algebra for all

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Sample Activity Blue

What's the Rule?

Determining rules for function machines

AIM

Students will figure out missing rules for function machines.

MATERIALS

- 2 blank cards
- 1 copy of the blackline master (opposite) for each student

REFLECTION

Refer to the blackline master and explain that there is more than one correct rule for each question and that the different rules are equivalent.

1 Draw the table shown below on the board.

IN	OUT

Invite 2 students to stand side-by-side out the front of the class to act as function machines. Write **÷2** on one card and **+6** on another card. Give a card to each student and ask them not to show the class.

2 Ask volunteers to write IN numbers between 1 and 20 in the table on the board. For each suggestion, the 1st student mentally divides the number by 2 and whispers the result to the 2nd student who then mentally adds 6 and writes the OUT number in the table on the board. For each OUT number, ask students to figure out the rule. As they share their ideas, invite another student to write them on the board beside the table. Repeat until the class successfully figures out the operation and number. (For example, although "+12" and "÷2" works, it is not the rule so it is incorrect.)

Discuss that adding 12 first and then dividing by 2 is equivalent to dividing by 2 and adding 6.

3 Repeat the activity using different numbers and operations, and different students in each role.

4 Have the students complete the blackline master. If students need some assistance, write the operation symbols (without the numbers) on each rule before copying the sheet. Invite volunteers to share their answers.
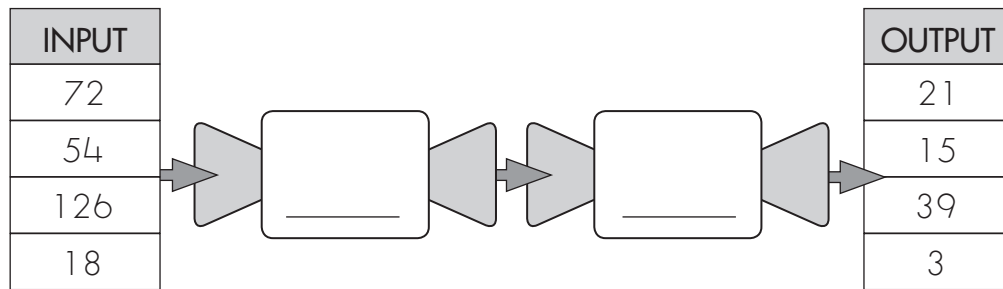
What's the Rule?
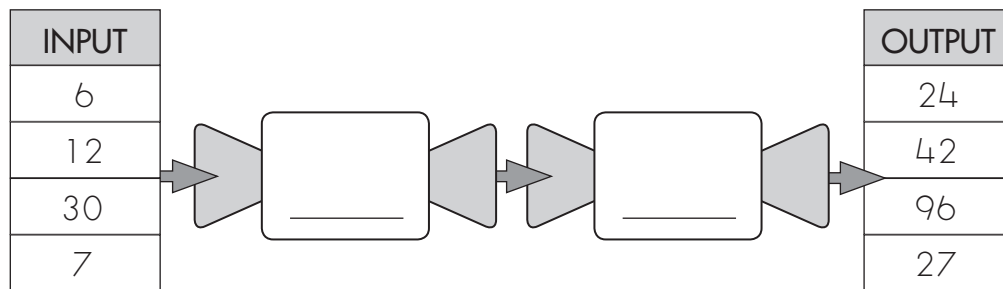
1. **a.** Write the function on each machine.

INPUT				OUTPUT
8				56
40				184
4				40
9				60
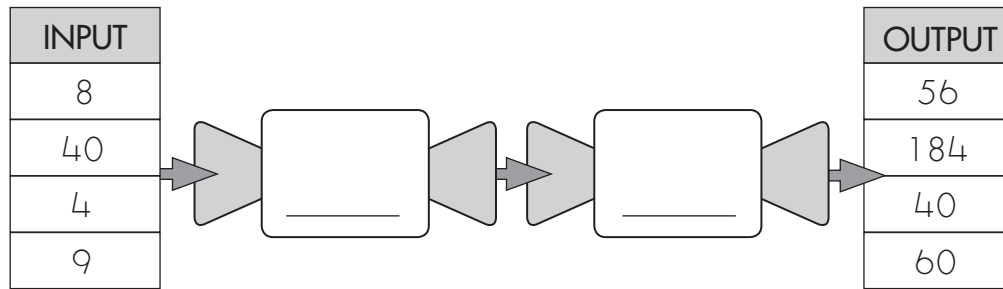
b. Use arrows to write the rule. _____

c. Write the matching equation. _____

2. **a.** Write the function on each machine.

INPUT				OUTPUT
72				21
54				15
126				39
18				3

b. Use arrows to write the rule. _____

c. Write the matching equation. _____

3. **a.** Write the function on each machine.

INPUT				OUTPUT
6				24
12				42
30				96
7				27

b. Use arrows to write the rule. _____

c. Write the matching equation. _____

Patterns and Functions

8