



MATHS

BOOKS - MBD

EXPONENTS AND POWERS

Example

1. Find the multiplicative inverse of the following :

$$2^{-4}$$



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2. Find the multiplicative inverser of the following :

$$10^{-5}$$



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3. Find the multiplicative inverser of the following :

$$7^{-2}$$





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4. Find the multiplicative inverse of the following :

5



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5. Find the multiplicative inverser of the following :

$10^{- (100)}$



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6. Expand the following numbers using exponents:

$$1025 \cdot 63$$



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7. Expand the following numbers using exponents:

$$1256 \cdot 249$$



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8. Simplify and write in exponential form:

$$(-2)^{-3} \times (-2)^{-4}$$



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9. Simplify and write in exponential form:

$$p^3 \times p - (10).$$



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10. Simplify and write in exponential form:

$$3^2 \times 3^{-5} \times 3^6.$$



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11. Evaluate:

$$3^{-2}$$



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12. Evaluate : $(-4)^{-2}$



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13. Evaluate : $\left(\frac{1}{2}\right)^{-5}$



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14. Simplify and express the result in power notation with positive exponent :

$$(-4)^5 \div (-4)^8$$



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15. Simplify and express the result in power

notation with positive exponent : $\left(\frac{1}{2^3}\right)^2$



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16. Simplify and express the result in power

notation with positive exponent :

$$(-3)^4 \times \left(\frac{5}{3}\right)^4$$



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17. Simplify and express the result in power notation with positive exponent :

$$(3^{-7} \div 3^{-10}) \times 3^{-5}$$



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18. Simplify and express the result in power notation with positive exponent :

$$2^{-3} \times (-7)^{-3}$$



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19. Find the value of : $(3^0 + 4^{-1}) \times 2^2$



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20. Find the value of : $(2^{-1} \times 4^{-1}) \div 2^{-2}$



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21. Find the value of :

$$\left(\frac{1}{2}\right)^{-2} + \left(\frac{1}{3}\right)^{-2} + \left(\frac{1}{4}\right)^{-2}$$



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22. Find the value of: $(3^{-1} + 4^{-1} + 5^{-1})^{\circ}$



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23. Find the value of:

$$\left[\left(-\frac{2}{3} \right)^{-2} \right]^2.$$



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24. Evaluate: $\frac{8^{-1} \times 5^3}{2^{-4}}$



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25. Evaluate : $(5^{-1} \times 2^{-1}) \times 6^{-1}$



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26. Find the value of m for which

$$5^m \div 5^{-3} = 5^5$$



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27. Evaluate : $1 \left\{ \left(\frac{1}{3} \right)^{-1} - \left(\frac{1}{4} \right)^{-1} \right\}^{-1}$



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28. Evaluate : $\left(\frac{5}{8} \right)^{-7} \times \left(\frac{8}{5} \right)^{-4}$



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29. Simplify : $\frac{25 \times t^{-4}}{5^{-3} \times 10 \times t^{-8}} (t \neq 0)$



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30. Simplify : $\frac{3^{-5} \times 10^{-5} \times 125}{5^{-7} \times 6^{-5}}$



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31. Write the following numbers in standard form:

0.000000564.



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32. Write the following numbers in standard form:

0.0000021



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33. Write the following numbers in standard form:

21600000



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34. Write the following numbers in standard form:

5240000



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35. Express the following numbers in standard form : 0.00000000000085



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36. Express the following numbers in standard

form : 0.000000000000942



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37. Express the following numbers in standard

form : 6020000000000000



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38. Express the following numbers in standard form : 0.00000000837



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39. Express the following numbers in standard form : 31860000000



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40. Express the following numbers in usual form:

$$3.02 \times 10^{-8}$$



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41. Express the following numbers in usual form : 1.0001×10^9



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42. Express the following numbers in usual

form : 5.8×10^{12}



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43. Express the following numbers in usual

form : 3.61492×10^6



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44. Express the number appearing in the following : statements in standard form : 1

micron is equal to $\frac{1}{1000000}m$



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45. Express the number appearing in the following : Charge of an electron is 0.000,000,000,000,000,000,16 coulomb.



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46. Express the number appearing in the following : Size of a bacteria is 0.0000005 m



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47. Express the number appearing in the following : Size of a plant cell is 0.00001275 m



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48. Express the number appearing in the following : Thickness of a thick paper is 0.07 mm



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49. In a stack there are 5 books each of thickness 20mm and 5 paper sheets each of thickness 0.016 mm. What is the total thickness of the stack.



