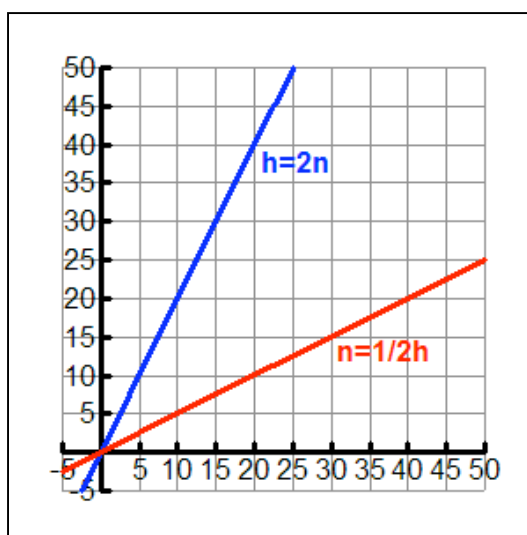
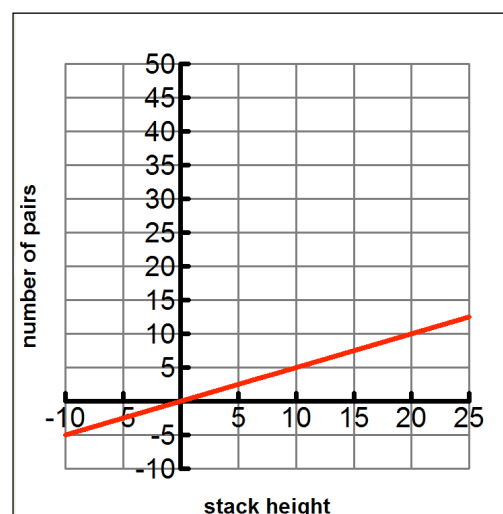
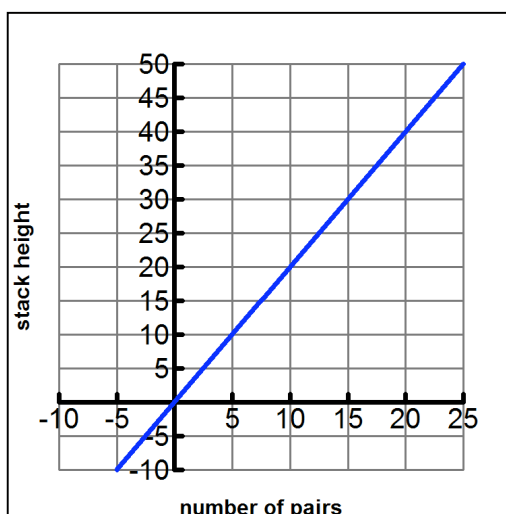


