Graph Related Linear Inequalities

**Student Handout**

Step 1: Graph and sketch related inequalities

Match the related inequalities by putting the number of the inequality in the left column beside its corresponding “relative” in the right column.

1. With your partner, graph both related inequalities, the one you were given and the one your partner has, in Microsoft Math.

For help, read How to Graph an Inequality in Microsoft Math.

1. Once you have graphed the two inequalities, hand sketch a graph of your two inequalities on a sheet of graph paper. For graph paper, print this Office Excel document.
2. On your hand-sketched graph, shade the set of points that satisfies both inequalities.
3. Pick a point inside the shaded area and test to see if it satisfies both inequalities.

Step 2: Pair other inequalities

Now that you have successfully paired one set of related inequalities by finding your partner, you are ready to pair other related inequalities. Match the related inequalities listed below by putting the number of the inequality in the left column beside its corresponding “relative” in the right column.

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| 1. y < - 2x + 1 (Parallel)
 | \_\_\_\_\_ x > 0 (Perpendicular) |
| 1. y < 2x + 1 (Perpendicular)
 | \_\_\_\_\_ x > - 5 (Parallel) |
| 1. y > - 4 x -3 (Parallel)
 | \_\_\_\_\_ y < - (¼) x +3 (Parallel) |
| 1. y < - x - 3 (Perpendicular)
 | \_\_\_\_\_ y < - 4 x +3 (Parallel) |
| 1. y < 2x -3 (Parallel)
 | \_\_\_\_\_ y < - 5 (Parallel) |
| 1. y < 5 (Perpendicular)
 | \_\_\_\_\_ y < - x - 1 (Perpendicular) |
| 1. x < 5 (Parallel)
 | \_\_\_\_\_ y < - 3x + 3 (Parallel) |
| 1. y < - 2 (Parallel)
 | \_\_\_\_\_ y > - (½) x+ 1 (Perpendicular) |
| 1. y > - 3x - 2 (Parallel)
 | \_\_\_\_\_ y > (1/3 )x - 2 (Perpendicular) |
| 1. y < - 3x - 2 (Perpendicular)
 | \_\_\_\_\_ y > - (3/2)x+ 1 (Parallel) |
| 1. y < (2/3)x + 1 (Perpendicular)
 | \_\_\_\_\_ y > - (3/2)x+ 1 (Perpendicular) |
| 1. y > - (¼) x -3 (Parallel)
 | \_\_\_\_\_ y > - 2x (Parallel) |
| 1. y > x -1 (Perpendicular)
 | \_\_\_\_\_ y > 2x + 3 (Parallel) |
| 1. y < x – 2 (Parallel)
 | \_\_\_\_\_ y > x - 3 (Perpendicular) |
| 1. y > - (3/2)x (Parallel)
 | \_\_\_\_\_ y > x – 8 (Parallel) |

Step 3: Graph all the pairs of related inequalities listed in Step 2

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1. Using Microsoft Math, graph all the pairs of related inequalities you found listed above in Step 2.
2. Hand-sketch each pair of related inequalities.
3. Identify a point in the solution of the system of inequalities.