



MATHS

BOOKS - PSEB

EXPONENTS AND POWERS

Example

1. Find the value of : 2^{-3}



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2. Find the value of : $\frac{1}{3^{-2}}$



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



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4. Simplify $2^5 \div 2^{-6}$



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



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



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

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



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8. Simplify and write the answer in the exponential form: $\frac{1}{8} \times (3)^{-3}$



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9. Simplify and write the answer in the exponential form: $(-3)^4 \times \left(\frac{5}{3}\right)^4$



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



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



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12.

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



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14. Express the following numbers in standard form : 0.000035



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15. Express the following numbers in standard form : 4050000



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16. Express the following numbers in usual form: 3.52×10^5



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17. Express the following numbers in usual form : 7.54×10^{-4}



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



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Exercise

1. Evaluate : 3^{-2}



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



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



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

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



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5. Simplify and express the result in power notation with positive exponent : $\left(\frac{1}{2^3}\right)^2$



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

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



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

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



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

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



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



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





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



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



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



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



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16. Find the value of m for which

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



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



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



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



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



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21. Express the following numbers in standard form : 0.00000000000085



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22. Express the following numbers in standard form : 0.000000000000942



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23. Express the following numbers in standard form : 6020000000000000



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24. Express the following numbers in standard form : 0.00000000837



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25. Express the following numbers in standard form : 31860000000



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26. Express the following numbers in usual form : 3.02×10^{-6}



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27. Express the following numbers in usual form : 4.5×10^4



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28. Express the following numbers in usual form : 3×10^{-8}



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29. Express the following numbers in usual

form : 1.0001×10^9



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30. Express the following numbers in usual

form : 5.8×10^{12}



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31. Express the following numbers in usual form : 3.61492×10^6



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32. Express the number appearing in the following : statements in standard form : 1 micron is equal to $\frac{1}{1000000}m$



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



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



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



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37. 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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