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NCERT Class 9 Solutions: Number Systems (Chapter 1) Exercise 1.6

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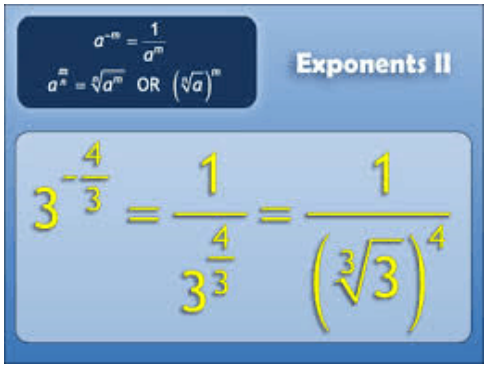
Q-1 Find:

1. $64^{\frac{1}{2}}$
2. $32^{\frac{1}{5}}$
3. $125^{\frac{1}{3}}$

Solution:

$$\left(\frac{x}{y}\right)^m = \frac{x^m}{y^m}$$



1. $64^{\frac{1}{2}} = \left(8^2\right)^{\frac{1}{2}}$

   $= 8^{2\times\frac{1}{2}}$

   $= 8^1$

   $= 8$

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

   $= 2^{5\times\frac{1}{5}}$

   $= 2^1$

   $= 2$

1. $125^{\frac{1}{3}} = \left(5^3\right)^{\frac{1}{3}}$

   $= 5^{3\times\frac{1}{3}}$

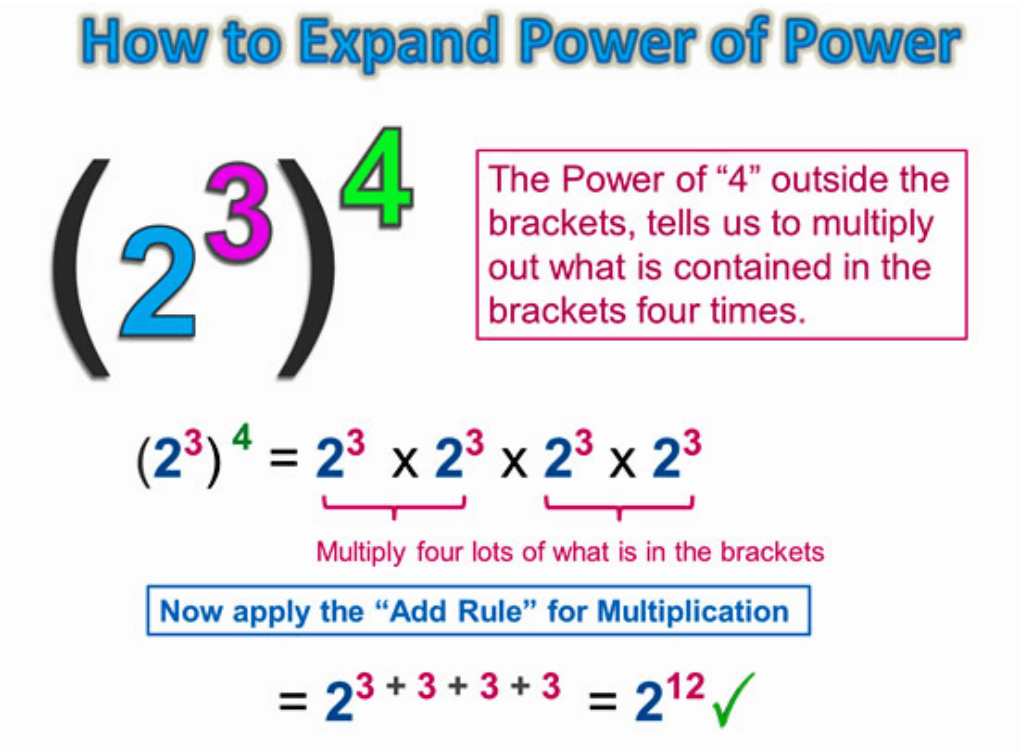
   $= 5^1$

   $= 5$

Q-2 Find:

1. $9^{\frac{3}{2}}$
2. $32^{\frac{2}{5}}$
3. $16^{\frac{3}{4}}$
4. $125^{\frac{-1}{3}}$

Solution:



1. $9^{\frac{3}{2}} = \left(3^2\right)^{\frac{3}{2}}$

   $= 3^{2\times\frac{3}{2}}$

   $= 3^3$

   $= 27$

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

   $= 2^{5\times\frac{2}{5}}$

   $= 2^2$

   $= 4$

1. $16^{\frac{3}{4}} = \left(2^4\right)^{\frac{3}{4}}$

   $= 2^{4\times\frac{3}{4}}$

   $= 2^3$

   $= 8$

1. $125^{\frac{-1}{3}} = \dfrac{1}{(125)^{\frac{1}{3}}}$

   $= \dfrac{1}{\left(5^3\right)^{\frac{1}{3}}}$

   $= \dfrac{1}{5}$

Q-3 Find:

1. $2^{\frac{2}{3}} \times 2^{\frac{1}{5}}$
2. $\left(\dfrac{1}{3^3}\right)^7$
3. $\dfrac{11^{\frac{1}{2}}}{11^{\frac{1}{4}}}$
4. $7^{\frac{1}{2}} \times 8^{\frac{1}{2}}$

Solution:

1. $2^{\frac{2}{3}} \times 2^{\frac{1}{5}} = 2^{\left(\frac{2}{3}+\frac{1}{5}\right)}$

   $= 2^{\frac{10+3}{15}}$

   $= 2^{\frac{13}{15}}$

1. $\left(\dfrac{1}{3^3}\right)^7 = \dfrac{1}{3^{3\times7}}$

   $= \dfrac{1}{3^{21}}$

   $= 3^{-21}$

1. $\dfrac{11^{\frac{1}{2}}}{11^{\frac{1}{4}}} = 11^{\frac{1}{2}-\frac{1}{4}}$

   $= 11^{\frac{2-1}{4}}$

   $= 11^{\frac{1}{4}}$

1. $7^{\frac{1}{2}} \times 8^{\frac{1}{2}} = (7\times8)^{\frac{1}{2}}$

   $= 56^{\frac{1}{2}}$