

Fraction Exponents NO CALCULATOR

$$\textcircled{1} 8^{\frac{1}{3}} = \textcircled{2} \quad \textcircled{2} 16^{\frac{1}{4}} = \textcircled{2} \quad \textcircled{3} 16^{\frac{1}{2}} = \textcircled{4}$$

$$\textcircled{4} 32^{\frac{1}{5}} = \textcircled{2} \quad \textcircled{5} 27^{\frac{1}{3}} = \textcircled{3} \quad \textcircled{6} 8^{\frac{2}{3}} = 2^2 = \textcircled{4}$$

$$\textcircled{7} 8^{\frac{3}{3}} = \textcircled{8} \quad \textcircled{8} 4^{\frac{3}{2}} = 2^3 = \textcircled{8} \quad \textcircled{9} 27^{\frac{2}{3}} = 3^2 = \textcircled{9}$$

$$\textcircled{10} 16^{\frac{3}{4}} = 2^3 = \textcircled{8} \quad \textcircled{11} 81^{\frac{1}{4}} = \textcircled{3} \quad \textcircled{12} 81^{\frac{3}{4}} = 3^3 = \textcircled{27}$$

$$\textcircled{13} 16^{\frac{5}{4}} = 2^5 = \textcircled{32} \quad \textcircled{14} (-27)^{\frac{1}{3}} = \textcircled{-3} \quad \textcircled{15} (-8)^{\frac{2}{3}} = (-2)^2 = \textcircled{4} \quad \text{!!!}$$

$$\textcircled{16} (-4)^{\frac{1}{2}} \quad \text{No answer, undefined} \quad \textcircled{17} (-125)^{\frac{2}{3}} = (-5)^2 = \textcircled{25} \quad \textcircled{17} \left(\frac{1}{16}\right)^{\frac{1}{2}} = \textcircled{\frac{1}{4}}$$

$$\textcircled{18} \left(\frac{1}{8}\right)^{\frac{1}{3}} = \textcircled{\frac{1}{2}} \quad \textcircled{19} \left(\frac{8}{27}\right)^{\frac{1}{3}} = \textcircled{\frac{2}{3}} \quad \textcircled{20} \left(\frac{-8}{27}\right)^{\frac{1}{3}} = \textcircled{\frac{-2}{3}}$$

Math 10 - Negative Exponents

Name _____

Skill 18

Change to a positive exponent - Do not evaluate

$$\textcircled{1} 2^{-3} = \frac{1}{2^3} \quad \textcircled{2} 5^{-2} = \frac{1}{5^2} \quad \textcircled{3} 7^{-1} = \frac{1}{7} \quad \textcircled{4} 8^{-5} = \frac{1}{8^5}$$

$$\textcircled{5} 3^{-4} = \frac{1}{3^4} \quad \textcircled{6} 3^{-7} = \frac{1}{3^7} \quad \textcircled{7} 1^{-2} = \frac{1}{1^2} \quad \textcircled{8} 10^{-3} = \frac{1}{10^3}$$

$$\textcircled{9} 10^{-5} = \frac{1}{10^5} \quad \textcircled{10} 4^{-3} = \frac{1}{4^3} \quad \textcircled{11} 6^{-1} = \frac{1}{6} \quad \textcircled{12} 5^{-8} = \frac{1}{5^8}$$

$$\textcircled{13} \frac{1}{3^{-2}} = 3^2 \quad \textcircled{14} \frac{1}{5^{-3}} = 5^3 \quad \textcircled{15} \frac{1}{10^{-1}} = 10^1 \quad \textcircled{16} \frac{1}{8^{-2}} = 8^2$$

$$\textcircled{17} \frac{1}{4^{-6}} = 4^6 \quad \textcircled{18} \frac{1}{3^{-5}} = 3^5 \quad \textcircled{19} \frac{1}{6^{-1}} = 6 \quad \textcircled{20} \frac{1}{5^{-7}} = 5^7$$

$$\textcircled{21} (-3)^{-5} = \frac{1}{(-3)^5} \quad \textcircled{22} (-6)^{-4} = \frac{1}{(-6)^4} \quad \textcircled{23} (-2)^{-1} = \frac{1}{(-2)} \quad \textcircled{24} (-8)^{-3} = \frac{1}{(-8)^3}$$

$$\textcircled{25} (-7)^{-6} = \frac{1}{(-7)^6} \quad \textcircled{26} (-10)^{-7} = \frac{1}{(-10)^7} \quad \textcircled{27} (-4)^{-2} = \frac{1}{(-4)^2} \quad \textcircled{28} (-3)^{-7} = \frac{1}{(-3)^7}$$

$$\textcircled{29} \left(\frac{2}{3}\right)^{-5} = \left(\frac{3}{2}\right)^5 \quad \textcircled{30} \left(\frac{4}{5}\right)^{-7} = \left(\frac{5}{4}\right)^7 \quad \textcircled{31} \left(\frac{3}{4}\right)^{-1} = \left(\frac{4}{3}\right)^1 \quad \textcircled{32} \left(\frac{5}{6}\right)^{-3} = \left(\frac{6}{5}\right)^3$$

$$\textcircled{33} \left(\frac{5}{4}\right)^{-2} = \left(\frac{4}{5}\right)^2 \quad \textcircled{34} \left(\frac{10}{3}\right)^{-6} = \left(\frac{3}{10}\right)^6 \quad \textcircled{35} (6.5)^{-3} = \left(\frac{1}{2}\right)^3 = \frac{1}{2^3} \quad \textcircled{36} (.3)^{-7} = \left(\frac{3}{10}\right)^7 = \left(\frac{10}{3}\right)^7$$

