Must Know Questions To Ace Indices

1.	Solve the following equations: a) $7^{2x-1} \times 49^{x} = 1$ b) $7^{x-1} = (\frac{1}{49})^{\frac{3}{2}}$
2.	Solve the following equations: a) $9^{x+2} = 27^{3-2x}$ b) $16^{3x-1} \times \sqrt{32} = \frac{1}{4}$
3.	Simplify the following, giving your answer in positive index notation. a) $(\frac{2x^{-2}y^{5}}{5x^{4}y^{-1}})^{-2}$ b) $(2x)^{-2} \times 64x^{\frac{2}{3}}$
4.	Simplify the following, giving your answer in positive index notation. $\frac{16x^{6}y^{-3}}{(2x^{-2}y)^{3}} \div \frac{18x^{3}y^{-2}}{8x^{-2}}$
5.	Simplify the following, giving your answer in positive index notation. $\sqrt{64\,x^{\frac{1}{2}}y^{-\frac{1}{4}}} \div \frac{\sqrt[5]{32\,x^{\frac{1}{4}}}}{y^{3}}$

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6.	Rewrite the following in standard form: a) 85 300 b) 0.053 c) 649.57
7.	Express the following as an integer or as a decimal. a) 0.097×10^{-2} b) 8.456×10^{4} c) 935.68×10^{-3}
8.	A sum of \$25 000 is invested at an interest rate of 4% per annum compound interest for 3 years. Find the total interest accumulated if it is a) compounded yearly b) compounded monthly
9.	\$500 is invested at 6% per annum compound interest compounded half-yearly. Find the compound interest earned after 2 years.
10.	Clara invested some money in her savings account for 4 years. If there was \$9724.05 in her account at the end of 4 years, and the rate of compound interest was fixed at 5% per annum, how much did she invest in her savings account?

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Answer Key:

1. a) $x = \frac{1}{4}$

   b) $x = -2$

2. a) $x = \frac{5}{8}$

   b) $x = -\frac{1}{24}$

3. a) $\frac{25x^{12}}{4y^{12}}$

   b) $\frac{16}{x^{\frac{4}{3}}}$

4. $\frac{8x^7}{9y^4}$

5. $4\,x^{\frac{1}{5}}\,y^{\frac{23}{8}}$

6. a) 8.53×10^4

   b) 5.3×10^{-2}

   c) 6.4957×10^2

7. a) 0.00097

   b) 84560

   c) 0.93568

8. a) $3121.60

   b) $3181.80

9. $62.75

10. $800

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