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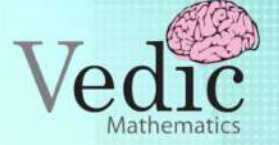
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Formulas:

- 1) $(a + b)^2 = a^2 + b^2 + 2ab$
- 2) $(a - b)^2 = a^2 + b^2 - 2ab$
- 3) $a^2 - b^2 = (a + b)(a - b)$
- 4) $(a + b)^2 - (a - b)^2 = 4ab$
- 5) $(a - b)^2 + (a + b)^2 = 2(a^2 + b^2)$
- 6) $(a + b)^3 = a^3 + b^3 + 3ab(a + b)$
- 7) $(a - b)^3 = a^3 - b^3 - 3ab(a - b)$
- 8) $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$
- 9) $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$

5) 496×504

- a) 259984 b) 249984
b) 249988 d) 289984

6) $\frac{458 \times 458 \times 458 - 239 \times 239 \times 239}{458 \times 458 + 458 \times 239 + 239 \times 239}$

- a) 218 b) 220
c) 210 d) 219

7) $(475 + 425)^2 - 4 \times 475 \times 425$

- a) 2400 b) 2300
c) 2500 d) 2000

8) $(64)^2 - (36)^2 = 20Z$. Find the value of 'Z'.

- a) 145 b) 144
c) 149 d) 140

9) $(46)^2 - (x)^2 = 4398 - 3066$

- a) 38 b) 48
c) 58 d) 28

10) $\frac{(856+167)^2 + (856-167)^2}{856 \times 856 + 167 \times 167}$

- a) 2 b) 4
c) 5 d) 8

Practice Questions:

1) $152 \times 152 + 148 \times 148 + 2 \times 152 \times 148$

- a) 10000 b) 90000
c) 9000 d) -9000

2) $\frac{642 \times 642 - 142 \times 142}{642 - 142}$

- a) 487 b) 847
c) 784 d) None of the above

3) $462 \times 884 + 462 \times 116$

- a) 462000 b) 442000
c) 430000 d) 444000

4) 203×206

- a) 41818 b) 41881
c) 48818 d) 41188





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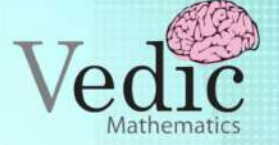
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$$11) \frac{64}{121} - \frac{9}{64}$$

$$\frac{8}{11} + \frac{3}{8}$$

- a) $\frac{31}{55}$ b) $\frac{31}{88}$
c) $\frac{31}{95}$ d) $\frac{31}{45}$
d)

$$12) \frac{55^3 - 45^3}{55^2 + 2475 + 45^2}$$

a) 20 b) 30
c) 25 d) 10

$$13) \frac{0.125 + 0.027}{0.5 \times 0.5 - 0.15 + 0.09}$$

a) 0.6 b) 0.5
c) 0.8 d) 0.3

$$14) \frac{(74\frac{3}{5})^2 - (37\frac{7}{10})^2}{111\frac{3}{10}}$$

a) $36\frac{9}{10}$ b) $39\frac{9}{10}$
c) $35\frac{9}{10}$ d) $32\frac{9}{10}$

$$15) 1.2 \times 1.2 + 0.8 \times 0.8 + 2.4 \times 0.8 = ?$$

a) 5 b) 3
b) 4 d) 7

$$16) \frac{0.1 \times 0.1 \times 0.1 + 0.02 \times 0.02 \times 0.02}{0.1 \times 0.1 - 0.1 \times 0.02 + 0.0004}$$
 is

a) 0.0125 b) 0.12

c) 0.25 d) 0.5

$$17) \frac{(2.697 - 0.498)^2 + (2.697 + 0.498)^2}{2.697 \times 2.697 + 0.498 \times 0.498}$$
 is:

a) 4 b) 2
c) 2.199 d) 3.195

$$18) \frac{0.0347 \times 0.0347 \times 0.0347 + (0.9653)^3}{(0.0347)^2 - (0.347)(0.09653) + (0.9653)^2}$$

