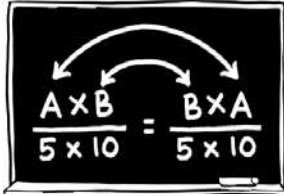


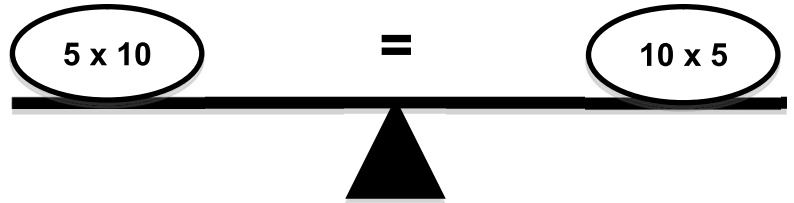
Name: \_\_\_\_\_  
Date: \_\_\_\_\_

## Commutative Property of Multiplication

**Commutative** means to exchange.  
It is used with addition and multiplication.



“is the same as”



Fill in the missing number.

1.  $6 \times 9 = 9 \times \underline{\quad}$

9.  $8 \times 2 = \underline{\quad} \times 8$

17.  $\underline{\quad} \times 5 = 5 \times 3$

2.  $\underline{\quad} \times \underline{\quad} = 3 \times 7$

10.  $10 \times 5 = \underline{\quad} \times \underline{\quad}$

18.  $4 \times 6 = 6 \times \underline{\quad}$

3.  $2 \times 10 = \underline{\quad} \times \underline{\quad}$

11.  $6 \times 3 = \underline{\quad} \times 6$

19.  $2 \times 3 = \underline{\quad} \times 2$

4.  $4 \times \underline{\quad} = 7 \times 4$

12.  $12 \times 4 = \underline{\quad} \times 12$

20.  $7 \times \underline{\quad} = 8 \times 7$

5.  $8 \times 9 = \underline{\quad} \times \underline{\quad}$

13.  $5 \times 5 = \underline{\quad} \times 5$

21.  $0 \times \underline{\quad} = 6 \times 0$

6.  $8 \times \underline{\quad} = 11 \times 8$

14.  $100 \times 4 = \underline{\quad} \times 100$

22.  $\underline{\quad} \times 9 = 9 \times 7$

**Standard:** Commutative Property of Multiplication

4.2.2.2

Name: \_\_\_\_\_  
Date: \_\_\_\_\_

## Associative Property of Multiplication

Insert parenthesis to make each equation true.

1.  $4 * 3 * 5 = 4 * 3 * 5$

9.  $6 * 2 * 8 = 6 * 2 * 8$

2.  $9 * 2 * 4 = 9 * 2 * 4$

10.  $5 * 4 * 7 = 5 * 4 * 7$

3.  $8 * 1 * 6 = 8 * 1 * 6$

11.  $2 * 0 * 6 = 2 * 0 * 6$

4.  $10 * 3 * 5 = 10 * 3 * 5$

12.  $8 * 4 * 9 = 8 * 4 * 9$

5.  $6 * 8 * 2 = 6 * 8 * 2$

13.  $7 * 3 * 2 = 7 * 3 * 2$

6.  $1 * 0 * 9 = 1 * 0 * 9$

14.  $5 * 2 * 7 = 5 * 2 * 7$

7.  $2 * 7 * 8 = 2 * 7 * 8$

15.  $6 * 4 * 9 = 6 * 4 * 9$

8.  $3 * 4 * 6 = 3 * 4 * 6$

16.  $8 * 3 * 4 = 8 * 3 * 4$

**Standard:** Associative Property of Multiplication

4.2.2.2

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Distributive Property of Multiplication:

Fill in the blanks to make each equation true.

