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PRODUCT CATALOG MATHEMATICS

PASCAL'S TRIANGLE

What is Pascal's Triangle?
One of the most interesting Number Patterns is Pascal's Triangle named after Blaise Pascal, a famous Mathematician. A Pascal's triangle is an arrangement of numbers in a triangular array such that the numbers at the end of each row are 1 and the remaining numbers are the sum of the nearest two numbers in the above row. This concept is used widely in probability, combinatorics and algebra.

MULTIPLICATION CHART

FROM 1 TO 10

X	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

What is multiplication chart?
A multiplication chart is a table that shows the products of two numbers. Usually, one set of numbers is written on the left column and another set is written on the top row. The products are listed in a rectangular array of numbers.

most visual, colorful, and artistic way of learning

Number theory

Arithmetic

Algebra

Trigonometry

Geometry

and many more.....

3D SHAPES SURFACE AREAS

<p>CUBE</p> <p>Surface Area (A) = $6a^2$</p>	<p>CUBOID</p> <p>Surface Area (A) = $2ab + 2bh + 2ah$</p>
<p>SQUARE PYRAMID</p> <p>Surface Area (A) = $a^2 + a\sqrt{3}l$</p>	<p>CONE</p> <p>Surface Area (A) = $\pi r^2 + \pi rl$</p>
<p>CYLINDER</p> <p>Surface Area (A) = $2\pi r^2 + 2\pi rh$</p>	<p>SPHERE</p> <p>Surface Area (A) = $4\pi r^2$</p>

BASIC GEOMETRY TERMS

POINT	A single location in a space or on a flat surface.
LINE	A collection of points that continue forever in 2 directions.
LINE SEGMENT	A part of a line with a definite beginning and end.
RAY	A part of a line with one endpoint and extends forever in the other direction.
ANGLE	Two rays that converge at one point.
INTERSECTING LINES	Two non-parallel lines that share exactly one point (point of intersection).
PARALLEL LINES	Two lines that don't intersect or meet at any point but are together separated by some distance.
PERPENDICULAR LINES	Two lines that meet or intersect at an angle of 90° (right angle).
CHORD	The line segment between two points on a given curve.

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STUDENTS AND TEACHERS

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WHY MATH CREATIVES

Math is a universal concept that has impacted cultures across the globe and throughout time. Mathematics is not just a standalone subject, but it is a foundation of understanding more complex concepts of science and engineering. It also helps develop the logical frameworks which can aid in critical decision-making process.

And yet, young students are giving up on maths as they find Math hard and boring.

Interestingly, most often it's not the subject itself but the teaching method, and its mundane presentation make the subject boring and hard. This is the case with young kids when it come to understand fundamentals of mathematics.

We believe if teaching methods are made interesting and creative, any concept can be learned easily.

As a result, we have introduced our first set of creatives on Maths – Math posters.

We believe Math posters

are most visual, colourful, and artistic way to learn fundamentals of mathematics.

can be perfect gift for classroom decorations in school, study room at home and playroom as well.

can be a quick source of revision material.

**LET'S MAKE KID A MATH GENIUS.
LET'S LOVE MATH.
LET'S LEARN MATH.**

KRUTI TRIVEDI & RONAK TRIVEDI
Founders, KRITINOVA



MATHS POSTERS

QUALITY AND SPECIFICATIONS

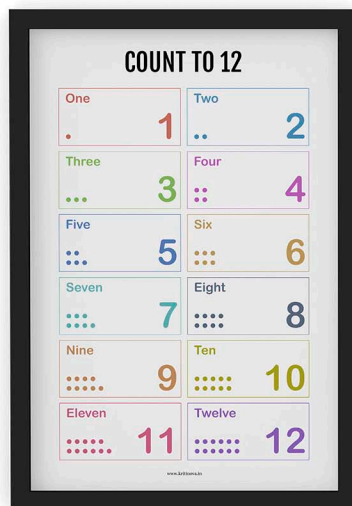
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A3 - Rolled
12" x 18" - Framed
A3 - Framed
A4 - Framed

260 gsm RC satin Matt
Paper
300 DPI Image resolution
Water resistant print

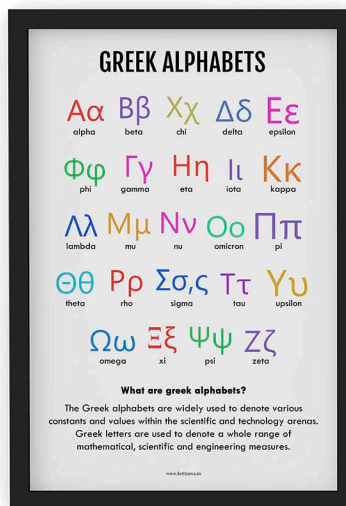
0.75" frame with texture
Comes with
preinstalled hook



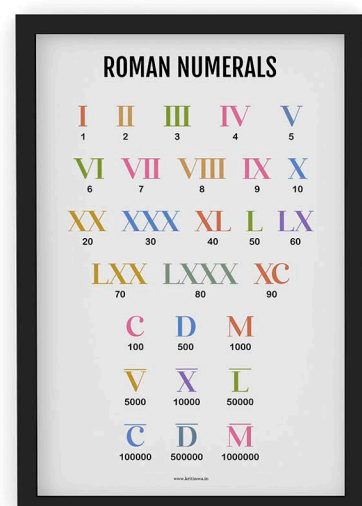
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1



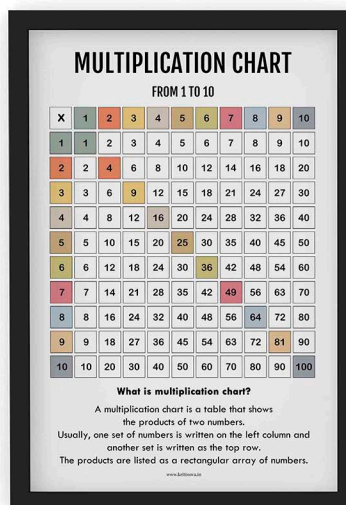
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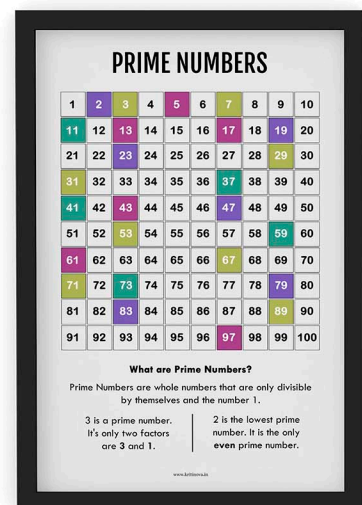
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TYPES OF NUMBERS

PART 1

EVEN numbers	The numbers which are exactly divisible by 2 are called even numbers. These can be both positive or negative integers.	Even numbers are 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, etc.
ODD numbers	The numbers which are not exactly divisible by 2 are called odd numbers. These can be both positive or negative integers.	Odd numbers are 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, etc.
POSITIVE numbers	Any number that has a value greater than zero is a positive number. Natural numbers are examples of positive numbers.	Positive numbers are +1, +2, +3, +4, +5 and so on.
NEGATIVE numbers	Any number that has a value less than zero is a negative number. They are the opposite of natural numbers (counting numbers).	Negative numbers are -1, -2, -3, -4, -5 and so on.
PRIME numbers	Prime numbers are the numbers which are only divided by 1 and the number itself.	Prime numbers are 2, 3, 5, 7, 11, etc.
COMPOSITE numbers	A composite number is a number that has more than two factors. For example, 6 is a composite number, as the number 6 is divisible by 1, 2, and 3.	Examples of composite numbers are 4, 6, 8, 9, 10, and so on.
NATURAL numbers	Natural numbers are known as counting numbers that start with the positive integers from 1 to infinity.	The set of natural numbers is denoted by \mathbb{N} and is $\{1, 2, 3, 4, 5, \dots\}$.
WHOLE numbers	Whole numbers are known as non-negative integers and do not include any fractional or decimal part.	The whole numbers in mathematics are $\{0, 1, 2, 3, 4, 5, \dots\}$.

