

Statements Involving "NOT", "AND", "OR"

Before we discuss how these statements work we need to review some mathematical skills from our past!!!!

List the factors of each number and then list the common factors

18 1, 2, 3, 6, 9, 18
 24 1, 2, 3, 4, 6, 8, 12, 24

Common factors: 1, 2, 3, 6

15 1, 3, 5, 15

and

75 1, 3, 5, 15, 25, 75

AND: Included in both

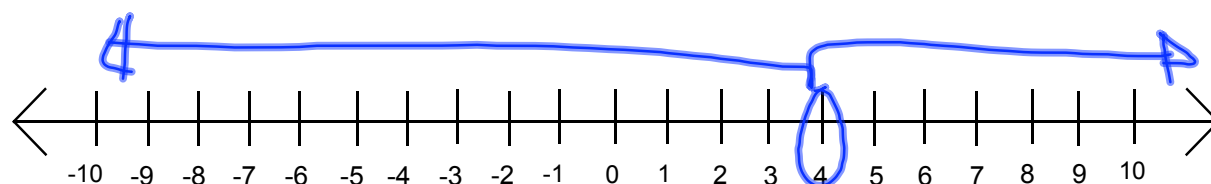
List multiples of each of the following numbers

8 , 16 , 24 , 32 , 40 , 48

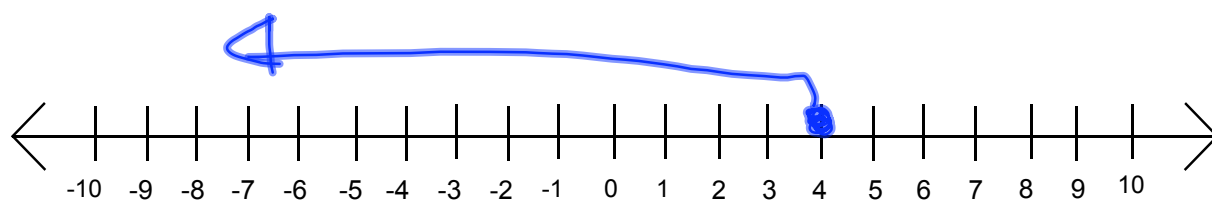
15 , 30 , 45 , 60 , 75 , 90

The words NOT, AND, OR have particular meanings and uses in mathematics. The following examples will help us to understand these.

$x \neq 4$ *negation* x is not equal to 4.



$$x \geq 4$$



What numbers satisfy the following;

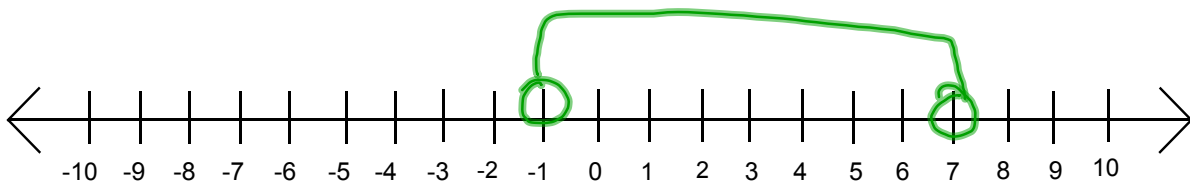
Is a multiple of 8 **and** a multiple of 12

8, 16, 24, 32

12, 24

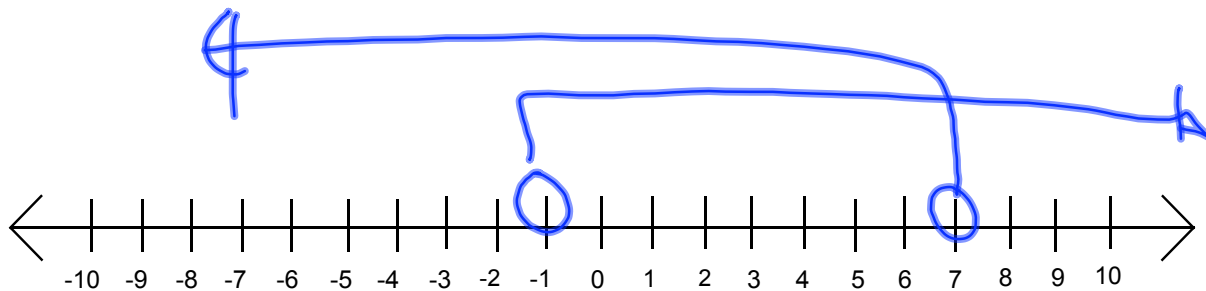
24

$x > -1$ and $x < 7$



$x > -1$ **OR** $x < 7$

One or the other or both



x is a factor of 18 or a factor of 30

18: 1, 2, 3, 6, 9, 18

30: 1, 2, 3, 5, 6, 10, 15, 30

Ans: 1, 2, 3, 5, 6, 9, 10
15, 18, 30

Write the negation of the following:

$$x > 1$$

x is greater than
1

$$x \not> 1$$

x is NOT greater
than 1

x is a factor of 12

→ x is NOT a factor
of 12.

Assignment

Pg. 391

1, 2, 6, 7, 8, 12, 13