MATH

Input and output tables



Name _____ Date _____

I can use a rule to fill in a table and find the rule from a table.

1 How it works

An input and output table shows a rule at work. A number goes In, the rule changes it, and a number comes Out. With the rule × 3, 2 goes in and 6 comes out. To find a rule, test +, − and × on the first row, then check it works for every row.

Rule: × 3

In	Out
1	3
2	6

2 Use the rule. Fill in the table.

Do the rule to each In number.

Rule: + 6

In	Out
2	8
5	
11	
12	
14	

Rule: × 5

In	Out
1	5
4	
8	
12	
21	

Rule: + 11

In	Out
1	12
2	
9	
11	
12	

Rule: + 12

In	Out
2	14
7	
9	
12	
20	

3 What comes out?

Rule: × 2. In: 6. Out? ☐

Rule: + 4. In: 2. Out? ☐

How did I do? ☆ ☆ ☆

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Find the rule

Name _____ Date _____

I can look at a table and find the rule.

1 Find the rule. Then fill in the last Out.

Is it +, −, or ×? Check every row.

Rule:

In	Out
6	12
12	24
16	32
19	38
22	

Rule:

In	Out
2	6
7	11
9	13
12	16
21	

Rule:

In	Out
1	12
4	15
7	18
8	19
11	

Rule:

In	Out
2	12
3	18
8	48
11	66
15	

How did I do? ☆ ☆ ☆

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Think deeper

Name _____ Date _____

I can explain and predict a pattern.

1 Two-step rules

Do the first step, then the second.

Rule: × 2, then + 1

In	Out
1	3
2	
3	
4	
5	

Rule: × 3, then − 2

In	Out
1	1
2	
3	
4	
5	

2 Work backward: what went in?

Undo the rule.

Rule: + 6. Out: 18. In? ☐

Rule: × 5. Out: 60. In? ☐

Rule: + 11. Out: 22. In? ☐

Rule: + 12. Out: 24. In? ☐

3 Think about it

1. The rule is + 5. What goes in to get 12? ☐
2. In 3 gives 12, In 5 gives 20. What is the rule? ☐
3. Do + 2 and × 2 ever give the same Out? ☐

How did I do? ☆ ☆ ☆

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Word problems

Name _____ Date _____

I can use a pattern to solve a problem.

1 Read, find the pattern, solve

Make a table or draw if it helps.

1 A ticket costs $4. Make a table for 1, 2, 3 and 4 tickets. How much do 4 tickets cost?

Answer:

2 In: 2, 5, 8. Out: 6, 9, 12. What is the rule?

Answer:

3 Each bike has 2 wheels. Aisha counts 7 bikes. How many wheels?

Answer:

4 Omar's rule is "× 3, then − 1". What comes out when 5 goes in?

Answer:

How did I do?

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FOR TEACHERS AND PARENTS

Answer key: input and output tables

1 Page 1

Tables: 1) 11, 17, 18, 20; 2) 20, 40, 60, 105; 3) 13, 20, 22, 23; 4) 19, 21, 24, 32.
Out: 1) 12; 2) 6.

2 Page 2

Rules: 1) multiply by 2 (last Out 44); 2) add 4 (last Out 25); 3) add 11 (last Out 22); 4) multiply by 6 (last Out 90).

3 Page 3

Two-step: 1) 5, 7, 9, 11; 2) 4, 7, 10, 13.
Work backward: 1) 12; 2) 12; 3) 11; 4) 12.
Think: 1) 7; 2) × 4; 3) Yes, when 2 goes in: 4.

4 Page 4: word problems

1) $16 (rule: × 4)
2) add 4
3) 14 wheels (rule: × 2)
4) 5 × 3 − 1 = 14

5 Teaching tip 💡

Call it a "function machine": draw a box with a slot on top and a slot below. Children love feeding numbers in, and it makes the In and Out columns concrete.

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