

Speed for Maths

Increase your calculation speed by up to 30% through daily practice for 20 minutes ($\approx 0.3\text{h}$).

1. Squares: 1 to 50
2. Cubes: 1 to 30
3. % Value: 50+
4. Table: 1-30
5. Powers of 2: $2^2 \dots 2^{16}$
6. Multiplication values
7. Powers of 3 & 5 (up to 3^{10} and 5^{10})
8. **Factorials:** 1! to 10!
9. Prime numbers: Up to 100

Daily Quiz

- <https://github.com/mohitdhami/Speed-for-Maths>

(1) Squares: 1 to 50

Squares 1 to 50 Chart

$1^2 = 1$	$13^2 = 169$	$26^2 = 676$	$39^2 = 1521$
$2^2 = 4$	$14^2 = 196$	$27^2 = 729$	$40^2 = 1600$
$3^2 = 9$	$15^2 = 225$	$28^2 = 784$	$41^2 = 1681$
$4^2 = 16$	$16^2 = 256$	$29^2 = 841$	$42^2 = 1764$
$5^2 = 25$	$17^2 = 289$	$30^2 = 900$	$43^2 = 1849$
$6^2 = 36$	$18^2 = 324$	$31^2 = 961$	$44^2 = 1936$
$7^2 = 49$	$19^2 = 361$	$32^2 = 1024$	$45^2 = 2025$
$8^2 = 64$	$20^2 = 400$	$33^2 = 1089$	$46^2 = 2116$
$9^2 = 81$	$21^2 = 441$	$34^2 = 1156$	$47^2 = 2209$
$10^2 = 100$	$22^2 = 484$	$35^2 = 1225$	$48^2 = 2304$
$11^2 = 121$	$23^2 = 529$	$36^2 = 1296$	$49^2 = 2401$
$12^2 = 144$	$24^2 = 576$	$37^2 = 1369$	$50^2 = 2500$
	$25^2 = 625$	$38^2 = 1444$	

(2) Cubes: 1 to 30

$$1^3 = 1$$

$$2^3 = 8$$

$$3^3 = 27$$

$$4^3 = 64$$

$$5^3 = 125$$

$$6^3 = 216$$

$$7^3 = 343$$

$$8^3 = 512$$

$$9^3 = 729$$

$$10^3 = 1000$$

$$11^3 = 1331$$

$$12^3 = 1728$$

$$13^3 = 2197$$

$$14^3 = 2744$$

$$15^3 = 3375$$

$$16^3 = 4096$$

$$17^3 = 4913$$

$$18^3 = 5832$$

$$19^3 = 6859$$

$$20^3 = 8000$$

$$21^3 = 9261$$

$$22^3 = 10648$$

$$23^3 = 12167$$

$$24^3 = 13824$$

$$25^3 = 15625$$

$$26^3 = 17576$$

$$27^3 = 19683$$

$$28^3 = 21952$$

$$29^3 = 24389$$

$$30^3 = 27000$$

(3) % Value: 50+

#1

Important fractional values

$$\cdot 27.27\% = 27\frac{3}{11}\% = 3(9\frac{1}{11}) = 3(9.09\%) = 3 \times \frac{1}{11} = \frac{3}{11}$$

$$\cdot 45.45\% = 45\frac{5}{11}\% = 5(9\frac{1}{11}) = 5(9.09\%) = 5 \times \frac{1}{11} = \frac{5}{11}$$

$$\cdot 63.63\% = 63\frac{7}{11}\% = 7(9\frac{1}{11}) = 7(9.09\%) = 7 \times \frac{1}{11} = \frac{7}{11}$$

$$\uparrow [9.09\% = \frac{1}{11}]$$

#2

$\cdot \frac{1}{2} = 50\%$	$\cdot \frac{1}{7} = 14\frac{2}{7}\% = 14.28\%$
	$\cdot \frac{1}{14} = 7\frac{1}{7}\% = 7.14\%$
$\cdot \frac{1}{4} = 25\%$	$\cdot \frac{2}{7} = 28\frac{4}{7}\% = 28.56\%$
$\cdot \frac{1}{8} = 12.5\%$	$\cdot \frac{3}{7} = 42\frac{6}{7}\%$
$\cdot \frac{1}{16} = 6.25\%$	$\cdot \frac{4}{7} = 56\frac{8}{7}\% = 57\frac{1}{7}\%$
$\cdot \frac{1}{32} = 3.125\%$	$\cdot \frac{5}{7} = 70\frac{10}{7}\% = 71\frac{3}{7}\%$

