

Fluency Activities

Algebra I

Algebra I Fluency Activities

Math fluency activities in Imagine+ Math help students develop accuracy, efficiency, and flexibility in mathematical thinking. They provide structured practice to strengthen number sense, reinforce foundational skills, and build automaticity with key math concepts. Fluency activities increase student confidence by engaging them in problem-solving, developing a deeper understanding of mathematical relationships, and preparing them for more complex tasks.

Some activities require materials found in your classroom.

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Activity 1

Polynomial Relay

Topic/Concept

Simplify and Factor Polynomials

Objective

Students will simplify polynomial expressions and factor polynomials by identifying common factors and using algebraic reasoning.

Materials

- Whiteboards or paper
- A list of polynomial expressions to simplify/factor

Steps

1. Divide the class into teams.
2. Project or call out a polynomial to simplify or factor.
3. Allow teams to solve quickly, showing each step.
4. First correct answer earns a point; continue for several rounds.

Resource List

- A list of polynomial expressions to simplify/factor:

Simplify:

$$3x + 7x - 5$$

$$4a - 2a + 9$$

$$2(3x + 5) - (x - 4)$$

$$5y - 3(2y - 1)$$

$$6m + 2(m - 7)$$

Factor:

$$6x + 12$$

$$8y - 4$$

$$9a + 15$$

$$10m - 25$$

$$12p + 18q$$

$$x^2 + 7x$$

$$4t^2 - 12t$$

$$3n^2 - 6n$$

$$2x^2 + 10x + 12$$

$$x^2 + 6x + 9$$

Activity 2

Slope Match-Up

Topic/Concept

Identify Lines from Linear Equations

Objective

Students will match linear equations to their graphs by identifying slope and y -intercept.

Materials

- Index cards with linear equations in slope-intercept form
- Index cards with graphs of lines
- Dry-erase boards (optional)

Steps

1. **Give a Card:** Distribute equation cards to half the class and graph cards to the other half.
2. **Find Your Match:** Students circulate the room to find their “match” (equation $\leftrightarrow$ corresponding graph).
3. **Confirm and Explain:** Once matched, pairs explain why they belong together using slope and y -intercept.
4. **Extend the Challenge:** Rotate cards and repeat with new partners for additional practice.

Resource List

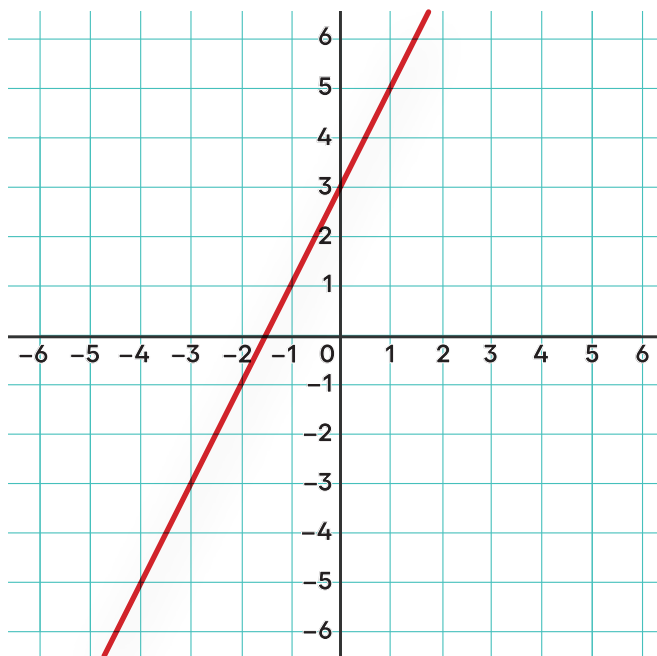
- Linear equation cards
- Linear equation graph cards

Linear Equation Cards and Linear Equation Graph Cards

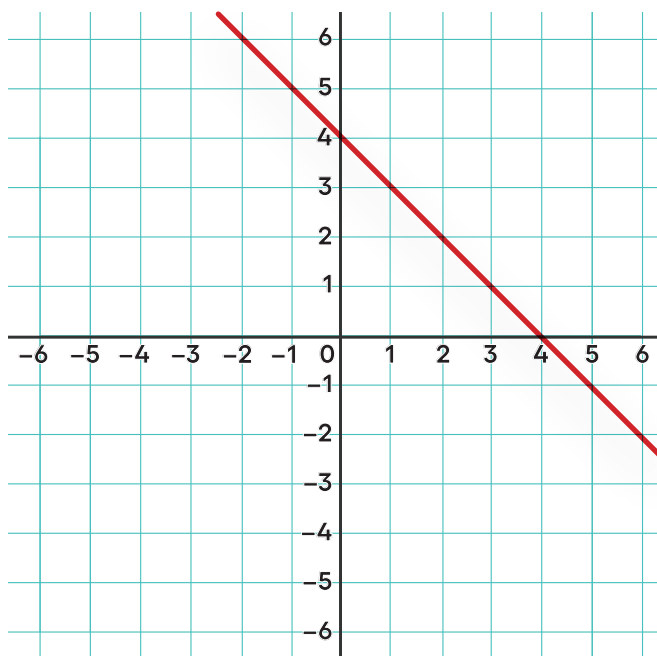
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Instructions for teacher: Fold equation cards along light gray dotted line if desired.