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TYPES OF NUMBERS

PART 2

INTEGERS	Integers are the set of all whole numbers that include a negative set of natural numbers also.	\mathbb{Z} represents integers and the set of integers are $\mathbb{Z} = \{0, -1, -2, -3, -4, -5, -6, -7, -8, -9, \dots\}$.
ORDINAL numbers	An ordinal number is a number that denotes the position or place of an object. It indicates the order of things or objects.	Examples of ordinal numbers are 1 st , 2 nd , 3 rd , 4 th , 5 th , etc.
CONSECUTIVE numbers	Numbers that follow each other in order from the smallest number to the largest number. They have a difference of 1 between every two numbers.	Examples of consecutive numbers are 1, 2, 3, 4, 5, 6, 7 and so on.
REAL numbers	All positive and negative integers, all fractions and decimal numbers without imaginary numbers are called real numbers.	It is represented by the symbol \mathbb{R} and the set of real numbers are $\mathbb{R} = \{1, 2, 1.5, 1.51, 6.51, 9.2, \dots\}$.
RATIONAL numbers	A number that can be written as a ratio of one number over another is known as a rational number.	The symbol \mathbb{Q} represents the rational number.
IRRATIONAL numbers	A number that cannot be expressed in the ratio of one over another is known as an irrational number.	The symbol \mathbb{I} represents the irrational numbers.
COMPLEX numbers	A number that can be written in the form of "a+bi" where "a" and "b" are the real number and "i" is an imaginary number is known as a complex number.	The symbol \mathbb{C} represents the complex numbers.
IMAGINARY numbers	The imaginary numbers are the complex numbers that can be written in the form of "a+bi" where "a" is a real number and "b" is an imaginary number.	The symbol \mathbb{I} represents the imaginary number.

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CARDINAL-ORDINAL NUMBERS

CARDINAL	ORDINAL		
1	One	1 st	First
2	Two	2 nd	Second
3	Three	3 rd	Third
4	Four	4 th	Fourth
5	Five	5 th	Fifth
6	Six	6 th	Sixth
7	Seven	7 th	Seventh
8	Eight	8 th	Eighth
9	Nine	9 th	Ninth
10	Ten	10 th	Tenth
11	Eleven	11 th	Eleventh
12	Twelve	12 th	Twelfth
13	Thirteen	13 th	Thirteenth
14	Fourteen	14 th	Fourteenth
15	Fifteen	15 th	Fifteenth

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NUMBER, DIGIT & NUMERAL

NUMBER	NUMERAL
Number is a mathematical concept used to count, measure and label.	A numeral is a figure, symbol or group of figures or symbols that stands for a number.
Number is truly an idea in our minds.	For denoting a number, we use a group of digits known as numerals.
The greatest two-digit number is 99.	When number is an idea, the numeral tells how we write it.
The greatest three-digit number is 999.	Example: 8, 50 and twelve.
The greatest four-digit number is 9999.	Example: 8, 50 and twelve.
We write or talk about numbers using numerals such as "99" or "five".	
DIGIT	
A digit is a single individual symbol used to make numerals.	
0, 1, 2, 3, 4, 5, 6, 7, 8, and 9 are the ten digits we use in everyday numerals.	
Example: The numeral 753 is made up of 3 digits ("7", "5" and "3").	
The numeral 8 is made up of 1 digit ("8").	
So a single digit can also be a numeral.	
Digit CAN NEVER be more than one at once.	
Like 99 is 02 digit.	
There are two digits: 1 and 0.	

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ROUNDING NUMBERS

ROUND DOWN	ROUND UP
↓	↑
0 1 2 3 4	5 6 7 8 9
ROUNDING WHOLE NUMBERS	
Rounding to the nearest 10	33 → 30 158 → 160 08 → 60 358 → 360 87 → 90 878 → 880
Rounding to the nearest 100	114 → 100 1580 → 1600 158 → 200 3538 → 3500 887 → 900 4878 → 4900
ROUNDING DECIMALS	
Rounding to tenth	7.42 → 7.4 14.251 → 14.3 13.85 → 13.9 4.772 → 4.8 15.78 → 15.8 8.762 → 8.8
Rounding to hundredth	5.256 → 5.26 23.112 → 23.11 6.888 → 6.89 89.354 → 89.35 6.658 → 6.66 78.263 → 78.26
What is rounding a number?	
Rounding a number is making a number simpler but keeping its value closest to the original number.	

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BASIC MATH SYMBOLS

+	-	×	÷
add	subtract	multiply	divide
=	≠	≈	≡
equal	not equal	approximate	equivalent
%	√	°	·
percentage	square root	degree	decimal point
<	>	≤	≥
less than	greater than	less than or equal	greater than or equal
()	{}	[]	x
parentheses	braces	brackets	absolute value
∑	π	∞	!
sum of	pi	infinity	factorial

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ALGEBRA SYMBOLS

x	△	Δ	∴
variable	equal by definition	delta	therefore
<<	>>	∀	∃
much less than	much greater than	for all	there exists
f(x)	(f+g)	(a,b)	[a,b]
function of x	function composition	open interval	closed interval
a ^b	√	∛	∜
power	square root	cube root	fourth root
⌊	⌈	∑	∝
floor brackets	ceiling brackets	double summation	proportional to
π	φ	e	γ
capital pi	golden ratio	Euler's number	Euler's constant

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SET THEORY SYMBOLS

A ∩ B	A ∪ B	A ⊂ B	A ⊆ B
intersection	union	subset	proper subset
A ⊄ B	A ⊇ B	A ⊃ B	A ⊄ B
not subset	superset	proper superset	not superset
A = B	A - B	A \ B	B , #B
equality	relative difference	symmetric difference	cardinality
{ }	∅	P(C)	A ^c
set	empty set	power set	complement
(a,b)	A × B	a ∈ A	a ∉ A
ordered pair	cartesian product	element of	not element of
Q	Z	C	R
rational numbers set	integer numbers set	complex numbers set	real numbers set

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GEOMETRY SYMBOLS

∠	⊥	∠	∠
angle	right angle	spherical angle	measured angle
°	degree	/	//
degree	degree	prime	double prime
AB	AB	AB	AB
line	line segment	ray	arc
⊥	∥	≡	~
perpendicular	parallel	congruent to	similarity
Δ	x-y	π	rad
triangle	distance	pi constant	radians
c	grad	g	arcsecond
radians	gradians	gradians	arcsecond

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CALCULUS SYMBOLS

ϵ epsilon	e Euler's number	y' derivative	y'' second derivative
$y^{(n)}$ nth derivative	$\frac{dy}{dx}$ derivative	$\frac{d^2y}{dx^2}$ second derivative	$\frac{d^3y}{dx^3}$ nth derivative
\int integral	\iint double integral	\iiint triple integral	\oint closed line integral
\oiint closed surface integral	\osiiint closed volume integral	\dot{y} time derivative	\ddot{y} time second derivative
(a, b) closed interval	$[a, b)$ open interval	i imaginary unit	\lim limit
∞ lemniscate	x^y convolution	\otimes vector	\hat{x} unit vector

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STATISTICS SYMBOLS

$P(A B)$ probability of events intersection	$P(A)$ probability function	$P(A B)$ conditional probability	$P(A \cup B)$ probability of events union
$E(X)$ expectation value	μ population mean	$\text{var}(X)$ variance	$\text{std}(X)$ standard deviation
$\text{corr}(X, Y)$ correlation	$\text{cov}(X, Y)$ covariance	$\rho_{X, Y}$ correlation	M_o mode
M_d sample median	M_R mid-range	$N(\mu, \sigma^2)$ normal distribution	$\text{Gamma}(c, \lambda)$ gamma distribution
$F(k_1, k_2)$ F distribution	$\text{Bin}(n, p)$ binomial distribution	$\chi^2(k)$ chi-square distribution	$\text{exp}(\lambda)$ exponential distribution
$\text{Geom}(p)$ geometric distribution	$\text{Poisson}(\lambda)$ Poisson distribution	$\text{Bern}(p)$ Bernoulli distribution	$\text{HG}(N, K, n)$ hypergeometric distribution

