Creating Comprehensive Student-Centered Lessons in High School Math

Inspired Instruction, LLC

Agenda

- Review Standards and Math Practices
- Discuss and Model Elements of a Comprehensive Lesson Plan
- Examine Effective Questioning and Monitoring Techniques
- Create a Comprehensive Lesson Plan
- Debrief and Discuss

Designing a Comprehensive Lesson Plan

- Identify Standards and Critical Concepts and Skills
- Design Pre-Lesson Activity (Warm-up, Do Now…)
- Design Lesson
  - Materials
  - Vocabulary
  - Worked-Out Examples for Notes
  - Follow-up Problems
  - Check for Understanding
  - Homework
- Create Extension Activity for Small Groups
- Consider Assessment – Formative and Summative

Pre-Lesson Warm-up
Solving Quadratic Equations

Consider the equation $y = x^2 + bx + 9$.

Part A

For each value of b, indicate if the quadratic equation will have 1 real root, 2 unique rational roots, 2 unique non-rational real roots, or no real roots when $y = 0$.

Select all appropriate cells in the table.

b	1 real root	2 unique rational roots	2 unique non-rational real roots	no real roots
-7	☐	☐	☐	☐
0	☐	☐	☐	☐
6	☐	☐	☐	☐
10	☐	☐	☐	☐

Part B

For what value of b will the graph of the quadratic equation have a vertex at $(1, 8)$?

Enter your answer in the box.

☐

HS-Int.2
Solve multi-step mathematical problems with degree of difficulty appropriate to the course that requires analyzing quadratic functions and/or writing and solving quadratic equations.

Activity 1

Group discussion will follow.

Worked Example #1

Solve, find the discriminant, & sketch the graph.

$x^2 - 6x + 8 = 0$

$(x - 4)(x - 2) = 0$

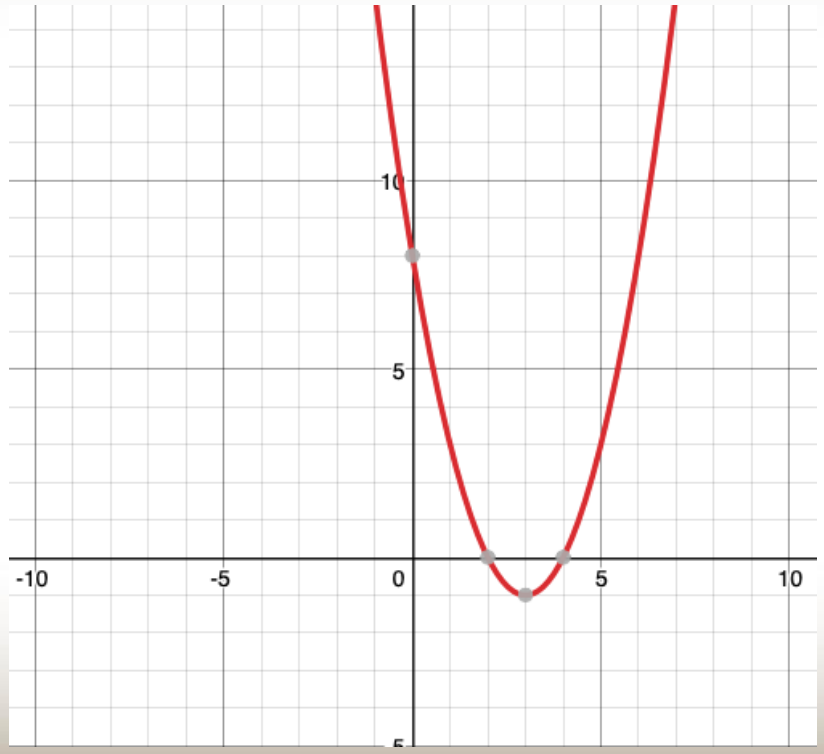
$x = 4$ or $x = 2$

Discriminant $(b^2 - 4ac)$

$(-6)^2 - 4(1)(8) =$

$36 - 32 = 4$

Graph



Brainstorming

Pair and Share:

How do you choose your “worked examples” for your lessons?

Group discussion will follow.

Check for Understanding

HS-REI.4b-2 Solve quadratic equations in one variable.
b) Recognize when the quadratic formula gives complex solutions.

Determine whether the equations shown have real solutions or no real solutions.

Drag and drop each equation into the correct box.

Real Solutions	No Real Solutions

$4x^2 - 2x = -1$

$3x^2 + 6x = -3$

$2x^2 - 5x + 7 = 0$

Assessment

Formative

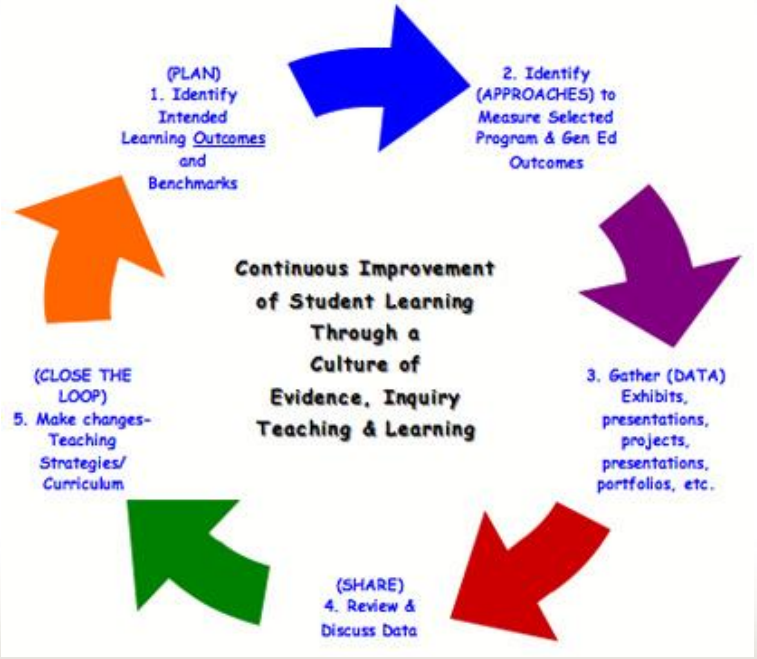
- Response Cards – White Boards, Index Cards, Signs, Magnetic Boards
- Entrance and Exit Tickets
- Problem Solving Cards
- Journal Writing
- Four Corners
- Gallery Walks
- Peer Editing or Instruction

Summative

- End of Unit Tests
- District Benchmarks
- NJSLA style questions

Observing and Monitoring

- Clip Boards
- Anecdotal Notes
- Interviews
- Conferences
- Math Portfolios with Timely and Descriptive Feedback
- Student Reflection



Create a Comprehensive Lesson Plan

Work with a partner(s) to create a comprehensive lesson plan for an upcoming unit.

Activity 4

Use the lesson plan template to map out all parts of your lesson.

Small and Whole Group Discussions will follow.

Want to Book This Workshop? Contact Us Today!

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