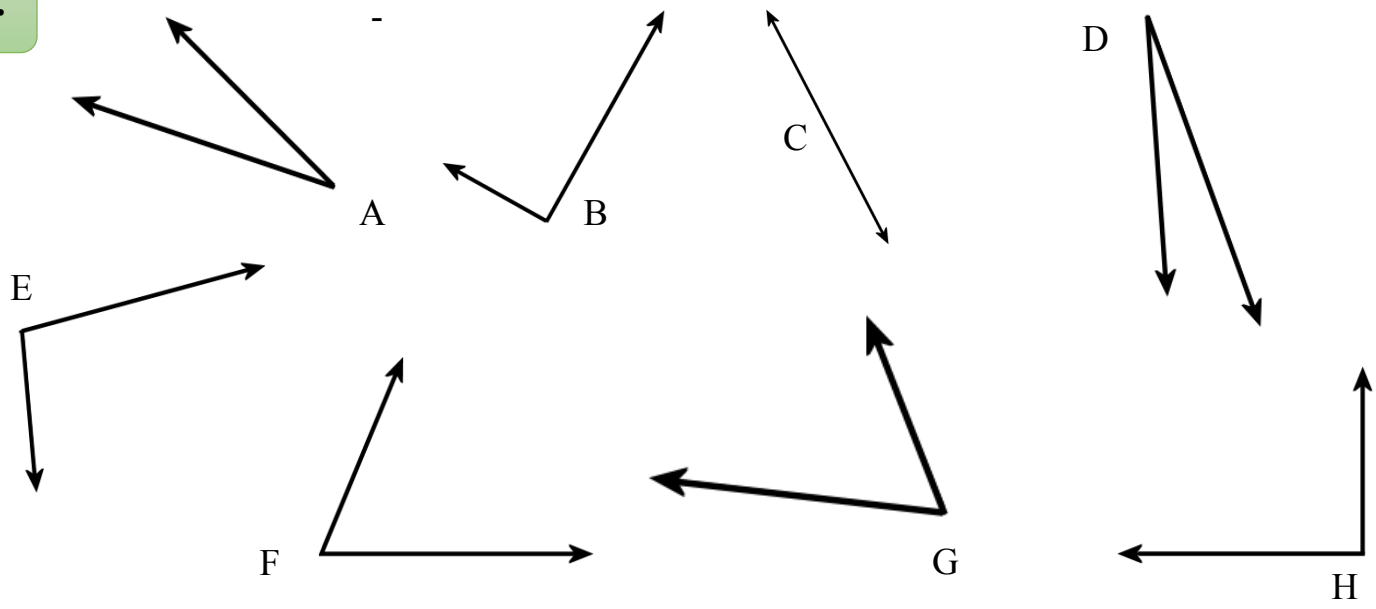
Lesson 15. Classwork

WARM-UP

Use right angle template. Label the angles as acute, right, obtuse, or straight.

1.



2

a) Translate the "sum of 12 and x" into an algebraic expression: _____

b) Translate "5 less than x" into an algebraic expression: _____

c) Translate the" difference of 10 and x" into an algebraic expression: _____

d) Translate the " 20 more than x" into an algebraic expression _____

3.

Compare using >, <, or =

$4 \times 2 \ldots 14 + 14$	$10 \times 17 \ldots 17 \times 9$	$35 \times 1 \ldots 35 \times 2$
$5 \times 2 \ldots 5 \times 2 \times 2$	$11 + 11 + 11 \ldots 11 \times 7$	$4 \times 5 \ldots 2 \times 10$
$3 \times 6 \ldots 2 \times 9$	$6 + 6 + 6 + 6 \ldots 2 \times 12$	$9 \times 4 \ldots 7 \times 4$

4. Solve:

a) 14 – (4 - 1) =_____

b) 208 - (100 + 8) =_____

c) 444 – (44 + 400) =_____

Now remove parenthesis and solve:

a) 14 – (4 - 1) =_____

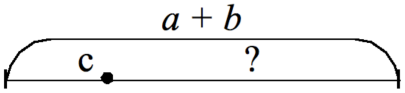
b) 208 – (100 + 8) = _____

c) 444 – (44 + 400) =_____

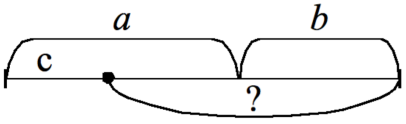
NEW MATERIAL

"There are ***a*** liters of water in a bucket and ***b*** liters of water in a second bucket. A gardener used ***c*** liters of water. How many liters of water remained in both buckets total?"

