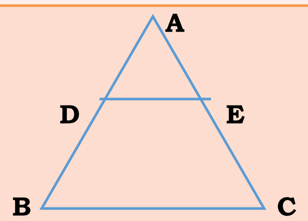
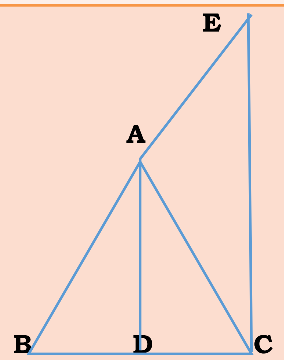
IMPORTANT NOTE TO BE TAKEN BY SLOW LEARNERS IN 10TH MATHS

P. LAKSHMIKANDAN,BT ASST IN MATHS	AVVAI CORPORATION GIRLS HSS, MADURAI
KEY WORD (in Question)	***ANSWER/FORMULA (To write)***
A.P. (or) Arithmetic Progression	$t_n = a + (n-1)d;\ n = \frac{l-a}{d} + 1;\ d = t_2 - t_1$
A.P & Sum (between 300 and 600)	$S_n = \frac{n}{2}[2a + (n-1)d];\ \ S_n = \frac{n}{2}(a + l)$
G.P. (or) Geometric Progression	$t_n = ar^{n-1};\ \ r = \frac{t_2}{t_1}$
G.P & Sum (3+33+333+...) OR (5+55+555+...)	$S_n = \frac{a(r^n - 1)}{r-1};\ \ S_\infty = \frac{a}{1-r}$
Sum of natural numbers are given	$\sum n = \frac{n(n+1)}{2}$
Sum of natural odd numbers are given	$S_n = n^2\ \ (or)\ S_n = \left(\frac{l+1}{2}\right)^2$
Sum of squares of natural numbers are given (or) Rekha sum	$\sum n^2 = \frac{n(n+1)(2n+1)}{6}$
Sum of Cubes of natural numbers are given	$\sum n^3 = \left(\frac{n(n+1)}{2}\right)^2$
Solving quadratic equation (formula method)	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
Nature of roots	$\Delta = b^2 - 4ac$ $\Delta = 0$, real and equal roots $\Delta > 0$, real and unequal roots $\Delta < 0$, no real roots
α & β is given	$\alpha + \beta = -\frac{b}{a};\ \alpha\beta = \frac{c}{a};$ x^2-(sum of the roots)x+product of the roots=0
Transpose of a matric (or) A^T ,B^T is given	Interchange rows into columns (or) columns into rows
I_2.	$I_2 = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$
Basic proportionality theorem (or) Thales theorem	 $\frac{AD}{DB} = \frac{AE}{EC}$
DE ∥ BC	$\frac{AD}{DB} = \frac{AE}{EC}$
Angle Bisector Theorem	 $\frac{BD}{DC} = \frac{AB}{AC}$

