



MATHS

BOOKS - ICSE

EXPONENTS (POWERS)

Exercise 2 A

1. Evaluate :

$$(3^{-1} \times 9^{-1}) \div 3^{-2}$$



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2. Evaluate :

$$(3^{-1} \times 4^{-1}) \div 6^{-1}$$



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3. Evaluate :

$$(2^{-1} + 3^{-1})^3$$



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4. Evaluate :

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



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5. Evaluate :

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



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6. Evaluate :

$$(5^2 - 3^2) \times \left(\frac{2}{3}\right)^{-3}$$



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7. Evaluate :

$$\left[\left(\frac{1}{4}\right)^{-3} - \left(\frac{1}{3}\right)^{-3} \right] \div \left(\frac{1}{6}\right)^{-3}$$



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8. Evaluate :

$$\left[\left(-\frac{3}{4} \right)^{-2} \right]^2$$



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9. Evaluate :

$$\left\{ \left(\frac{3}{5} \right)^{-2} \right\}^{-2}$$



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10. Evaluate :

$$(5^{-1} \times 3^{-1}) \div 6^{-1}$$



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11. If $1125 = 3^m \times 5^n$, find m and n.



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12. Find x , "if" $9 \times 3^x = (27)^{2x-3}$



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Exercise 2 B

1. Compute :

$$1^8 \times 3^0 \times 5^3 \times 2^2$$



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2. Compute :

$$\left(4^7\right)^2 \times \left(4^{-3}\right)^4$$



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3. Compute :

$$(2^{-9} \div 2^{-11})^3$$



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4. Compute :

$$\left(\frac{2}{3}\right)^{-4} \times \left(\frac{27}{8}\right)^{-2}$$



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5. Compute :

$$\left(\frac{56}{28}\right)^0 \div \left(\frac{2}{5}\right)^3 \times \frac{16}{25}$$



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6. Compute :

$$(12)^{-2} \times 3^3$$



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7. Compute :

$$(-5)^4 \times (-5)^6 \div (-5)^9$$



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8. Compute :

$$\left(-\frac{1}{3}\right)^4 \div \left(-\frac{1}{3}\right)^8 \times \left(-\frac{1}{3}\right)^5$$



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9. Compute :

$$9^0 \times 4^{-1} \div 2^{-4}$$



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10. Compute :

$$(625)^{-\frac{3}{4}}$$



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11. Compute :

$$\left(\frac{27}{64}\right)^{-\frac{2}{3}}$$



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12. Compute :

$$\left(\frac{1}{32}\right)^{-\frac{2}{5}}$$



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13. Compute :

$$(125)^{-\frac{2}{3}} \div (8)^{\frac{2}{3}}$$



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14. Compute :

$$(243)^{\frac{2}{5}} \div (32)^{-\frac{2}{5}}$$



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15. Compute :

$$(-3)^4 - (\sqrt[4]{3})^0 \times (-2)^5 \div (64)^{\frac{2}{3}}$$



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16. Compute :

$$(27)^{\frac{2}{3}} \div \left(\frac{81}{16}\right)^{-\frac{1}{4}}$$



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17. Simplify :

$$8^{\frac{4}{3}} + 25^{\frac{3}{2}} - \left(\frac{1}{27}\right)^{-\frac{2}{3}}$$



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18. Simplify :

$$\left[(64)^{-2}\right]^{-3} \div \left[\left\{(-8)^2\right\}^3\right]^2$$



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19. Simplify :

$$(2^{-3} - 2^{-4})(2^{-3} + 2^{-4})$$



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20. Evaluate :

$$(-5)^0$$



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21. Evaluate :

$$8^0 + 4^0 + 2^0$$



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22. Evaluate :

$$(8 + 4 + 2)^0$$



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23. Evaluate :

$$4X^0$$



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24. Evaluate :

$$(4X)^0$$



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25. Evaluate :

$$\left[(10^3)^0 \right]^5$$



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26. Evaluate :

$$(7X^0)^2$$



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27. Evaluate :

$$9^0 + 9^{-1} - 9^{-2} + 9^{\frac{1}{2}} - 9^{-\frac{1}{2}}$$



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28. Simplify :

$$\frac{a^5 b^2}{a^2 b^{-3}}$$



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29. Simplify :

$$15y^8 \div 3y^3$$



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30. Simplify :

$$X^{10}y^6 \div X^3y^{-2}$$



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31. Simplify :

$$5z^{16} \div 15z^{-11}$$



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32. Simplify :

$$(36x^2)^{\frac{1}{2}}$$



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33. Simplify :

$$(125x^{-3})^{\frac{1}{3}}$$



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34. Simplify :

$$(2x^2y^{-3})^{-2}$$



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35. Simplify :

$$(27x^{-3}y^6)^{\frac{2}{3}}$$



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36. Simplify :

$$\left(-2X^{2/3}y^{-3/2}\right)^6$$



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37. Simplify :

$$(X^{a+b})^{a-b} \cdot (X^{b+c})^{b-c} \cdot (X^{c+a})^{c-a}$$



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38. Simplify :

$$\sqrt[5]{x^{20}y^{-10}z^5} \div \frac{x^3}{y^3}$$



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39. Simplify :

$$\left(\frac{256a^{16}}{81b^4} \right)^{-\frac{3}{4}}$$



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40. Simplify and express as Positive indices :

$$(a^{-2}b)^{-2} \cdot (ab)^{-3}$$



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41. Simplify and express as Positive indices :

$$(x^n y^{-m})^4 \times (x^3 y^{-2})^{-n}$$



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42. Simplify and express as Positive indices :

$$\left(\frac{125a^{-3}}{y^6} \right)^{\frac{-1}{3}}$$



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43. Simplify and express as Positive indices :

$$\left(\frac{32x^{-5}}{243y^{-5}} \right)^{\frac{-1}{5}}$$



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44. Simplify and express as Positive indices :

$$(a^{-2}b)^{\frac{1}{2}} \times (ab^{-3})^{\frac{1}{3}}$$



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45. Simplify and express as Positive indices :

$$(xy)^{m-n} \cdot (yz)^{n-l} \cdot (zx)^{l-m}$$



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46. Evaluate :

$$\frac{X^{5+n} \times (X^2)^{3n+1}}{X^{7n-2}}$$



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47. Evaluate :

$$\frac{a^{2n+1} \times a^{(2n+1)(2n-1)}}{a^{n(4n-1)} \times (a^2)^{2n+3}}$$



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48. Find the value of n, when :

$$12^{-5} \times 12^{2n+1} = 12^{13} \div 12^7$$



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49. Find the value of n, when :

$$\frac{a^{2n-3} \times (a^2)^{n+1}}{(a^4)^{-3}} = (a^3)^3 \div (a^6)^{-3}$$



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50. Simplify :

$$\frac{a^{2n+3} \cdot a^{(2n+1)(n+2)}}{(a^3)^{2n+1} \cdot a^{n(2n+1)}}$$



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