Name _____ Date _____

LESSON 6.6

# Spreadsheet Activity: Solving Systems of Inequalities in Two Variables

*For use before the lesson "Solve Systems of Linear Inequalities"*

**QUESTION** **How can you use a spreadsheet to tell whether an ordered pair is a solution of a system of linear inequalities in two variables?**

A system of linear inequalities in two variables consists of two or more linear inequalities in the same variables. An example is shown.

$x + 1.5y < 7.5$ Inequality 1

$3x - y \geq -4$ Inequality 2

A solution of a system of inequalities is an ordered pair that is a solution of each inequality in the system.

**EXAMPLE** **Use a spreadsheet to tell whether an ordered pair is a solution of a system of inequalities**

Use a spreadsheet to tell whether each ordered pair is a solution of the system of inequalities: (5, 7), (−3.5, 8), (−8, −0.5), (4, −3).

**STEP 1** Enter coordinates and formulas. Label columns *x*-coordinates, *y*-coordinates, solution of inequality 1, solution of inequality 2, and solution of system. Enter the *x*-coordinates in column A. Enter the *y*-coordinates in column B. Then enter the formulas to tell whether the ordered pair is a solution of each inequality and the system.

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | *x*-coordinates | *y*-coordinates | Solution of Inequality 1 | Solution of Inequality 2 | Solution of system |
| 2 | 5 | 7 | =A2+1.5*B2<7.5 | =3*A2−B2>=−4 | =AND(C2, D2) |
| 3 | −3.5 | 8 | =A3+1.5*B3<7.5 | =3*A3−B3>=−4 | =AND(C3, D3) |
| 4 | −8 | −0.5 | =A4+1.5*B4<7.5 | =3*A4−B4>=−4 | =AND(C4, D4) |
| 5 | 4 | −3 | =A5+1.5*B5<7.5 | =3*A5−B5>=−4 | =AND(C5, D5) |

**STEP 2** From column E below, you can conclude that (4, −3) is a solution of the system because it is a solution of *each* inequality in the system. The other ordered pairs are *not* solutions because they are not solutions of both of the inequalities.

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | *x*-coordinates | *y*-coordinates | Solution of Inequality 1 | Solution of Inequality 2 | Solution of system |
| 2 | 5 | 7 | FALSE | TRUE | FALSE |
| 3 | −3.5 | 8 | FALSE | FALSE | FALSE |
| 4 | −8 | −0.5 | TRUE | FALSE | FALSE |
| 5 | 4 | −3 | TRUE | TRUE | TRUE |

**PRACTICE** **Use a spreadsheet to tell whether each ordered pair is a solution of the system of inequalities.**

**1.** $x - y \geq -2.5$
$y > -x + 7$
(1.5, 12), (−3, 0), (7, 5), (6, −9.5)

**2.** $2.5x - y \leq 5$
$y < -3.5x$
(−5, 1.5), (0, 10), (3, −7), (−4, 5)

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# Spreadsheet Activity: Solving Systems of Inequalities in Two Variables *continued*

*For use before the lesson "Solve Systems of Linear Inequalities"*

## EXCEL

Select cell A1.

*x*-coordinates TAB *y*-coordinates TAB Solution of Inequality 1 TAB Solution of Inequality 2 TAB Solution of system ENTER

Select cell A2.

5 ENTER −3.5 ENTER −8 ENTER 4 ENTER

Select cell B2.

7 ENTER 8 ENTER −0.5 ENTER −3 ENTER

Select cell C2.

= A2 + 1.5*B2 < 7.5 ENTER

Select cell C2. From the **Edit** menu, choose **Copy.**

Select cells C3–C5. From the **Edit** menu, choose **Paste.**

Select cell D2.

= 3*A2 − B2 >= −4 ENTER

Select cell D2. From the **Edit** menu, choose **Copy.**

Select cells D3–D5. From the **Edit** menu, choose **Paste.**

Select cell E2.

=AND(C2, D2) ENTER

Select cell E2. From the **Edit** menu, choose **Copy.**

Select cells E3–E5. From the **Edit** menu, choose **Paste.**