$$y = 2x + 3$$



$$y = -x + 4$$

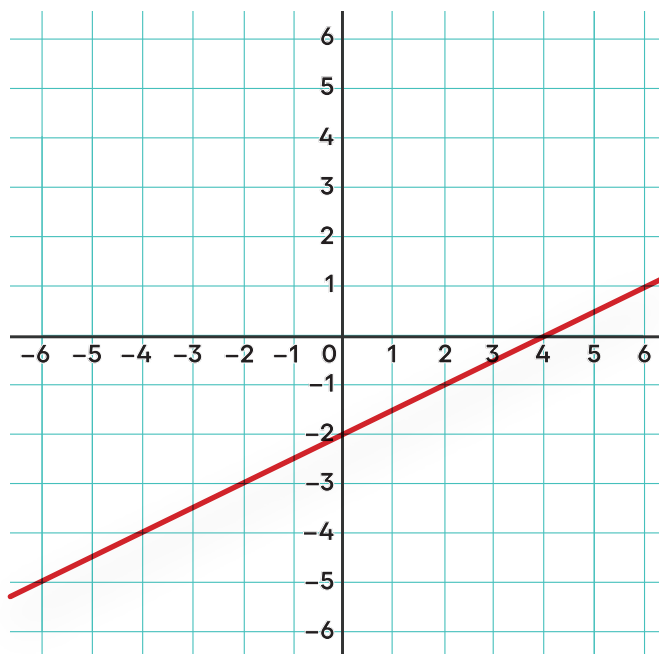


Linear Equation Cards and Linear Equation Graph Cards

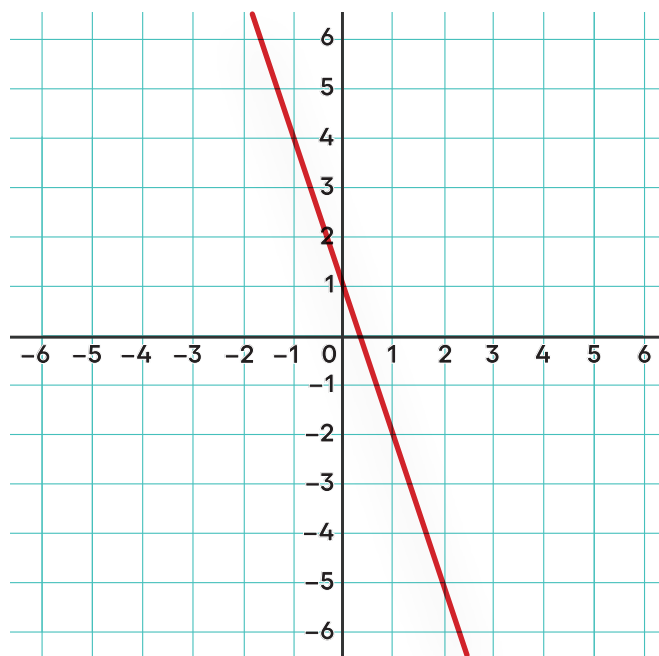
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Instructions for teacher: Fold equation cards along light gray dotted line if desired.