a) 0.9306 b) 1.0009
b) 1.0050 d) 1

$$19) \frac{(3.4567)^2 - (3.4533)^2}{0.0034}$$

a) 6.91 b) 7
c) 6.81 d) 7.1

$$20) \frac{(0.03)^2 - (0.01)^2}{0.03 - 0.01}$$
 is :

a) 0.02 b) 0.004
c) 0.4 d) 0.04

$$21) \frac{(3.63)^2 - (2.37)^2}{3.63 + 2.37}$$
 is simplified to :

a) 6 b) 1.36
c) 2.26 d) 1.26





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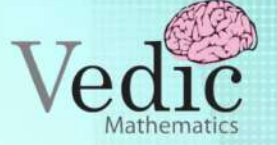
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22) $\frac{0.051 \times 0.051 \times 0.051 + 0.041 \times 0.041 \times 0.041}{0.051 \times 0.051 - 0.051 \times 0.041 + 0.041 \times 0.041}$

- a) 0.92 b) 0.092
c) 0.0092 d) 0.00092

23) $\frac{(75.8)^2 - (55.8)^2}{20}$ is :

- a) 20 b) 40
c) 121.6 d) 131.6

24) $\frac{(2.644)^2 - (2.356)^2}{0.288}$ we get :

- a) 1 b) 4
b) c) 5 d) 6

25) $\frac{(75983)^2 - (45983)^2}{30,000}$ is:

- b) 121796 b) 121866
c) 121956 d) 121966

26) The value of

$\frac{2.75 \times 2.75 \times 2.75 - 2.25 \times 2.25 \times 2.25}{2.75 \times 2.75 + 2.75 \times 2.25 + 2.25 \times 2.25}$ is:

- b) 0.30 b) 0.50
c) 3 d) 5

27) $\frac{(2.697 - 0.498)^2 + (2.697 + 0.498)^2}{2.697 \times 2.697 + 0.498 \times 0.498}$ i :

- c) 2.199 b) 2.195
c) 2 d) $\frac{1}{2}$

28) $\frac{(5.2)^4 - (3.2)^4}{(5.2)^2 + (3.2)^2}$ is :

- a) 0.0168 b) 168
c) 1.68 d) 16.8

Practice Questions

1)

$\frac{0.1 \times 0.1 \times 0.1 + 0.2 \times 0.2 \times 0.2 + 0.3 \times 0.3 \times 0.3 - 3 \times 0.1 \times 0.2 \times 0.3}{0.1 \times 0.1 + 0.2 \times 0.2 + 0.3 \times 0.3 - 0.1 \times 0.2 - 0.2 \times 0.3 - 0.3 \times 0.1}$

- a) 0.2 b) 0.006
c) 0 d) 0.6

2)

$\frac{0.9 \times 0.9 \times 0.9 + 0.2 \times 0.2 \times 0.2 + 0.3 \times 0.3 \times 0.3 - 3 \times 0.9 \times 0.2 \times 0.3}{0.9 \times 0.9 + 0.2 \times 0.2 + 0.3 \times 0.3 - 0.9 \times 0.2 - 0.2 \times 0.3 - 0.3 \times 0.9}$

- a) 1.4 b) 0.054
c) 0.8 d) 1.0

3) $(32)^3 + (79)^3 - (111)^3 + 3 \times 32 \times 79 \times 111$

- a) 10000 b) 0
c) 30007 d) 1

4) $[(0.111)^3 + (0.222)^3 - (0.333)^3 + (0.333^2(0.222))]^3$ is:

- a) 0.999 b) 0





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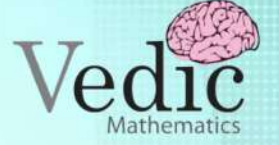
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c) 0.888

d) 0.111

5) $\frac{(4.53-3.07)^2}{(3.07-2.15)(2.15-4.53)} + \frac{(3.07-2.15)^2}{(2.15-4.53)(4.53-3.07)} + \frac{(2.15-4.53)^2}{(4.53-3.07)(3.07-2.15)}$ is simplified to :

a) 0

b) 1

c) 2

d) 3

7) $\frac{17}{15} \times \frac{17}{15} + \frac{2}{15} \times \frac{2}{15} - \frac{17}{15} \times \frac{4}{15}$ is equal to :