#3

Fraction to Percentage ($9 \div 11$)

$$\cdot \frac{1}{9} = 11\frac{1}{9}\% = 11.11\%$$

$$\cdot \frac{1}{11} = 9\frac{1}{11}\% = 9.09\%$$

$$\cdot \frac{2}{9} = 22\frac{2}{9}\% = 22.22\%$$

$$\cdot \frac{3}{11} = 27\frac{3}{11}\% = 27.27\%$$

$$\cdot \frac{4}{9} = 44\frac{4}{9}\% = 44.44\%$$

$$\cdot \frac{5}{11} = 45\frac{5}{11}\% = 45.45\%$$

$$\cdot \frac{7}{9} = 77\frac{7}{9}\% = 77.77\%$$

$$\cdot \frac{2}{11} = 18\frac{2}{11}\% = 18.18\%$$

Fraction to Percentage (Multiple of 8)

$$\cdot \frac{1}{8} = 12.5\%$$

$$\cdot \frac{3}{8} = 37.5\% = 37\frac{1}{2}\%$$

$$\cdot \frac{1}{16} = 6.25\%$$

$$\cdot \frac{5}{8} = 62.5\% = 62\frac{1}{2}\%$$

= More Important Fractional Values

$$81.81\% = \frac{9}{11}$$

$$\cdot 54.54\% = \frac{6}{11}$$

$$33.33\% = 33\frac{1}{3}\% = \frac{3}{9} = \frac{1}{3}$$

$$44.44\% = 44\frac{4}{9}\% = \frac{4}{9}$$

$$55.55\% = 55\frac{5}{9}\% = \frac{5}{9}$$

$$77.77\% = 77\frac{7}{9}\% = \frac{7}{9}$$

$$66.66\% = 66\frac{2}{3}\% = \frac{2}{3}$$

$$\frac{1}{7} = 14\frac{2}{7}\% = 14.28\%$$

#4

$$\cdot 28 \frac{4}{7}\% = 28,56\% = \frac{2}{7}$$

$$\cdot 42 \frac{6}{7}\% = 42,84\% = \frac{3}{7}$$

$$\cdot 57 \frac{1}{7}\% = 57,12\% = \frac{4}{7}$$

$$\begin{aligned} \cdot 71 \frac{3}{7}\% &= 71,40\% = 70 \frac{\cancel{10} \frac{1}{7} \cancel{10}}{\cancel{14} \times 5} = 71 \frac{3}{7}\% \\ &= \frac{5}{7} \end{aligned}$$

....

$$\cdot 12 \frac{1}{2}\% = 12,5\% = \frac{1}{8}$$

$$\cdot 25\% = \frac{1}{4}$$

$$\cdot 37 \frac{1}{2}\% = 37,5\% = 50\% - 12,5\% = \frac{1}{2} - \frac{1}{8} = \frac{4-1}{8} = \frac{3}{8}$$

$$\cdot 62 \frac{1}{2}\% = 62,5\% = 50\% + 12,5\% = \frac{1}{2} + \frac{1}{8} = \frac{4+1}{8} = \frac{5}{8}$$

$$\cdot 87 \frac{1}{2}\% = 87,5\% = 100\% - 12,5\% = \frac{1}{2} - \frac{1}{8} = \frac{8-1}{8} = \frac{7}{8}$$

$$\text{OR, } 50\% + 37,5\% = \frac{1}{2} + (12,5\% \times 3) = \frac{1}{2} + \frac{3}{8} = \frac{4+3}{8} = \frac{7}{8}$$

$$\cdot 212 \frac{1}{2}\% = 212,5\% = 200\% + 12,5\% = 2 + \frac{1}{8} = \frac{17}{8}$$

$$\cdot 116 \frac{2}{3}\% = 100\% + (8,33\% \times 2) = 1 + \frac{2}{12} = \frac{7}{6}$$

$$\cdot 128 \frac{4}{7}\% = 128,56\% = 100\% + (14,28\% \times 2) = 1 + \frac{2}{7} = \frac{9}{7}$$

$$\cdot 208 \frac{1}{3}\% = 208,33\% = 200\% + 8,33\% = 2 + \frac{1}{12} = \frac{25}{12}$$