$$y = \frac{1}{2}x - 2$$



$$y = -3x + 1$$

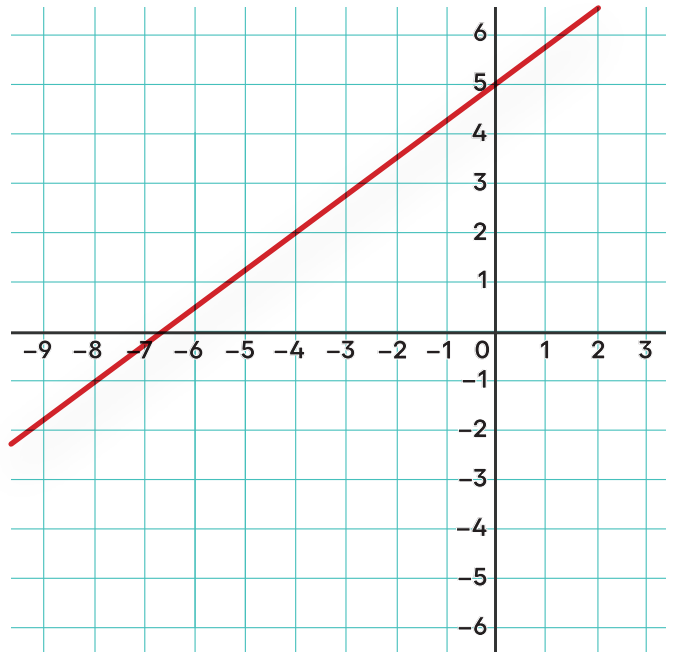


Linear Equation Cards and Linear Equation Graph Cards

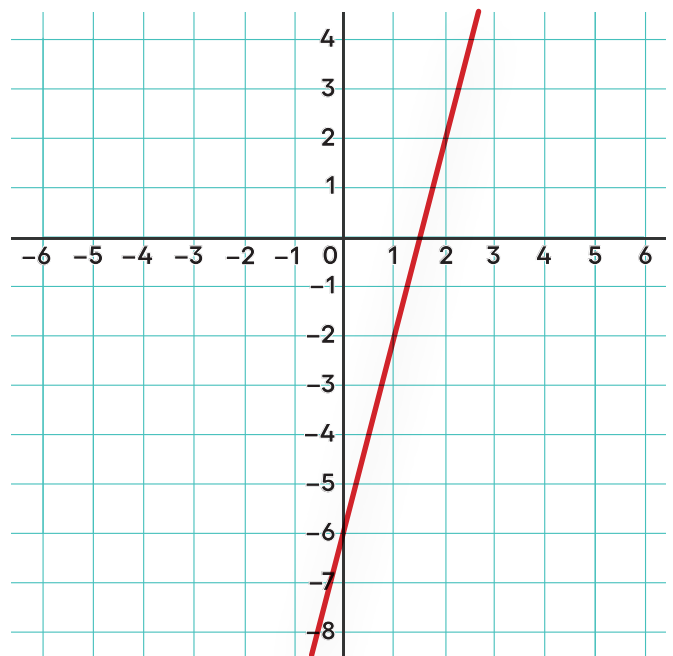
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Instructions for teacher: Fold equation cards along light gray dotted line if desired.

$$y = \frac{3}{4}x + 5$$



$$y = 4x - 6$$

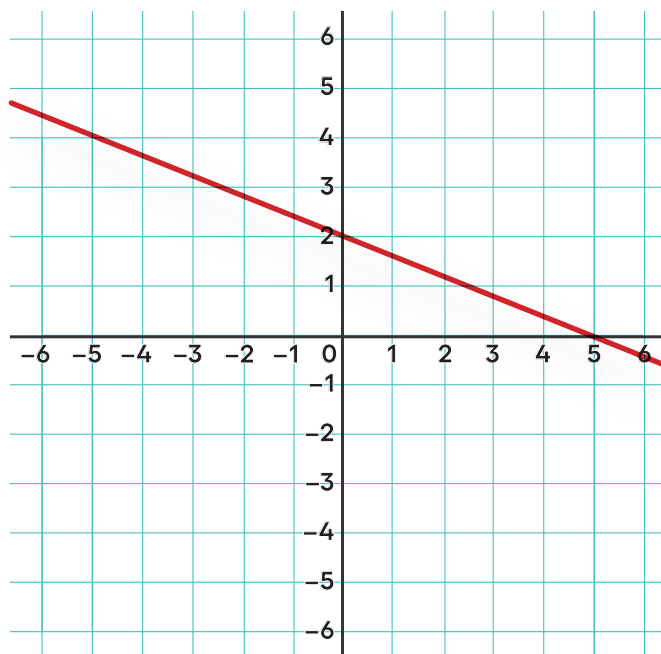


Linear Equation Cards and Linear Equation Graph Cards

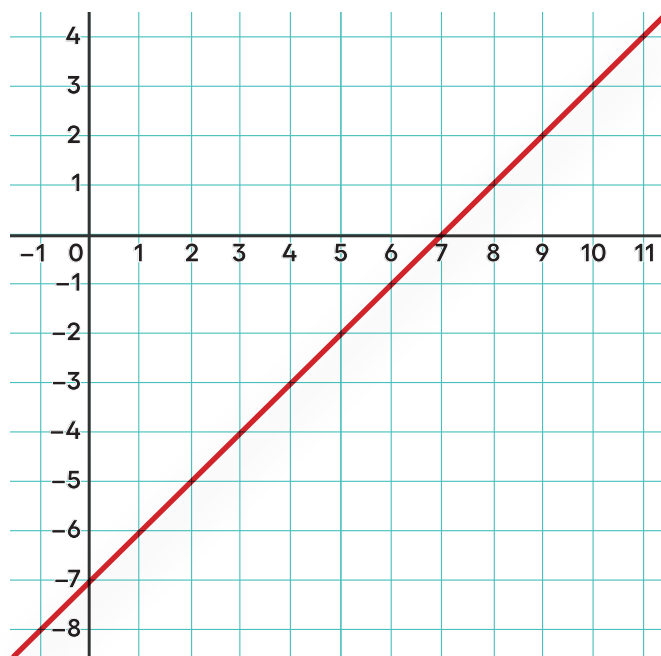
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Instructions for teacher: Fold equation cards along light gray dotted line if desired.