1.  $(5 + 6) * 8 = ( \_ * \_ ) + ( \_ * \_ )$

8.  $( \_ + \_ ) * \_ = ( 6 * 3 ) + ( 5 * 3 )$

2.  $(8 + 7) * 2 = ( \_ * \_ ) + ( \_ * \_ )$

9.  $( \_ + \_ ) * \_ = ( 8 * 9 ) + ( 2 * 9 )$

3.  $(2 + 6) * 9 = ( \_ * \_ ) + ( \_ * \_ )$

10.  $( \_ + \_ ) * \_ = ( 7 * 1 ) + ( 4 * 1 )$

4.  $(9 + 3) * 6 = ( \_ * \_ ) + ( \_ * \_ )$

11.  $( \_ + \_ ) * \_ = ( 4 * 3 ) + ( 8 * 3 )$

5.  $(4 + 1) * 0 = ( \_ * \_ ) + ( \_ * \_ )$

12.  $( \_ + \_ ) * \_ = ( 5 * 6 ) + ( 3 * 6 )$

6.  $(8 + 5) * 2 = ( \_ * \_ ) + ( \_ * \_ )$

13.  $( \_ + \_ ) * \_ = ( 1 * 9 ) + ( 10 * 9 )$

7.  $(5 + 3) * 9 = ( \_ * \_ ) + ( \_ * \_ )$

14.  $( \_ + \_ ) * \_ = ( 6 * 4 ) + ( 7 * 4 )$

**Standard:** Distributive Property of Multiplication

4.2.2.2

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Solving Number Sentences

Solve each number sentence to make it true.

1.  $(7 * 9) + 15 =$  \_\_\_\_\_

9.  $(40 / 8) + 19 =$  \_\_\_\_\_

2. \_\_\_\_\_  $= (12 - 8) * 6$

10.  $(3 * 9) + 13 =$  \_\_\_\_\_

3. \_\_\_\_\_  $= (15 - 8) + (42 / 6)$

11.  $(17 - 8) + (3 * 3) =$  \_\_\_\_\_

4.  $(16 / 4) + (72 / 8) =$  \_\_\_\_\_

12.  $(36 / 6) + 1 =$  \_\_\_\_\_

5.  $(6 * 7) - (5 * 5) =$  \_\_\_\_\_

13.  $(25 + 5) / 6 =$  \_\_\_\_\_

6. \_\_\_\_\_  $= (4 + 3) * 2$

14.  $(6 + 16) - (12 / 4) =$  \_\_\_\_\_

7.  $(3 * 10) + (4 / 2) =$  \_\_\_\_\_

15.  $(37 - 2) / 5 =$  \_\_\_\_\_

8.  $(15 - 10) + (63 / 9)$  \_\_\_\_\_

16.  $(18 - 6) + 5 =$  \_\_\_\_\_

**Standard:** Solving Number Sentences

4.2.2.2

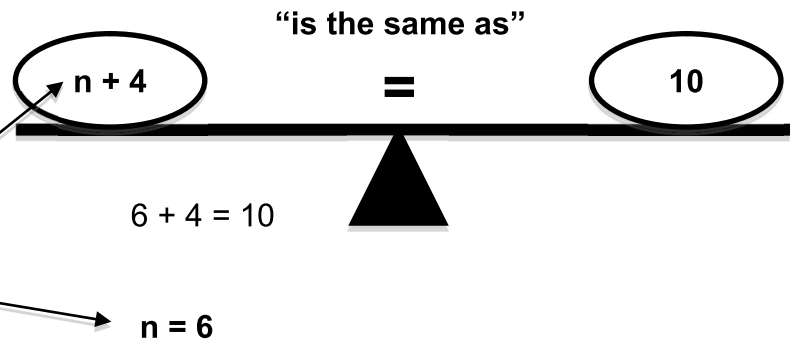
Name: \_\_\_\_\_  
Date: \_\_\_\_\_

## Finding Unknown Variables

A **variable** is an unknown value.



A lowercase letter represents its quantity or value.



Find the value of each variable.