TASK 2.3.5: THE RELATIONSHIP BETWEEN THE HEIGHT FUNCTION AND THE COUNT FUNCTION

Solutions

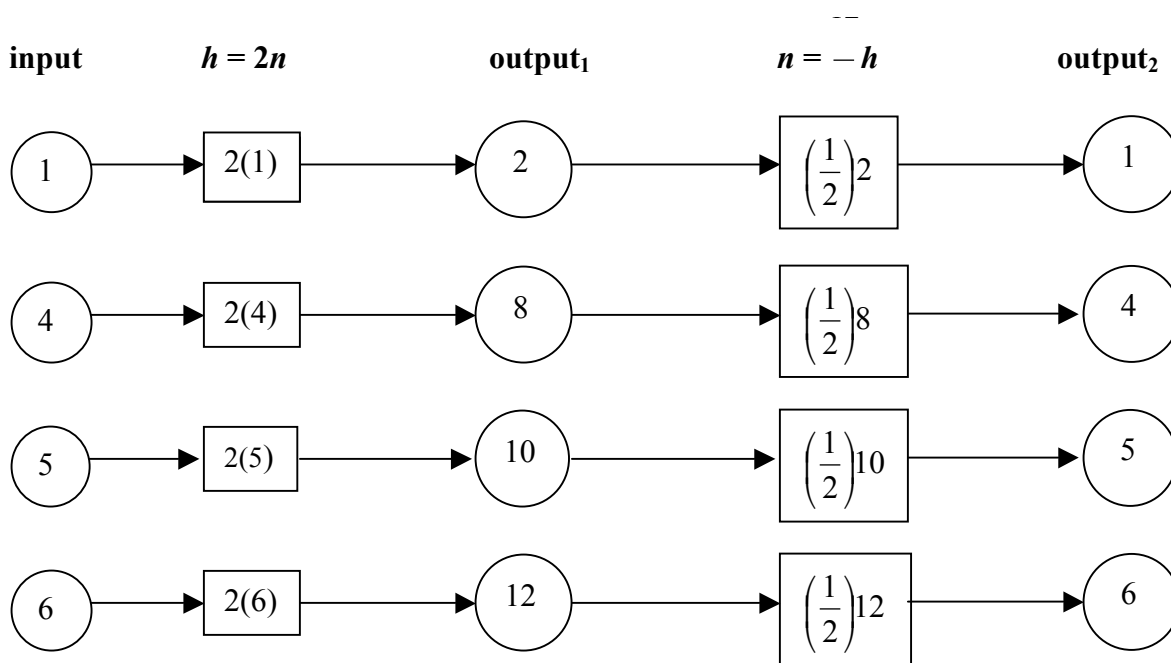
The height function $h = 2n$ and the count function $n = (1/2)h$ are closely related.

- Compare the graphs of $h = 2n$, height function, to $n = (1/2)h$, the count function. For $h = 2n$, the independent variable is n , the number of pairs of hexagons; the dependent variable is h , height of the stack. For $n = (1/2)h$, the independent variable is height of the stack, h , and the dependent variable is number of pairs of hexagons, n . If you draw these 2 graphs together on a dimensionless graph, one is the mirror image of the other across the $y = x$ line. (A MIRA or other reflector could be used to check if one relationship is the mirror image of the other.)

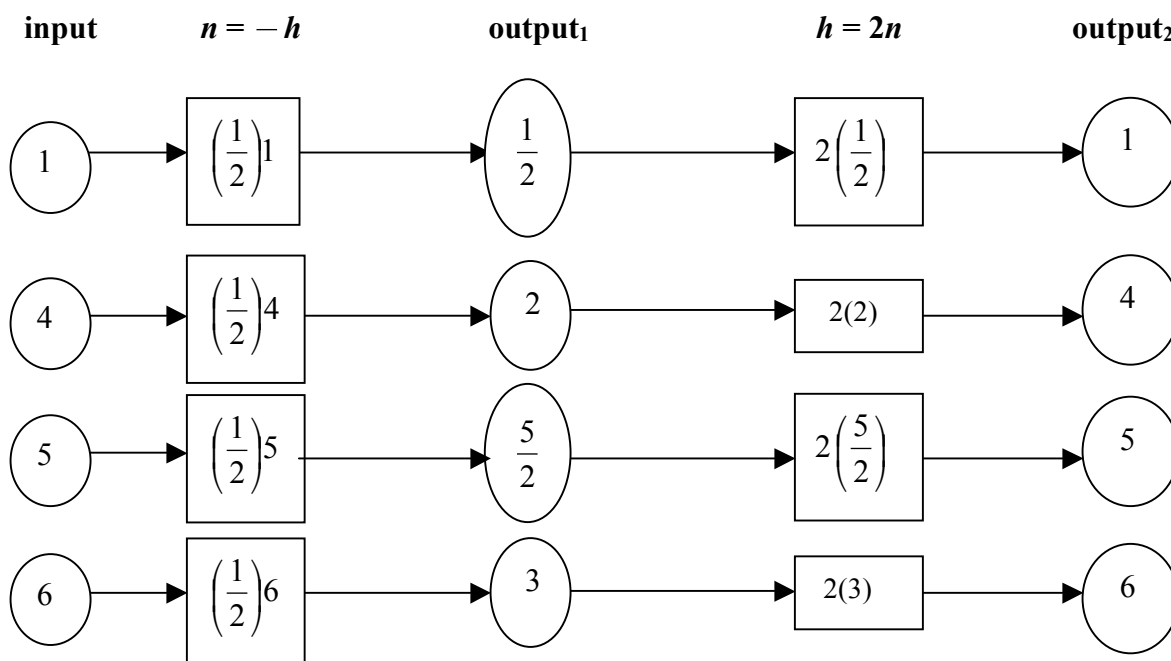


Algebra I: Strand 2. Linear Functions; Topic 3. $Y=MX$; Task 2.3.5

2. a. Complete the flow charts below.



b.



