GMATPoint

GMAT Arithmetic Formulas PDF

By GMATPoint.com

GMAT Arithmetic Formulas [PDF]

- Integers $\in \{...-5,-4,-3,-2,-1,0,1,2,3,4,5...\}$
- If integer a is divisible by b, then a = nb, i.e n is a natural number.
- a is a multiple of b; b is a divisor/factor of a.
- a = nb + q
- a = dividend
- n = quotient
- b = divisor
- q = reminder

Ex: 29 = 4*7+1

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- Even integer → divisible by 2
- Odd integer → not divisible by 2
- Odd ±Odd = Even
- Even ±Even = Even
- Odd ±Even = Odd
- Even ±Odd = Odd
- Odd*Odd = Odd
- Odd*Even = Even
- Even*Even = Even
- $(odd)^n = odd$
- $(even)^n = even$

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- Prime Number→has 2 Factors only (1 and itself). Ex - 2,3,5,7...
- Composite Number→have more than 2 factors.
- 1 ∋- neither nor composite
- 2 - prime (only even number)
- 1 x n = n x 1 = n
- n/1 = n
- n + 0 = n - 0 = n
- Divisible by 0 is not allowed
- Fractions $\rightarrow \frac{n}{2} \Rightarrow d \neq 0$

  n = numerator, d =denomination
- if $\frac{n_1}{d_1} = \frac{n_2}{d_2}$, they are equivalent fractions.

- Addition and subtraction of fractions

$$\frac{13}{5}+\frac{14}{5}=\frac{13+14}{5}=\frac{27}{5}$$

$$\frac{6}{7}-\frac{3}{7}=\frac{6-3}{7}=\frac{3}{7}$$

$$\frac{1}{2}+\frac{3}{4}=\frac{4+2*3}{2*4}=\frac{10}{8}=\frac{5}{4}$$

$$\frac{1}{2}+\frac{3}{4}=\frac{2*3}{4(LCM)}=\frac{5}{4}$$

- Multiplication and division of fractions

$$\frac{2}{13}\text{x}\frac{7}{9}=\frac{2x7}{13x9}=\frac{14}{117}$$

$$\frac{2}{5}\div\frac{3}{4}=\frac{2}{5}\text{x}\frac{4}{3}=\frac{2x4}{5x3}=\frac{8}{15}$$

- Mixed Fraction $\rightarrow 17\frac{1}{4} = 17 + \frac{1}{4} = \frac{17x4+1}{4} = \frac{69}{4}$

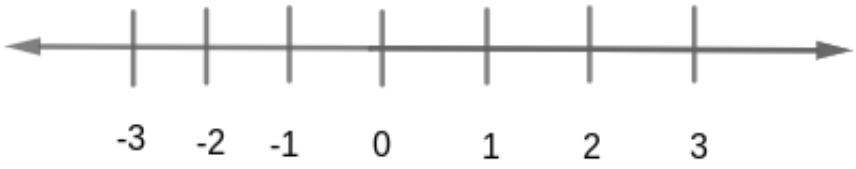
- Decimal = 364.57

- 1.3+2.6 = 3.9 (Addition with carry forward)

- 1.3 x 2.6 = 0.26 (Decimal Has as many digits after it as the sum of that of the 2 numbers)

- $5\sqrt{1.7}$ = 0.34

- Real Numbers $\rightarrow$ +ve,0,-ve



Absolute Value $\rightarrow$ The number without sign

- $|x|$ = x if x is positive

  = -x if x negative

- $x + y = y + x$
- $ab = ba$
- $a + (b+c) = (a+b)+c = b + (a + c)$
- $(ab)d = a(bd) = b(ad)$
- $xy+yz = y(x+z)$
- $(+ve) + (+ve) = (+ve)$
- $(-ve) + (-ve) = (-ve)$
- $(+ve) \times (+ve) = (+ve)$
- $(-ve) \times (-ve) = (+ve)$
- $(+ve) \times (-ve) = (-ve)$
- $x \times 0 = 0$
- $|x + y| \leq |x| + |y|$
- $2:3 = \frac{2}{3} = 0.67$

(Ratio can be represented in these ways)

- If a value x is greater than 100% of a value y, x>y

$$130\% = \frac{130}{100} = 1.3$$

$$130\% \text{ of } y = 1.3y$$

- If a value x is less than 1% of y

$$x < \frac{1}{100} y$$

- Percentage change = $\frac{change\ in\ value}{Initial\ value} \times 100\%$

- If x becomes y, % change = $\frac{|y-x|}{x} \times 100\%$

- If y > x, % increase, else % decrease

- Successive % change of a% and b% = $(a+b+\frac{ab}{100})\%$

so, if 100 increases by 20% and then 30%, %

increase = $(20+30+\frac{20x30}{100})=56\%$

➔$a^b = a \times a \times a \times \ldots\ldots (upto\ b\ times)$

➔$5^3 = 5 \times 5 \times 5$

➔$(-5)^3 = -5 \times -5 \times -5$

➔$(0.5)^3 = 0.5 \times 0.5 \times 0.5$

- $a^2 \rightarrow a\ squared$
- $(n)^{even}$ = Positive (if n is positive)

= Positive (if n is negative)

- $(n)^{odd}$ = Positive (if n is positive)

  = Negative (if n is negative)

- Square root = $\sqrt{a} \rightarrow a\ cannot\ be\ negative$

- $\sqrt{25} = \sqrt{5^2} = 5$

- Mean = Average = $\dfrac{a_1+a_2+.....+a_n}{n}$

- Median is the middle number of a list when arranged in ascending/descending order

  (It is the average of the middle 2 numbers if the number of numbers is even)

➔ Mode - The most frequent number in a list

➔ $|A \cup B| = |A| + |B| - |A \cap B|$

➔ n! = n(n-1)(n-2).....!

➔ 0! = 1! = 1

➔ $^{n}C_{r} = \frac{n!}{r!\,n-r!}$

➔ $P(E) = \frac{The\ number\ of\ favourable\ outcomes}{The\ total\ number\ of\ outcomes}$

➔ P(Aor B) = P(A) + P(B)

(If A & B are mutually exclusive)

➔ P(A or B) = P(A) + P(B) - P(A) P(B)

(If A & B are not mutually exclusive)

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