Equation stories

Annotation

Grant shows that he understands linear relationships and can recognize them when they are graphed. He can explain his thinking and can move flexibly between representations of the relationships.
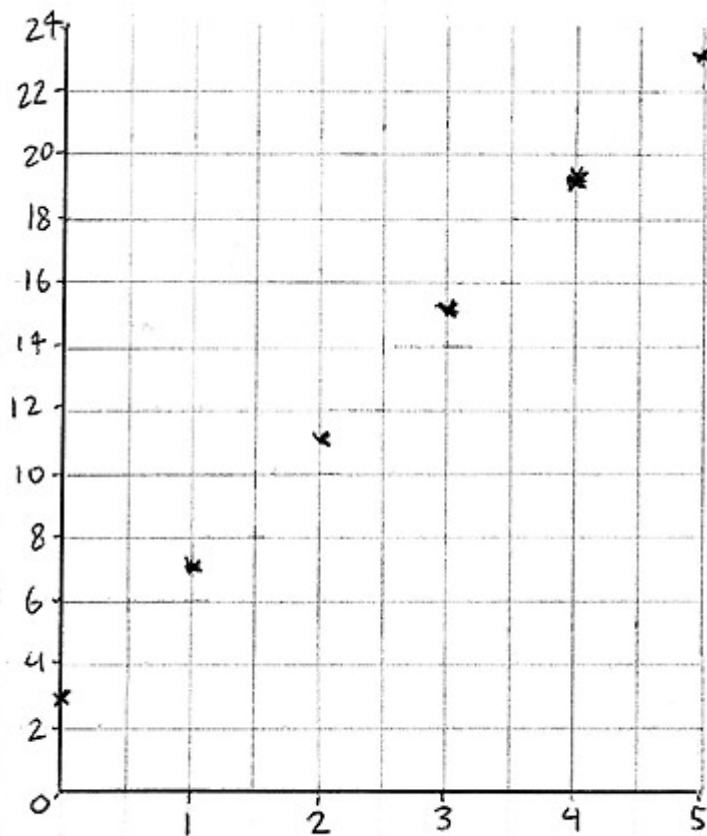
Problem: Equation stories

The teacher poses this problem:

Last night I was reading the algebra homework from your group. Someone handed in only their final page on which this equation was written: y = 4x + 3. What could the homework have been investigating? What situation might this equation describe?

Student Response

Grant: Well *y* might be like the total number of something. Say there was a repeating stick pattern that used four sticks in each repeat of the pattern then *y* would be the total sticks used, and *x* could be the number of times the pattern repeated. So that would be *y* = 4*x*. Then I thought that, for some reason, maybe it could take three extra sticks to make the first pattern. That would be the + 3. So I made a graph so I could see what this looked like.

$$y = 4x + 3$$

I thought it would be a straight line and it is. For the first pattern, you can see the graph begins at 7, that's 4 + 3, on the y axis. Then it goes up by four on the y axis for each of the 2, 3, 4 and 5 repeat patterns marked on the x axis.