1.  $15 = 3 + n$        $n = \underline{\hspace{2cm}}$

9.  $28 - x = 5$        $x = \underline{\hspace{2cm}}$

2.  $6 * s = 42$        $s = \underline{\hspace{2cm}}$

10.  $6 * p = 48$        $p = \underline{\hspace{2cm}}$

3.  $8 * r = 40$        $r = \underline{\hspace{2cm}}$

11.  $h + 58 = 78$        $h = \underline{\hspace{2cm}}$

4.  $y / 5 = 7$        $y = \underline{\hspace{2cm}}$

12.  $3 * 5 = 45 / k$        $k = \underline{\hspace{2cm}}$

5.  $x / 4 = 9$        $x = \underline{\hspace{2cm}}$

13.  $r + 8 = 10 + 5$        $r = \underline{\hspace{2cm}}$

6.  $27 - m = 20$        $m = \underline{\hspace{2cm}}$

14.  $18 / 2 = b + 7$        $b = \underline{\hspace{2cm}}$

7.  $100 / a = 25$        $a = \underline{\hspace{2cm}}$

15.  $30 = n * 6$        $n = \underline{\hspace{2cm}}$

8.  $7 * t = 63$        $t = \underline{\hspace{2cm}}$

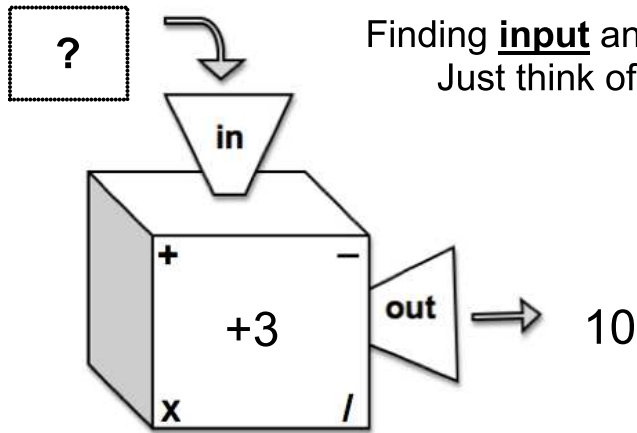
16.  $50 + h = 125$        $h = \underline{\hspace{2cm}}$

**Standard:** Find the value of an unknown.

4.2.2.2

Name: \_\_\_\_\_  
 Date: \_\_\_\_\_

## Input and Output



Finding **input** and **output** is easy!  
 Just think of fact families.

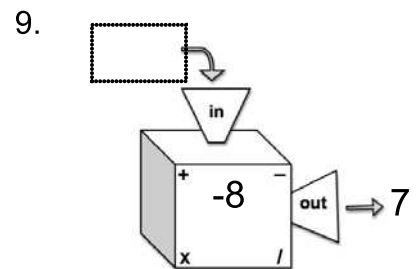
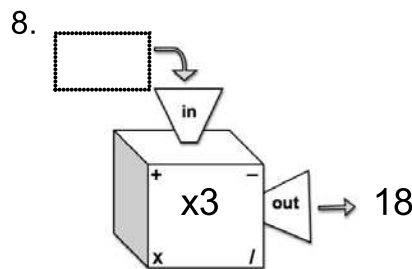
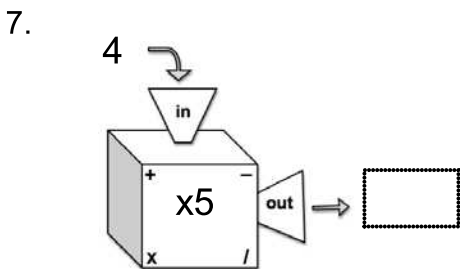
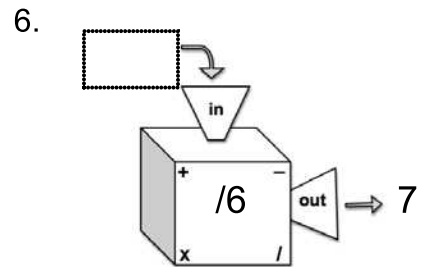
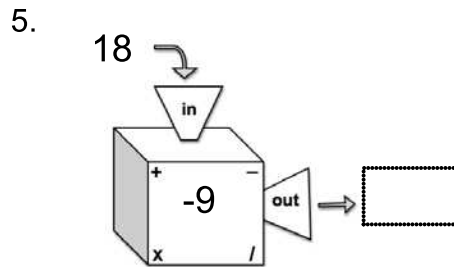
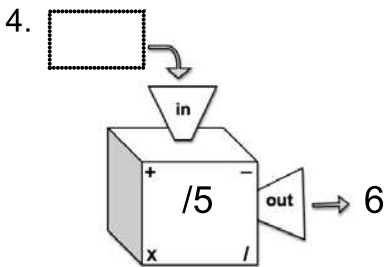
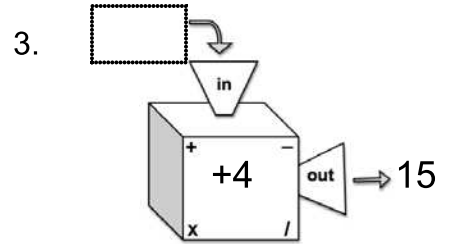
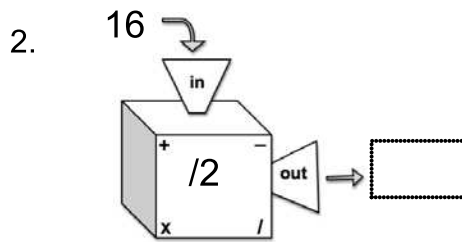
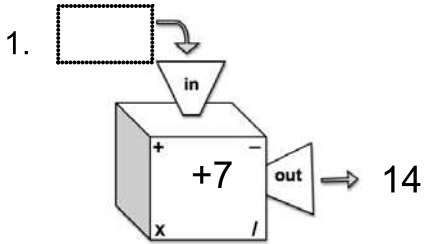
128

