

Lesson 33 Input-Output Tables

- D.1.2.1: Determine the missing elements in a function table given the rule (functions may use +, - or \times and whole numbers or money)
- D.1.2.2: Determine the rule for a function n given a completed table (functions may use +, - or \times and whole numbers)

An **input-output table** uses a rule to change an input number to an output number.

EXAMPLE 1

For this table, the rule is add 10. Find the output numbers.

Input Numbers	Output Numbers
7	
23	
38	

STRATEGY

Use the rule with each input number.

STEP 1 Add 10 to the first input number.

The first input number is 7.

$$7 + 10 = 17$$

The first output number is 17.

STEP 2 Use the rule with the other input numbers.

$$23 + 10 = 33$$

$$38 + 10 = 48$$

SOLUTION

The completed input-output table looks like this:

Input Numbers	Output Numbers
7	17
23	33
38	48



For this input-output table, the rule is *subtract 7*. Find all the missing numbers in the table.

Input	Output
14	?
20	?
?	19
32	25

STRATEGY

Use the rule to find the two missing output numbers and the one missing input number.

- STEP 1** Find the first output number.
 Subtract 7 from the first input number.
 $14 - 7 = 7$
 7 is the output for 14.
- STEP 2** Find the second output number.
 $20 - 7 = 13$
 13 is the output number for 20.
- STEP 3** Find the missing input number.
 What number, minus 7, equals 19?
 $26 - 7 = 19$
 The missing input number is 26.

SOLUTION

The missing numbers are 7, 13, and 26. The completed table looks like this:

Input	Output
14	7
20	13
26	19
32	25

If you are given a completed input-output table, you can find the rule for the table.



What is the rule for this input-output table?

Input	Output
2	6
4	12
6	18
8	24

STRATEGY

Compare each input number to its output number.

STEP 1 What rules can change 2 into 6?

You can add 4 or multiply by 3.

STEP 2 Apply the rules to the next input number and see if you get the right output number.

The rule *add 4* changes 4 to 8, which is not the output number.

The rule *multiply by 3* changes 4 to 12, the output number.

The rule seems to be *multiply by 3*.

STEP 3 Try the rule with the other input-output pairs.

The rule *multiply by 3* changes 6 to 18.

It changes 8 to 24.

SOLUTION

The rule is *multiply by 3*.

What is the rule for this input-output table?

Input	Output
2	4
3	6
4	8
5	10

Let's check it out:

What are some possible rules to change 2 into 4? _____

Which of those rules works for the input number 3? _____

Does that rule work for the input numbers 4 and 5? _____

What is the rule for the table? _____

✓ Check It Out
with the
Coach

