

The Linear Graph Teacher Manual has 60 pages of ready to use cooperative learning activities each with related group literacy discussion questions and black line masters for instruction help with the lesson. The three sample pages provided for your review illustrate the formats for (1) Cooperative Group Learning Activities, (2) group discussion literacy sheets and (3) sample black line transparency master. Many of the student response sheets can also serve as assessments sheets or math journal entries.

Equations For Lines

*Solving Equations In Two Variables
Slope-intercept Form for a Straight Line
Standard Form Equations*

When to use this activity: Using two variables in equations is one of the first paths away from the student's usual math experience of "finding the right answer", an experience that students usually interpret as having only one answer to be THE correct answer. To solve linear equations in two variables, students must learn that it takes two numbers at a time to keep the equation balanced. One number is not enough. During the activities, students learn that more than one pair of "answers" are needed in order to guarantee that one specific equation will match to one specific table of several coordinate pair "answers."

Materials:

- Selected Decks, separated into sets depending on the number of students in classroom (see page 8 for description options), Supplement Deck cards with standard form equations
- One Activity card for each group
- Equation Mat (in back) or Equation Literacy sheet as the activity requires.
- Optional: Conjecture Sheet (in back of book)
- Optional: Graphing calculators

Activity Card for Solving Equations in Two Variables

Materials Manager: Deal the cards to all group members.

All group members sort the cards into 5 separate stacks: Graph, Slope, Equation, Point Pairs, and Yintercept. Pool the stacks so that there are 5 stacks for the whole group.

Facilitator: Put aside the Slope, Graph, and Y-intercept cards. Spread out the Equation cards on the table so that all members of the group can see all of the cards.

Materials Manager: Deal the Point Pair cards to all group members.

All members match the cards in hand to the correct Equation card on the table. Substitute each x number from the Point Pair card and calculate the y numbers.

Scribe: After all cards are matched, read the discussion questions to the group and write the responses that the whole group agrees are appropriate. All questions should have a response including the new questions to ask the rest of the class.

Speaker: Report the group's responses to the class.

Equation Literacy

The equations in the left column match the two points in the right column. Substitute both points into the equation to test that the equations stay balanced.

1. $y = -1x + 4$	a. $(-2, 6) (0, 4)$
2. $y = +1x - 3$	b. $(-1, -4) (1, -2)$
3. $y = +2x$	c. $(0, 0) (1, 2)$
4. $y = -3x - 2$	d. $(0, -2) (-2, 4)$
5. $y = -4x$	e. $(1, -4) (2, -8)$
6. $y = -2x - 4$	f. $(0, -4) (2, -8)$
7. $y = +5x + 1$	g. $(-1, -4) (-2, -9)$

Describe any connections you notice between the two columns.

Name: _____ Date: _____

Class: _____ Period: _____

Discussion questions for use with Activity Card for Solving Equations in Two Variables

1. Can different equations contain the same point? _____ Explain.

2. Can two different equations both have $(0, 0)$ on the matching Point pair card? _____ Explain.

3. Can two different equations contain two points that are the same? _____ Explain.

The group must now write two questions to ask the rest of the class. The group must decide on acceptable responses before asking the questions to the class.

1.

2.

Group Names: _____

Class: _____ Period: _____