$$\begin{aligned} ? + 3 &= 10 \\ 3 + ? &= 10 \\ 10 - 3 &= ? \\ 10 - ? &= 3 \end{aligned}$$



So the input  
 is 7.

Find the **input** or **output** for each function machine and write the number model.



**Standard:** Use input and output rules.

4.2.1.1

## Finding Input with 2 Operations

**It's opposite day!**

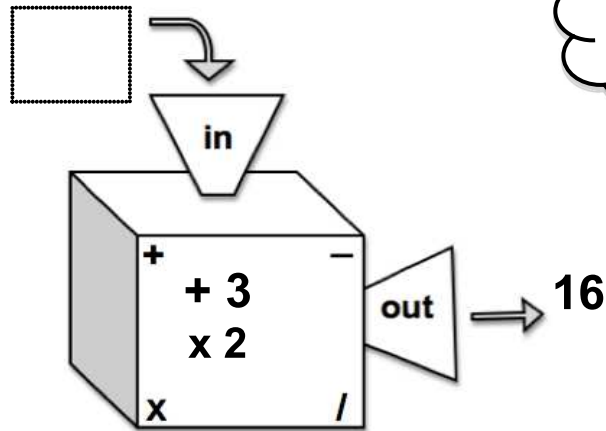
So in this example

out means in,  
 multiply means divide,

and

add means subtract!

