Use Equations to Extend Patterns

TOPIC 4 / MATHEMATICS

Write. Represent. Explain.

45-minute lesson • Original classroom examples

What will we learn today?

- Check a rule with input–output tables and predict.
- Use an equation, inequality, table, or diagram to justify your reasoning.
- Explain your answer using mathematical vocabulary and units.

5-minute warm-up

Discuss with a partner: What previous algebra or number skill will help with today’s lesson?

Show one calculation or example in your notebook.

Why this lesson matters

A parking garage starts at $6 and adds $3 per hour.

What is known? What is unknown? Which quantities are related?

Represent the relationship

A parking garage starts at $6 and adds $3 per hour.

$$C = 6 + 3h$$

Explain the meaning of the variable, numbers, and operations.

Worked example

Find C for h = 0, 2, 4.

$$C = 6, 12, 18$$

Check: Does the result match the original relationship?

Independent practice

1. A pattern follows $y = 4x - 1$. Find y at $x = 6$.

2. The ordered pairs are $(0,5),(1,8),(2,11)$. Write the rule.

Check your reasoning

Question 1

$$y = 23$$

Question 2

$$y = 3x + 5$$

Group challenge

Why must a proposed equation match every known pair?

Each group member must explain one step or defend one claim.

Group challenge • solution

One mismatch disproves the rule

Compare methods. Does the answer make sense in context?

Additional Practice — If Time Allows

The ordered pairs are (0,5),(1,8),(2,11). Write the rule.

Extension: Create a similar problem with different numbers.

2-minute exit ticket

For y = 2x + 7, find y at x = 5.

Work independently. Show enough steps to explain your thinking.

Exit ticket • answer

$$y = 17$$

Reflect: What would you check before moving to the next lesson?