18. y = mx + b formula with Arithmetic Sequence Activity

Target: I can use the \( y = mx + b \) formula to write an equation for an arithmetic sequence.

1) Fortunately, we can use the \( y = mx + b \) formula to help us find the zero term AND write a formula to help us find any term we want to find. Here is the table from the last activity #19 Finding the 0 term with Arithmetic Sequence.

<table>
<thead>
<tr>
<th>Term #</th>
<th>50</th>
<th>51</th>
<th>52</th>
</tr>
</thead>
<tbody>
<tr>
<td>Term</td>
<td>500</td>
<td>512</td>
<td>524</td>
</tr>
</tbody>
</table>

a) In arithmetic sequences, what do ‘m’ and ‘b’ represent in the \( y = mx + b \) formula?

b) When we write a \( y = mx + b \) formula, you must have ‘m’ & ‘b’. Which one, ‘m’ or ‘b’, do we know from just using the table?

c) Show Mr. Mosiman. Checkpoint 1.

d) Since we only have ‘m’, we have to find ‘b’. That means we need information for ‘x’ & ‘y’ so the formula will help us find ‘b’.

e) What does the ‘x’ number represent? (think about what “x” represented in the DATA RoC lesson, the one with apple profits)

f) What does the ‘y’ number represent?

g) Show Mr. Mosiman. Checkpoint 2.

h) Substitute the 3 numbers into the \( y = mx + b \) formula. You should have a number for m, x, and y.

i) Now calculate to find the missing number for ‘b’.

j) What is the zero term for the arithmetic sequence?

k) How do we know ‘b’ is the zero term? (plug 0 into x, see what you get)
18 \textbf{y = mx + b formula with Arithmetic Sequence Activity}

l) In Arithmetic Sequences intro you wrote formulas in \textit{y = mx + b} form. Which two variables were turned into numbers for the equation?

m) Now write a new formula in \textit{y = mx + b} form for this sequence filling in the same two variables.

n) Write your formula in function notation.

\hspace{1cm} o) Use your formula to find the 10th and 25th terms in the arithmetic sequence.

2) \textbf{Show Mr. Mosiman. Checkpoint 3.}

3) Here is a new sequence.

<table>
<thead>
<tr>
<th>Term #</th>
<th>100</th>
<th>101</th>
<th>102</th>
<th>103</th>
</tr>
</thead>
<tbody>
<tr>
<td>Term</td>
<td>654</td>
<td>632</td>
<td>610</td>
<td>588</td>
</tr>
</tbody>
</table>

\hspace{1cm} a) Find the zero term and write a formula in \textit{y = mx + b} form for the arithmetic sequence in function form.

\hspace{1cm} b) Find the 5th and 50th terms in the sequence.

4) Practice again with this table.

<table>
<thead>
<tr>
<th>Term #</th>
<th>81</th>
<th>82</th>
<th>83</th>
<th>84</th>
</tr>
</thead>
<tbody>
<tr>
<td>Term</td>
<td>60</td>
<td>63</td>
<td>66</td>
<td>69</td>
</tr>
</tbody>
</table>

\hspace{1cm} a) Find the zero term and write a formula in \textit{y = mx + b} form for the arithmetic sequence in function form.

\hspace{1cm} b) Find the 5th and 50th terms in the sequence.
5) Write a description of how we can use the $y = mx + b$ formula to find the zero term and write a formula to find other terms in an arithmetic sequence.

6) Show Mr. Mosiman. Checkpoint 4.

Make sure Mr. Mosiman signs your green sheet.