

The Quadratic Equations 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.

Recognizing Parabola Graphs

When to use this activity: To recognize patterns in parabola graphs, students will find it helpful to look for patterns in the curve of these graphs, specifically the symmetry and increase ratio of the coordinate points. The activity directions and the Discussion Questions prompt students to identify the patterns in the coordinate points and associate the patterns with the related graphs. The Thumb Test transparency can help students readily focus on the parabola pattern.

Materials:

- Selected Decks, separated into sets depending on the number of students in classroom (see description in Getting Started for options),
- One Activity card for each group
- Point Pair and Graph Sorting Mats for each group
- Parabola Coordinate sheets (in back)
- Optional: Equation Pattern sheet for all students in the group as a pattern hint (use this if you want students to apply patterns that they recognize from the sheet)
- Optional: Conjecture Sheet (in back of book)
- Optional: Graphing calculators

Activity Card for Matching Roots to Graph Cards

Materials Manager: Deal the cards to all group members.

All group members sort the cards into separate stacks by vocabulary type. Combine the group's stacks so that there are only five stacks. Pool the stacks so that there are 5 stacks for the whole group.

Facilitator: Put aside all card stacks except the Roots and Graph cards. Place the Parabola Sorting Mat and the Roots Sorting Mat in the center of the table.

Materials Manager: Deal the Graph cards and the Roots cards to all group members.

All group members work together to place the cards in the correct location on the Parabola Sorting Mat and Roots Sorting Mat. Group members may discuss strategies for placing the cards. Next, the group members discuss strategies to match the cards on one mat with the cards on the second mat.

Scribe: After all Graphs and Roots 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.

Roots Sorting Mat

Has two roots	Has one root	Has an i
Has two roots	Has one root	Has an i

Discussion questions for use with the Activity Card for Matching Roots Cards to Graph Cards

1. What was the reason that your group used for matching the graphs to the roots?
2. Can one Root card match more than one Graph card? Explain.
3. Match the Point Pair cards to the Roots cards. Describe the reasons that you *think* they might be connected.
4. Compare the Graph, Roots, and Point Pair cards. Do you *think* that there is a connection among the Graphs, Roots, and Point Pair cards? 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.

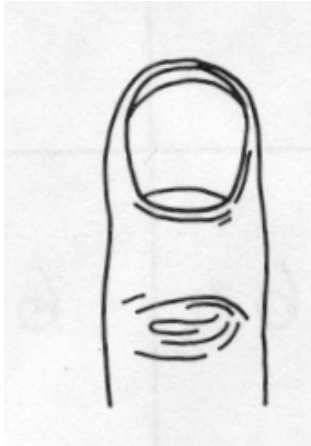
1.

2.

Group Names: _____

Class: _____ Period: _____

The Thumb Test



x	y
-2	3
-1	0
0	-1
1	0
2	3

Place your thumb over the x column.

How are the y's changing?

Does it always work? Explain.