$$y = -\frac{2}{5}x + 2$$



$$y = x - 7$$

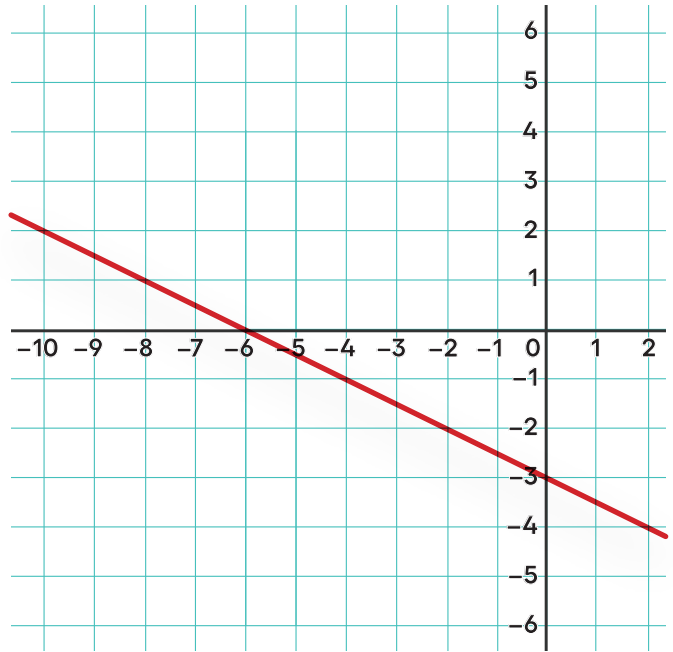


Linear Equation Cards and Linear Equation Graph Cards

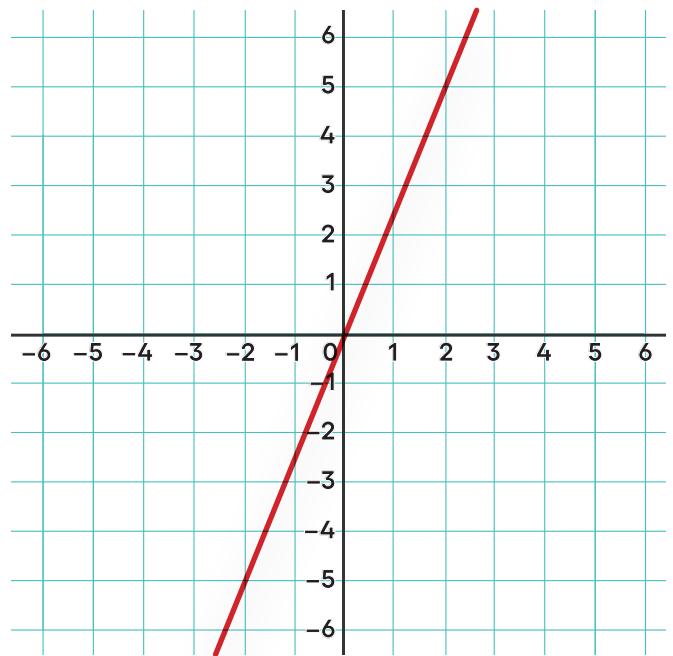
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Instructions for teacher: Fold equation cards along light gray dotted line if desired.

$$y = -\frac{1}{2}x - 3$$



$$y = \frac{5}{2}x + 0$$



Activity 3

Parabola Puzzle

Topic/Concept

Identify Parabolas from Quadratic Equations

Objective

Students will match quadratic equations to their graphs by identifying vertex, direction of opening, and intercept.

Materials

- Cards with quadratic equations
- Cards with corresponding graphs
(*Optional: Cut the pairs of cards in a way that the two “fit together” like puzzle pieces.*)
- Scissors, envelopes (for prep)

Steps

1. **Pass Out the Puzzles:** Distribute sets of mixed-up equation and graph cards.
2. **Fit the Pieces:** Students work in pairs to match equations to graphs by identifying vertex, direction of opening, and intercept.
3. **Explain the Pairs:** Students justify matches by stating key features.
4. **Optional:** Create challenge cards with real-world contexts (e.g., projectile motion).