Algebra I: Strand 2. Linear Functions; Topic 3. $Y=MX$; Task 2.3.5

3. Write an explanation of what you see in the flow chart.

The output of the first function is the input of the second function. The result is that you end with the value that you started with.

This is observed regardless which function is the first function (note 2a and 2b above).

Math notes

This represents “doing” and “undoing”, which is investigated in middle school and in Algebra I. In formal mathematical terms, this process refers to finding the **inverse of a function**. The process represented in the flow charts in 2a and 2b can be represented mathematically as $f(g(x))$ for 2a and $g(f(x))$ for 2b.

TASK 2.3.5: THE RELATIONSHIP BETWEEN THE HEIGHT FUNCTION AND THE COUNT FUNCTION

For this activity, we are assuming that two hexagons are wrapped in clear plastic packages and cannot be separated. Simulate these packages by placing two yellow hexagon-shaped pattern blocks in groups of two and stack them one pair at a time.

We are investigating the relationship between the height (h) of the stack of hexagons and the number (n) of pairs of hexagons as represented in Figure I.

n = the number of pairs of hexagons in the stack

h = the height of the stack

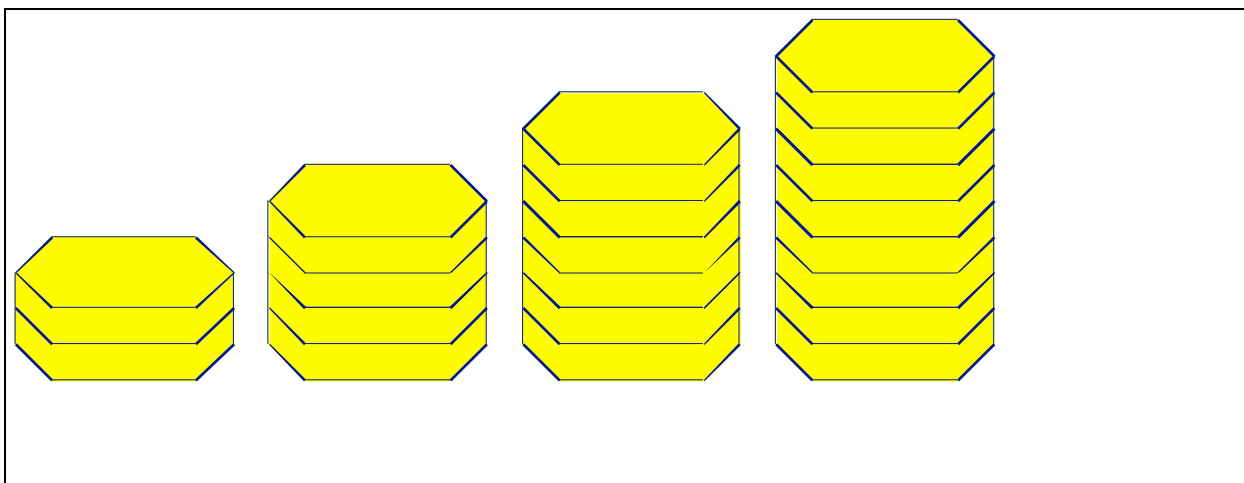


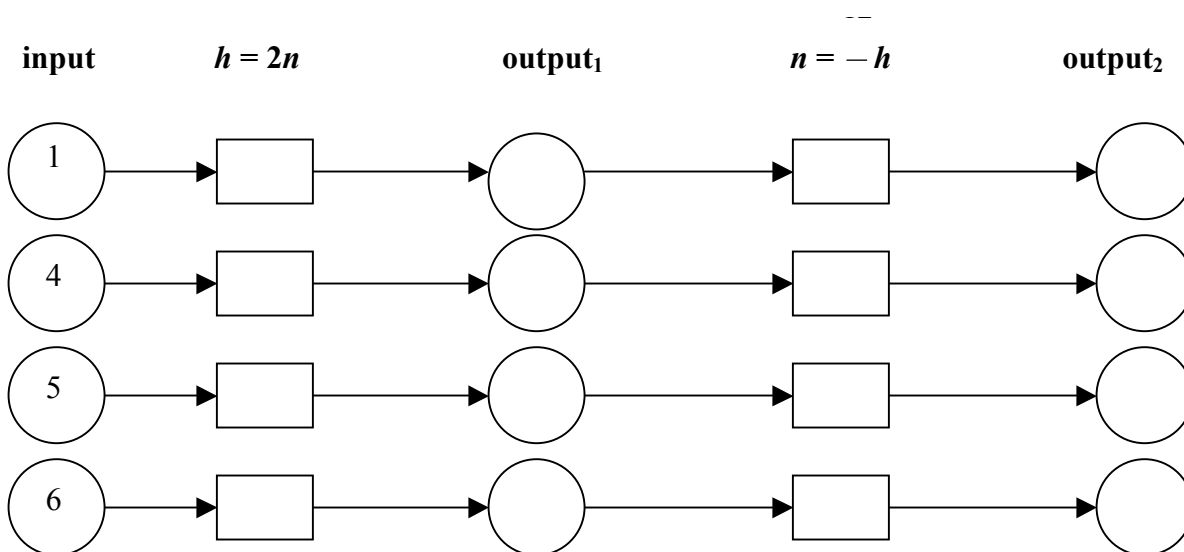
Figure I

The height function $h = 2n$ and the count function $n = \frac{1}{2}h$ are closely related.

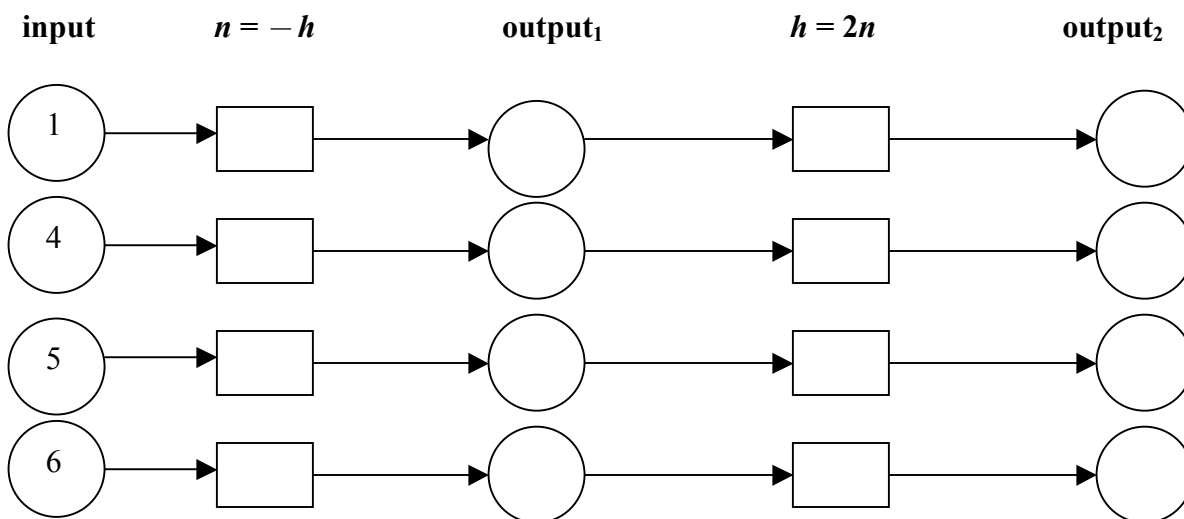
1. Compare the graphs of $h = 2n$, height function, to $n = \frac{1}{2}h$, the count function.

Algebra I: Strand 2. Linear Functions; Topic 3. $Y=MX$; Task 2.3.5

2. a. Complete the flow charts below.



b. Complete the flow chart below.



3. Write an explanation of what you see in the flow chart.