Grade 6 Math

Date: Nov 1

Test on chapter 1-patterns on TUESDAY Nov. 6

1) Look at table and determine the pattern rule that relates the input to the output. Write it as an expression using n for input.

In	out
9	61
10	70
11	79
12	88
13	97

Expression with variable "n"

+9

$\Rightarrow 9 \times n$

Check

n = 9 → out = 61

$9 \times n$

9×9

81

need to subtract 20

$9n - 20$

→ multiply input by 9, then subtract 20 to get output.

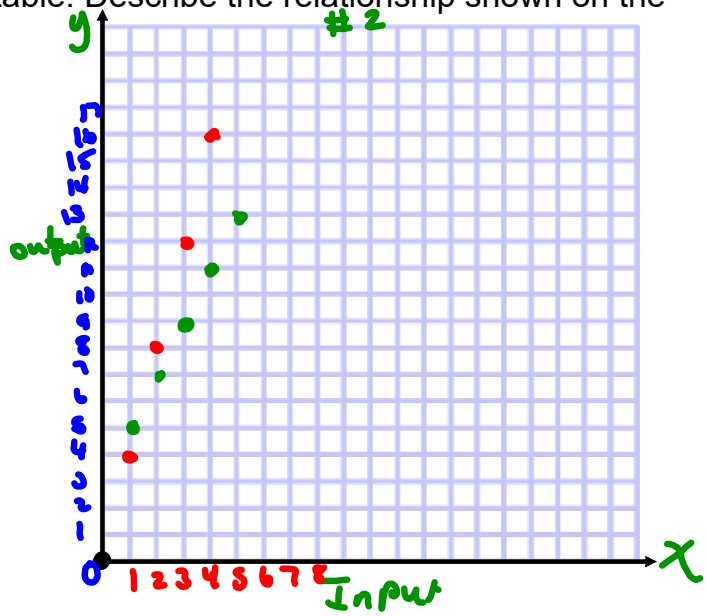
2) Use grid paper. graph each table. Describe the relationship shown on the graph

x	y	ordered pairs
1	4	(1,4)
2	8	(2,8)
3	12	(3,12)
4	16	(4,16)

+1 +4

a) Relationship of graph

As x increases by 1, y increases by 4.



b) As x increases by 1, y increases by 2

x	y
1	5
2	7
3	9
4	11

+1 +2

Homework Solutions

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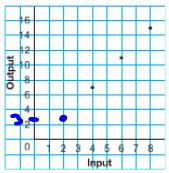
3. For each graph, make an Input/Output table.

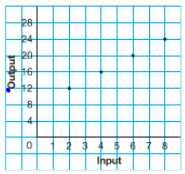
a)



Input	Output
2	3
4	7
6	11
8	15

2n - 2

b)



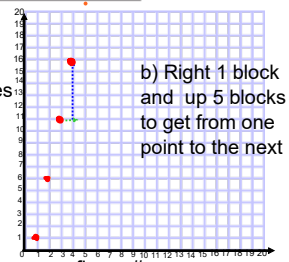
Input	Output
2	12
4	16
6	20
8	24

2n +8

4. Use grid paper.
a) Graph the data in the table.
b) Describe the relationship shown on the graph.
c) Write an expression to represent the pattern.
d) Find the number of shapes in the 8th figure.
What strategy did you use?
Could you use the same strategy to find the number of shapes in the 18th figure?
Explain.

Figure Number	Number of Shapes
1	1
2	6
3	11
4	16
5	21

b) As the fig # increases by 1, the # of Shapes increases by 5



b) Right 1 block and up 5 blocks to get from one point to the next

c) 5n ___

Check

Figure number =1 then

Number of shapes is 1

5 x 1 = 5 not 1 so need to subtract 4

5n - 4 where "n" is the figure number

c) If n= 8 then 5x8 - 4 in figure 8 there will be 36 shapes

40 - 4

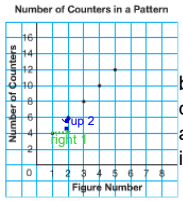
36

If n= 18 then 5x18 - 4 in figure 18 there will be 536 shapes

540 - 4

536

5. Use grid paper.
a) Make a table.
Record the figure number and the number of counters in a figure.
b) How does the graph represent the pattern?
c) Find the number of counters in the 7th figure.
Describe the strategy you used.
d) How many counters are in the 23rd figure?
Describe the strategy you used to find out.