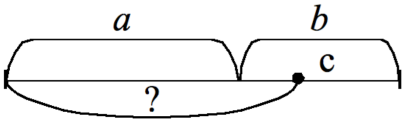
There are three different methods to solve this problem. Let us consider all of them.



Method I : ***(a + b) – c***



Method II : ***(a – c) + b***



Method III : ***a + (b – c)***

To subtract a number from the sum, one may subtract it from either of the addends and then add the other addend:

$$(a + b) - c = (a - c) + b = a + (b - c) = a + b - c$$

5. Perform the following actions and write their results:

$1 \times 2 =$ _____ **Conclusion**: $1 \times a =$ _____

$1 \times 3 =$ _____

$1 \times 6 =$ _____

6. Perform the following actions and write their results:

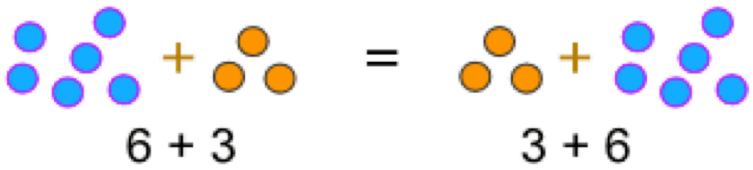
$0 \times 2 =$ _____ **Conclusion**: $0 \times a =$ _____

$0 \times 3 =$ _____

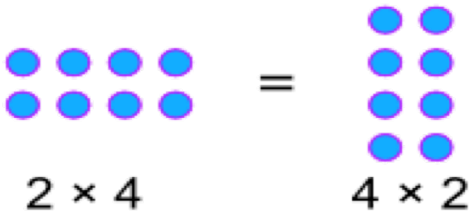
$0 \times 6 =$ _____

The **Commutative property** of multiplication says that when two numbers multiplied together, the product is the same regardless of the order of multiplicands.

When we **add**: **a + b = b + a**



When we **multiply**: **a × b = b × a**



7. Use the commutative property of multiplication to evaluate the expressions:

$3 \times 1 = 1 \times 3 =$ _____ **Conclusion**: $a \times 1 =$ _____

$5 \times 1 = 1 \times 5 =$ _____

$7 \times 1 =$ ___ × ___ = _____

$9 \times 1 =$ ___ × ___ = _____

8. Use the commutative property of multiplication to evaluate the expressions:

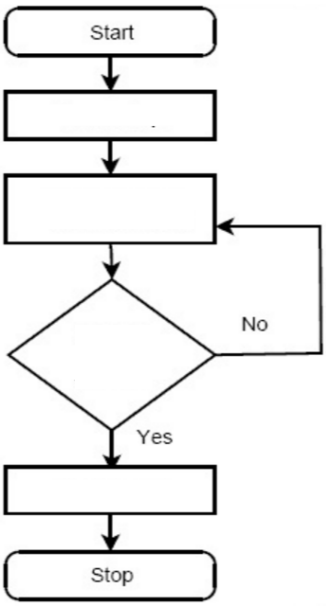
$3 \times 0 = 0 \times 3 =$ _____ **Conclusion**: $a \times 0 =$ _____

$5 \times 0 = 0 \times 5 =$ _____

$7 \times 0 =$ ___ × ___ = _____

9.

Branching algorithm



A set of steps or instructions to do something is called an algorithm. Even a robot can follow instructions!

Please help Bob – a robot - to cross the street with the traffic light. What steps we will need to add to this algorithm?

1._____

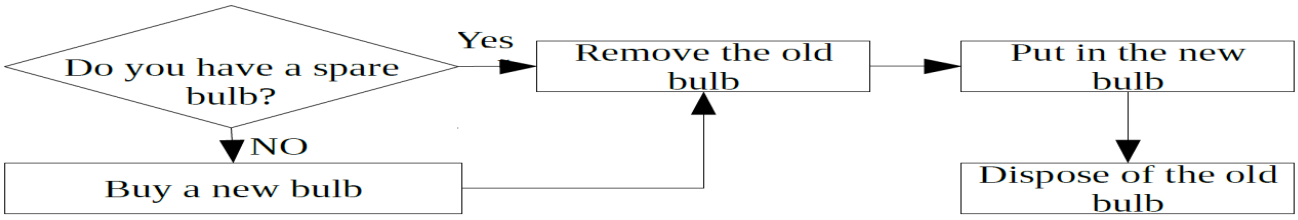
2._____

3._____

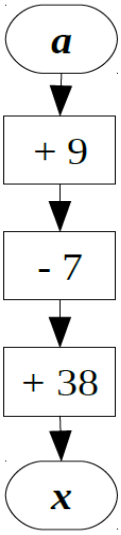
4._____

When an "algorithm" makes a choice to do one of two (or more) things, this is called branching. The most common programming "statement" used to branch is the "IF" statement. If light is green, then cross the road.

