Algebra Support
Topic: Graphing Linear Functions

Linear Functions Graph Match Activity

Teacher Instructions:
• Xerox and have students cut apart the following 2 pages of cards. When cutting, tell students to trim extra off of edges as edges will not match. Place one complete set in an envelope, one envelope per group (group size: 2 – 4).
• Provide each group with blank answer grids (2 pages) and glue sticks (or tape)
• Students are to match the 4 representations

Variations:
• Leave out of the envelope 2 or three pieces (an equation from one row, a graph from another, a table from another). Students are required to generate the missing pieces.
• If students are working on graphing, leave out all of the graph pieces and require students to generate.
• If students are working on writing equations, leave out all of the equation pieces and require students to generate.
<table>
<thead>
<tr>
<th>Verbal Description</th>
<th>Tabular Representation</th>
<th>Graph</th>
<th>Symbolic Representation</th>
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</table>
| y is always 4 more than x. | \[
\begin{array}{c|c}
\ x & \ y \\
-4 & 3 \\
-2 & 2 \\
0 & 1 \\
2 & 0 \\
4 & -1 \\
\end{array}
\] | ![Graph](image1.png) | \( y = x \) |
| This function is a direct variation with a constant of variation equal to 4. | \[
\begin{array}{c|c}
\ x & \ y \\
-4 & -5 \\
-2 & -1 \\
0 & 3 \\
2 & 7 \\
4 & 11 \\
\end{array}
\] | ![Graph](image2.png) | \( y = 4x \) |
| The input for this function is identical to the output. y is 3 less than twice a number x | \[
\begin{array}{c|c}
\ x & \ y \\
-4 & 8 \\
-2 & 6 \\
0 & 4 \\
2 & 2 \\
4 & 0 \\
\end{array}
\] | ![Graph](image3.png) | \( y = \frac{1}{2} x + 2 \) |
| y is equal to the sum of 3 and twice a number x | \[
\begin{array}{c|c}
\ x & \ y \\
-4 & -16 \\
-2 & -8 \\
0 & 0 \\
2 & 8 \\
4 & 16 \\
\end{array}
\] | ![Graph](image4.png) | \( y = -x + 4 \) |
| y is 3 less than twice a number x | \[
\begin{array}{c|c}
\ x & \ y \\
-4 & 4 \\
-2 & 4 \\
0 & 4 \\
2 & 4 \\
4 & 4 \\
\end{array}
\] | ![Graph](image5.png) | \( y = x + 4 \) |
The sum of \(x\) and \(y\) is 4.

\[
\begin{array}{c|c}
  x & y \\
-4 & 8 \\
-2 & 6 \\
 0 & 4 \\
 2 & 2 \\
 4 & 0 \\
\end{array}
\]

\[y = 2x + 3\]

When \(x\) is increased by twice \(y\), the result is 4.

\[
\begin{array}{c|c}
  x & y \\
-4 & 4 \\
-2 & 3 \\
 0 & 2 \\
 2 & 1 \\
 4 & 0 \\
\end{array}
\]

\[y = 2x - 3\]

The sum of \(x\) and \(y\) is 4.

\[
\begin{array}{c|c}
  x & y \\
-4 & 8 \\
-2 & 6 \\
 0 & 4 \\
 2 & 2 \\
 4 & 0 \\
\end{array}
\]

\[y = 4\]

The opposite of half the value of \(x\), when increased by 1 results in the value of \(y\).

\[
\begin{array}{c|c}
  x & y \\
-4 & -11 \\
-2 & -7 \\
 0 & -3 \\
 2 & 1 \\
 4 & 5 \\
\end{array}
\]

\[y = -x + 4\]

\(y\) maintains a constant value

\[
\begin{array}{c|c}
  x & y \\
-4 & 0 \\
-2 & 2 \\
 0 & 4 \\
 2 & 6 \\
 4 & 8 \\
\end{array}
\]

\[y = -\frac{1}{2}x + 1\]
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