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NUMBER PROPERTIES

COMMUTATIVE PROPERTY

ADDITION: The sum of two real numbers is always the same regardless of the order in which they are added.
 $a + b = b + a$
 $8 + 6 = 6 + 8$
 $(-4) + 9 = 9 + (-4)$

MULTIPLICATION: The product of two real numbers is unaffected by the order in which they are multiplied.
 $a \times b = b \times a$
 $6 \times 2 = 2 \times 6$
 $(-3) \times 5 = 5 \times (-3)$

ASSOCIATIVE PROPERTY

ADDITION: The sum of three real numbers is always the same regardless of their grouping.
 $(a + b) + c = a + (b + c)$
 $(2 + 3) + 4 = 2 + (3 + 4)$
 $(-4 + 5) + 7 = -4 + (5 + 7)$

MULTIPLICATION: The product of three real numbers is always the same regardless of their grouping.
 $(a \times b) \times c = a \times (b \times c)$
 $(3 \times 4) \times 5 = 3 \times (4 \times 5)$
 $(-2 \times 3) \times 4 = -2 \times (3 \times 4)$

IDENTITY PROPERTY

ADDITION: The sum of any real number and zero is the number.
 $a + 0 = 0 + a = a$
 $18 + 0 = 0 + 18 = 18$
 $-6 + 0 = 0 + (-6) = -6$

MULTIPLICATION: The product of any real number and one is the number.
 $a \times 1 = 1 \times a = a$
 $9 \times 1 = 1 \times 9 = 9$
 $-4 \times 1 = 1 \times (-4) = -4$

DISTRIBUTIVE PROPERTY

Adding two or more real numbers and multiplying the sum by a real number, is the same as multiplying the individual numbers by the multiplier.
 $a(b + c) = ab + ac$
 $4(5 + 20) = 4 \times 5 + 4 \times 20$
 $40 = 20 + 80$
 $52 = 52$

$a(b \times c) = (a \times b) \times c$
 $(8 \times 5) \times 2 = 8 \times (5 \times 2)$
 $80 = 40 \times 2$
 $80 = 80$

INVERSE PROPERTY

ADDITION: The sum of any real number and its additive inverse is zero.
 $a + (-a) = 0$
 $7 + (-7) = 0$

MULTIPLICATION: The product of any real number and its multiplicative inverse is one.
 $a \times \frac{1}{a} = 1$
 $9 \times \frac{1}{9} = 1$

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HOW TO TELL TIME

The little hand shows the hour.

The big hand shows the minutes.

The number shows the hour.

Each line shows the minutes.

AM

PM

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TIME CONVERSION CHART

1 MINUTE	=	60 SECONDS
1 HOUR	=	60 MINUTES
1 DAY	=	24 HOURS
1 WEEK	=	7 DAYS
1 MONTH	=	28-31 DAYS
1 YEAR	=	365 DAYS
1 LEAP YEAR	=	366 DAYS
1 YEAR	=	52 WEEKS
1 YEAR	=	12 MONTHS
1 DECADE	=	10 YEARS
1 CENTURY	=	100 YEARS
1 MILLENNIUM	=	1000 YEARS

What is conversion chart?
Time conversion chart is the handy guide of the conversion of time in hour, minute, second, day, week, month, and year.

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ADDITION TABLES

NUMBERS 1-12

+1	+2	+3	+4	+5	+6
1+1=2	2+1=3	3+1=4	4+1=5	5+1=6	6+1=7
1+2=3	2+2=4	3+2=5	4+2=6	5+2=7	6+2=8
1+3=4	2+3=5	3+3=6	4+3=7	5+3=8	6+3=9
1+4=5	2+4=6	3+4=7	4+4=8	5+4=9	6+4=10
1+5=6	2+5=7	3+5=8	4+5=9	5+5=10	6+5=11
1+6=7	2+6=8	3+6=9	4+6=10	5+6=11	6+6=12
1+7=8	2+7=9	3+7=10	4+7=11	5+7=12	6+7=13
1+8=9	2+8=10	3+8=11	4+8=12	5+8=13	6+8=14
1+9=10	2+9=11	3+9=12	4+9=13	5+9=14	6+9=15
1+10=11	2+10=12	3+10=13	4+10=14	5+10=15	6+10=16
1+11=12	2+11=13	3+11=14	4+11=15	5+11=16	6+11=17
1+12=13	2+12=14	3+12=15	4+12=16	5+12=17	6+12=18

+7	+8	+9	+10	+11	+12
7+1=8	8+1=9	9+1=10	10+1=11	11+1=12	12+1=13
7+2=9	8+2=10	9+2=11	10+2=12	11+2=13	12+2=14
7+3=10	8+3=11	9+3=12	10+3=13	11+3=14	12+3=15
7+4=11	8+4=12	9+4=13	10+4=14	11+4=15	12+4=16
7+5=12	8+5=13	9+5=14	10+5=15	11+5=16	12+5=17
7+6=13	8+6=14	9+6=15	10+6=16	11+6=17	12+6=18
7+7=14	8+7=15	9+7=16	10+7=17	11+7=18	12+7=19
7+8=15	8+8=16	9+8=17	10+8=18	11+8=19	12+8=20
7+9=16	8+9=17	9+9=18	10+9=19	11+9=20	12+9=21
7+10=17	8+10=18	9+10=19	10+10=20	11+10=21	12+10=22
7+11=18	8+11=19	9+11=20	10+11=21	11+11=22	12+11=23
7+12=19	8+12=20	9+12=21	10+12=22	11+12=23	12+12=24

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SUBTRACTION TABLES

NUMBERS 1-12

-1	-2	-3	-4	-5	-6
1-1=0	2-1=1	3-1=2	4-1=3	5-1=4	6-1=5
2-1=1	3-1=2	4-1=3	5-1=4	6-1=5	7-1=6
3-1=2	4-1=3	5-1=4	6-1=5	7-1=6	8-1=7
4-1=3	5-1=4	6-1=5	7-1=6	8-1=7	9-1=8
5-1=4	6-1=5	7-1=6	8-1=7	9-1=8	10-1=9
6-1=5	7-1=6	8-1=7	9-1=8	10-1=9	11-1=10
7-1=6	8-1=7	9-1=8	10-1=9	11-1=10	12-1=11
8-1=7	9-1=8	10-1=9	11-1=10	12-1=11	13-1=12
9-1=8	10-1=9	11-1=10	12-1=11	13-1=12	14-1=13
10-1=9	11-1=10	12-1=11	13-1=12	14-1=13	15-1=14
11-1=10	12-1=11	13-1=12	14-1=13	15-1=14	16-1=15
12-1=11	13-1=12	14-1=13	15-1=14	16-1=15	17-1=16

-7	-8	-9	-10	-11	-12
7-1=6	8-1=7	9-1=8	10-1=9	11-1=10	12-1=11
8-1=7	9-1=8	10-1=9	11-1=10	12-1=11	13-1=12
9-1=8	10-1=9	11-1=10	12-1=11	13-1=12	14-1=13
10-1=9	11-1=10	12-1=11	13-1=12	14-1=13	15-1=14
11-1=10	12-1=11	13-1=12	14-1=13	15-1=14	16-1=15
12-1=11	13-1=12	14-1=13	15-1=14	16-1=15	17-1=16
13-1=12	14-1=13	15-1=14	16-1=15	17-1=16	18-1=17
14-1=13	15-1=14	16-1=15	17-1=16	18-1=17	19-1=18
15-1=14	16-1=15	17-1=16	18-1=17	19-1=18	20-1=19
16-1=15	17-1=16	18-1=17	19-1=18	20-1=19	21-1=20
17-1=16	18-1=17	19-1=18	20-1=19	21-1=20	22-1=21
18-1=17	19-1=18	20-1=19	21-1=20	22-1=21	23-1=22