b) the number of counters increase by 2 as the figure number increases by 1

Figure number	Number of counters
1	4
2	6
3	8
4	10
5	12
6	14
7	16

2/1 = 2

2 x n ....

check n=1 , number of counters= 4

2 x___

2 x 1

2 not 4 so need to add 2

2n +2

c) Extended my chart to find out the figure 7 would have 16 counters

d) if figure is 23, then replace the "n" with 23 to get the number of counters

2n +2

2(23) + 2

46 + 2

48

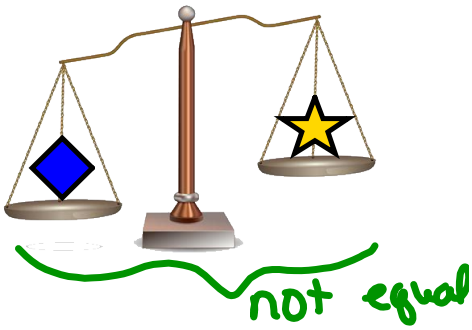
Ch. 1 Lesson 7 Understanding Equality

Equality means equal. What does equal mean?

same

What can you tell me about theses two shapes?

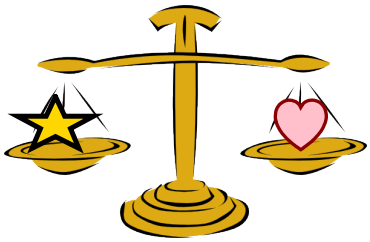
→ Blue diamond is heavier than the yellow star

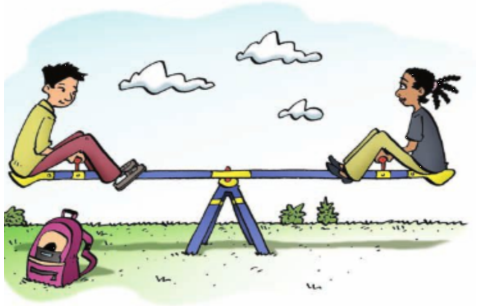


not equal

What can you tell me about these two shapes?

→ Star and heart are equal





What can you tell me about these two people?

Their mass are equal

Now what would happen if the boy put his backpack on?

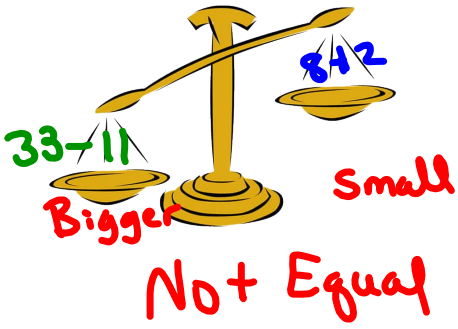
→ he becomes heavier and drops down. (She goes up)

a) Given the following expressions group the expression that are equal.

SHOW WORK

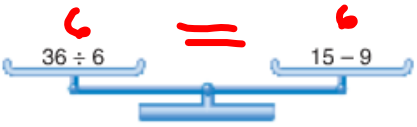
- 3 + 4 = 7
- 33 - 11 = 22
- 2 x 5 = 10
- 5 x 2 = 10
- 18÷2 = 9
- 11 + 4 = 15
- 6 x 2 = 12
- 17 + 5 = 22
- 14÷2 = 7
- 4 + 11 = 15
- 3 + 8 = 11
- 7 + 4 = 11
- 6 + 4 = 10
- 8+ 2 = 10

b) Place an expression (from above) on each side of the scale to make the scale tilt the way it is indicated in the picture



Connect

Each of the scales below are balanced.
For each balance scales, the expression in one pan is equal to the expression in the other pan.
We use the equals sign to show that the two expressions are equal.