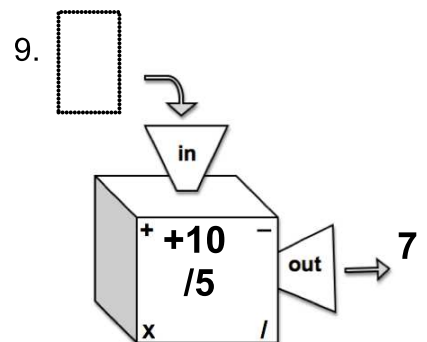
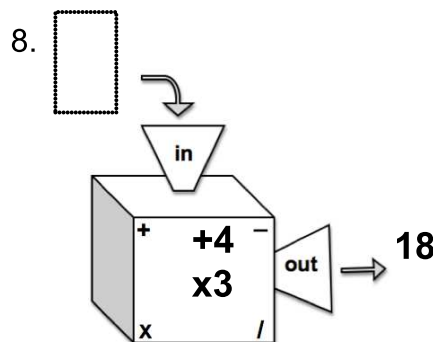
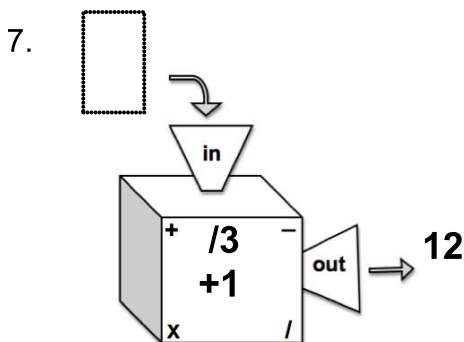
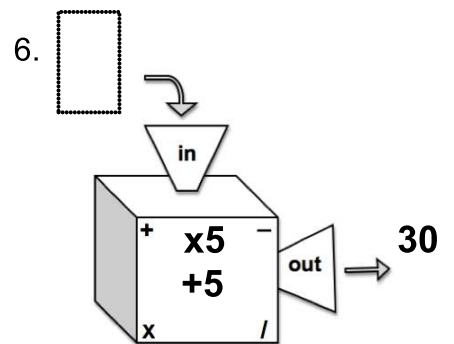
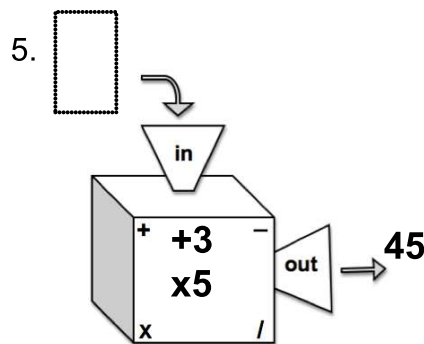
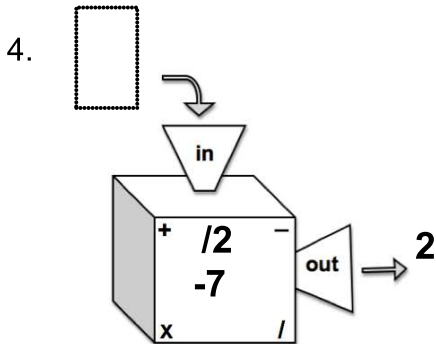
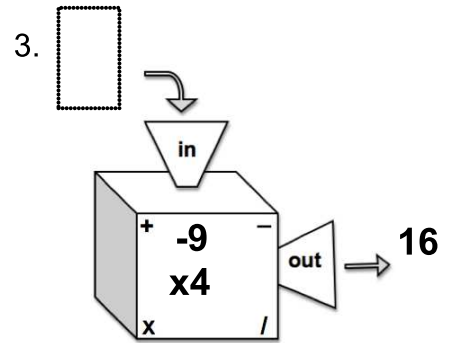
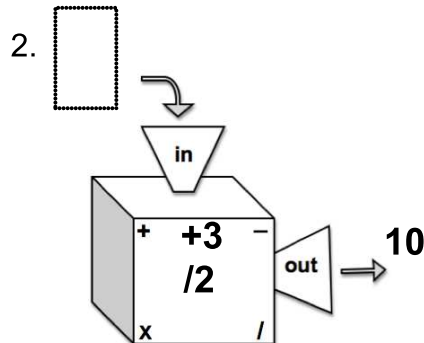
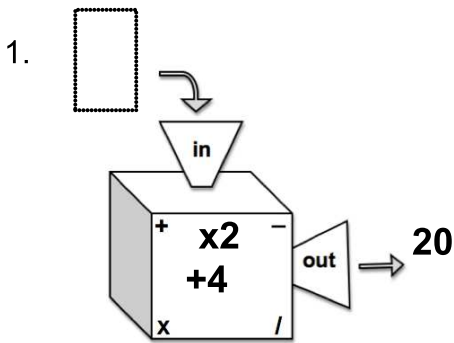
**Try it!**



16 / 2 = 8  
 then  
 8 - 3 = 5



Remember to work from the bottom up!



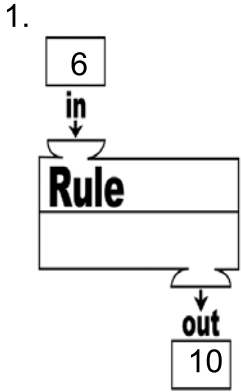
**Standard:** Use input and output rules.

4.2.1.1

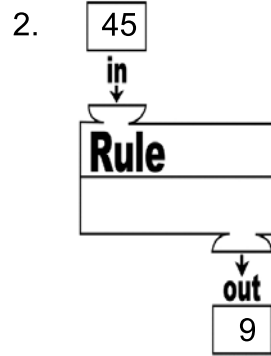
Name: \_\_\_\_\_  
 Date: \_\_\_\_\_

## Input & Output Tables

Name the **rule** and fill in the table.



in	out
6	10
8	
10	
12	
	18
	20
18	



in	out
45	9
40	
35	
30	
	5
20	

3. Rule: \_\_\_\_\_

in	out
3	9
5	11
12	
20	
27	33
	40
38	

4. Rule: \_\_\_\_\_

in	out
2	4
5	10
7	14
10	
15	
	50
	100

5. Rule: \_\_\_\_\_

in	out
30	23
27	20
22	
20	
15	
	3
	1

6.

<b>Rule</b>										
	<b>in</b>	4	5	6	7	8	9			
	<b>out</b>	16	20					40	44	48

**Standard:** Record input and outputs in a table.

4.2.1.1