

AA PREP—EVALUATING EXPONENTS—WORKSHEET #1

KEY

Evaluate each expression without using a calculator.

1) 4^2 16	2) 4^0 1
3) $4^{-1} = \frac{1}{4^1} = \frac{1}{4}$ $\frac{1}{4}$	4) $\left(\frac{1}{4}\right)^2 = \frac{1^2}{4^2} = \frac{1}{16}$ $\frac{1}{16}$
5) $-4^2 = -1 \cdot 4^2 = -1 \cdot 16 = -16$ -16	6) $(-4)^2 = 16$ 16
7) $2^3 = 8$ 8	8) $-2^3 = -1 \cdot 2^3 = -1 \cdot 8 = -8$ -8
9) $-2^0 = -1 \cdot 2^0 = -1 \cdot 1 = -1$ -1	10) $(-2)^0 = 1$ 1
11) $\left(-\frac{1}{2}\right)^2 = \frac{1^2}{(-2)^2} = \frac{1}{4}$ $\frac{1}{4}$	12) $\left(\frac{1}{2}\right)^{-3} = \left(\frac{2}{1}\right)^3 = 2^3 = 8$ 8
13) $25^{\frac{1}{2}} = \sqrt[2]{25^1} = 5^1 = 5$ 5	14) $16^{\frac{1}{4}} = \sqrt[4]{16^1} = 2^4 = 2$ 2
15) $8^{-\frac{1}{3}} = \sqrt[3]{8^{-1}} = 2^{-1} = \frac{1}{2}$ $\frac{1}{2}$	16) $32^{-\frac{1}{5}} = \sqrt[5]{32^{-1}} = 2^{-1} = \frac{1}{2}$ $\frac{1}{2}$
17) $81^{\frac{3}{4}} = \sqrt[4]{81^3} = 3^3 = 27$ 27	18) $64^{\frac{4}{3}} = 64^{\frac{2}{3}} = \sqrt[3]{64^2} = 4^2 = 16$ 16
19) $\left(\frac{1}{64}\right)^{\frac{2}{3}} = \sqrt[3]{\frac{1}{64^2}} = \left(\frac{\sqrt[3]{1}}{\sqrt[3]{64}}\right)^2 = \left(\frac{1}{4}\right)^2 = \frac{1}{16}$ $\frac{1}{16}$	20) $\left(\frac{4}{25}\right)^{-\frac{3}{2}} = \sqrt[2]{\frac{4}{25^{-3}}} = \left(\frac{\sqrt{4}}{\sqrt{25}}\right)^{-3} = \left(\frac{2}{5}\right)^{-3} = \left(\frac{5}{2}\right)^3 = \frac{125}{8}$ $\frac{125}{8}$