$36 \div 6 = 6$ and
$15 - 9 = 6$
So, $36 \div 6 = 15 - 9$

≠ Not equal

= equal

$12 + 5 = 17$ and
$5 + 12 = 17$
So, $12 + 5 = 5 + 12$

$3 \times 7 = 21$ and
$7 \times 3 = 21$
So, $3 \times 7 = 7 \times 3$

a) $7 \times 2 = 16 - 2$
$14 = 14$

b) $11 + 4 \neq 3 \times 5 - 1$
$15 \neq 15 - 1$
$\neq 14$

Show work

What do we notice about the following?

Switch order

a) 3 + 7 = 10 7 + 3 = 10

b) 2 + 4 = 6 4 + 2 = 6

When we add numbers together,

What about the following?

Switched order for "x" → doesn't matter

c) 5 x 7 = 35 7 x 5 = 35

d) 3 x 4 = 12 4 x 3 = 12

When we multiply numbers together,

The order in which you add two numbers does not matter. This is the commutative property.

$a + b = b + a$

The order in which you multiply two numbers does not matter. This is the commutative property.

$a \times b = b \times a$

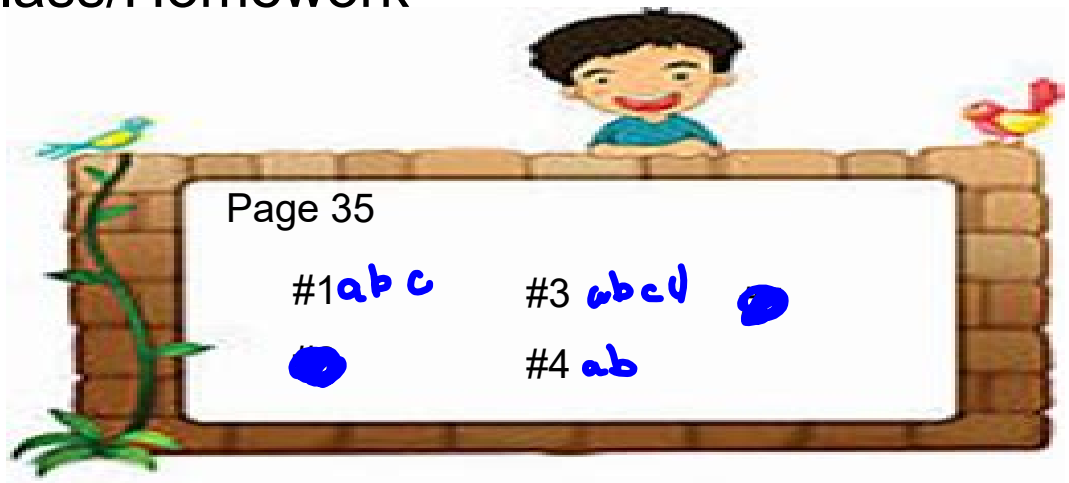
BUT

Order does matter when you subtract or divide

10 / 2 = 5 but 2 / 5 = 0.20

6-2 = 4 but 2 -6 = -4

Class/Homework



Test on chapter 1-patterns on TUESDAY Nov. 6

You need to study For H.W

Practice

1. Suppose you were using real balance scales.
   Which scales below would balance?
   How did you find out?

a) $72 \div 9$ $13 - 5$

b) 12×6 6×12

c) $19 - 9$ $9 + 19$

2. a) Write an expression with 2 numbers and one operation.
   b) Write 5 different expressions that equal your expression in part a.
   What strategy did you use to find the expressions?
   c) Suppose you used real balance scales.
   You put counters to represent 3 of the expressions in the left pan and 3 in the right pan. What would happen? How do you know?

3. Rewrite each expression using a commutative property.

a) $5 + 8$ b) 6×9 c) 11×7

d) $12 + 21$ e) $134 + 72$ f) 36×9

4. a) Are these scales balanced?

b) If your answer is yes, why do you think so?
If your answer is no, what could you do to balance the scales?
Why would this work?

5. a) Addition and subtraction are inverse operations.
Addition is commutative. Is subtraction commutative?
Use an example to show your answer.

b) Multiplication and division are inverse operations.
Multiplication is commutative. Is division commutative?
Use an example to show your answer.