Grade 6 Math

Date: Oct. 15

Handed this out Oct. 9

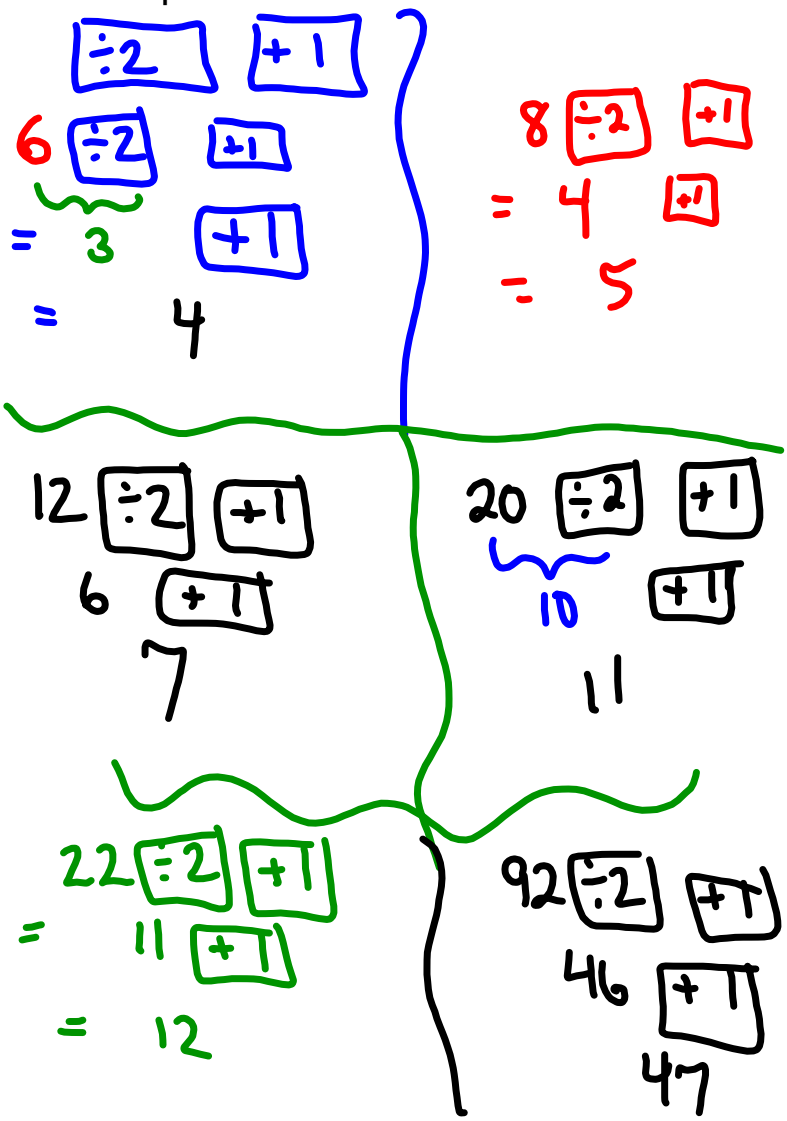
1) Check the data in the table. The pattern rule that relates the input to the output is divide input by 2, then add 1.

a) Identify any output numbers that are incorrect.

b) Correct the table. show work

c) Write 2 more input and output numbers

input	output
6	4 ✓
8	5 ✓
12	7 ✓
20	11 9 ✗
22	12
92	47



Homework Solutions

Extra Practice

1. Complete the table for each Input/Output machine.

a) Input → +3 → ×2 → Output

Input	Output
1	8
3	12
5	16
7	20
9	24

(1 +3) x 2
= 4 x 2
8

(3 +3) x 2
= 6 x 2
12

(5 +3) x 2
= 8 x 2
16

(7 +3) x 2
= 10 x 2
20

(9 +3) x 2
= 12 x 2
24

b) Input → − 1 → ÷ 4 → Output

Input	Output
1	0
5	1
9	2
13	3
17	4

(1 -1) ÷ 4
= 0 ÷ 4
0

(5 -1) ÷ 4
= 4 ÷ 4
1

(9 -1) ÷ 4
= 8 ÷ 4
2

(13 -1) ÷ 4
= 12 ÷ 4
3

(17 -1) ÷ 4
= 16 ÷ 4
4

Worksheet solutions **Homework Solutions**

2. Make a chart for the following using the below inputs

a) Subtract 4, then multiply by 3.

b) Multiply by 3, then subtract 4.