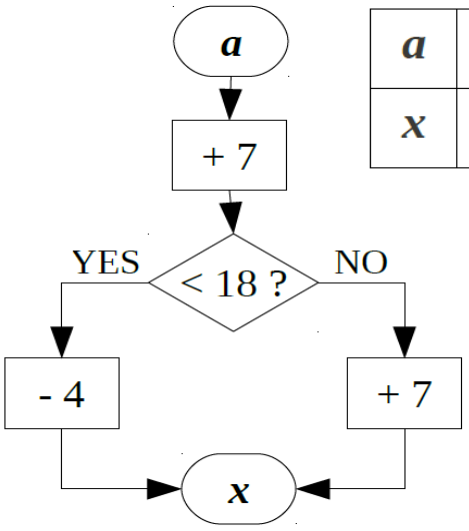
Explain the algorithm of changing the broken bulb.



Perform the actions according to the algorithms in the drawing below. Which of these algorithms



a	5	14	20
x			



a	5	14	20
x			

REVIEW

10.

Andrew is having his friends over for game night. So he decided to prepare the snacks and the games.

a) He started by making mini sandwiches. If he has 4 friends coming over and he made 3 sandwiches for each one of them, how many sandwiches did he make in total?

b) He also made some juice from fresh oranges. If he used 2 oranges per glass of juice and he made 6 glasses of juice, how many oranges did he use?

c) Then he started to prepare the games. If each game takes 5 minutes to prepare and he prepared a total of 5 games, how many minutes did it take for Andrew to prepare all the games?

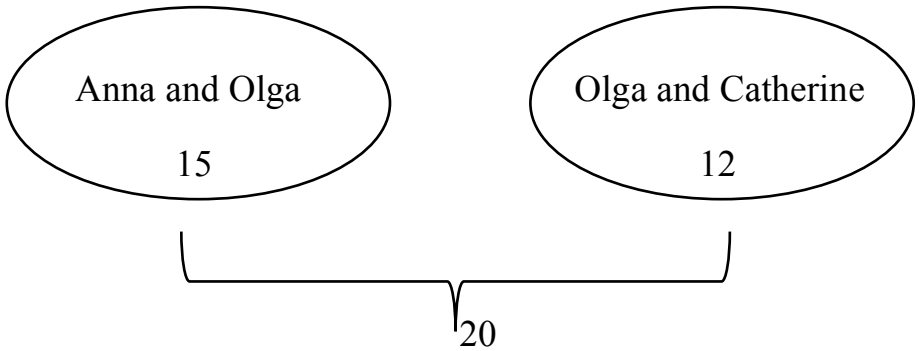
d) Andrew's 4 friends decided to bring food as well. If each of them brought 4 slices of pizza, how many slices of pizza do they have in total?

11.

Alan is 8 years old. His dad is 4 times older than Alan. How old is Alan's dad?

12.

Three girls together had 20 pencils. Anna and Olga together had 15 pencils. Olga and Catherine together had 12 pencils. How many pencils does each girl have?



13.

Roman numerals originated, as the name might suggest, in ancient Rome. There are seven basic symbols: I, V, X, L, C, D and M. The first usage of the symbols began showing up between 900 and 800 B.C.

Seven different letters: I, V, X, L, C, D and M represent 1, 5, 10, 50, 100, 500 and 1,000. We use these seven letters to make thousands of different numbers.

Roman numerals are not without flaws. For example, there is no symbol for zero, and there is no way to denote fractions.

1 = I	8 = VIII	60 = LX
2 = II	9 = IX	70 = LXX
3 = III	10 = X	80 = LXXX
4 = IV	20 = XX	90 = XC
5 = V	30 = XXX	100 = C
6 = VI	40 = XL	500 = D
7 = VII	50 = L	1000 = M

Forming numbers:

VI = 6 (5 + 1 = 6)

LXX = 70 (50 + 10 + 10 = 70)

MCC = 1200 (1000 + 100 + 100 = 1200)

IV = 4 (5 – 1 = 4)

XC = 90 (100 – 10 = 90)

CM = 900 (1000 – 100 = 900)

How would Roman write a) 18 _____ b) 273 _____?

Write Roman Numerals as a normal numbers

a) XXIX _____ b) CLX _____ c) CCCII _____