Copy out the chart

In	Out
7	22
8	25
9	28
10	31

+1 +3

a) What is the pattern rule for the input?

Start at 7 and add 1 each time.

b) What is the pattern rule for the output?

Start at 22 and add 3 each time

c)What is the pattern rule that relates the input to the output? (Machines)

In [x3] [+1] = output

Check

In = 7 out: 22

7 [x3] 21 [+1]

d) What is the output value if the input is 20?

in =20 Out=? Show work

20 [x3] 60 [+1] 61

Grade 6 Math

Date: Oct.18

Review of expression (Use a variable to represent the following)

a) three times a number plus 4

3 x n + 4 or 3n + 4

b) 46 minus a number

46 − n

c) $6 per plate

6n where n represents # of plates

d) Triple a number

3 n

e) 10 more than double a number

10 + 2n or 2n + 10

Can you write the pattern rule that relates the input to the output?

Can you write an expression using "n" for input

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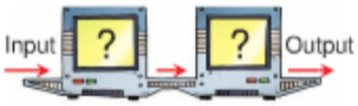
Homework Solutions

Explore

Abi made an Input/Output machine that uses two operations.

Here is a table for Abi's machine.

Find out what the machine does to each input number.



Input	Output
15	6
5	4
20	7
25	8
10	5

$\frac{\Delta out}{\Delta in}$

$\frac{-2}{-10} = \frac{1}{5}$

$\frac{3}{15} = \frac{1}{5}$

$= \frac{1}{5}$

Show and Share

Explain the strategy you used to solve the problem.

$n \div 5 \pm$ _____

$15 \div 5$ ___ $= 6$ looks to divide by 5

3 must +3 to get 6

$n \div 5 + 3$

check

$5 \div 5 + 3$

$1 + 3$

4 YES

Practice

Choose one of the **Strategies**

1. Design an Input/Output machine for each table below. How did you decide which operations to use?

a)

Input	Output
2	7
4	15
6	23
8	31

b)

Input	Output
3	10
6	19
9	28
12	37

$\frac{\Delta out}{\Delta in} = \frac{9}{3} = 3$

$\frac{\Delta out}{\Delta in} = \frac{8}{4} = 2$

Reflect

Choose one part of question 1.
Explain how you used a pattern to solve it.

$3n$ _____

$2n$ _____

3×3 _____ $= 10$

12 must subtract 2 to get to 10

2×2 _____ $= 7$

4 must add 3 to get to 7

$3n - 2$

$2n + 7$

Which expression below represents this number pattern?
12, 11, 10, 9

a) 12 + n b) 12 - n c) n - 12

12, 11, 10, 9

The grade 6 class is having a banquet. The cost to rent the hall is $80.
The cost for supper is $7 per student.

Make a table of values to show the total cost for 1,2,3,4,5, and 6 students (Show work for the first 3 entries)

n # of Students	C Total Cost
1	87
2	94
3	101
4	108
5	115
6	122

+7 +7 +7 +7 +7

n=3
3 x7 +80
21 +80
101

• let n represent # of students

Total cost = 7n + 80

n=1
1 x7 +80
7 +80
87

n=2
2 x7 +80
14 +80
94

What pattern do you see in the table?

Yes

Write the pattern rule that relates the number of students to the total cost.

(machine) n x7 +80

Cost is # of student multiplied by 7 the add 80.

Use the pattern rule to find the cost for 25 students. (Show work)

n=25
25 x7 +80
175 +80
=$255

Cost for 25 Students is $255

Suppose the total cost was $423. How many students would be on the trip? (Hint work backwards) Show work

Cost $423
-80
÷7

423 −80
343 ÷7
49

So 49 student can go for the cost of $423

Key words

per

for each

for every

/ slash

This # goes with the variable (being multiplied)