

# Learn About

## Using Algebra: Table of Values

A **table of values** shows the relationship between two sets of variables. The relationship between the variables is described by a rule. The rule for a table of values can be represented by an equation. Sometimes there are missing numbers in a table of values. You can use equations to find the missing numbers.

To find a missing number in a table of values, follow these steps:

- Compare each pair of values in the table.
- Write an equation that describes the relationship between the pairs of values.
- Solve the equation to find the missing number.

Look at the table of values. Try to find the missing number.

Cathy made this table in maths class. What is the value of  $y$  when  $x$  is 4?

$x$	1	2	3	4	5
$y$	7	12	17	?	27

Find the missing number. First, write an equation to describe the relationship between each pair of  $x$  and  $y$  values. Then solve the equation to find the missing number.

$$(1 \times 5) + 2 = 7 \quad (2 \times 5) + 2 = 12 \quad (3 \times 5) + 2 = 17$$
$$(5 \times 5) + 2 = 27$$

The equation for this table is  $y = 5x + 2$ .

$$(5 \times 4) + 2 = 22$$

The missing number is 22.



A **table of values** shows the relationship between two sets of variables. The relationship between the variables is described by a rule. The rule can be written as an equation. The equation for a table of values can be used to find missing numbers.

Look at the answer choices for each question.  
Read why each answer choice is correct or not correct.

1. The table shows the relationship between the teacher population and student population at Ashland Secondary School for the last five years. What is the missing number?

<b>Teachers (x)</b>	28	30	32	34	36
<b>Students (y)</b>	570	610	650		730

(A) 655

This answer is not correct because the equation for this table is  $y = 20x + 10$ , and  $(20 \times 34) + 10 = 690$ , not 655.

(B) 678

This answer is not correct because the equation for this table is  $y = 20x + 10$ , and  $(20 \times 34) + 10 = 690$ , not 678.

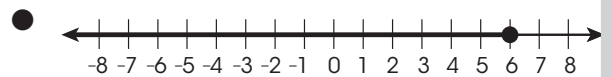
(C) 680

This answer is not correct because the equation for this table is  $y = 20x + 10$ , and  $(20 \times 34) + 10 = 690$ , not 680.

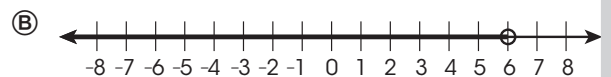
● 690

This answer is correct because the equation for this table is  $y = 20x + 10$ , and  $(20 \times 34) + 10 = 690$ .

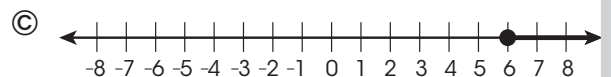
2. Every teacher in the school teaches 6 or fewer classes. Which graph indicates  $x \leq 6$ ?



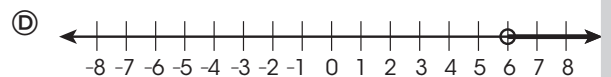
This answer is correct because the circle around 6 is closed and the dark line extends to the left of 6 in the negative direction.



This answer is not correct because the circle around 6 is open. This means that 6 is not included in the solution set.



This answer is not correct because the dark line extends to the right of 6 in the positive direction. The teachers teach 6 classes or fewer, not more.



This answer is not correct because the circle around 6 is open and the dark line extends to the right of 6 in the positive direction.

# Lesson

# 3

*Read the passage.  
Then do Numbers 1–5.*

## Magnificent Monarchs

Monarch butterflies cannot live in cold weather and prefer not to live in cool weather, so during winter they leave the inland areas of Australia and migrate towards the coast. In North America, monarch butterflies travel each year between eastern Canada and central Mexico. This is a distance of approximately 5500 kilometres. This migration has taken place for thousands of years.



1. A monarch butterfly reserve in Mexico occupies 124,000 hectares. If four million butterflies spend the winter on this reserve, which expression can help you find the number of butterflies per hectare?

- (A)  $(1.24 \times 10^5) + (4.0 \times 10^6)$
- (B)  $(4.0 \times 10^6) \div (1.24 \times 10^5)$
- (C)  $(1.24 \times 10^5) \times (4.0 \times 10^6)$
- (D)  $(1.24 \times 10^5) \div (4.0 \times 10^6)$

2. If it takes a butterfly approximately five months (150 days) to fly from Canada to Mexico, which expression can help you find the butterfly's rate of speed?

- (A)  $5500 \div 150$
- (B)  $5500 \times 150$
- (C)  $5500 - 150$
- (D)  $150 \div 5500$

# Lesson 11

Read the passage.  
Then do Numbers 1–5.

## Waterfall Wonders

When we think of waterfalls, we usually think of the very large and impressive waterfalls, such as Niagara Falls between New York in the US and Canada. Another way to think about waterfalls is according to their height. There are some very tall buildings around the world, too. The tables show the heights of some tall waterfalls and buildings.



**Waterfalls**

Name	Height (m)
Angel Falls	979
Tugela Falls	948
Tres Hermanas Falls	914
Olo'upena Falls	900
Yumbilla Cataract Falls	896

**Buildings**

Name	Height (m)
Taipei 101	509
Shanghai Building	492
Petronas Tower	452
Sears Tower	442
Jin Mao	421

1. Which expression represents the ratio of the height of Yumbilla Cataract to the height of Angel Falls?

- (A)  $(9.89 \times 10^3) \div (8.96 \times 10^3)$
- (B)  $(8.95 \times 10^3) \div (9.79 \times 10^3)$
- (C)  $(9.79 \times 10^2) \div (8.96 \times 10^2)$
- (D)  $(8.96 \times 10^2) \div (9.79 \times 10^2)$

2. Serena wanted to buy six postcards of Angel Falls for \$0.85 each. Her father said he would pay for 80% of the total cost. Which expression can help Serena find how much her father will pay toward her purchase?

- (A)  $0.8 \times (6 \times \$0.85)$
- (B)  $8 \times (6 \times \$0.85)$
- (C)  $0.8 \times (0.06 \times \$0.85)$
- (D)  $8 \times (0.06 \times \$0.85)$

# Self-Assessment 2

Lessons 6–10

*Answer these questions after you have completed Lessons 6–10. Before you begin, re-read what you wrote in Self-Assessment 1.*

## **FOCUS on Using Algebra, Book G**

Name \_\_\_\_\_ Date \_\_\_\_\_

1. Rate your work in Lessons 6–10. Circle your answer.

successful

somewhat successful

needs improvement

2. Did any of the questions give you trouble? \_\_\_\_\_

If so, what kind of trouble did you have?

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Is this the same kind of trouble you had in Lessons 1–5? \_\_\_\_\_

3. Did you find the questions easier or more difficult than those in Lessons 1–5?

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Why do you think this is so?

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4. Did you meet the goal you set for yourself for Lessons 6–10? \_\_\_\_\_

Why or why not?

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5. What is your goal for Lessons 11–15?

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Cut along the dotted line.