#5

fraction to Percentage \Rightarrow

$$\cdot \frac{1}{100} \times 100 = 100\%$$

$$\# [x\% = \frac{x}{100}]$$

$$\cdot \frac{50}{100} \times 100 = 50\%$$

$$\cdot \frac{25}{100} \times 100 = 25\%$$

$$\cdot \frac{1}{7} \times 100 = 14\frac{2}{7}\% = 14,28\%$$

$$\cdot \frac{1}{6} \times 100 = 16\frac{4}{6}\% = 16.66\%$$

$$\cdot 20\% = \frac{20}{100} = \frac{1}{5}$$

$$\cdot 30\% = \frac{30}{100} = \frac{3}{10}$$

$$\cdot 25\% = \frac{25}{100} = \frac{1}{4}$$

$$\cdot 66\frac{2}{3}\% = \frac{200}{3} \times \frac{1}{100} = \frac{2}{3}$$

$$16.67\% = 16\frac{2}{3}\% = \frac{50}{3} \times \frac{1}{100} = \frac{1}{6}$$

$$12.5\% = 12\frac{1}{2}\% = \frac{25}{2} \times \frac{1}{100} = \frac{1}{8}$$

$$\frac{1}{2} = 50\%$$

$$\cdot \frac{1}{6} = 16\frac{2}{3}\% = 16.66\%$$

$$\cdot \frac{1}{13} = 7\frac{9}{13}\% = 7,69\%$$

$$\frac{1}{3} = 33.\overline{3}\% = 33\frac{1}{3}\%$$

$$\cdot \frac{1}{7} = 14\frac{2}{7}\% = 14.28\%$$

$$\cdot \frac{1}{14} = 7\frac{2}{7}\% = 7,14\%$$

$$\frac{1}{4} = 25\%$$

$$\cdot \frac{1}{8} = 12\frac{1}{2}\% = 12.5\%$$

$$\cdot \frac{1}{15} = 6\frac{2}{3}\% = 6.66\%$$

$$\frac{1}{5} = 20\%$$

$$\cdot \frac{1}{9} = 11\frac{1}{9}\% = 11.\overline{0}11\%$$

$$\cdot \frac{1}{16} = 6\frac{1}{4}\% = 6.25\%$$

$$\cdot \frac{1}{10} = 10\%$$

$$\cdot \frac{1}{11} = 9\frac{1}{11}\% = 9.09\%$$

$$\cdot \frac{1}{17} = 5\frac{15}{17}\% = 5.88\%$$

$$\cdot \frac{1}{12} = 8\frac{1}{3}\% = 8.33\%$$

$$\cdot \frac{1}{18} = 5.55\%$$

$$\cdot \frac{1}{19} = 5\frac{5}{19}\% = 5.26\%$$

(4) Table: 12-30

#1

12

$$\begin{aligned}12 \times 1 &= 12 \\12 \times 2 &= 24 \\12 \times 3 &= 36 \\12 \times 4 &= 48 \\12 \times 5 &= 60 \\12 \times 6 &= 72 \\12 \times 7 &= 84 \\12 \times 8 &= 96 \\12 \times 9 &= 108 \\12 \times 10 &= 120\end{aligned}$$

13

$$\begin{aligned}13 \times 1 &= 13 \\13 \times 2 &= 26 \\13 \times 3 &= 39 \\13 \times 4 &= 52 \\13 \times 5 &= 65 \\13 \times 6 &= 78 \\13 \times 7 &= 91 \\13 \times 8 &= 104 \\13 \times 9 &= 117 \\13 \times 10 &= 130\end{aligned}$$

14

$$\begin{aligned}14 \times 1 &= 14 \\14 \times 2 &= 28 \\14 \times 3 &= 42 \\14 \times 4 &= 56 \\14 \times 5 &= 70 \\14 \times 6 &= 84 \\14 \times 7 &= 98 \\14 \times 8 &= 112 \\14 \times 9 &= 126 \\14 \times 10 &= 140\end{aligned}$$