SHOW WORK

Input	Output
5	3
6	6
7	9
8	12
9	15

(5 -4) x 3
= 1 x 3
3

(6 -4) x 3
= 2 x 3
6

(7 -4) x 3
= 3 x 3
9

(8 -4) x 3
= 4 x 3
12

(9 -4) x 3
= 5 x 3
15

Input	Output
5	11
6	14
7	17
8	20
9	23

(5 x3) - 4
= 15 - 4
11

(6 x3) - 4
= 18 - 4
14

(7 x3) - 4
= 21 - 4
17

(8 x3) - 4
= 24 - 4
20

(9 x3) - 4
= 27 - 4
23

Worksheet solutions

Homework Solutions

3. Complete this table.
The pattern rule that relates the input to the output is:

Subtract 3 from the input.

a) Write the pattern rule for the input.
b) Write the pattern rule for the output.

Input	Output	
20	17	20-3
25	22	25-3
30	27	30-3
35	32	35-3
40	37	40-3

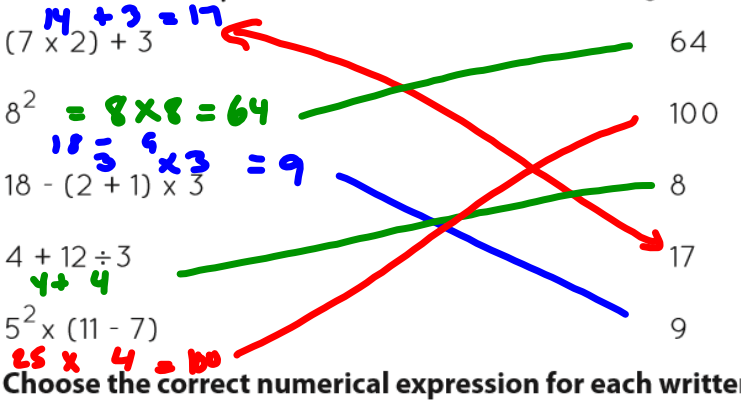
a) The input increases by 5

b) The output is increasing by 5

Homework Solutions

Expressions

Match each expression to its answer. Show your work on a separate piece of paper.



Choose the correct numerical expression for each written statement.

1. the product of eight and six

   a) 8 + 6 *b) 8 x 6* *c) 8 - 6* *d) 8 ÷ 6*

2. the quotient of 20 and four

   a) 20 + 4 *b) 20 x 4* *c) 20 - 4* *d) 20 ÷ 4*

3. three times the difference between four and two

   a) 4 - 2 x 3 *b) 3 x 4 - 2* *c) 3 x (4 - 2)* *d) 3 - (4 x 2)*

4. five less than double 14

   a) (14 x 2) - 5 *b) 14^2 - 5* *c) 14 - 5* *d) 14 x (5 - 2)*

5. six times the sum of 14 and eight squared

   a) 8^2 x 6 + 14 *b) 6 x (14 + 8)* *c) 6 x 14 + 8^2* *d) 6 x (14 + 8^2)*

Write an expression to solve each word problem. Use additional paper to show your work.

1. Tina lines up all her gummy bears and sees that she has the product of six and two. Then her brother gives her two more. How many gummy bears does she have now?

   $6 \times 2 + 2$

   $12 + 2 = 14$

2. A cookie recipe makes 24 cookies. Jaio made 11 less than double the recipe. How many cookies did she make?

   $2 \times 24 - 11$

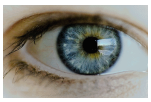
   $48 - 11 = 37$

3. Ahmed is collecting feathers. He finds two white feathers at the park and three white feathers at home. At the zoo, he finds four times as many blue feathers as all of his white feathers. How many blue feathers did he find at the zoo

   Blue: $4 \times (2+3)$

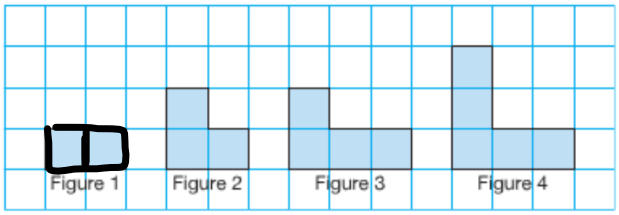
   $= 4 \times (5)$

   $= 20$



Patterns From Table

How does this pattern of squares represent the table of values?



Input	Output
1	2
2	3
3	4
4	5

+1 +1 +1

Do you see a pattern in the table?