(hint, change to fraction)

Math 10 Positive and Negative Exponents

Skill 18

Evaluate (if negative exponent, rewrite with positive exponent first)

① $2^3 = 8$

② $3^{-2} = \frac{1}{3^2} = \frac{1}{9}$

③ $6^{-1} = \frac{1}{6}$

④ $5^{-2} = \frac{1}{5^2} = \frac{1}{25}$

⑤ $7^1 = 7$

⑥ $8^2 = 64$

⑦ $7^{-2} = \frac{1}{7^2} = \frac{1}{49}$

⑧ $5^{-3} = \frac{1}{5^3} = \frac{1}{125}$

⑨ $2^{-3} = \frac{1}{2^3} = \frac{1}{8}$

⑩ $8^2 = 64$

⑪ $4^2 = 16$

⑫ $3^3 = 27$

⑬ $3^{-3} = \frac{1}{3^3} = \frac{1}{27}$

⑭ $2^{-1} = \frac{1}{2}$

⑮ $7^{-2} = \frac{1}{7^2} = \frac{1}{49}$

⑯ $\left(\frac{1}{2}\right)^{-3} = \left(\frac{2}{1}\right)^3 = 8$

⑰ $\left(\frac{3}{4}\right)^2 = \frac{9}{16}$

⑱ $\left(\frac{2}{3}\right)^{-2} = \left(\frac{3}{2}\right)^2 = \frac{9}{4}$

⑲ $\left(\frac{4}{5}\right)^2 = \frac{16}{25}$

⑳ $\left(\frac{1}{3}\right)^3 = \frac{1}{27}$

㉑ $\left(\frac{1}{8}\right)^{-2} = 8^2 = 64$

㉒ $7^{-2} = \frac{1}{7^2} = \frac{1}{49}$

㉓ $(-7)^{-2} = \frac{1}{(-7)^2} = \frac{1}{49}$

㉔ $(-7)^2 = 49$

㉕ $\left(-\frac{2}{3}\right)^2 = \frac{4}{9}$

㉖ $\left(-\frac{2}{3}\right)^{-2} = \left(\frac{3}{-2}\right)^2 = \frac{9}{4}$

㉗ $(-3)^2 = 9$

㉘ $(-3)^{-2} = \frac{1}{(-3)^2} = \frac{1}{9}$

㉙ $(-6)^2 = 36$

㉚ $(-6)^{-2} = \frac{1}{(-6)^2} = \frac{1}{36}$

5/4/18
Mixed Fraction and Negative Exponents

Evaluate

① $32^{-\frac{1}{5}} = \frac{1}{32^{\frac{1}{5}}} = \frac{1}{2}$ ② $4^{1.5} = 4^{\frac{3}{2}} = 2^3 = 8$ ③ $27^{\frac{2}{3}} = 3^2 = 9$

④ $16^{-\frac{3}{4}} = 2^{-3} = \frac{1}{2^3} = \frac{1}{8}$ ⑤ $8^{-\frac{1}{3}} = 2^{-1} = \frac{1}{2}$ ⑥ $49^{-\frac{1}{2}} = 7^{-1} = \frac{1}{7}$

⑦ $81^{\frac{3}{4}} = 3^3 = 27$ ⑧ $125^{-\frac{2}{3}} = 5^{-2} = \frac{1}{5^2} = \frac{1}{25}$ ⑨ $\left(\frac{1}{16}\right)^{\frac{1}{2}} = \frac{1}{4}$

⑩ $\left(\frac{8}{27}\right)^{-\frac{1}{3}} = \left(\frac{2}{3}\right)^{-1} = \frac{3}{2}$ ⑪ $\left(\frac{8}{27}\right)^{\frac{2}{3}} = \left(\frac{2}{3}\right)^2 = \frac{4}{9}$ ⑫ $81^{-\frac{1}{4}} = 81^{-\frac{1}{4}} = 3^{-5} = \frac{1}{3^5} = \frac{1}{243}$

⑬ $\left(\frac{1}{16}\right)^{-\frac{1}{2}} = 16^{\frac{1}{2}} = 4$ ⑭ $\left(\frac{1}{8}\right)^{-\frac{2}{3}} = 8^{\frac{2}{3}} = 2^2 = 4$ ⑮ $\left(\frac{1}{4}\right)^{-\frac{3}{2}} = 4^{\frac{3}{2}} = 2^3 = 8$

⑯ $(9)^{\frac{1}{2}}$
 $9^{\frac{3}{2}} = 3^3 = 27$

⑰ $(-8)^{\frac{2}{3}}$
 $(-2)^2 = 4$

⑱ $\left(-\frac{27}{8}\right)^{-\frac{1}{3}}$
 $\left(-\frac{8}{27}\right)^{\frac{1}{3}} = \frac{-2}{3}$

(same as $\frac{2}{-3}$)