Name _____ Date _____

LESSON 4.4

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Investigating Algebra Activity: Standard Form of a Linear Equation

For use before the lesson "Write Linear Equations in Standard Form"

Materials: graph paper

QUESTION **How can you model possible combinations of two items you can buy with a limited amount of money?**

EXPLORE **Model combinations**

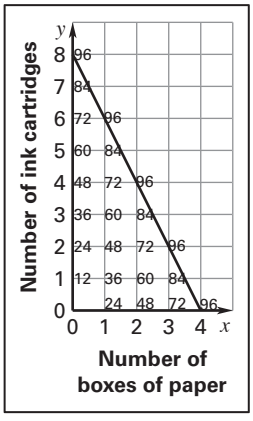
Work in a small group. Suppose your group needs to buy office supplies of paper and printer ink. Paper costs $24 per box and ink cartridges cost $12 each. Your group has $96 to spend.

STEP 1 Copy and complete the table

Number of boxes of paper	0	1	2	3	4
Number of ink cartridges	1	1	1	1	1
Total cost (dollars)					

STEP 2 Analyze graph

Total costs that represent different combinations of the two items are written at points on the graph. Looking at the graph, you can see that the cost of 2 boxes of paper and 3 ink cartridges is $84. Locate the values from your table on the graph. What do you notice about the point (4, 1)? Is it possible for the group to buy 4 boxes of paper and 1 ink cartridge?



STEP 3 Write equation of line

What does the line on the graph represent? Write the equation of the line in slope-intercept form.

DRAW CONCLUSIONS **Use your observations to complete these exercises.**

1. Each member of your group should copy the graph and choose a different amount of spending money from the following list: $48, $72, $120, and $144.
2. Draw a line that represents the combinations of items you can buy using all of your money from Exercise 1. Write an equation of the line in slope-intercept form.
3. Use the verbal model below to write an equation that models the combinations of items you can buy using your spending money as the total cost.

Ink cartridge price	•	Number of ink cartridges	+	Box of paper price	•	Number of boxes of paper	=	Total cost