ODM EDUCATIONAL GROUP
Changing your Tomorrow

Period 1

INTEGERS

Introduction, Multiplication of Integers

SUBJECT : MATHEMATICS
CHAPTER NUMBER: 01
CHAPTER NAME : INTEGERS

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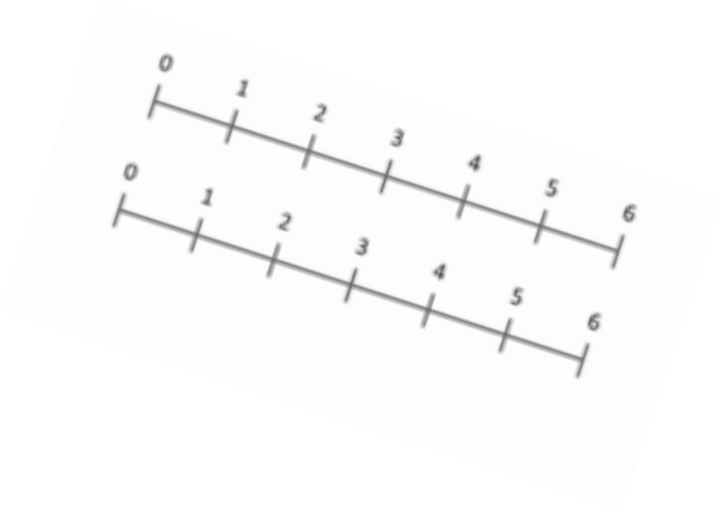
Learning outcome

Students will be able to

- multiply integers with different signs
- multiply integers with the same sign
- multiply an integer by -1



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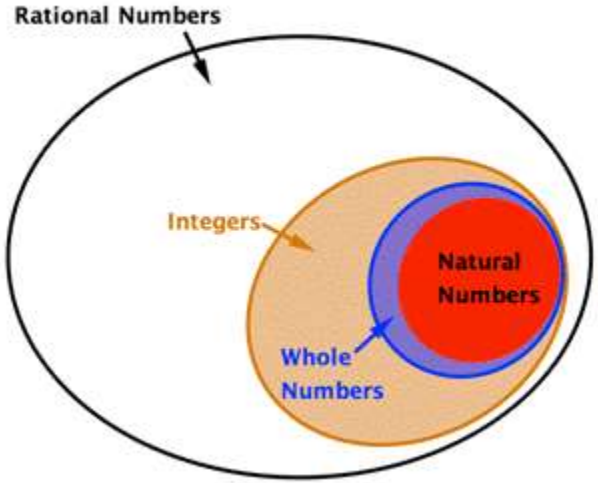
Video on universe of number system

- https://www.youtube.com/watch?v=tC7NkH5xwBM (2:57 seconds)



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INTRODUCTION

What are integers?

List out the uses of integers in real life.

Where do positive integers lie on the number line?

Where do negative integers lie on the number line?

Is zero an integer?

Integers are the numbers which can be positive, negative or zero, but cannot be a fraction.
The symbol of integers is "**Z**".
Z= {……-8,-7,-6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8,……}

In real life, integers are used in different sports, and when people utilize banks to deposit or withdraw cash, read a temperature below zero, calculate a loss or gain in stocks or look at a posted speed limits.

Positive integers lies on the right of zero on the number line.
Negative integers lies on the left of zero on the number line.
Zero is neither negative nor positive.

https://www.youtube.com/watch?v=oj5lZBbzVck (6:11 minutes)

Application of integers in real life

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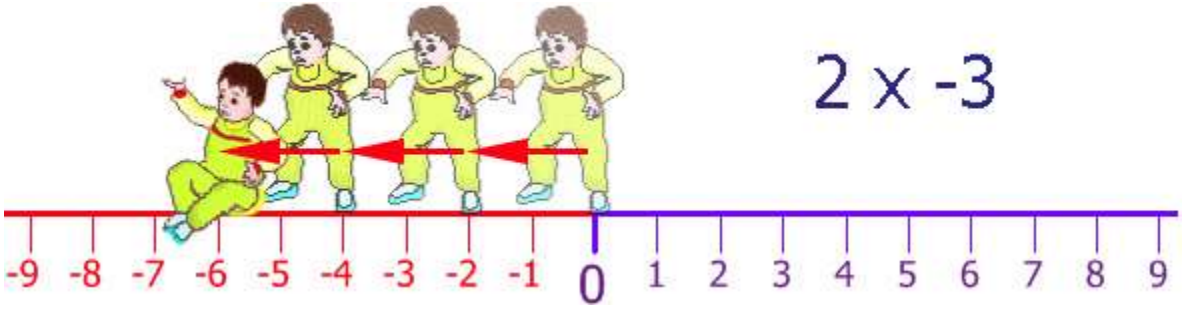
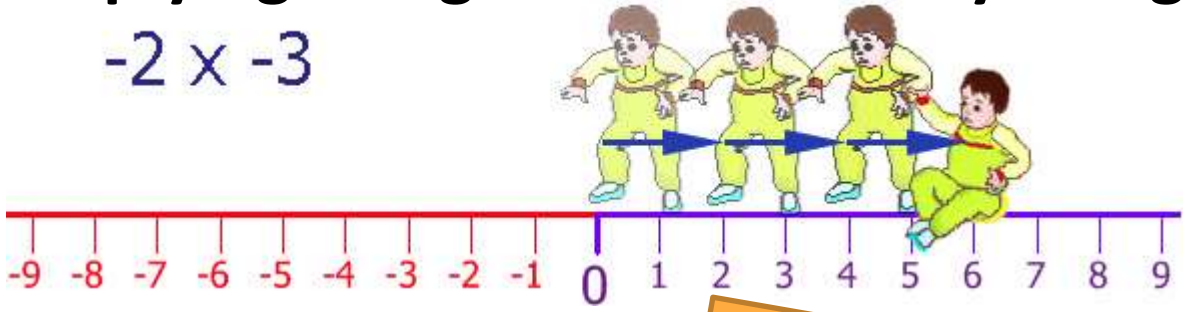
Multiplication of a positive integer by a negative number