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MULTIPLICATION TABLES

NUMBERS 1-12

1x	2x	3x	4x	5x	6x
1x1=1	2x1=2	3x1=3	4x1=4	5x1=5	6x1=6
1x2=2	2x2=4	3x2=6	4x2=8	5x2=10	6x2=12
1x3=3	2x3=6	3x3=9	4x3=12	5x3=15	6x3=18
1x4=4	2x4=8	3x4=12	4x4=16	5x4=20	6x4=24
1x5=5	2x5=10	3x5=15	4x5=20	5x5=25	6x5=30
1x6=6	2x6=12	3x6=18	4x6=24	5x6=30	6x6=36
1x7=7	2x7=14	3x7=21	4x7=28	5x7=35	6x7=42
1x8=8	2x8=16	3x8=24	4x8=32	5x8=40	6x8=48
1x9=9	2x9=18	3x9=27	4x9=36	5x9=45	6x9=54
1x10=10	2x10=20	3x10=30	4x10=40	5x10=50	6x10=60
1x11=11	2x11=22	3x11=33	4x11=44	5x11=55	6x11=66
1x12=12	2x12=24	3x12=36	4x12=48	5x12=60	6x12=72

7x	8x	9x	10x	11x	12x
7x1=7	8x1=8	9x1=9	10x1=10	11x1=11	12x1=12
7x2=14	8x2=16	9x2=18	10x2=20	11x2=22	12x2=24
7x3=21	8x3=24	9x3=27	10x3=30	11x3=33	12x3=36
7x4=28	8x4=32	9x4=36	10x4=40	11x4=44	12x4=48
7x5=35	8x5=40	9x5=45	10x5=50	11x5=55	12x5=60
7x6=42	8x6=48	9x6=54	10x6=60	11x6=66	12x6=72
7x7=49	8x7=56	9x7=63	10x7=70	11x7=77	12x7=84
7x8=56	8x8=64	9x8=72	10x8=80	11x8=88	12x8=96
7x9=63	8x9=72	9x9=81	10x9=90	11x9=99	12x9=108
7x10=70	8x10=80	9x10=90	10x10=100	11x10=110	12x10=120
7x11=77	8x11=88	9x11=99	10x11=110	11x11=121	12x11=132
7x12=84	8x12=96	9x12=108	10x12=120	11x12=132	12x12=144

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DIVISION TABLES

NUMBERS 1-12

:1	:2	:3	:4	:5	:6
1:1=1	2:1=2	3:1=3	4:1=4	5:1=5	6:1=6
2:1=2	4:1=4	6:1=6	8:1=8	10:1=10	12:1=12
3:1=3	6:1=6	9:1=9	12:1=12	15:1=15	18:1=18
4:1=4	8:1=8	12:1=12	16:1=16	20:1=20	24:1=24
5:1=5	10:1=10	15:1=15	20:1=20	25:1=25	30:1=30
6:1=6	12:1=12	18:1=18	24:1=24	30:1=30	36:1=36
7:1=7	14:1=14	21:1=21	28:1=28	35:1=35	42:1=42
8:1=8	16:1=16	24:1=24	32:1=32	40:1=40	48:1=48
9:1=9	18:1=18	27:1=27	36:1=36	45:1=45	54:1=54
10:1=10	20:1=20	30:1=30	40:1=40	50:1=50	60:1=60
11:1=11	22:1=22	33:1=33	44:1=44	55:1=55	66:1=66
12:1=12	24:1=24	36:1=36	48:1=48	60:1=60	72:1=72

:7	:8	:9	:10	:11	:12
7:1=7	8:1=8	9:1=9	10:1=10	11:1=11	12:1=12
14:1=14	16:1=16	18:1=18	20:1=20	22:1=22	24:1=24
21:1=21	24:1=24	27:1=27	30:1=30	33:1=33	36:1=36
28:1=28	32:1=32	36:1=36	40:1=40	44:1=44	48:1=48
35:1=35	40:1=40	45:1=45	50:1=50	55:1=55	60:1=60
42:1=42	48:1=48	54:1=54	60:1=60	66:1=66	72:1=72
49:1=49	56:1=56	63:1=63	70:1=70	77:1=77	84:1=84
56:1=56	64:1=64	72:1=72	80:1=80	88:1=88	96:1=96
63:1=63	72:1=72	81:1=81	90:1=90	99:1=99	108:1=108
70:1=70	80:1=80	90:1=90	100:1=100	110:1=110	120:1=120
77:1=77	88:1=88	99:1=99	110:1=110	121:1=121	132:1=132
84:1=84	96:1=96	108:1=108	120:1=120	132:1=132	144:1=144

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BASIC 2D SHAPES

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QUADRILATERALS TYPES

SQUARE It has four equal sides. It has four right angles (90°). The opposite sides are parallel. The diagonals bisect each other at 90°.	RECTANGLE It has two pairs of equal sides. It has four right angles (90°). The opposite sides are parallel. The diagonals bisect each other.
PARALLELOGRAM It has two pairs of equal sides. The opposite angles are equal. The opposite sides are parallel. The diagonals bisect each other.	RHOMBUS It has four equal sides. The opposite angles are equal. The opposite sides are parallel. The diagonals bisect each other at 90°.
TRAPEZOID Has one pair of parallel sides. Opposite sides are not equal. Opposite angles are not equal.	KITE It has two pairs of equal sides. It has one pair of equal angles. The diagonals meet at right angles. One of the diagonals bisects the other.

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BASIC GEOMETRY TERMS

	POINT	A single location in a space or on a flat surface.
	LINE	A collection of points that continue forever in 2 directions.
	LINE SEGMENT	A part of a line with a definite beginning and end.
	RAY	A part of a line with one endpoint and extends forever in the other direction.
	ANGLE	Two rays that converge on one point.
	INTERSECTING LINES	Two non-parallel lines that share exactly one point (point of intersection).
	PARALLEL LINES	Two lines that don't intersect or meet at any point but run together separated by same distance.
	PERPENDICULAR LINES	Two lines that meet or intersect at an angle of 90° (at right angle).
	CHORD	The line segment between two points on a given curve.

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TYPES OF ANGLES

ACUTE ANGLE Less than 90° 	RIGHT ANGLE Exact 90°
OBTUSE ANGLE Greater than 90° and less than 180° 	REFLEX ANGLE Greater than 180° and less than 360°
STRAIGHT ANGLE Exact 180° 	FULL ANGLE Exact 360°

ADJACENT ANGLES, OPPOSITE ANGLES, ALTERNATE ANGLES, CORRESPONDING ANGLES

Angles are core part of the geometry and they are the fundamentals for the more complex geometrical shapes.

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AREA FORMULAS

SQUARE $a \times a$ or a^2 	RECTANGLE $a \times b$
EQUILATERAL TRIANGLE $\frac{\sqrt{3}}{4} a^2$ 	TRIANGLE $\frac{1}{2} bh$
RHOMBUS $\frac{1}{2} ab$ 	CIRCLE πr^2
PARALLELOGRAM ah 	TRAPEZOID $\frac{1}{2} (a+b)h$

Area is defined as the amount of two-dimensional space occupied by an object. Area formulas have many practical applications in building, architecture & science.

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PART OF CIRCLE

	CIRCLE		CIRCUMFERENCE		ARC
	RADIUS		DIAMETER		CHORD
	SECTOR		SEGMENT		AREA
	SECANT		CENTRE		TANGENT

A circle is a closed two-dimensional figure in which the set of all the points in the plane is equidistant from a given point called "centre" and has many parts that represent the properties of a circle.

