LEARN NC

Chutes and ladders - Quadratic equations review

This lesson is designed as a review lesson for solving quadratic equations. Students will play the game "Chutes and Ladders," modified for quadratic equations, as they review for the test.

A lesson plan for grades 9–12 Mathematics

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Learning outcomes

By the end of the lesson, the students will have reviewed how to solve quadratic equations using the four methods that we have studied in this unit: graphing, completing the square, quadratic formula, and factoring.

Teacher planning

TIME REQUIRED FOR LESSON

60 minutes

MATERIALS/RESOURCES

- “Chutes and Ladders” game boards (I used similar game boards that I found at the dollar store.)
- 1 die for each group
- 1 pack of cards with 1 quadratic equation on each card for each group
- 4 game disks per group for moving along the board

Pre-activities

Prior to this lesson, students will have spent a couple of weeks learning the different ways to solve a quadratic equation.
This lesson is designed as a review day.

Activities

1. The students will be divided into groups of four.

Learn more

RELATED PAGES

- Hyper-solving quadratic equations: This plan uses student created HyperStudio Programs to present, review, and summarize various methods of solving quadratic equations.
- Equation Math-O: Students will review different types of equations by playing Math-O.
- Working with parabolas: In this lesson, students graph a quadratic equation to find a solution to a hypothetical scenario involving event planners.

RELATED TOPICS

- Learn more about algebra, equations, mathematics,

2. Each group will be given a game board, 1 die, 1 pack of quadratic equation cards, and 4 disks to move along the board.
3. On the overhead projector, students will see directions for playing this review game. The directions will read as follows:

Quadratic “Chutes and Ladders”

1. Draw a card.
2. Roll the die.
3. If you roll a 1 or a 6, then solve your quadratic equation by completing the square.
4. If you roll a 2 or a 5, then solve your quadratic equation by using the quadratic formula.
5. If you roll a 3, then solve your quadratic equation by graphing.
6. If you roll a 4, then solve your quadratic equation by factoring if possible. If not, then solve it another way.
7. If you solve your equation correctly, then you may move on the board the number of spaces that corresponds to your roll of the die.
8. If you answer the question incorrectly, then the person to your left has the opportunity to answer your question and move your roll of the die.
9. The first person to reach the end of the board first wins the game!
10. Good luck!!

Assessment

- Students will double check each other’s answers in order to make sure that their opponents have successfully completed their questions in order to move along the board.
- At the end of the period, students will turn in their solutions, including work shown, for the questions on the cards that were used for the game.

Supplemental information

COMMENTS

This lesson can be used as a review for any topic by creating new cards. For example, the game could be used for solving systems of equations by graphing, multiplication/elimination, substitution, matrices, or Cramer’s Rule. Also, the game could be adapted to fit whatever amount of time you wanted.

North Carolina Curriculum Alignment

MATHEMATICS (2004)

Grade 9–12 — Algebra 1

quadratic equations, and review activities.

Help

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Legal

- **Goal 4**: Algebra - The learner will use relations and functions to solve problems.
  - **Objective 4.02**: Graph, factor, and evaluate quadratic functions to solve problems.

Grade 9–12 — Algebra 2

- **Goal 2**: Algebra - The learner will use relations and functions to solve problems.
  - **Objective 2.02**: Use quadratic functions and inequalities to model and solve problems; justify results.
    - Solve using tables, graphs, and algebraic properties.
    - Interpret the constants and coefficients in the context of the problem.
  - **Objective 2.04**: Create and use best-fit mathematical models of linear, exponential, and quadratic functions to solve problems involving sets of data.
    - Interpret the constants, coefficients, and bases in the context of the data.
    - Check the model for goodness-of-fit and use the model, where appropriate, to draw conclusions or make predictions.

Grade 9–12 — Integrated Mathematics 2

- **Goal 3**: Data Analysis and Probability - The learner will collect, organize, and interpret data to solve problems.
  - **Objective 3.02**: Create and use, for sets of data, calculator-generated models of linear, exponential, and quadratic functions to solve problems.
    - Interpret the constants, coefficients, and bases in the context of the data.
    - Check the model for goodness-of-fit and use the model, where appropriate, to draw conclusions or make predictions.
- **Goal 4**: Algebra - The learner will use relations and functions to solve problems.
  - **Objective 4.02**: Use quadratic functions to model and solve problems; justify results.
    - Solve using tables, graphs, and algebraic properties.
    - Interpret the constants and coefficients in the context of the problem.

Grade 9–12 — Integrated Mathematics 3

- **Goal 3**: Algebra - The learner will use relations and functions to solve problems.
  - **Objective 3.02**: Use quadratic functions and inequalities to model and solve problems; justify results.
    - Solve using tables, graphs, and algebraic properties.
    - Interpret the constants and coefficients in the context of the problem.

Grade 9–12 — Integrated Mathematics 4

- **Goal 2**: Geometry and Measurement - The learner will describe geometric figures in the coordinate plane algebraically.
  - **Objective 2.01**: Use the quadratic relations (parabola, circle, ellipse, hyperbola) to model and solve problems; justify results.
    - Solve using tables, graphs, and algebraic properties.
    - Interpret the constants and coefficients in the context of the problem.

Grade 9–12 — Technical Mathematics 2

- **Goal 2**: Algebra - The learner will use relations and functions to solve problems.
  - **Objective 2.01**: Use quadratic equations to model and solve problems; justify results.

- Solve using tables, graphs, and algebraic properties.
- Interpret the constants and coefficients in the context of the problem.

- **Objective 2.03**: Create, interpret, and analyze best-fit models of linear, exponential, and quadratic functions to solve problems.
  - Interpret the constants, coefficients, and bases in the context of the data.
  - Check the model for goodness-of-fit and use the model, where appropriate, to draw conclusions or make predictions.