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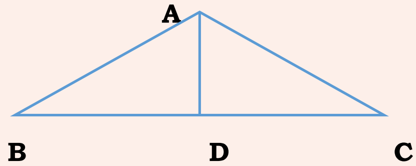
Bisector of ∠A	$\frac{BD}{DC} = \frac{AB}{AC}$
Pythagoras Theorem (or) Baudhayana Theorem	 **To prove:** $AB^2 + AC^2 = BC^2$
Area of the triangle	$\frac{1}{2}\begin{vmatrix} x_1 & x_2 & x_3 & x_1 \\ y_1 & y_2 & y_3 & y_1 \end{vmatrix}$ **sq.units** $\frac{1}{2}\{x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)\}$ **sq.units**
Collinear	$\frac{1}{2}\{x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)\} = 0$
Area of the quadrilateral	$\frac{1}{2}\begin{vmatrix} x_1 & x_2 & x_3 & x_4 & x_1 \\ y_1 & y_2 & y_3 & y_4 & y_1 \end{vmatrix}$ **sq.units** $\frac{1}{2}\{(x_1 - x_3)(y_2 - y_4) - (x_2 - x_4)(y_1 - y_3)\}$**sq.units**
Slope	$m = \frac{y_2 - y_1}{x_2 - x_1}$; $m = \tan\theta$; $m = -\frac{a}{b}$
Parallel	$m = \frac{y_2 - y_1}{x_2 - x_1}$; $m_1 = m_2$
Perpendicular	$m = \frac{y_2 - y_1}{x_2 - x_1}$; $m_1 x m_2 = -1$
Equation of the straight line	$y = mx + c$; $y - y_1 = m(x - x_1)$ $\frac{y - y_1}{y_2 - y_1} = \frac{x - x_1}{x_2 - x_1}$; $\frac{x}{a} + \frac{y}{b} = 1$
Equation of the median	$M\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$; $\frac{y - y_1}{y_2 - y_1} = \frac{x - x_1}{x_2 - x_1}$
Equation of the altitude (or) perpendicular bisector	$m = \frac{y_2 - y_1}{x_2 - x_1}$; $m_1 x m_2 = -1$; $y - y_1 = m(x - x_1)$
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Solid right circular Cylinder	**C.S.A**= $2\pi rh$ **sq.units** **T.S.A**= $2\pi r(h+r)$ **sq.units** **Volume**= $\pi r^2 h$ **cu.units**
Hollow Cylinder	**C.S.A** $= 2\pi(R + r)h$ **sq.units** **T.S.A** $= 2\pi(R + r)(R - r + h)$ **sq.units** **Volume** $= \pi(R^2 - r^2)h$ **cu.units**
Solid right circular Cone	**C.S.A** $= \pi rl$ **sq.units** **T.S.A** $= \pi r(l + r)$ **sq.units** **Volume** $= \frac{1}{3}(\pi r^2 h)$ **cu.units**
Sphere	**Surface area** $= 4\pi r^2$ **sq.units** **Volume** $= \frac{4}{3}\pi r^3$ **cu.units**
Hemi sphere	**C.S.A** $= 2\pi r^2$ **sq.units** **T.S.A** $= 3\pi r^2$ **sq.units** **Volume** $= \frac{2}{3}\pi r^3$ **cu.units**
Frustrum	**Volume** $= \frac{\pi h}{3}(R^2 + Rr + r^2)$ **cu.units**
Range and coefficient of range	**Range** $R = L - S$; **Coefficient of range** $= \frac{L-S}{L+S}$
Standard Deviation	$\sigma = \sqrt{\frac{\sum x^2}{n} - \left(\frac{\sum x}{n}\right)^2}$; $\sigma = \sqrt{\frac{\sum d^2}{n} - \left(\frac{\sum d}{n}\right)^2}$

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Standard deviation of first 'n' natural numbers	$\sigma = \sqrt{\frac{n^2-1}{12}}$
Variance	$\sigma^2 = \frac{\sum x^2}{n} - \left(\frac{\sum x}{n}\right)^2$
Coefficient of variation (or) C.V.	$C.V. = \frac{\sigma}{\bar{x}} x100\%$
Probability	$P(A) = \frac{n(A)}{n(S)}$
OR appear 1 time and probability	$P(A) = \frac{n(A)}{n(S)}$ $P(A \cup B) = P(A) + P(B) - P(A \cap B)$
OR appear 2 times and probability	$P(A) = \frac{n(A)}{n(S)}$ $P(A \cup B \cup C) = P(A) + P(B) + P(C) - P(A \cap B) - P(B \cap C) - P(C \cap A) + P(A \cap B \cap C)$
Two coins (OR) a coin tossed twice	S = {HH,HT,TH,TT}; n(S) = 4
Three coins (OR) a coin tossed three times	S = {HHH,HHT,HTH,HTT,THH,THT,TTH,TTT} n(S) = 8
Two dice	S = {(1,1),(1,2),(1,3),(1,4),(1,5),(1,6) (2,1),(2,2),(2,3),(2,4),(2,5),(2,6) (3,1),(3,2),(3,3),(3,4),(3,5),(3,6) (4,1),(4,2),(4,3),(4,4),(4,5),(4,6) (5,1),(5,2),(5,3),(5,4),(5,5),(5,6) (6,1),(6,2),(6,3),(6,4),(6,5),(6,6)} n(S) = 36.
NCC (or) NSS	$P(A) = \frac{n(A)}{n(S)}$ $P(A \cap \bar{B}) = P(A) - P(A \cap B)$ $P(\bar{A} \cap B) = P(B) - P(A \cap B)$
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