Resource List

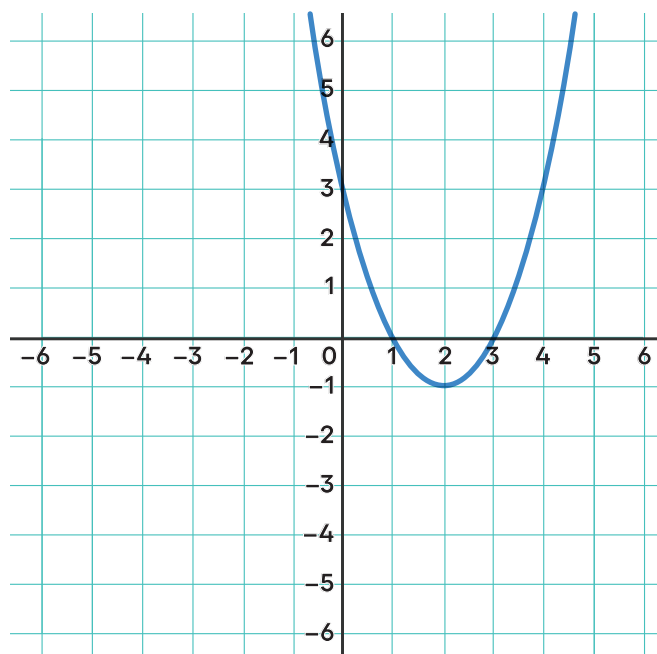
- Quadratic equation cards
- Quadratic equation graph cards

Quadratic Equation Cards and Quadratic Equation Graph Cards

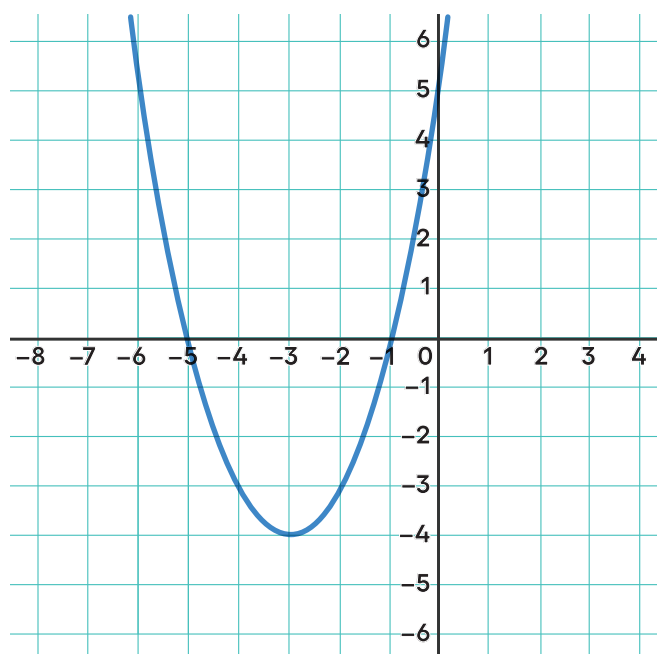
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Instructions for teacher: Fold equation cards along light gray dotted line if desired.

