Graphing Equations with Color Activity

Students must re-write equations into slope intercept form and then graph them on a coordinate plane.

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Between The Lines

Re-write each equation in slope intercept form.
Show your work below or on a separate sheet of paper.

1. \(2y = x\)
2. \(x + 6 = 0\)
3. \(y - 4 = x\)
4. \(y - 5 = 0\)
5. \(-2x + 3y = 18\)
6. \(y + x + 4 = 0\)
7. \(\frac{1}{2}x - y = 0\)
8. \(5 + y = 0\)
9. \(y + x = 4\)
10. \(-4x + 6y = -36\)
11. \(y + 4 = x\)
12. \(-2x - 3y = 18\)
13. \(x - 6 = 0\)
14. \(20x + 30y = 180\)

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Graph each line from the previous page.
Use the following colors to graph the indicated problem numbers.

<table>
<thead>
<tr>
<th>Red</th>
<th>Green</th>
<th>Blue</th>
<th>Purple</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problems 1 &amp; 7</td>
<td>Problems 2, 4, 8 &amp; 13</td>
<td>Problems 3, 6, 9 &amp; 11</td>
<td>Problems 5, 10, 12 &amp; 14</td>
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Between The Lines Follow Up

Answer each question based on observations from your graph and the equations.

1. What is the relationship between the red lines on the graph?

What is the relationship between the equations for the red lines (equations 1 & 7)?

How do the differences in the equations result in the differences in the lines?

2. What is the relationship between the green lines on the graph?

What is the relationship between the equations for the red lines (equations 2, 4, 8 & 13)?

How do the differences in the equations result in the differences in the lines?
3. What is the relationship between the blue lines on the graph?

What is the relationship between the equations for the red lines (equations 3, 6, 9 & 11)?

How do the differences in the equations result in the differences in the lines?

4. What is the relationship between the purple lines on the graph?

What is the relationship between the equations for the red lines (equations 5, 10, 12 & 14)?

How do the differences in the equations result in the differences in the lines?
Re-write each equation in slope intercept form.
Show your work below or on a separate sheet of paper.

1. \(2y = x\)
   \[y = \frac{1}{2}x\]

2. \(x + 6 = 0\)
   \[x = -6\]

3. \(y - 4 = x\)
   \[y = x + 4\]

4. \(y - 5 = 0\)
   \[y = 5\]

5. \(-2x + 3y = 18\)
   \[y = \frac{2}{3}x + 6\]

6. \(y + x + 4 = 0\)
   \[y = -x - 4\]

7. \(-\frac{1}{2}x - y = 0\)
   \[y = -\frac{1}{2}x\]

8. \(5 + y = 0\)
   \[y = -5\]

9. \(y + x = 4\)
   \[y = -x + 4\]

10. \(-4x + 6y = -36\)
    \[y = \frac{2}{3}x - 6\]

11. \(y + 4 = x\)
    \[y = x - 4\]

12. \(-2x - 3y = 18\)
    \[y = -\frac{2}{3}x - 6\]

13. \(x - 6 = 0\)
    \[x = 6\]

14. \(20x + 30y = 180\)
    \[y = -\frac{2}{3}x + 6\]
Between The Lines Follow Up

Answer each question based on observations from your graph and the equations.

1. What is the relationship between the red lines on the graph?

   The red lines intersect the y axis at the same point (0,0) but go off in different directions.
   They have opposite slopes.

   What is the relationship between the equations for the red lines (equations 1 & 7)?

   They are the same except for the negative sign in front of the ½ in number 7.

   How do the differences in the equations result in the differences in the lines?

   The same equations (minus the negative sign) result in the same line. The negative sign
   on #7 causes the line to descend at the same rate that #1 ascends, meaning they have
   opposite slopes.

2. What is the relationship between the green lines on the graph?

   Two are vertical and two are horizontal. The two vertical lines intersect at 6 and -6 on the x axis
   and the two horizontal lines intersect at 5 and -5 on the y axis.

   What is the relationship between the equations for the red lines (equations 2, 4, 8 & 13)?

   Equations 2 & 13 begin with x = and equations 4 & 8 being with y =.

   How do the differences in the equations result in the differences in the lines?

   The equations that begin with x = indicate that they will pass through the x axis only and
   therefore be vertical. The equations that begin with y = indicate that they will pass
   through the y axis only and therefore be horizontal. The number that comes after the
   equal sign indicates where on each axis the line will pass through (the intercept).
3. What is the relationship between the blue lines on the graph?

   The four blue lines form two sets of parallel lines, each going in opposite directions.
   They share one of two y intercepts.

   What is the relationship between the equations for the red lines (equations 3, 6, 9 & 11)?
   All of the equations have a slope of either 1 or -1 and they have a y intercept of either 4 or -4.

   How do the differences in the equations result in the differences in the lines?
   The slope of 1 and -1 causes them to be parallel or go in the opposite direction. The y intercept of 4 or -4 causes two of the lines to pass through the 4 and two pass through -4 on the y axis.

4. What is the relationship between the purple lines on the graph?

   The four purple lines form two sets of parallel lines, each going in opposite directions.
   They share one of two y intercepts.

   What is the relationship between the equations for the red lines (equations 5, 10, 12 & 14)?
   All of the equations have a slope of either 2/3 or -2/3 and they have a y intercept of either 6 or -6.

   How do the differences in the equations result in the differences in the lines?
   The slope of 2/3 and -2/3 causes them to be parallel or go in the opposite direction. The y intercept of 6 or -6 causes two of the lines to pass through the 6 and two pass through -6 on the y axis.
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