Multiplying a negative number by a negative number

-2×-3



Multiplying negatives makes a positive

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Multiplying Integers Rules

Positive X Positive = Positive Answer

Negative X Negative = Positive Answer

Positive X Negative = Negative Answer

Negative X Positive = Negative Answer

Tips to follow : If number of -ve integers is even : Product is +ve

If number of -ve integers is odd : Product is -ve

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Evaluation Question

4. Evaluate:

(i) 15 × 8

(ii) 15 × (-8)

(iii) (-15) × 8

(iv) (-15) × -8

Q.No. 4

Solution:

(i) 15 × 8 = 120

(ii) 15 × (-8) = – 120

(iii) (-15) × 8 = – 120

(iv) (-15) × -8 = 120

6. Evaluate:

(i) $2 \times 4 \times 6 \times 8$

(ii) $2 \times (-4) \times 6 \times 8$

(iii) $(-2) \times 4 \times (-6) \times 8$

(iv) $(-2) \times (-4) \times 6 \times (-8)$

(v) $(-2) \times (-4) \times (-6) \times (-8)$

Q.No. 6

Solution:

(i) $2 \times 4 \times 6 \times 8 = 384$

(ii) $2 \times (-4) \times 6 \times 8 = -384$

The number of negative integer in the product is odd

(iii) $(-2) \times 4 \times (-6) \times 8 = 384$

The number of negative integer in the product is even

(iv) $(-2) \times (-4) \times 6 \times (-8) = -384$

The number of negative integer in the product is odd

(v) $(-2) \times (-4) \times (-6) \times (-8) = 384$

The number of negative integer in the product is even

10. State, true or false:

(i) product of two different integers can be zero.

(ii) product of 120 negative integers and 121 positive integers is negative.

(iii) $a \times (b + c) = a \times b + c$

(iv) $(b - c) \times a = b - c \times a$.

Q.No. 10

Solution:

(i) True.

Example: $5 \times 0 = 0, 0 \times -8 = 0$

(ii) False.

The total number of negative integers is 120 which is an even number and we know that the product of even numbers of negative integers is always positive. Hence, the sign of the product will be positive.

(iii) False.

$a \times (b + c) \neq a \times b + c$

$ab + ac \neq ab + c$

(iv) False.

$(b - c) \times a \neq b - c \times a$

$ab - ac \neq b - ca$

Ex 1D Q.No.1

1. The sum of two integers is – 15. If one of them is 9, find the other.

Solution:

Sum of two integers = – 15

One integer = 9

Other integer = – 15 – 9

= – (15 + 9)

= – 24

2. The difference between integers x and – 6 is – 5. Find the values of x.

Solution:

The difference between integers x and -6 is -5

x – (-6) = – 5 or – 6 – x = – 5

So the value of x is

x + 6 = – 5 or – x = – 5 + 6

x = – 5 – 6 or – x = 1

x = – 11 or x = – 1

Q.No. 3

The sum of two integers is 28. If one integer is – 45, find the other.

Solution:

Sum of two integers = 28

One integer = – 45

Other integer = 28 – (-45)

By further calculation

= 28 + 45

= 73

4. The sum of two integers is – 56. If one integer is – 42, find the other.

Solution:

Sum of two integers = – 56

One integer = – 42

Other integer = – 56 – (- 42)

By further calculation

= – 56 + 42

= – 14

5. The difference between an integer x and (-9) is 6. Find all possible values of x.

Solution:

It is given that

The difference between an integer x and (-9) is 6

$x - (-9) = 6$ or $-9 - x = 6$

So the value of x is

$x - (-9) = 6$ or $-9 - x = 6$

By further calculation

$x + 9 = 6$ or $-x = 6 + 9$

So we get

$x = 6 - 9$ or $-x = 15$

Here

$x = -3$ or $x = -15$

Therefore, possible values of x are -3 and -15.

6. Evaluate:

(i) $(-1) \times (-1) \times (-1) \times \ldots\ldots\ldots$ 60 times.

(ii) $(-1) \times (-1) \times (-1) \times (-1) \times \ldots\ldots\ldots$ 75 times.

.

Solution:

(i) $(-1) \times (-1) \times (-1) \times \ldots\ldots\ldots$ 60 times = 1 because (-1) is multiplied even number of times.

(ii) $(-1) \times (-1) \times (-1) \times (-1) \times \ldots\ldots\ldots$ 75 times = -1 because (-1) is multiplied odd number of times

HOME WORK

Exercise 1A Q No. 5

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AHA

Evaluate : i) (-18) x (-2) x (-5)

ii) (-7) x(-8) x 4 x(-9)

THANKING YOU

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