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BASIC 3D SHAPES

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3D GEOMETRY CHART

CUBE Surface Area (A) = 6a² 12 8 6 	CUBOID Surface Area (A) = 2wl + 2wh + 2lh 12 8 6
SQUARE PYRAMID Surface Area (A) = a² + a√(a²+4h²) 8 5 5 	CONE Surface Area (A) = πr² + πrl 1 1 2
SPHERE Surface Area (A) = 4πr² 0 0 1 	CYLINDER Surface Area (A) = 2πr² + 2πrh 2 0 3

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3D SHAPES SURFACE AREAS

CUBE Surface Area (A) = 6a² 	CUBOID Surface Area (A) = 2wl + 2wh + 2lh
SQUARE PYRAMID Surface Area (A) = a² + a√(a²+4h²) 	CONE Surface Area (A) = πr² + πrl
CYLINDER Surface Area (A) = 2πr² + 2πrh 	SPHERE Surface Area (A) = 4πr²

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3D SHAPES VOLUMES

CUBE $\text{Volume (V)} = a^3$	CUBOID $\text{Volume (V)} = w \times h \times l$
SQUARE PYRAMID $\text{Volume (V)} = a^2 \times h/3$	CONE $\text{Volume (V)} = \pi r^2 \times h/3$
CYLINDER $\text{Volume (V)} = \pi r^2 h$	SPHERE $\text{Volume (V)} = 4/3 \times \pi r^3$

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BASIC OPERATIONS

ADDITION
It involves combining more than one numbers into one number to find the **sum** of numbers.
 $4 + 5 = 9$
addition is denoted by '+' sign

SUBTRACTION
It involves removing one number from another to find the **difference** between the two.
 $9 - 5 = 4$
subtraction is denoted by '-' sign

MULTIPLICATION
It involves finding the **product** of two or more numbers.
 $8 \times 10 = 80$
multiplication is denoted by 'x' sign

DIVISION
It involves splitting a number into smaller number to find the **quotient**.
 $9 \div 3 = 3$
division is denoted by '÷' sign

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INTEGERS RULES

MULTIPLYING INTEGER

$+$ \times $+$ = $+$
 $-$ \times $-$ = $+$
 $+$ \times $-$ = $-$
 $-$ \times $+$ = $-$

DIVIDING INTEGER

$+$ \div $+$ = $+$ $-$ \div $-$ = $+$
 $+$ \div $-$ = $-$ $-$ \div $+$ = $-$
 $-$ \div $-$ = $+$ $+$ \div $+$ = $+$
 $+$ \div $+$ = $+$ $-$ \div $-$ = $+$

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PLACE VALUE CHART

Place value **increases** from right to left. Place value **decreases** from left to right.

9	4	6	5	3	8	2
Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones

Word and Expanded forms
 nine million, four hundred sixty-five thousand, three hundred eighty two
 $9000000 + 400000 + 60000 + 5000 + 300 + 80 + 2$

What is place value?
 Place value is the value of a digit by virtue of its position in a number.
 Place value of 3 in above number is Hundred.
 Place value of 3 in 9465382 is 300.

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PEDMAS RULE

PEDMAS
The sequence in which mathematical operations are performed

P PARENTHESES () or { } or {}
E EXPONENTS Powers and Roots x^y
D DIVISION from left to right \div
M MULTIPLICATION from left to right \times
A ADDITION from left to right $+$
S SUBTRACTION from left to right $-$

DO OPERATION FROM LEFT TO RIGHT

EXAMPLE 1
 $56 - 20 \div 12 + 4 \times 3 - 2 + 20 \div 10$ Parentheses
 $= 56 - 20 \div 12 + 12 + 20 \div 10$ Divide
 $= 56 - 20 \div 12 + 12 + 2$ Multiply
 $= 56 - 1\frac{2}{3} + 12 + 2$ Add
 $= 56 - 1\frac{2}{3} + 14$ Subtract
 $= 56 - 1\frac{2}{3} + 14$ Subtract
 $= 55 - 1\frac{2}{3} + 14$ Add
 $= 68 - 1\frac{2}{3}$ Result

EXAMPLE 2
 $6 + 15 \div 4 + (2^3 + 2) \div 2$ Parentheses
 $= 6 + 15 \div 4 + (8 + 2) \div 2$ Exponent
 $= 6 + 15 \div 4 + 10 \div 2$ Addition-Subtraction
 $= 6 + 3\frac{3}{4} + 5$ Division
 $= 11 + 3\frac{3}{4}$ Add
 $= 14\frac{3}{4}$ Result

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DIVISIBILITY RULES

A number is divisible by

- 2** if the last digit is even or 0
- 3** if the sum of the digits is divisible by 3
- 4** if the last two digits are divisible by 4
- 5** if the last digit is 5 or 0
- 6** if a number is divisible by 2 & 3
- 8** if the last three digits are divisible by 8
- 9** if the sum of the digits is divisible by 9
- 10** if the last digit is 0

What is divisibility rule?
 A divisibility rule is a shorthand and useful way of determining whether a given integer is divisible by a fixed divisor without performing the division.

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FRACTIONS, DECIMALS & PERCENTAGES

100% 1	1
50% 0.50	$\frac{1}{2}$
33.3% 0.333	$\frac{1}{3}$
25% 0.25	$\frac{1}{4}$
20% 0.20	$\frac{1}{5}$
16.6% 0.166	$\frac{1}{6}$
12.5% 0.125	$\frac{1}{8}$
10% 0.10	$\frac{1}{10}$
8.33% 0.083	$\frac{1}{12}$

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CONVERTING FRACTIONS

Fraction to Decimal $\frac{5}{20}$ divide the numerator by denominator $5 \div 20 = 0.25$	Decimal to Fraction 0.08 numbers to the right of the decimal point are the numerator use the place value of decimal to write the denominator $\frac{8}{100}$
Fraction to Percentage $\frac{4}{8}$ divide the numerator by denominator $4 \div 8 = 0.5$ multiply it by 100 $0.5 \times 100 = 50\%$	Percentage to Fraction 5% divide the percentage value by 100 $\frac{5}{100}$ reduce and simplify the resulting fraction $\frac{1}{20}$
Percentage to Decimal 25% divide the percentage value by 100 $25 \div 100 = 0.25$ remove the % sign 0.25	Decimal to Percentage 0.4 multiply the decimal value by 100 $0.4 \times 100 = 40$ add the % sign 40%

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TYPE OF FRACTIONS

PROPER FRACTION
 the numerator is smaller than the denominator
 $\frac{1}{2}$ $\frac{3}{4}$ $\frac{5}{8}$

IMPROPER FRACTION
 the numerator is greater than the denominator
 $\frac{9}{5}$ $\frac{3}{2}$

MIXED FRACTION
 a combination of a whole number and a proper fraction
 $2\frac{2}{3}$ $3\frac{1}{6}$

EQUIVALENT FRACTION
 fractions that have same value
 $\frac{1}{4} = \frac{2}{8} = \frac{3}{6} = \frac{6}{10}$

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CONVERTING FRACTIONS

Fraction to Decimal

$\frac{5}{20}$

divide the numerator by denominator
 $5 \div 20 = 0.25$

Decimal to Fraction

0.08

numbers to the right of the decimal point are the numerator
use the place value of the denominator
 $\frac{8}{100}$

Fraction to Percentage

$\frac{4}{8}$

divide the numerator by denominator
 $4 \div 8 = 0.5$
multiply it by 100
 $0.5 \times 100 = 50\%$

Percentage to Fraction

5%

divide the percentage value by 100
 $\frac{5}{100}$
reduce and simplify the resulting fraction
 $\frac{1}{20}$

Percentage to Decimal

25%

divide the percentage value by 100
 $25 \div 100 = 0.25$
remove the % sign
0.25

Decimal to Percentage

0.4

multiply the decimal value by 100
 $0.4 \times 100 = 40$
add the % sign
40%

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FRACTION RULES

NUMERATOR: The number on the top. It shows how many equal parts of the whole is considered.

DENOMINATOR: The number which is below the line. It shows the total equal parts in the whole.

