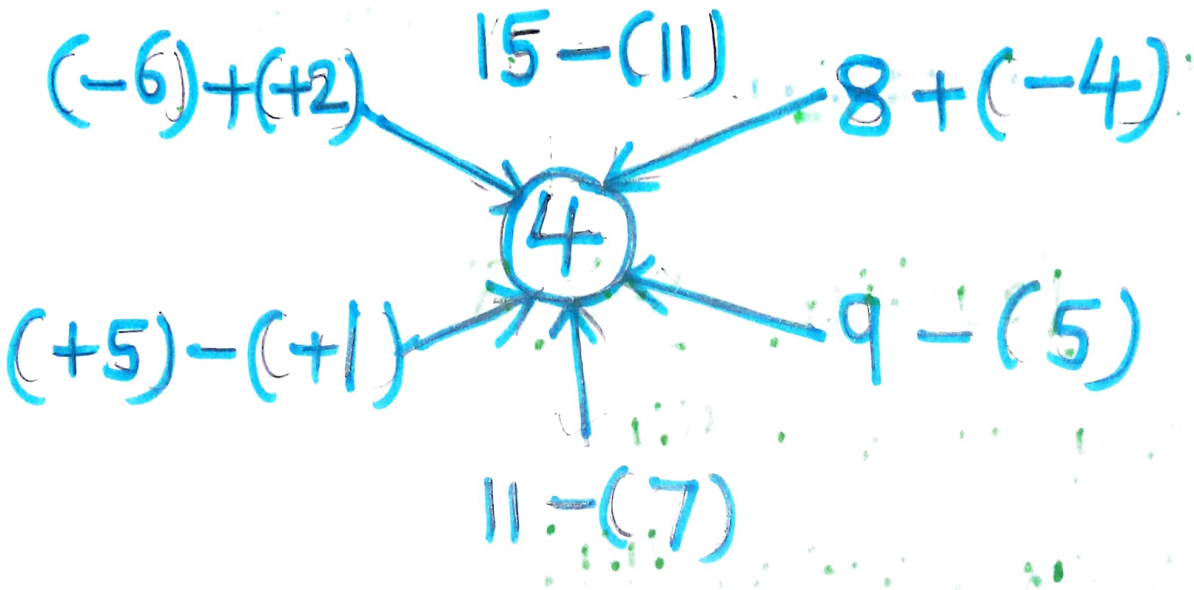
2. Multiplication & Division of Integers

* Addition and subtraction

① $7+8=15$ ② $10+(-4)=6$

③ $(-5)+(-4)=-9$ ④ $(+9)-(+5)=4$

* Write a no. in each bracket.



* Multiplication of Integers.

$(-3)+(-3)+(-3)+(-3)$ This is the add. of (-3) taken 4 times. It equals -12

It can be written as $(-3)\times 4=-12$

$(-6)\times(-3)=18$ $4\times(-9)=-36$

$5\times 4=20$ $(-7)\times 0=0$

- The product of two positive (+ve) integers is a positive (+ve) integer.
- The product of one positive (+ve) and one negative (−ve) integer is a negative integer.
- The product of two negative (−ve) integers is a positive (+ve) integer.

(+ve number) × (+ve number) = (+ve number)

(+ve number) × (−ve number) = (−ve number)

(−ve number) × (+ve number) = (−ve number)

(−ve number) × (−ve number) = (+ve number)

Complete the table of (-6)

