Mathematician's Toolbox

Square Roots

$\sqrt{0}=0$ $\sqrt{16}=4$ $\sqrt{64}=8$

$\sqrt{1}=1$ $\sqrt{25}=5$ $\sqrt{81}=9$

$\sqrt{4}=2$ $\sqrt{36}=6$ $\sqrt{100}=10$

$\sqrt{9}=3$ $\sqrt{49}=7$

Cube Roots

$\sqrt[3]{0}=0$ $\sqrt[3]{64}=4$ $\sqrt[3]{512}=8$

$\sqrt[3]{1}=1$ $\sqrt[3]{125}=5$ $\sqrt[3]{729}=9$

$\sqrt[3]{8}=2$ $\sqrt[3]{216}=6$ $\sqrt[3]{1000}=10$

$\sqrt[3]{27}=3$ $\sqrt[3]{343}=7$

Prime Number Chart

	2	3		5		7			10
11		13				17		19	
	22	23						29	
31						37			
41		43				47			
		53						59	
61						67			70
71		73						79	
		83						89	
						97			

Multiplication Chart

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
3	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45
4	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60
5	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
6	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90
7	7	14	21	28	35	42	49	56	63	70	77	84	91	98	105
8	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120
9	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135
10	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150
11	11	22	33	44	55	66	77	88	99	110	121	132	143	154	165
12	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180
13	13	26	39	52	65	78	91	104	117	130	143	156	169	182	195
14	14	28	42	56	70	84	98	112	126	140	154	168	182	196	210
15	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225

Divisibility Rules

A number is divisible by. . .		Divisible	Not Divisible
2	if the last digit is even (0, 2, 4, 6, or 8).	3,978	4,975
3	if the sum of the digits is divisible by 3.	315	139
4	if the last two digits form a number divisible by 4.	8,512	7,518
5	if the last digit is 0 or 5.	14,975	10,978
6	if the number is divisible by both 2 and 3	48	20
9	if the sum of the digits is divisible by 9.	711	93
10	if the last digit is 0.	15,990	10,536

Fraction/Decimal Equivalents

$\frac{1}{2}$	0.5	$\frac{1}{8}$	0.125	$\frac{1}{11}$	$0.\overline{09}$	$\frac{1}{16}$	0.0625
$\frac{1}{3}$	$0.\overline{3}$	$\frac{2}{8}$	0.25	$\frac{2}{11}$	$0.\overline{18}$	$\frac{2}{16}$	0.125
$\frac{2}{3}$	$0.\overline{6}$	$\frac{3}{8}$	0.375	$\frac{3}{11}$	$0.\overline{27}$	$\frac{3}{16}$	0.1875
$\frac{1}{4}$	0.25	$\frac{4}{8}$	0.5	$\frac{4}{11}$	$0.\overline{36}$	$\frac{4}{16}$	0.25
$\frac{2}{4}$	0.5	$\frac{5}{8}$	0.625	$\frac{5}{11}$	$0.\overline{45}$	$\frac{5}{16}$	0.3125
$\frac{3}{4}$	0.75	$\frac{6}{8}$	0.75	$\frac{6}{11}$	$0.\overline{54}$	$\frac{6}{16}$	0.375
$\frac{1}{5}$	0.2	$\frac{7}{8}$	0.875	$\frac{7}{11}$	$0.\overline{63}$	$\frac{7}{16}$	0.4375
$\frac{2}{5}$	0.4	$\frac{1}{9}$	$0.\overline{1}$	$\frac{8}{11}$	$0.\overline{72}$	$\frac{8}{16}$	0.5
$\frac{3}{5}$	0.6	$\frac{2}{9}$	$0.\overline{2}$	$\frac{9}{11}$	$0.\overline{81}$	$\frac{9}{16}$	0.5625
$\frac{4}{5}$	0.8	$\frac{3}{9}$	$0.\overline{3}$	$\frac{10}{11}$	$0.\overline{90}$	$\frac{10}{16}$	0.625
$\frac{1}{6}$	$0.1\overline{6}$	$\frac{4}{9}$	$0.\overline{4}$	$\frac{1}{12}$	$0.08\overline{3}$	$\frac{11}{16}$	0.6875
$\frac{2}{6}$	$0.\overline{3}$	$\frac{5}{9}$	$0.\overline{5}$	$\frac{2}{12}$	$0.1\overline{6}$	$\frac{12}{16}$	0.75
$\frac{3}{6}$	0.5	$\frac{6}{9}$	$0.\overline{6}$	$\frac{3}{12}$	0.25	$\frac{13}{16}$	0.8125
$\frac{4}{6}$	$0.\overline{6}$	$\frac{7}{9}$	$0.\overline{7}$	$\frac{4}{12}$	$0.\overline{3}$	$\frac{14}{16}$	0.875
$\frac{5}{6}$	$0.8\overline{3}$	$\frac{8}{9}$	$0.\overline{8}$	$\frac{5}{12}$	$0.41\overline{6}$	$\frac{15}{16}$	0.9375
$\frac{1}{7}$	$0.\overline{142857}$	$\frac{1}{10}$	0.1	$\frac{6}{12}$	0.5		
$\frac{2}{7}$	$0.\overline{285714}$	$\frac{2}{10}$	0.2	$\frac{7}{12}$	$0.58\overline{3}$		
$\frac{3}{7}$	$0.\overline{428571}$	$\frac{3}{10}$	0.3	$\frac{8}{12}$	$0.\overline{6}$		
$\frac{4}{7}$	$0.\overline{571428}$	$\frac{4}{10}$	0.4	$\frac{9}{12}$	0.75		
$\frac{5}{7}$	$0.\overline{714285}$	$\frac{5}{10}$	0.5	$\frac{10}{12}$	$0.8\overline{3}$		
$\frac{6}{7}$	$0.\overline{857142}$	$\frac{6}{10}$	0.6	$\frac{11}{12}$	$0.91\overline{6}$		
		$\frac{7}{10}$	0.7				
		$\frac{8}{10}$	0.8				
		$\frac{9}{10}$	0.9				