$$y = x^2 - 4x + 3$$



$$y = x^2 + 6x + 5$$

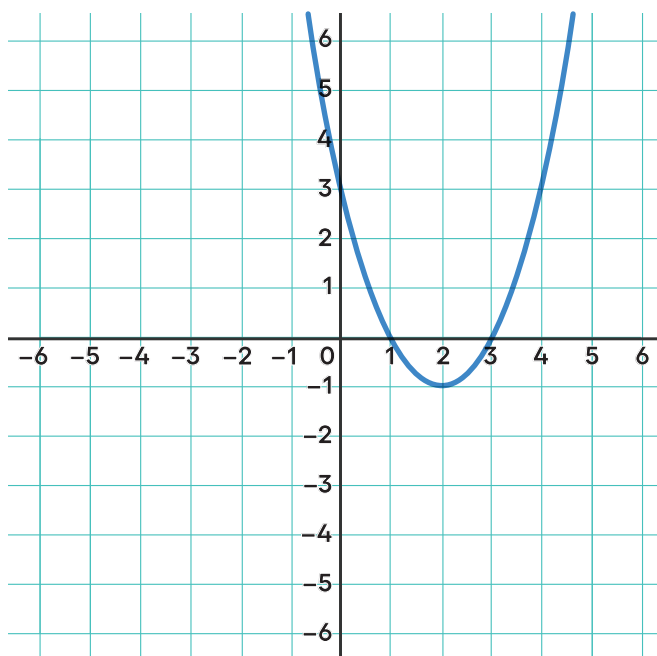


Quadratic Equation Cards and Quadratic Equation Graph Cards

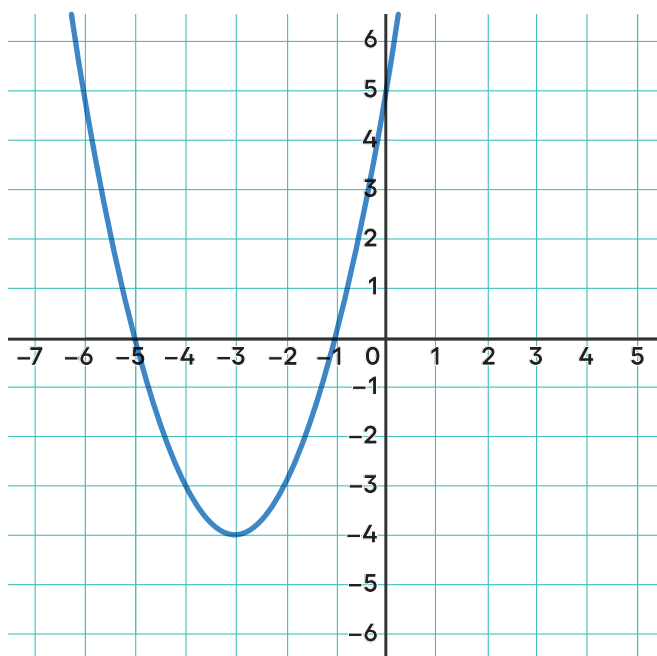
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Instructions for teacher: Fold equation cards along light gray dotted line if desired.

$$y = (x - 2)^2 - 1$$



$$y = (x + 3)^2 - 4$$

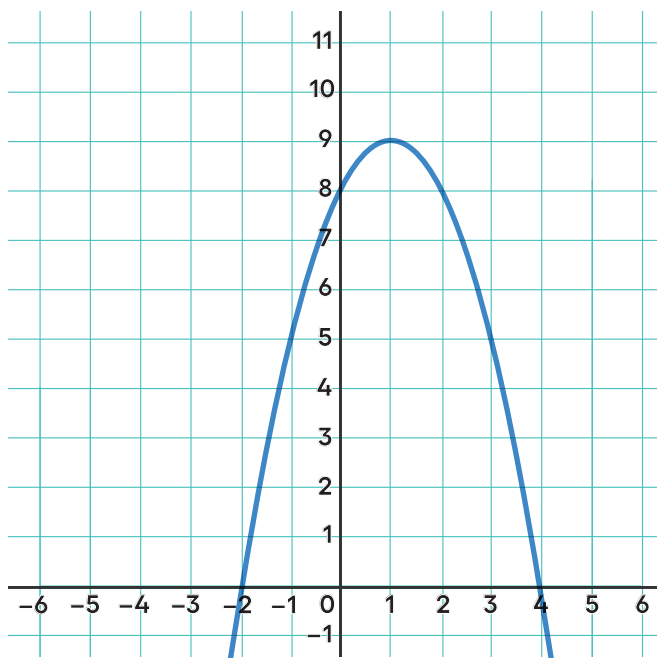


Quadratic Equation Cards and Quadratic Equation Graph Cards

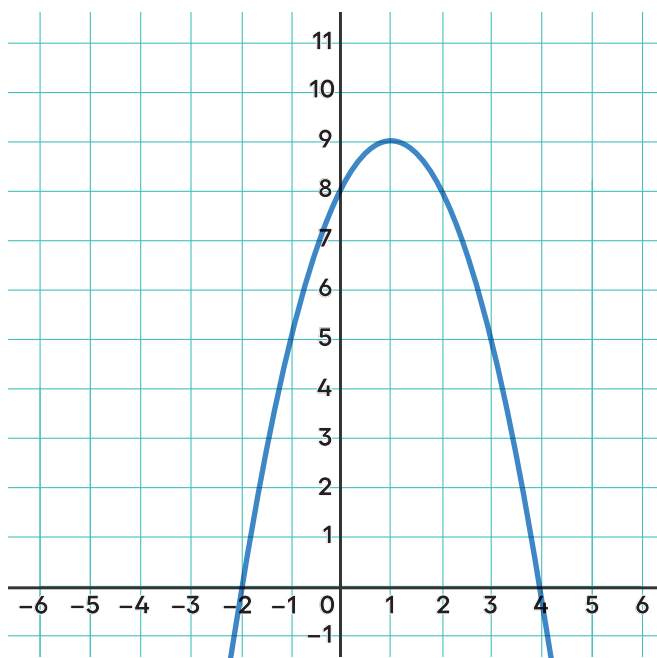
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Instructions for teacher: Fold equation cards along light gray dotted line if desired.