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50. The value of 2^{-3} will be :

A. $\frac{1}{2}$

B. $\frac{1}{4}$

C. $\frac{1}{8}$

D. $\frac{1}{9}$.

Answer:



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51. The value of $\frac{1}{3^{-2}}$ will be :

A. $\frac{1}{9}$

B. $\frac{1}{8}$

C. 9

D. 8

Answer:



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52. The value of 3^{-2} will be :

A. $\frac{1}{9}$

B. $\frac{1}{8}$

C. $\frac{1}{4}$

D. `9.

Answer:



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53. The value of $\left(\frac{1}{2}\right)^{-5}$ will be :

A. $\frac{1}{32}$

B. 32

C. 10

D. $\frac{1}{10}$.

Answer:



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54. Find the value of: $(3^0 + 4^{-1}) \times 2^2$

A. 13

B. 14

C. 28

D. 5

Answer:



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55. Find the value of : $(3^{-1} + 4^{-1} + 5^{-1})^{\circ}$

A. 12

B. $\frac{47}{60}$

C. $\left(\frac{47}{60}\right)^{-1}$.

D. 1

Answer:



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56. If $5^m \div 5^{-3} = 5^5$, then value of m will be:

A. 5

B. 2

C. 3

D. 4

Answer:



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57. The value of $(3^2 + 4^2)^{-\frac{1}{2}}$ will be :

A. $-\frac{1}{5}$

B. $\frac{1}{5}$

C. 5

D. 7.

Answer:



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58. What will be the value of

$$X^m \times X^n = \dots\dots ?.$$



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59. What will be the value of

$$X^m \times X^n = \dots\dots ?.$$

A. $X^{m \times n}$

B. X^{m-n}

C. X^{m+n}

D. X^0 .

Answer:



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60. What will be the value of

$$(X^m)^n = \dots\dots\dots ?$$

A. $X^{m \times n}$

B. X^{m-n}

C. X^{m+n}

D. X^0 .

Answer:



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61. The value of $3^2 \times 3^4 \times 3$:

A. 3^5

B. 3^7

C. 3^6

D. 3^8 .

Answer:



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62. The value of $5^3 \times 5^2 \times 5^4$ will be:

A. 5^6

B. 5^5

C. 5^9

D. 5^7 .

Answer:



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63. The value of $4^3 \times 4 \times 4^2$ will be :

A. 6^4

B. 12^3

C. 4^6

D. 16^2 .

Answer:



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64. Express the following numbers in standard form : 0.00000000000085

A. 85×10^{-13}

B. $8.5 \times (10^{-12})$

C. 8.5×10^{-11}

D. 8.5×10^{-10} .

Answer:



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65. The usual form of the number 3.02×10^{-6}

is :

A. 0.302000

B. 0.000302

C. 0.0000302

D. 0.00000302.

Answer:



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66. The standard form of the number 0.07 mm is :

A. 7×10^{-2} mm

B. 7.0×10^{-1}

C. 7×10^{-3} mm

D. 0.7×10^{-3} m.

Answer:



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1. Evaluate the following :

$$2^{-3}$$



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2. Evaluate the following :

$$(-3)^{-4} \times (-3)^{-3}$$



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3. Evaluate the following :

$$5^{-2} \times 5^4$$



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4. Evaluate the following :

$$5^{-4} \times 5^2.$$



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5. Simplify and express the following as a positive exponents:

$$(-4)^5 \times (-4) \times (-4)^{10}.$$



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6. Simplify and express the following as a positive exponents:

$$2^5 \div 2^{-6}$$



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7. Simplify and express the result in power notation with positive exponent :

$$2^{-3} \times (-7)^{-3}$$



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8. Find m so that $(-3)^{m+1} \times (-3)^5 = (-3)^7$



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9. Simplify : $\left[\left\{ \left(-\frac{1}{5} \right)^{-2} \right\}^2 \right]^1$



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10. Find the value of $\left(\frac{2}{3}\right)^{-2}$



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11. Express 4^{-3} as a power with the base 2.



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12. Simplify and write the answer in the exponential form : $(2^5 \div 2^8)^5 \times 2^{-5}$



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13. Simplify and write the answer in the exponential form :

$$(-4)^{-3} \times (5)^{-3} \times (-5)^{-3}$$



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14. Simplify and write the answer in the

exponential form : $\frac{1}{8} \times (3)^{-3}$



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15. Simplify and write the answer in the

exponential form : $(-3)^4 \times \left(\frac{5}{3}\right)^4$



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16. Find the value of $\left(\frac{2}{3}\right)^{-2}$



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17. Simplify :

$$\left\{ \left(\frac{1}{3} \right)^{-2} - \left(\frac{1}{2} \right)^{-3} \right\} \div \left(\frac{1}{4} \right)^{-2}$$



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18. Simplify : $\left(\frac{5}{8} \right)^{-7} \times \left(\frac{8}{5} \right)^{-5}$



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19. Write 1425.36 in expanded form:



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20. Express the following in the Standard Form:
Form:

0.000007 m.



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21. Express the following in the Standard Form:
Form:

0.0016cm .



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22. Express the following numbers in usual form:

$$3.52 \times 10^5$$



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23. Express the following numbers in usual form:

$$7.54 \times 10^{-4}.$$



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24. Express the following numbers in usual form : 3×10^{-5}



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25. Express the following numbers in standard form : 0.000035



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26. Express the following numbers in standard form : 4050000



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27. Express the number appearing in the following statements in standard form:

Size of Red blood cell is 0.000007 m.



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28. Express the number appearing in the following : Size of a plant cell is 0.00001275 m



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29. Express the number appearing in the following statements in standard form

Speed of light in vacuum is 300,000,000 m/s .



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30. Express the number appearing in the following statements in standard form

The distance between Earth and Moon is 384,000,000 m.



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