Unit 1: Review & Numeracy

Integers and Order of Operations

Sep. 10/2015

An integer is a whole number with any sign.

Examples:

Integers	NOT Integers
5 126	0.5 25% = 0.25
-6	$\frac{6}{10}$ = $\frac{25}{100}$
30 000 000	

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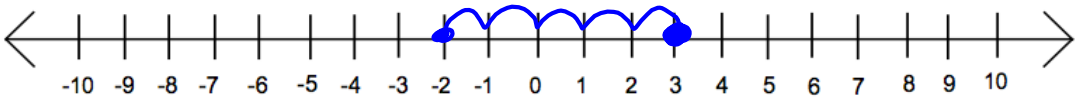
When adding or subtracting integers, move along the number line.

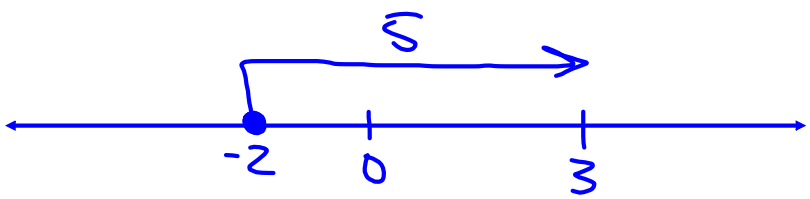


-2 + 5

starting point

amount to move in that direction

direction to move (right)



-2+5 = 3

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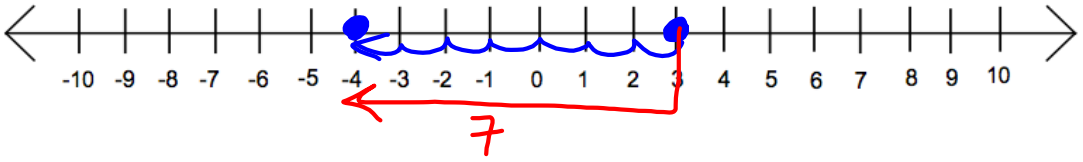
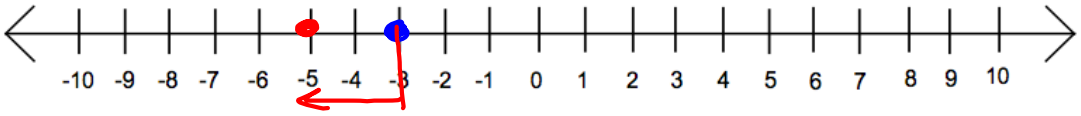
Exercise 1:

3 − 7

a) 3 - 7 = -4 start left by 7



b) -3 - 2 = -5



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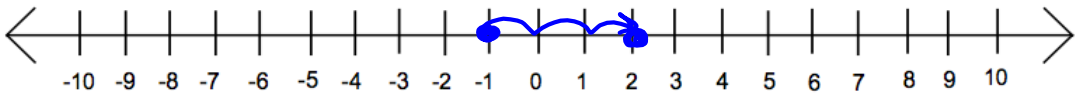
If there are two signs next to each other, change it to one sign using the rules:

$(+)(+) \rightarrow +$
$(-)(-) \rightarrow +$
$(+)(-) \rightarrow -$
$(-)(+) \rightarrow -$

If the signs are the same, it's positive.

If the signs are different, it's negative.



Ex.2 $-1-(-3) = -1+3$

$= 2$

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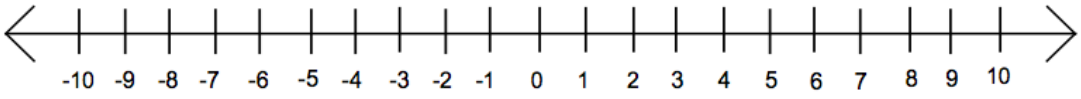
Another way to think about it:



$$-1 - (-3)$$

starting point

direction to move

amount to move in that direction

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When there is more than one operation, you must do them in the correct order.

Brackets
Exponents
Division
Multiplication
Addition
Subtraction

} in order, from left to right

$4 \div 2 \times 3 = 2 \times 3$
$= 6$ ✓

WRONG

$4 \div 2 \times 3 = 4 \div 6$
$= \frac{2}{3}$
$\doteq 0.67$

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Note: For a fraction, the numerator and denominator are understood to have brackets.

$$\frac{1+2}{3+4} = \frac{(1+2)}{(3+4)}$$

If no brackets are shown, draw them yourself.

Important! This concept is a source of errors even in Grade 12!

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Exercise 3: Simplify, showing all steps.

(a) $2\left[(-1)^2 - 3 + 8\right]$

$= 2[1 - 3 + 8]$

$= 2[-2 + 8]$

$= 2[6]$

$= 12$

$2^2 = 2 \cdot 2$
$= 4$
$(-1)^2 = (-1)(-1)$
$= +1$

(b) $[1 - (-3) \times (-4)] \times (3 - 4) \div [14 + (-3)]$

(hint: some steps can be done simultaneously)

14 - 3

$= [1 - 12] \times (-1) \div [11]$

$= [-11] \times (-1) \div (11)$

$= 11 \div (11)$

$= 1$

(c) $\frac{(1-2)\times 8}{2\times 3-2} = \frac{(-1)\times 8}{6-2}$

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Assigned Work:

A. - page 1 of Integer and Numeracy Review
B. - BEDMAS worksheet

B. 1 $\left(\left(10 \div (-10)\right)^{7}\right)^{2}$

$10 \div (-10) = -1$

$= \left((-1)^{7}\right)^{2}$

$(-1)^{7} = (-1)(-1)(-1)(-1)(-1)(-1)(-1)$

$= (-1)^{2}$

$= 1$

$= -1$

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