$$y = -x^2 + 2x + 8$$



$$y = -(x - 1)^2 + 9$$

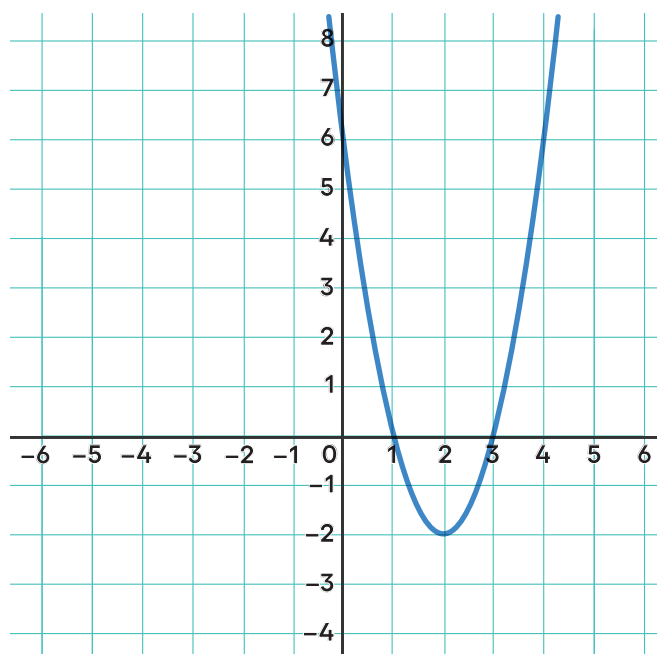


Quadratic Equation Cards and Quadratic Equation Graph Cards

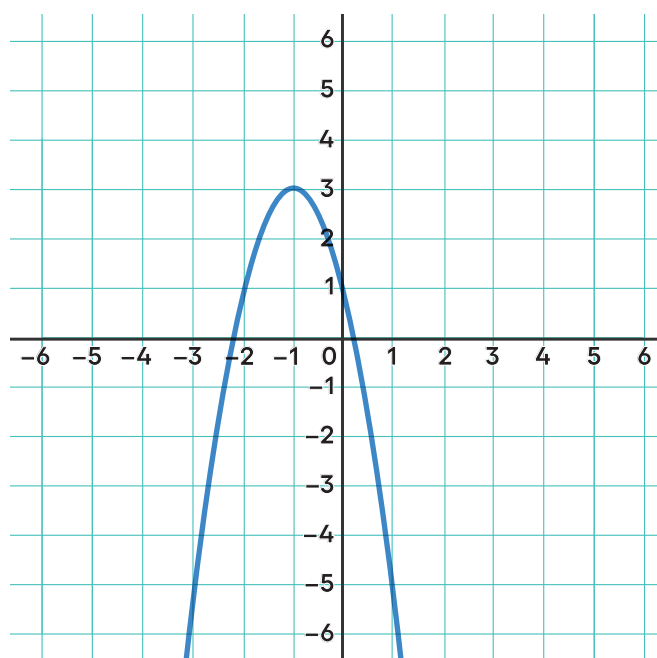
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Instructions for teacher: Fold equation cards along light gray dotted line if desired.

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



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

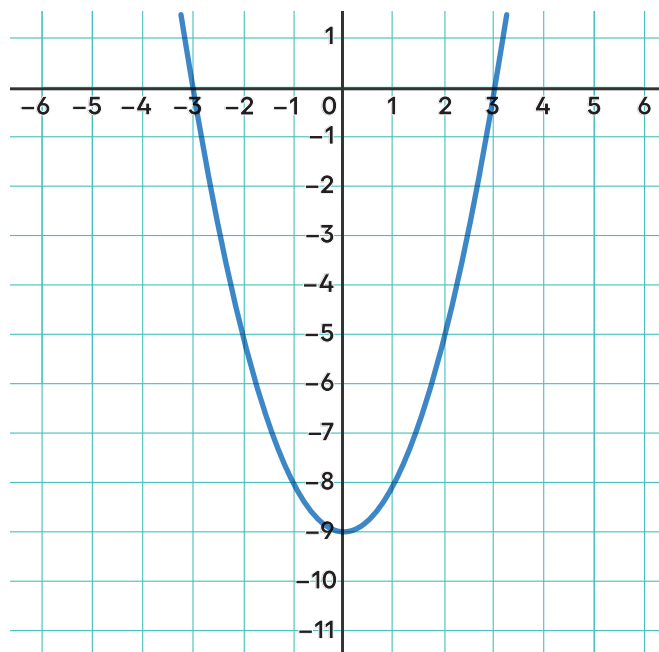


Quadratic Equation Cards and Quadratic Equation Graph Cards

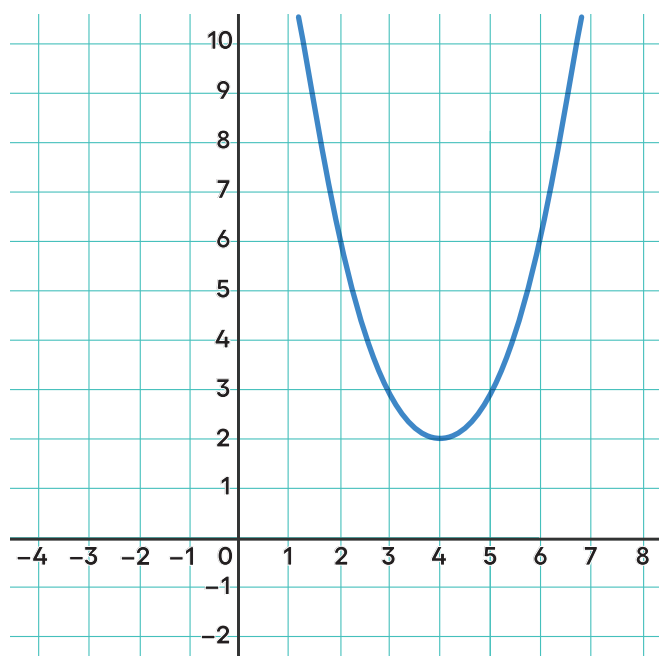
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Instructions for teacher: Fold equation cards along light gray dotted line if desired.