RULE 1: SPECIAL FRACTIONS

$\frac{1}{1}$ simplifies to a

$\frac{2}{2}$ does not simplify

$\frac{3}{3}$ simplifies to 0

$\frac{4}{4}$ undefined

RULE 2: NEGATIVE FRACTIONS

$\frac{1}{-2}$ is same as $-\frac{1}{2}$ and $-\frac{1}{2}$

$\frac{-1}{2}$ simplifies to $-\frac{1}{2}$

$\frac{-1}{-2}$ is NOT the same as $\frac{1}{2}$

RULE 3: CANCELLATION
(a, b, c, d, e, f)

$\frac{1}{2}$ cancels to $\frac{1}{2}$

$\frac{2}{3}$ simplifies to $\frac{2}{3}$

$\frac{3}{4}$ cancels to $\frac{3}{4}$

$\frac{4}{5}$ cancels to $\frac{4}{5}$

$\frac{5}{6}$ cancels to $\frac{5}{6}$

$\frac{6}{7}$ cancels to $\frac{6}{7}$

RULE 4: ADDITION

$\frac{1}{2} + \frac{1}{2} = \frac{2}{2} = 1$

$\frac{1}{2} + \frac{1}{3} = \frac{3}{6} + \frac{2}{6} = \frac{5}{6}$

$\frac{1}{3} + \frac{1}{4} = \frac{4}{12} + \frac{3}{12} = \frac{7}{12}$

RULE 5: SUBTRACTION

$\frac{1}{2} - \frac{1}{2} = \frac{0}{2} = 0$

$\frac{1}{2} - \frac{1}{3} = \frac{3}{6} - \frac{2}{6} = \frac{1}{6}$

$\frac{1}{3} - \frac{1}{4} = \frac{4}{12} - \frac{3}{12} = \frac{1}{12}$

RULE 6: MULTIPLICATION

$\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

$\frac{2}{3} \times \frac{1}{2} = \frac{2}{6} = \frac{1}{3}$

$\frac{3}{4} \times \frac{1}{3} = \frac{3}{12} = \frac{1}{4}$

RULE 7: DIVISION

$\frac{1}{2} \div \frac{1}{2} = \frac{1}{2} \times \frac{2}{2} = 1$

$\frac{1}{2} \div \frac{1}{3} = \frac{1}{2} \times \frac{3}{3} = \frac{3}{2}$

$\frac{1}{3} \div \frac{1}{4} = \frac{1}{3} \times \frac{4}{4} = \frac{4}{3}$

RULE 8: BE CAREFUL

$\frac{1}{2} \div \frac{1}{2} = \frac{1}{2} \times \frac{2}{2} = 1$

$\frac{1}{2} \div \frac{1}{3} = \frac{1}{2} \times \frac{3}{3} = \frac{3}{2}$

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ALGEBRAIC IDENTITIES

Square of a binomial
 $(a + b)^2 = a^2 + 2ab + b^2$
 $(a - b)^2 = a^2 - 2ab + b^2$

Difference of squares
 $a^2 - b^2 = (a + b)(a - b)$

Cube of a binomial
 $(a + b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$
 $(a - b)^3 = a^3 - 3a^2b + 3ab^2 - b^3$

Square of a trinomial
 $(a + b + c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ca$

Sum of cubes
 $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$

Difference of cubes
 $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$

Product of two binomials
 $(x + a)(x + b) = x^2 + (a + b)x + ab$

What is Algebraic Identities?
Algebraic identity is an equation that is always true regardless of the values assigned to the variables.

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ALGEBRAIC IDENTITIES

IDENTITY I

$(a + b)^2 = a^2 + 2ab + b^2$

IDENTITY II

$(a - b)^2 = a^2 - 2ab + b^2$

IDENTITY III

$a^2 - b^2 = (a + b)(a - b)$

IDENTITY IV

$(x + a)(x + b) = x^2 + x(a + b) + ab$

What is identities in algebra?
Algebraic identity is an equation that is always true regardless of the values assigned to the variables.

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9 EXPONENT RULES

Exponent OF ZERO	$a^0 = 1$ if $a \neq 0$	$0^0 = 1$
Exponent OF ONE	$a^1 = a$	$0^1 = 0$
Exponent PRODUCT	$a^m \times a^n = a^{m+n}$	$0^m \times 0^n = 0^m + n$
Exponent QUOTIENT	$\frac{a^m}{a^n} = a^{m-n}$	$0^m \div 0^n = 0^m - n$
Exponent POWER	$(a^m)^n = a^{m \times n}$	$(0^n)^m = 0^n \times m$
Exponent Power OF PRODUCT	$(a \times b)^m = a^m \times b^m$	$(0 \times 0)^m = 0^m \times 0^m$
Exponent Power OF QUOTIENT	$(\frac{a}{b})^m = \frac{a^m}{b^m}$	$(\frac{0}{0})^m = \frac{0^m}{0^m}$
Exponent NEGATIVE	$a^{-1} = \frac{1}{a}$	$0^{-1} = \frac{1}{0}$
Exponent FRACTIONAL	$a^{\frac{1}{2}} = \sqrt{a}$	$0^{\frac{1}{2}} = \sqrt{0}$

What are Exponent Rules?
The exponent rules explain how to solve various equations that have exponents in them. There are Nine most important exponent rules, or laws of exponents.
Each rule shows how to solve different types of math equations and how to add, subtract, multiply and divide exponents.

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COORDINATE PLANE

What is coordinate plane?
A coordinate plane is a two-dimensional plane formed by an intersection of a horizontal line (X-axis) and a vertical line (Y-axis). These perpendicular lines intersect each other at zero, and this point is called the origin.

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UNIT CIRCLE

What is Unit Circle?
A unit circle can be used to define right triangle relationships known as sine, cosine and tangent. These relationships describe how angles and sides of a right triangle relate to one another.

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TRIGONOMETRIC TABLE

	0°	30°	45°	60°	90°
Sin	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
Cos	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0
Tan	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	Not Defined
Cosec	Not Defined	2	$\sqrt{2}$	$\frac{2\sqrt{3}}{3}$	1
Sec	1	$\frac{2\sqrt{3}}{3}$	$\sqrt{2}$	2	Not Defined
Cot	Not Defined	$\sqrt{3}$	1	$\frac{\sqrt{3}}{3}$	0

What is Trigonometry Table?
Trigonometric table helps to find the values of trigonometric standard angles such as 0°, 30°, 45°, 60° and 90°. This table is essential to solve the trigonometry problems.

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TYPES OF TRIANGLES

BY ANGLE

ACUTE TRIANGLE

When all the angles of a triangle are acute, that is, they measure less than 90°. It is called an acute-angled triangle or acute triangle.

BY SIDE

EQUILATERAL TRIANGLE

A triangle is considered to be an equilateral triangle when all three sides have the same length.

RIGHT TRIANGLE

When one of the angles of a triangle is 90°, it is called a right-angled triangle or right triangle.

ISOSCELES TRIANGLE

A triangle is considered to be an isosceles triangle when two sides of a triangle are equal or congruent.

OBTUSE TRIANGLE

When one of the angles of a triangle is an obtuse angle, that is, it measures greater than 90°, it is called an obtuse-angled triangle or obtuse triangle.

SCALENE TRIANGLE

A triangle is considered to be an scalene triangle when none of the sides of a triangle are equal.

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PYTHAGORAS THEOREM

As per Pythagoras Theorem
 Area "A" + Area "B" = Area "C"
 $a^2 + b^2 = c^2$

What is Pythagoras Theorem?
 Pythagoras Theorem (also called Pythagorean Theorem) states that "the area of the square whose side is hypotenuse (c) is equal to the sum of the area of the squares on the other two sides (a and b)."

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SOHCAHTOA

SOH = $\sin \theta = \frac{\text{opposite}}{\text{hypotenuse}}$

CAH = $\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$

TOA = $\tan \theta = \frac{\text{opposite}}{\text{adjacent}}$

What is SOHCAHTOA?
 "SOHCAHTOA" is a helpful mnemonic for remembering the definitions of the trigonometric functions sine, cosine, and tangent i.e., sine equals opposite over hypotenuse, cosine equals adjacent over hypotenuse, and tangent equals opposite over adjacent.

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LAW OF SINES

Law of sines
 $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Other forms of the ratios
 $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$
 $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Example
 $\frac{b}{c} = \frac{\sin B}{\sin C}$
 $\frac{b}{5} = \frac{\sin 35^\circ}{\sin 40^\circ}$
 $c = 8.97 \text{ cm}$

What is law of sines?
 The law of sine or the sine law states that "the ratio of each side of a plane triangle to the sine of the opposite angle is the same for all three sides and angles."

