



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai

Accredited by NAAC-UGC with 'A++' Grade (Cycle III) &

Accredited by NBA (B.E - CSE, EEE, ECE, Mech & B.Tech.IT)

COIMBATORE-641 035, TAMIL NADU



DEPARTMENT OF MATHEMATICS

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SQUARES & CUBES

Pascal's Triangle

$$\begin{array}{c}
 1 \\
 1 \quad 1 \\
 1 \quad 2 \quad 1 \\
 1 \quad 3 \quad 3 \quad 1 \\
 1 \quad 4 \quad 6 \quad 4 \quad 1 \\
 1 \quad 5 \quad 10 \quad 10 \quad 5 \quad 1
 \end{array}$$

$\rightarrow (a+b)^2 = a^2 + 2ab + b^2$
 $\rightarrow (a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$
 $\rightarrow (a+b)^4 = a^4 + 4a^3b + 6a^2b^2 + 4ab^3 + b^4$
 $\rightarrow (a+b)^5 = a^5 + 5a^4b + 10a^3b^2 + 10a^2b^3 + 5ab^4 + b^5$

1) $47^2 \Rightarrow$

a^2	$2ab$	b^2
16	56	49
<u>6</u>	<u>4</u>	
22	60	
		9
		2209

2) $122^2 \Rightarrow$

a^2	$2ab$	b^2
144	48	4
<u>4</u>		
148		
		4
		14884

3) 55^2

a^2	$2ab$	b^2
25	50	25
<u>5</u>		
30		25
		3025

4) 85^2

a^2	$2ab$	b^2
64	80	25
<u>8</u>		
72		25
		7225



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3. $\frac{23^3}{a/b} \Rightarrow$

a^3	$3a^2b$	$3ab^2$	b^3
8	36	54	27
$\frac{4}{12}$	$\frac{5}{41}$	$\frac{2}{56}$	
$\boxed{12167}$			

4) $\frac{43^3}{a/b} \Rightarrow$

a^3	$3a^2b$	$3ab^2$	b^3
64	144	108	27
$\frac{15}{79}$	$\frac{11}{55}$	$\frac{2}{110}$	
$\boxed{79507}$			

Square Roots

x	x^2
1	1
2	4
3	9
4	16
5	25
6	36
7	49
8	64
9	81



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1) $\sqrt{8281} = 91$
 $\begin{array}{r} 82,81 \\ \leftarrow \begin{array}{l} 91 \\ 99 \end{array} \rightarrow \end{array}$ $95^2 = 9025$
 $8281 < 9025 \Rightarrow 91$

2) $\sqrt{6084} = 78$
 $\begin{array}{r} 60,84 \\ \leftarrow \begin{array}{l} 72 \\ 78 \end{array} \rightarrow \end{array}$ $75^2 = 5625$
 $6084 > 5625 \Rightarrow 78$

3) $\sqrt{4761} = 69$
 $\begin{array}{r} 47,61 \\ \leftarrow \begin{array}{l} 61 \\ 69 \end{array} \rightarrow \end{array}$ $65^2 = 4225$
 $4761 > 4225 \Rightarrow 69$

Cube Roots

x	x^3	
1	1	_____
2	8	_____
3	27	_____
4	64	_____
5	125	_____
6	216	_____
7	343	_____
8	512	_____
9	729	_____

1) $\sqrt[3]{493/039} = 79$

2) $\sqrt[3]{12/167} = 23$

3) $\sqrt[3]{46/656} = 36$

4) $\sqrt[3]{140/608} = 52$



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Handwritten mathematical work on lined paper showing calculations for squares, cubes, and square roots.

Squares:

- 1) $114^2 = 12996$
- 2) $122^2 = 14884$

Cubes:

- 1) $68^3 = 314432$
- 2) $23^3 = 12167$
- 3) $37^3 = 50653$
- 4) $96^3 = 884736$
- 5) $45^3 = 91125$
- 6) $74^3 = 4,05,224$

Roots:

- 1) $\sqrt[3]{884,736} = 96$
- 2) $\sqrt[3]{27,44} = 14$
- 3) $\sqrt[3]{50,653} = 37$
- 1) $\sqrt{6084} = 78$
- 2) $\sqrt{147,1369} = 1213$

Long Division for Square Root:

1. $\sqrt{1258884}$

Step 1: $\sqrt{12} = 3$, remainder 6. Bring down 5. $32 \times 32 = 1024$, remainder 238. Bring down 8. $38 \times 38 = 1444$, remainder 948. Bring down 8. $382 \times 382 = 145724$, remainder 1164. Bring down 8. $3822 \times 3822 = 1458724$, remainder 160. Bring down 4. $38222 \times 38222 = 14588724$, remainder 0.

Approximation for Square Root:

1) $\sqrt{15129}$ is between $\sqrt{123}$ and $\sqrt{127}$. $12 \times 13 = 156$. $124 \rightarrow 12$.

2) $\sqrt{15876}$ is between $\sqrt{124}$ and $\sqrt{126}$. $12 \times 13 = 156$. $124 \rightarrow 12$.



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3) $\sqrt{17956} = 134$
 $13 \times 14 = 182$
 $169 \rightarrow 13$

4) $\sqrt{24964} = 158$
 $15 \times 16 = 240$
 $225 \rightarrow 15$

1) $\sqrt{941192} = 98$	5) $\sqrt{195112} = 58$
2) $\sqrt{493039} = 79$	6) $\sqrt{97336} = 46$
3) $\sqrt{1191016} = 106$	7) $\sqrt{531441} = 81$
4) $\sqrt{1481544} = 114$	8) $\sqrt{195112} = 58$
9) $\sqrt{300763} = 67$	10) $\sqrt{421875} = 75$
11) $\sqrt{571787} = 83$	12) $\sqrt{830584} = 94$