BALABHADRA SKILL DEVELOPMENT ACADEMY
MATHS FORMULA - 23

SQUARE AND SQUARE ROOT

Sl	Situation	Formula
1	If number of digits in any number is even (say k), then its square root has _____ number of digits	$\frac{k}{2}$
2	if number of digits in any number is odd (say k), then number of digits in its square root will be _____	$\left(\frac{k+1}{2}\right)$
2	If any number is in the form $\frac{1}{\sqrt{a}\pm\sqrt{b}}$, then to rationalize its denominator, the numerator and denominator should be multiplied by	$\sqrt{a} \mp \sqrt{b}$
3	If 2,3,7 or 8 are units place digits of any number, then this number will not be a _____.	Perfect square
4	To find the square root of any number upto two places of decimal, given number should be divided in such a way that one part is perfect square i.e.	$x = y + z$ Where y is the greatest square number contained in x. Then, $\sqrt{x} = \sqrt{y \pm z} = \sqrt{y} \pm \frac{z}{2\sqrt{y}}$

INDICES AND SURDS

Sl	Situation	Formula
1	Let 'a' be a real number and m be a positive integer and if 'a' is multiplied by itself 'm' times i.e.	$a \times a \times a \times \ldots . m \text{ times} = a^m$
2	Let 'a' and 'm' be a rational number and a positive integer, respectively. If $a^{1/m}$ is an irrational number, then $a^{1/m}$ is known as surd of power m.	$a^{1/m} = \sqrt[m]{a} = \text{mth root of a}$

3.	Let a and b be two real numbers and m and n are two positive integers, then	(i) $a^m \times a^n = a^{m+n}$
		(ii) $\frac{a^m}{a^n} = a^{m-n}$
		(iii) $(a^m)^n = a^{mn}$
		(iv) $a^{-m} = \frac{1}{a^m}$
		(v) $(ab)^m = a^m b^m$
		(vi) $\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$
		(vii) $a^\circ = 1$

FRACTION

Sl	Situation	Formula
1.	A number which can be expressed in the form of $\frac{p}{q}$ where $q \neq 0$, is known as _____. Here, p and q are respectively known as _____ and _____ of fraction.	Fraction, numerator, denominator
2.	If the numerator is equal to denominator, then the value of fraction is equal to _____.	One
3.	When numerator is zero and denominator is not equal to zero, then value of fraction is ___.	Zero
4.	The denominator of a fraction is always assumed to be non-zero but in case when denominator is zero, then value of fraction is equal to _____.	Infinity
5.	When numerator and denominator are multiplied or divided by the same number, then value of fraction remains_____.	Unchanged
6.	If numerator and denominator are do not have any common factor, then the fraction is said to be in its _____.	Lowest form
7.	If the numerator of a fraction is greater than its denominator, then fraction is known as an _____.	Improper fraction

8.	Example of improper fraction is	$\frac{13}{4}$
9.	The fractions which are formed by using an integer and a proper fraction are known as _____.	Mixed fraction
10.	Example of mixed fraction is	$3\frac{1}{4}$
11.	A fraction of a fraction is known as a _____.	Compound fraction
12.	Example of compound fraction is	$\frac{3}{5}\ of\ \frac{11}{3}, i.e. \frac{33}{65}$
13.	A fraction in which either the numerator or denominator or both are fractions, is known as a _____.	Complex fraction
14.	Example of complex fraction is	$\frac{\frac{1}{2}+\frac{2}{3}}{\frac{3}{4}-\frac{2}{9}}$
15.	A fraction which contains an additional fraction in the numerator or in the denominator, is known as a _____.	Continued fraction
16.	Example of continued fraction is	$\cfrac{1}{2+\cfrac{1}{3+\cfrac{1}{1+\frac{1}{4}}}}$
17.	Fractions can be compared by _____, _____ and _____.	Decimal form, denominators, numerators
18.	A decimal in which all the figures recur, is known as pure _____.	Recurring decimal
19.	Example of recurring decimal is	$\frac{1}{3} = 0.333\ldots = 0.\overline{3}$
20.	A recurring decimal in which some figures do not recur, is known as	Mixed recurring decimal
21.	Example of mixed recurring decimal is	$0.12\overline{36}$

22.	A pure recurring decimal is equal to a fraction which has the recurring numeral as its numerator and its denominator has as many nines as is the number of recurring digits.	$0.\overline{xyz} = \frac{xyz}{999}$
23.	A mixed recurring decimal is equal to a fraction whose numerator is the difference between the number formed by all the digits after decimal point (recurring digits are taken only once) and the number formed by non-recurring digits and whose denominator is the number formed by as many nines as there are recurring digits followed by as many zeroes as there are non-recurring digits.	$0.xy\overline{ab} = \frac{xyab - ab}{9900}$