15

$$\begin{aligned}15 \times 1 &= 15 \\15 \times 2 &= 30 \\15 \times 3 &= 45 \\15 \times 4 &= 60 \\15 \times 5 &= 75 \\15 \times 6 &= 90 \\15 \times 7 &= 105 \\15 \times 8 &= 120 \\15 \times 9 &= 135 \\15 \times 10 &= 150\end{aligned}$$

16

$$\begin{aligned}16 \times 1 &= 16 \\16 \times 2 &= 32 \\16 \times 3 &= 48 \\16 \times 4 &= 64 \\16 \times 5 &= 80 \\16 \times 6 &= 96 \\16 \times 7 &= 112 \\16 \times 8 &= 128 \\16 \times 9 &= 144 \\16 \times 10 &= 160\end{aligned}$$

17

$$\begin{aligned}17 \times 1 &= 17 \\17 \times 2 &= 34 \\17 \times 3 &= 51 \\17 \times 4 &= 68 \\17 \times 5 &= 85 \\17 \times 6 &= 102 \\17 \times 7 &= 119 \\17 \times 8 &= 136 \\17 \times 9 &= 153 \\17 \times 10 &= 170\end{aligned}$$

18

$$\begin{aligned}18 \times 1 &= 18 \\18 \times 2 &= 36 \\18 \times 3 &= 54 \\18 \times 4 &= 72 \\18 \times 5 &= 90 \\18 \times 6 &= 108 \\18 \times 7 &= 126 \\18 \times 8 &= 144 \\18 \times 9 &= 162 \\18 \times 10 &= 180\end{aligned}$$

19

$$\begin{aligned}19 \times 1 &= 19 \\19 \times 2 &= 38 \\19 \times 3 &= 57 \\19 \times 4 &= 76 \\19 \times 5 &= 95 \\19 \times 6 &= 114 \\19 \times 7 &= 133 \\19 \times 8 &= 152 \\19 \times 9 &= 171 \\19 \times 10 &= 190\end{aligned}$$

20

$$\begin{aligned}20 \times 1 &= 20 \\20 \times 2 &= 40 \\20 \times 3 &= 60 \\20 \times 4 &= 80 \\20 \times 5 &= 100 \\20 \times 6 &= 120 \\20 \times 7 &= 140 \\20 \times 8 &= 160 \\20 \times 9 &= 180 \\20 \times 10 &= 200\end{aligned}$$

#2

21

$$\begin{aligned}21 \times 1 &= 21 \\21 \times 2 &= 42 \\21 \times 3 &= 63 \\21 \times 4 &= 84 \\21 \times 5 &= 105 \\21 \times 6 &= 126 \\21 \times 7 &= 147 \\21 \times 8 &= 168 \\21 \times 9 &= 189 \\21 \times 10 &= 210\end{aligned}$$

22

$$\begin{aligned}22 \times 1 &= 22 \\22 \times 2 &= 44 \\22 \times 3 &= 66 \\22 \times 4 &= 88 \\22 \times 5 &= 110 \\22 \times 6 &= 132 \\22 \times 7 &= 154 \\22 \times 8 &= 176 \\22 \times 9 &= 198 \\22 \times 10 &= 220\end{aligned}$$

23

$$\begin{aligned}23 \times 1 &= 23 \\23 \times 2 &= 46 \\23 \times 3 &= 69 \\23 \times 4 &= 92 \\23 \times 5 &= 115 \\23 \times 6 &= 138 \\23 \times 7 &= 161 \\23 \times 8 &= 184 \\23 \times 9 &= 207 \\23 \times 10 &= 230\end{aligned}$$

24

$$\begin{aligned}24 \times 1 &= 24 \\24 \times 2 &= 48 \\24 \times 3 &= 72 \\24 \times 4 &= 96 \\24 \times 5 &= 120 \\24 \times 6 &= 144 \\24 \times 7 &= 168 \\24 \times 8 &= 192 \\24 \times 9 &= 216 \\24 \times 10 &= 240\end{aligned}$$

25

$$\begin{aligned}25 \times 1 &= 25 \\25 \times 2 &= 50 \\25 \times 3 &= 75 \\25 \times 4 &= 100 \\25 \times 5 &= 125 \\25 \times 6 &= 150 \\25 \times 7 &= 175 \\25 \times 8 &= 200 \\25 \times 9 &= 225 \\25 \times 10 &= 250\end{aligned}$$