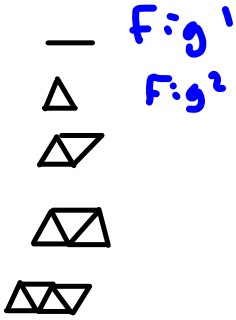
BEFORE Get Started

Draw students' attention to the pattern of squares and the table of values at the top of Student Book page 11. Ensure they see the connection between the input numbers in the table of values and the figure numbers in the pattern of squares, as well as the connection between the output numbers and the number of squares in each figure.

Look at the following chart

Figure	Number of edges
1	1
2	3
3	5
4	7
5	9
6	11
7	13

+1 +1 +1 +2 +2 +2 +2 +2 +2



What pattern do you see in the figures?

Figure starts at 1, and adds 1 each time.

What pattern do you see in the chart?

The # of edges starts at 1 and add 2 each time.

Write the pattern rule that relates the figure number to the number of edges.

- Pattern rule is two time the figure number subtract 1.

2n - 1

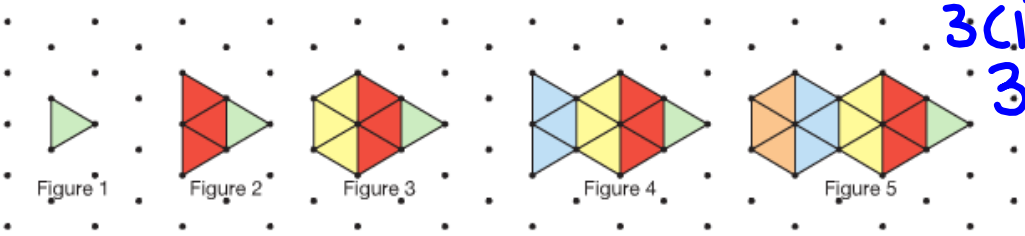
Connect

➤ We can draw pictures to show the relationship in a table of values.

In this table:
The input increases by 1 each time.
The output increases by 3 each time.

We could draw a pattern of triangles on triangular dot paper.
The figure number is the input.
The number of triangles in each figure is the output.

Input	Output
1	1
2	4
3	7
4	10
5	13



Pattern Rule

Can relate the input to the output.

It will tell us the numbers and operations to do to the input

The table shows the input and output for this one-operation machine.

To identify the numbers and operation in the machine:

7×n

Check
7(1)
7 ✓

Δx	Input	Output	Δy
+1	1	7	+7
+1	2	14	+7
+1	3	21	+7
+1	4	28	+7
	5	35	+7

The pattern rule for the input is start at 1 and increase by 1 each time

The pattern rule for the output is start at 7 and increase by 7 each time

this is a clue on what to do

The pattern rule that relates the input to the output is

multiply input by 7 to get output.

You try (One operation)

The table shows the input and output for this one operation machine.

To identify the numbers and operations in the machine: 1 x 7 -2 =
7 -2 = 5

Input	Output
7	5
8	6
9	7
10	8
11	9

+1 +1 +1 +1 +1 +1

1 x n -2

The pattern rule for the input is Start at 7 then add 1 each time.

The pattern rule for the output is Start at 5 then add 1 each time. ← this is a clue on what to do

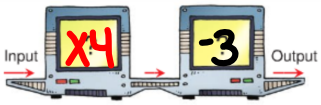
The pattern rule that relates the input to the output is

Subtract 2 from input to get output

Pattern Rule

(2 operations)

The table shows the input and output for this two-operation machine.



To identify the numbers and operations in the machine:

x4 -3

x	y
Input	Output
1	1
2	5
3	9
4	13
5	17

+1 +1 +1 +1

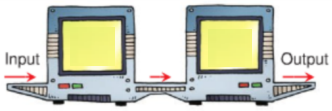
+4 +4 +4 +4

This change suggest what you multiply the input by

The pattern rule for the input is start at 1, add 1 each time

The pattern rule for the output is start at 1, add 4 each time

this is a clue on what you multiply the input by



The Second operation is gotten by taking one input value from the chart and applying the multiplication to it and see what do you have to do to get its output (do you add a value or subtract a value?)

Must think In=2 Output=5

Input	Output
1	1
2	5
3	9
4	13
5	17

so try our suggestion

_____ NOT _____

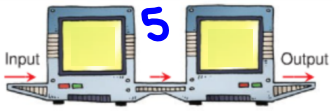
so how do I go from __ to 5?

need to _____

2 x4 -3

8 -3

5



The pattern rule that relates the input to the output is

multiply input by 4 then subtract 3 each time to get output

In=1 Output=1

1 x4 -3 =1

4 -3 =1 .

Identify the number and operation in the machine

Input	Output
1	26
2	27
3	28
4	29

Write the pattern rule that relates the input to the output