$$y = x^2 - 9$$



$$y = (x - 4)^2 + 2$$



Activity 4

Growth or Decay?

Topic/Concept

Classifying Exponential Functions

Objective

Students will classify exponential functions as growth or decay by analyzing the base and explain how the base affects the graph.

Materials

- Notecards with exponential functions, e.g., $y = 2^x$, $y = 0.5^x$, $y = 3(0.8)^x$
- Chart labeled “Growth” and “Decay”

Steps

1. **Introduce:** Present one function card to each student.
2. **Classify:** Students classify their function as growth or decay and place it in the correct column.
3. **Explain It:** Discuss the base of the exponent and how it determines growth/decay. *(Optional: Place a couple incorrectly on the chart and ask students to identify them.)*
4. **Extend:** Sketch graphs of two examples from each category.

Resource List

- Sample exponential functions to use:

Growth (base > 1)	Decay (0 < base < 1)
$y = 2^x$	$y = (0.5)^x$
$y = 3^x$	$y = (0.8)^x$
$y = (1.5)^x$	$y = (0.9)^x$
$y = (1.2)^x$	$y = (0.75)^x$
$y = (1.1)^x$	$y = (0.6)^x$
$y = 4(1.3)^x$	$y = 5(0.8)^x$
$y = 10(1.05)^x$	$y = 12(0.95)^x$
$y = 2(1.8)^x$	$y = 3(0.7)^x$
$y = 0.5(2.5)^x$	$y = 20(0.85)^x$
$y = 7(1.4)^x$	$y = 0.5(0.4)^x$
$y = 12(1.15)^x$	$y = 9(0.9)^x$
$y = 3(2)^x$	$y = 2(0.2)^x$



Topic/Concept

Building and Balancing Budgets

Objective

Students will create a monthly budget by subtracting expenses from income, determine surplus or deficit, and explain adjustments to balance the budget.

Materials

- Blank monthly budget template
- Cards with expenses and income sources

Steps

1. **Get a Job:** Students receive an income card and several expense cards.
2. **Create a Budget:** Using the budget template, they record income, subtract expenses, and determine surplus or deficit.
3. **Discuss Decisions:** Students focus discussions around “What could you adjust to balance your budget?”
4. **Extend:** Ask students to consider savings goals or unexpected expenses.

Resource List

- Simple Monthly Budget Template
- Income and Expense Cards

Simple Monthly Budget Template

Name: _____ Date: _____

Income

Income Source

Amount

1. _____ \$ _____

2. _____ \$ _____

Total Income \$ _____

Expenses

Expense

Amount

1. _____ \$ _____

2. _____ \$ _____

3. _____ \$ _____

4. _____ \$ _____

5. _____ \$ _____

Total Expenses \$ _____

Final Balance

Total Income \$ _____

Minus Total Expenses – \$ _____

Surplus/Deficit \$ _____ Circle one: surplus deficit

If deficit, what would you change? _____



Income and Expense Cards

Page 1 of 2

Instructions for teacher: Make one copy of the set for each group.

INCOME	PART-TIME JOB \$1,200/month	INCOME	WEEKEND JOB \$900/month
INCOME	AFTER-SCHOOL JOB \$750/month	INCOME	SUMMER SAVINGS (monthly) \$600/month
INCOME	SIDE GIGS \$1,050/month	INCOME	INTERNSHIP \$1,400/month
EXPENSE	RENT/FAMILY CONTRIBUTION \$450	EXPENSE	GROCERIES \$200
EXPENSE	PHONE BILL \$45	EXPENSE	TRANSPORTATION \$80
EXPENSE	UTILITIES \$120	EXPENSE	HEALTH/MEDICINE \$40



Income and Expense Cards

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Instructions for teacher: Make one copy of the set for each group.

EXPENSE	EATING OUT \$60	EXPENSE	STREAMING/MUSIC \$15
EXPENSE	CLOTHES \$50	EXPENSE	ENTERTAINMENT \$35
EXPENSE	HOBBIES/GAMES \$25	EXPENSE	GYM/SPORTS \$30
EXPENSE	SAVINGS GOAL \$100	EXPENSE	EMERGENCY FUND \$50
EXPENSE	GIFT/CHARITY \$20		