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LAW OF COSINES

Law of Cosines
 Below formulas are used to find the length of the sides of triangle ABC

$a^2 = b^2 + c^2 - 2bc \cos A$
 $b^2 = a^2 + c^2 - 2ac \cos B$
 $c^2 = a^2 + b^2 - 2ab \cos C$

Other forms of the formulas
 Below formulas are used to find the angles of triangle ABC if all three sides are known

$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$ $\cos B = \frac{a^2 + c^2 - b^2}{2ac}$ $\cos C = \frac{a^2 + b^2 - c^2}{2ab}$

What is law of cosines?
 Law of cosines states that "the square of a side of a plane triangle equals the sum of the squares of the remaining sides minus twice the product of those sides and the cosine of the angle between them."

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MEAN, MEDIAN, MODE AND RANGE

MEAN
 What is it? Total of all the values in a set of data divided by the total number of values. How to calculate? Add up all the values in a set of data and divide by the total number of values.
 3 1 4 7 6 3 $3 + 1 + 4 + 7 + 6 + 3 = 24$ Mean is $\frac{24}{6} = 4$

MEDIAN
 What is it? A middle number in a set of values. How to calculate? Put the numbers in order from smallest to largest and find the middle number.
 3 32 6 29 16 4 5 3 4 5 6 16 29 32 Median is 6
 3 6 29 16 4 5 3 4 5 6 16 29 Median is $\frac{(5+6)}{2} = 5.5$

MODE
 What is it? The number that appears most often. How to calculate? Count how many times each number appears.
 3 2 8 9 6 4 0 5 6 10 10 12 15 Mode is 5

RANGE
 What is it? The difference between the highest and lowest number. How to calculate? Subtract the lowest value from the highest value.
 7 2 6 9 8 4 3 $9 - 2 = 7$ Range is 7

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INVISIBLE MATH

$x = \frac{x}{1}$	$15 = 15 \cdot 0$	$10 = 10^1$	$5y = 5 \cdot y$
There is a denominator of 1 for every number.	There is a decimal point at the end of every whole number.	Every number has an exponent of one.	There is a multiplication sign between every coefficient and variable.
$\sqrt{7} = \sqrt{7}$	$9 = +9$	$-x = -1x$	$x = 1x$
Every radical has an index of every number.	There is a positive sign to the left of every number.	A negative sign to the left of a variable is the same as a negative one times the variable.	There is a coefficient of one to the left of every variable.
$- x = -1 x $	$\frac{1}{x} = x^{-1}$	$-(-8) = -1(-8)$	$99^0 = 1$
A negative sign to the left of an absolute value symbol is the same as a negative one times the absolute value.	One plus a variable in the numerator is the same as the positive first power.	A negative sign to the left of a parenthesis is the same as a negative one times first number.	Any number as a variable raised to the zero power is equal to one.

Invisible math poster is to help students remember these secret and invisible math symbols, numbers and math tricks.

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FOUR TYPES OF SLOPES

POSITIVE
 Increasing from left to right

NEGATIVE
 Decreasing from left to right

ZERO
 Horizontal line has a slope of zero

UNDEFINED
 Vertical line has an undefined slope

What is slope?
 A slope measure the steepness of a line. The slope of a line can also be interpreted as the "average rate of change". It tells us how fast y is changing with respect to x.

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SQUARES & ROOTS

$1^2 = 1$	$\sqrt{1} = 1$	$21^2 = 441$	$\sqrt{441} = 21$
$2^2 = 4$	$\sqrt{4} = 2$	$22^2 = 484$	$\sqrt{484} = 22$
$3^2 = 9$	$\sqrt{9} = 3$	$23^2 = 529$	$\sqrt{529} = 23$
$4^2 = 16$	$\sqrt{16} = 4$	$24^2 = 576$	$\sqrt{576} = 24$
$5^2 = 25$	$\sqrt{25} = 5$	$25^2 = 625$	$\sqrt{625} = 25$
$6^2 = 36$	$\sqrt{36} = 6$	$26^2 = 676$	$\sqrt{676} = 26$
$7^2 = 49$	$\sqrt{49} = 7$	$27^2 = 729$	$\sqrt{729} = 27$
$8^2 = 64$	$\sqrt{64} = 8$	$28^2 = 784$	$\sqrt{784} = 28$
$9^2 = 81$	$\sqrt{81} = 9$	$29^2 = 841$	$\sqrt{841} = 29$
$10^2 = 100$	$\sqrt{100} = 10$	$30^2 = 900$	$\sqrt{900} = 30$
$11^2 = 121$	$\sqrt{121} = 11$	$31^2 = 961$	$\sqrt{961} = 31$
$12^2 = 144$	$\sqrt{144} = 12$	$32^2 = 1024$	$\sqrt{1024} = 32$
$13^2 = 169$	$\sqrt{169} = 13$	$33^2 = 1089$	$\sqrt{1089} = 33$
$14^2 = 196$	$\sqrt{196} = 14$	$34^2 = 1156$	$\sqrt{1156} = 34$
$15^2 = 225$	$\sqrt{225} = 15$	$35^2 = 1225$	$\sqrt{1225} = 35$
$16^2 = 256$	$\sqrt{256} = 16$	$36^2 = 1296$	$\sqrt{1296} = 36$
$17^2 = 289$	$\sqrt{289} = 17$	$37^2 = 1369$	$\sqrt{1369} = 37$
$18^2 = 324$	$\sqrt{324} = 18$	$38^2 = 1444$	$\sqrt{1444} = 38$
$19^2 = 361$	$\sqrt{361} = 19$	$39^2 = 1521$	$\sqrt{1521} = 39$
$20^2 = 400$	$\sqrt{400} = 20$	$40^2 = 1600$	$\sqrt{1600} = 40$

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PARENT FUNCTIONS

$f(x) = a$ Constant
 $f(x) = x$ Linear
 $f(x) = |x|$ Absolute Value
 $f(x) = \lfloor x \rfloor$ Greatest Integer
 $f(x) = x^2$ Quadratic
 $f(x) = x^3$ Cube
 $f(x) = \sqrt{x}$ Square Root
 $f(x) = \sqrt[3]{x}$ Cube Root
 $f(x) = a^x$ Exponential
 $f(x) = \log(x)$ Logarithmic
 $f(x) = 1/x$ Reciprocal
 $f(x) = 1/x^2$ Rational
 $f(x) = \sin(x)$
 $f(x) = \cos(x)$
 $f(x) = \tan(x)$

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PASCAL'S TRIANGLE

What is Pascal's Triangle?
 One of the most interesting Number Patterns is Pascal's Triangle named after Blaise Pascal, a famous Mathematician.
 A Pascal's triangle is an arrangement of numbers in a triangular array such that the numbers at the end of each row are 1 and the remaining numbers are the sum of the nearest two numbers in the above row.
 This concept is used widely in probability, combinatorics and algebra.

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PASCAL'S TRIANGLE

EXPONENTS OF 11

11⁰ = 1 (the first row is just a "1")
 11¹ = 11 (the second row is "1" and "1")
 11² = 121 (the third row is "1", "2", "1")
 11³ = 1331 (the fourth row is "1", "3", "3", "1")
 11⁴ = 14641 (the fifth row is "1", "4", "6", "4", "1")

FROM 11⁵ THE DIGITS JUST OVERLAP, LIKE THIS:

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PASCAL'S TRIANGLE

PATTERNS

1st Diagonal just number "1"
 2nd Diagonal counting numbers
 3rd Diagonal triangular numbers
 4th Diagonal tetrahedral numbers
 5th Diagonal pentagonal numbers

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PASCAL'S TRIANGLE

HORIZONTAL SUMS

The sum of each row doubles each time.
 The sum is always powers of 2.

SQUARES

For 2nd diagonal, the square of a number is equal to the sum of the numbers next to it and below both of those.

2² = 1 + 3 = 4
 3² = 1 + 3 + 6 = 9
 4² = 1 + 3 + 6 + 10 = 16
 5² = 1 + 3 + 6 + 10 + 15 = 25
 6² = 1 + 3 + 6 + 10 + 15 + 21 = 36
 and so on...

