

What Changes What?

Identify input and output from actual tables and graphs.

GRADE 6 • TEKS 6.6.A

6.6.A "identify independent and dependent quantities from tables and graphs;"

NAME _____

DATE _____

Connect the representations

The independent quantity is the input used to describe a relationship. The dependent quantity is the modeled output. Read the context and labels; the first table column is not automatically the input. Time can be an input without anyone controlling it.

Bags	Pencils
1	3
2	6
3	9

Worked example

Use this table: each bag holds 3 pencils. Identify both quantities.

The bag count is the input. The total pencils follow from the bag count.

Independent: bags (count). Dependent: pencils (count).

Use the supplied tables and graphs. Show calculations and explain the relationships. Label plotted points as requested.

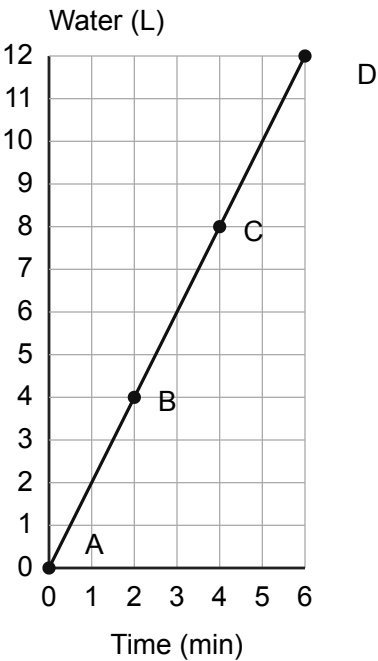
1. A table of purchases

The table records same-price water bottles purchased. Identify the independent quantity and dependent quantity, with units. Explain which value determines the other.

Bottles	Cost (\$)
1	2
3	6
5	10

2. A graph of filling

The graph models water entering an empty tank. Identify the independent and dependent quantities. Read point B and explain it in context.



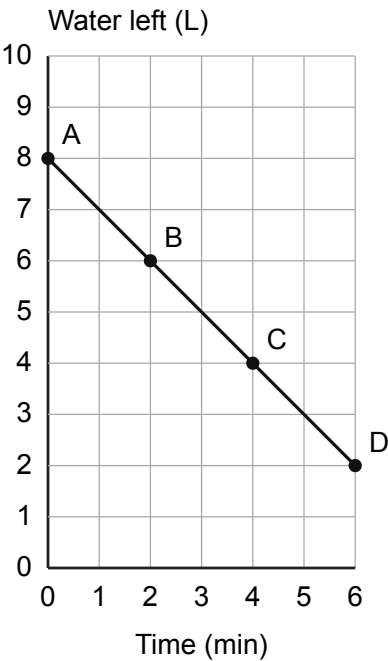
3. Column order is not the rule

This table puts plant height first. Height is measured as days pass. Identify both quantities and explain why the first column is not the independent quantity here.

Height (cm)	Days elapsed
3	0
4	2
5	4
6	6

4. A decreasing output

This graph models water draining from a tank. Identify the independent and dependent quantities. Does a decreasing output change which quantity is dependent? Explain.



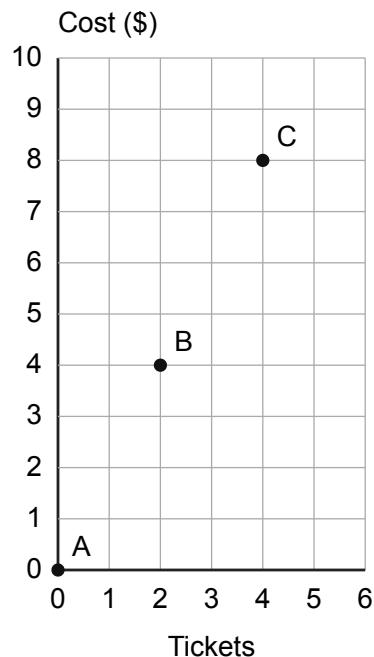
5. Match table and graph roles

Each ticket costs \$2. Identify both quantities from the table. State which quantity belongs on the horizontal axis and which on the vertical axis of a graph using tickets as the input.

Tickets	Total cost (\$)
0	0
2	4
4	8

6. Interpret a plotted purchase

The graph shows the same ticket rule as Task 5. Identify the quantities from the axis labels. Explain point C, including both quantities and their units.

**7. Challenge a claim**

A student says water amount must be independent because the tank owner chooses its size. Use the filling graph in Task 2 to explain why that does not describe the quantities in that graph.

Accept equivalent wording with correct quantities and units. Roles are defined by the stated model, not by column position, a claim of absolute causation, or whether the output increases.

Task 1

Independent: bottles purchased (count).
Dependent: total cost (dollars). The bottle count determines the cost.

Task 2

Independent: elapsed time (minutes). Dependent: water amount (liters). $B = (2,4)$: after 2 minutes, the tank holds 4 liters.

Task 3

Independent: days elapsed. Dependent: plant height (cm). The model tracks height over time; column order does not decide the roles.

Task 4

Independent: time (minutes). Dependent: water remaining (liters). No; the remaining water is still modeled as a function of elapsed time.

Task 5

Independent/horizontal: ticket count.
Dependent/vertical: total cost (\$). Cost is determined by the number of tickets. Check that the representation and explanation agree with the given quantities.

Task 6

Independent: tickets (count); dependent: cost (\$). $C = (4,8)$, so 4 tickets cost \$8. Check that the representation and explanation agree with the given quantities.

Task 7

Task 2 relates elapsed time to water amount. Time is the independent input; liters in the tank are the dependent output. Tank size is not a plotted variable.