ Date: _____



	Hours	Pay
Tyrone		
Pedro		
Maria		
Erica		

Look at the graph. Then fill in the table with the number of hours and amount of pay for Tyrone, Pedro, Maria and Erica.

Who received the most money? _____

Who worked the most? _____

Who got the best pay for each hour of work? Explain

Who got the worst pay for each hour of work? Explain