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MATH

A SYSTEMATIC USE OF LOGIC AND COMMON SENSE WITH PROBLEM SOLVING ATTITUDE

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

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I am
 A
 Math
 Teacher
 so
 No Doubt
 I Have
 A Problem

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66

$I = f(u)$
 I can't
 function
 Without you

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SUCCESS FORMULA

$$B > \frac{1}{n} \sum_{i=1}^n x_i$$

ALWAYS
 BE
 GREATER THAN
 AVERAGE

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YOU
 HAVE
 TO BE
 ODD
 TO BE
 NUMBER
 ONE

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69



Avoid Negativity

|X|

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ALL WE NEED IS

$y = 1/x$

$x^2 + y^2 = 9$

$f(x) = |x|$

$x = -4/\sin(y)$

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LOVE FORMULA

Y-AXIS

X-AXIS

$$X^2 + \left(\frac{5y}{4} - \sqrt{|x|}\right)^2 = 1$$

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FIRST 1000 DIGITS OF PI

π

3.1415926535 8979323846 2643383279 5028841971 6939937510 5820974944 5923078164 0628620899 8628034825 3421170679 814808651 3282306647 0938446095 508223172 5359408128 4811174502 8410270193 8521105559 6446229489 5492038196 4423810975 6659334641 2847564823 3786783165 2712019091 4564856692 3460348610 4543266482 1339360726 0249141273 7245870066 0631558817 4881520920 962892540 9171536436 7892590360 0113305305 488206652 1284146951 9415115094 3305727036 5759591933 0921861173 8193261179 3105118548 0744623799 6274956735 188522224 891229381 8301194912 9833673362 440656430 8602139494 6395224737 1907021798 6094370277 0539217174 2931747523 8467481846 7649405132 0005681271 4526356082 7785771342 757896091 7363717872 1468440901 2249534301 4654958537 1050792276 6892589215 4201994811 2139021940 8640344181 5981362977 4771309960 5187072113 4999999837 2978049951 0597317328 1609631859 3024459455 3469083074 4232230825 3344685035 2619311881 7101000313 7838973286 587532083 8142061717 7659147303 5982534904 2875546873 1159562863 8823337875 9373195778 185780532 1712268066 1300192767 6611195909 2164201989

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VENN DIAGRAMS

What are Venn Diagrams?
Venn diagrams are used to illustrate the logical relationships between two or more sets of items. They are widely used in mathematics, statistics, logic, teaching, computer science and business.

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TYPES OF POLYGONS

REGULAR POLYGONS
Polygons that have equal sides and angles

IRREGULAR POLYGONS
Polygons with unequal sides and angles

CONVEX POLYGONS
Polygon with all interior angles less than 180°.

CONCAVE POLYGONS
Polygon with at least one interior angle greater than 180°.

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POLYGONS

What is polygon?
In geometry, a polygon can be defined as a flat or plane, two-dimensional closed shape bounded with straight sides. The sides of a polygon are also called its edges. The points where two sides meet are the vertices of a polygon.

- TRIANGLE
- QUADRILATERAL
- PENTAGON
- HEXAGON
- HEPTAGON
- OCTAGON
- NONAGON
- DECAGON
- HEXAGON
- HEPTAGON
- HEXAGON
- HEPTAGON

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17 EQUATIONS THAT CHANGED THE WORLD

PART 1

- $a^2 + b^2 = c^2$ PYTHAGORAS'S THEOREM (Pythagoras, 520 BC)
- $\log xy = \log x + \log y$ LOGARITHMS (John Napier, 1610)
- $\frac{df}{dx} = \frac{f(x) - f(a)}{x - a}$ CALCULUS (Isaac Newton, 1666)
- $F = G \frac{m_1 m_2}{r^2}$ LAW OF GRAVITY (Isaac Newton, 1687)
- $E^2 = mc^2$ SQUARE ROOT OF -ONES (Euler, 1782)
- $V = E + F = Z$ POLYHEDRA FORMULA (Euler, 1781)
- $\Phi(x) = \frac{1}{2\pi i} \int_{c-i\infty}^{c+i\infty} f(s) x^{-s} ds$ NORMAL DISTRIBUTION (Gauss, 1809)
- $\frac{d^2 y}{dx^2} + \omega^2 y = 0$ WAVE EQUATION (d'Alembert, 1746)
- $f(x) = \int_{-\infty}^{\infty} f(\xi) e^{i2\pi x \xi} d\xi$ FOURIER TRANSFORM (J. Fourier, 1822)

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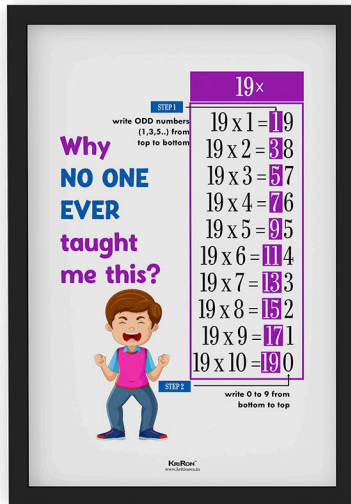
17 EQUATIONS THAT CHANGED THE WORLD

PART 2

- $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = 0$ NAVIER-STOKES EQUATION (Clément-Adrien Navier, 1845)
- $\psi = \psi(x, y, z, t)$ MAXWELL'S EQUATIONS (J.C. Maxwell, 1865)
- $\frac{d^2 x}{dt^2} = 0$ SECOND LAW OF THERMODYNAMICS (Rudolf Clausius, 1850)
- $\hat{H}\psi = E\psi$ SCHRÖDINGER'S EQUATION (Erwin Schrödinger, 1927)
- $E = mc^2$ RELATIVITY (Einstein, 1905)
- $\psi = \sum_{k=1}^n \psi_k(x) \psi_k(y)$ INFORMATION THEORY (Claude Shannon, 1948)
- $\frac{1}{2} \rho v^2 = \rho g h + \rho \omega^2 r^2$ BILAK-SCHULES EQUATION (J. Bilak, M. Schules, 1960)

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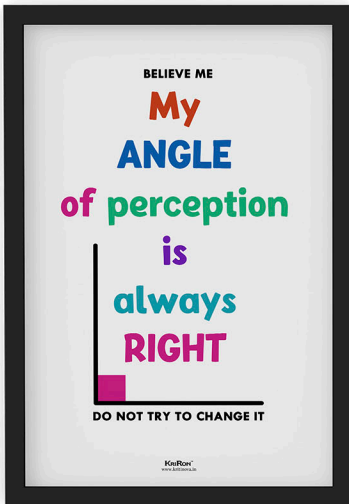
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12" x 18" / A3 - Rolled	₹ 190.00	50	₹ 9,500.00	25%	₹ 7,125.00	₹ 2,375.00
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12" x 18" / A3 - Rolled	₹ 190.00	100	₹ 19,000.00	32%	₹ 12,920.00	₹ 6,080.00

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A4 - Framed	₹ 530.00	20	₹ 10,600.00	10%	₹ 9,540.00	₹ 1,060.00
A4 - Framed	₹ 530.00	30	₹ 15,900.00	15%	₹ 13,515.00	₹ 2,385.00
A4 - Framed	₹ 530.00	40	₹ 21,200.00	15%	₹ 18,020.00	₹ 3,180.00
A4 - Framed	₹ 530.00	50	₹ 26,500.00	18%	₹ 21,730.00	₹ 4,770.00
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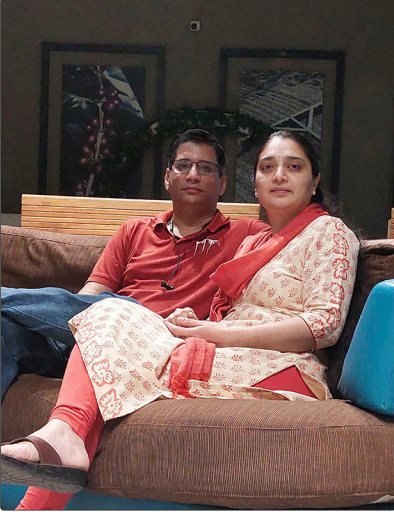
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