26

$$\begin{aligned}26 \times 1 &= 26 \\26 \times 2 &= 52 \\26 \times 3 &= 78 \\26 \times 4 &= 104 \\26 \times 5 &= 130 \\26 \times 6 &= 156 \\26 \times 7 &= 182 \\26 \times 8 &= 208 \\26 \times 9 &= 234 \\26 \times 10 &= 260\end{aligned}$$

27

$$\begin{aligned}27 \times 1 &= 27 \\27 \times 2 &= 54 \\27 \times 3 &= 81 \\27 \times 4 &= 108 \\27 \times 5 &= 135 \\27 \times 6 &= 162 \\27 \times 7 &= 189 \\27 \times 8 &= 216 \\27 \times 9 &= 243 \\27 \times 10 &= 270\end{aligned}$$

28

$$\begin{aligned}28 \times 1 &= 28 \\28 \times 2 &= 56 \\28 \times 3 &= 84 \\28 \times 4 &= 112 \\28 \times 5 &= 140 \\28 \times 6 &= 168 \\28 \times 7 &= 196 \\28 \times 8 &= 224 \\28 \times 9 &= 252 \\28 \times 10 &= 280\end{aligned}$$

29

$$\begin{aligned}29 \times 1 &= 29 \\29 \times 2 &= 58 \\29 \times 3 &= 87 \\29 \times 4 &= 116 \\29 \times 5 &= 145 \\29 \times 6 &= 174 \\29 \times 7 &= 203 \\29 \times 8 &= 232 \\29 \times 9 &= 261 \\29 \times 10 &= 290\end{aligned}$$

30

$$\begin{aligned}30 \times 1 &= 30 \\30 \times 2 &= 60 \\30 \times 3 &= 90 \\30 \times 4 &= 120 \\30 \times 5 &= 150 \\30 \times 6 &= 180 \\30 \times 7 &= 210 \\30 \times 8 &= 240 \\30 \times 9 &= 270 \\30 \times 10 &= 300\end{aligned}$$

(5) Powers of 2: 2^2 2^{16}

$$2^1 = 2$$

$$2^2 = 4$$

$$2^3 = 8$$

$$2^4 = 16$$

$$2^5 = 32$$

$$2^6 = 64$$

$$2^7 = 128$$

$$2^8 = 256$$

$$2^9 = 512$$

$$2^{10} = 1024$$

$$2^{11} = 2048$$

$$2^{12} = 4096$$

$$2^{13} = 8192$$

$$2^{14} = 16384$$

$$2^{15} = 32768$$

$$2^{16} = 65536$$

(6) Important Multiplication Values

$$37 \times 3 = 111$$

$$67 \times 3 = 201$$

$$27 \times 3 = 81$$

$$87 \times 3 = 261$$

(7) Powers of 3 & 5 (up to 3^{10} and 5^{10})

#1

The powers of 3 up to the 10th power are as follows:

$$3^1 = 3$$

$$3^2 = 9$$

$$3^3 = 27$$

$$3^4 = 81$$

$$3^5 = 243$$

$$3^6 = 729$$

$$3^7 = 2,187$$

$$3^8 = 6,561$$

$$3^9 = 19,683$$

$$3^{10} = 59,049$$

#2

The powers of 5 up to 10 are as follows:

$$5^1 = 5$$

$$5^2 = 25$$

$$5^3 = 125$$

$$5^4 = 625$$

$$5^5 = 3,125$$

$$5^6 = 15,625$$

$$5^7 = 78,125$$

$$5^8 = 390,625$$

$$5^9 = 1,953,125$$

$$5^{10} = 9,765,625$$

(8) Factorials: 1! to 10!

n Factorial	Value
1 Factorial	1
2 Factorial	2
3 Factorial	6
4 Factorial	24
5 Factorial	120
6 Factorial	720
7 Factorial	5040
8 Factorial	40,320
9 Factorial	362,880
10 Factorial	3,628,800

(9) Prime numbers: Up to 100

Prime Numbers up to 100



What is a prime number?

A prime number is a number that can only be divided by itself and 1 without remainders.

1 is not a prime number because it has only one factor - itself. Prime numbers need to have exactly two factors.

Some prime number facts...



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100