$(-6) \times (-3) = 18$

$(-6) \times (-2) = 12$

$(-6) \times (-1) = 6$

$(-6) \times 0 = 0$

$(-6) \times 1 = -6$

$(-6) \times 2 = -12$

$(-6) \times 3 = -18$

$(-6) \times 4 = -24$

$(-7) \times (-3) = 21$

$(-7) \times (-2) = 14$

$(-7) \times (-1) = 7$

$(-7) \times 0 = 0$

$(-7) \times 1 = -7$

$(-7) \times 2 = -14$

$(-7) \times 3 = -21$

Practice set 8

1) $(-9) \times 6 = -54$

2) $(-63) \times (-7) = 441$

3) $(-124) \times (-1) = (+124)$

4) $(-9) \times (-4) = 36$

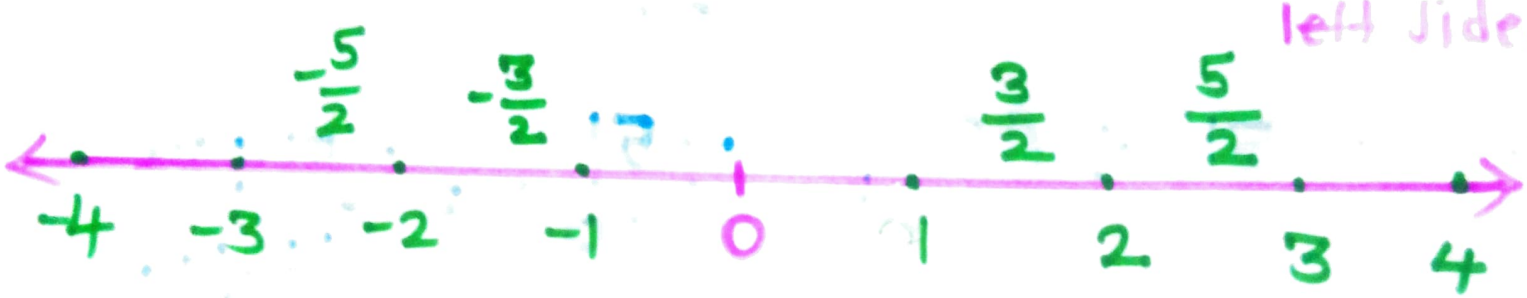
5) $(-12) \times 7 = -84$

Division

1) $12 \div 3 = \frac{12}{3} = 4.$

2) $13 \div 4 = \frac{13}{4}.$

The positive integers on the right side of number line and negative integers on left side.



$\left(-\frac{5}{2}, \frac{5}{2}\right)$ $\left(\frac{-3}{2}, \frac{3}{2}\right)$ are opposite numbers. They are also called additive inverse numbers.

* $(-1) \times (-1) = 1$

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

1) $15 \div (-3) = \frac{15}{(-3)} = -5$.

2) $(-28) \div (-7) = \frac{-28}{-7} = 4$

The rules of division of integers are like the rules of multiplication of integers.

- We cannot divide any number by zero.
- The quotient of two positive integers is a positive number.
- The quotient of two negative integers is a positive number.
- The quotient of a positive integer and a negative integer is always a negative number.

Practice Set 9.

1) $(-96) \div 16 = \frac{-96}{16} = -6$

$\frac{-48}{8} = -6$

2) $98 \div (-28) = -\frac{98}{28} = \frac{-98 \div 2}{28 \div 2} = \frac{-49}{14}$

$= \frac{-7}{2}$

3) $(-51) \div 68 = \frac{-51}{68} = \frac{-51 \div 17}{68 \div 17}$

$= \frac{-3}{4}$

4) $-38 \div (-57) = -\frac{38}{57} = \frac{38 \div 19}{57 \div 19}$

$= \frac{-2}{3}$

5) $78 \div 65 = \frac{78}{65} = \frac{78 \div 13}{65 \div 13}$

$= \frac{6}{5}$

Practice set (9)

Q.2) Wr. three divisions of Integers

1) $\frac{24}{5} = \frac{24 \times 5}{5 \times 5} = \frac{120 \div 5}{25 \div 5} = \frac{24}{5}$

2) $\frac{72}{15} = \frac{72 \div 3}{15 \div 3} = \frac{24}{5}$

$\frac{24}{\times 3}$
$\frac{}{72}$

3) $\frac{-480}{-100} = \frac{480 \div 20}{100 \div 20} = \frac{24}{5}$

Q.5 for multiplication

① $(-13) \times (-15) = 195$

② $(+41) \times (-8) = -328$

③ $12 \times 9 = 108$

Division

① $(-24) \div 9 = \frac{-24}{9}$

$= \frac{-8}{3}$

② $\frac{12}{28} = \frac{3}{7}$