Independent and Dependent Variables

TOPIC 4 / MATHEMATICS

Write. Represent. Explain.

45-minute lesson • Original classroom examples

What will we learn today?

- Identify input and output quantities and the direction of dependence.
- 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 sports rental costs $7 per hour. Which quantity is the input?

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

Represent the relationship

A sports rental costs $7 per hour. Which quantity is the input?

$$C = 7h$$

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

Worked example

Name the independent and dependent variables in C = 7h.

h : input C : cost

Check: Does the result match the original relationship?

Independent practice

1. Each notebook costs $3. Write total price for n notebooks.

2. A garden grows 2 cm each week from 5 cm. Which quantity depends on time?

Check your reasoning

Question 1

$$P = 3n$$

Question 2

$$H = 5 + 2w$$

Group challenge

For C = 7h, make a table for h = 0, 1, 2, 3.

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

Group challenge • solution

$$C = 0, 7, 14, 21$$

Compare methods. Does the answer make sense in context?

Additional Practice — If Time Allows

A garden grows 2 cm each week from 5 cm. Which quantity depends on time?

Extension: Create a similar problem with different numbers.

2-minute exit ticket

Write a formula for distance at 4 km per hour.

Work independently. Show enough steps to explain your thinking.

Exit ticket • answer

$$d = 4t$$

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