a) 0

b) 1

c) 10

d) 11

8) $\left(4\frac{11}{15} + \frac{15}{71}\right)^2 - \left(4\frac{11}{15} - \frac{15}{71}\right)^2$ is equal to :

a) 1

b) 2

c) 3

d) 4

9) The value of $\frac{0.1 \times 0.1 \times 0.1 + 0.02 \times 0.02 \times 0.02}{0.2 \times 0.2 \times 0.2 + 0.04 \times 0.04 \times 0.04}$ is :

a) 0.0125

b) 0.125

c) 0.25

d) 0.5

10) $\sqrt[3]{\frac{0.2 \times 0.2 \times 0.2 + 0.04 \times 0.04 \times 0.04}{0.4 \times 0.4 \times 0.4 + 0.08 \times 0.08 \times 0.08}}$

a) 0.5

b) 0.25

c) 0.75

d) 0.125

11) $(53 \times 87 + 159 \times 21 + 106 \times 25)$ is equal to :

a) 16000

b) 1060

c) 10600

d) 60100

12) The value of $\frac{0.125+0.027}{0.25-0.15+0.09}$ is :

a) 0.2

b) 0.25

c) 0.3

d) 0.8

13) $\frac{(2.697-0.498)^2 + (2.697+0.498)^2}{2.697 \times 2.697 + 0.498 \times 0.498}$ is :

a) 4

b) 2

c) 2.199

d) 3.195

14) $(0.9 \times 0.9 \times 0.9 + 0.1 \times 0.1 \times 0.1)$ is equal to :

b) 0.73

b) 0.82

d) 0.91

d) 1.00

15) $\frac{0.0347 \times 0.0347 \times 0.0347 + (0.9653)^3}{(0.0347)^2 - (0.347)(0.09653) + (0.9653)^2}$

a) 0.9306

b) 1.0009

c) 1.0050

d) 1

16) The value of $\frac{(3.2)^3 - 0.008}{(3.2)^2 + 0.64 + 0.04}$ is :





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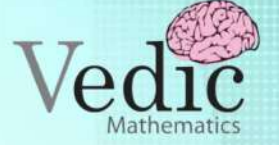
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a) 0

b) 2.994

c) 3.208

d) 3

21) $\sqrt{(0.798)^2 + 0.404 \times 0.798 + (0.202)^2} + 1 = ?$

a) 0

b) 2

c) 1.596

d) 0.404

$(0.5 \times 5 + 0.25 \times 0.5 + 0.5 \times 4 + 0.5 \times 0.75)$ is equal to :

b) **5**

b) 10

d) 15

d) 20

22) $\frac{\left(\frac{3}{7}\right)^3 - \left(\frac{1}{7}\right)^3}{\left(\frac{3}{7}\right)^2 - \left(\frac{1}{7}\right)^2}$

a) $3\frac{1}{4}$

b) $3\frac{1}{2}$

c) $2\frac{1}{4}$

d) $2\frac{1}{2}$

e) None of these

18) $(113^2 + 115^2 + 117^2 - 113 \times 115 - 115 \times 117 - 117 \times 113)$ is equal to :

a) 0

b) 4

c) 8

d) 12

23) $\frac{(176+124)^2 - (176-124)^2}{176 \times 124}$

a) 4

b) $\frac{1}{4}$

c) 2

d) $\frac{1}{2}$

19) The square root of $\frac{\left(\frac{3\frac{1}{4}}{4}\right)^4 - \left(\frac{4\frac{1}{3}}{3}\right)^4}{\left(\frac{3\frac{1}{4}}{4}\right)^2 - \left(\frac{4\frac{1}{3}}{3}\right)^2}$

a) $7\frac{1}{12}$

b) $5\frac{5}{12}$

c) $1\frac{1}{12}$

d) $1\frac{7}{12}$

24) $\frac{(415+223)^2 + (415-223)^2}{(415 \times 415 + 223 \times 223)} = ?$

a) 2

b) 5

c) 3

d) 6

e) 4

20) The positive square root of $[0.6 \times 0.6 \times 0.6 + 0.4 \times 0.4 \times 0.4 + 3 \times 0.6 \times 0.4(0.6+0.4)]$ is equal to :

a) 2.1736

b) 1

c) 0.21736

d) 0.072

