

Warm Up Questions

- 1.** Arrange these numbers in order from least to greatest. Describe your strategy.

$$\sqrt[3]{4}, 4^{\frac{3}{2}}, 4^2, \left(\frac{1}{4}\right)^{\frac{3}{2}}$$

- 2.** Evaluate.

i) $16^{1.5}$

ii) $81^{0.75}$

iii) $(-32)^{0.8}$

iv) $36^{0.5}$

v) $1.21^{1.5}$

1. Arrange these numbers in order from least to greatest. Describe your strategy.

$$\sqrt[3]{4}, 4^{\frac{3}{2}}, 4^2, \left(\frac{1}{4}\right)^{\frac{3}{2}}$$

$$4^{1/3}, 4^{3/2}, 4^2, 4^{-3/2}$$

Least to Greatest

$$4^{-3/2}, 4^{1/3}, 4^{3/2}, 4^2$$

Evaluate.

- i) $16^{1.5}$
- iii) $(-32)^{0.8}$
- v) $1.21^{\textcircled{1.5}}$

- ii) $81^{0.75}$
- iv) $36^{0.5}$

$$\frac{0.75}{\frac{75}{100}}$$

$\frac{3}{4}$

1.5
|
 $\frac{1}{2}$
|
 $\frac{3}{2}$

0.8
|
 $\frac{8}{10}$
|
 $\frac{4}{5}$

i) $16^{3/2}$
 $= (\sqrt{16})^3$
 $= 4^3$
 $= 64$

ii) $81^{3/4}$
 $= (\sqrt[4]{81})^3$
 $= 3^3$
 $= 27$

iii) $(-32)^{4/5}$
 $= (\sqrt[5]{-32})^4$
 $= (-2)^4$
 $= 16$

Simplify

iv) $36^{1/2}$
 $= \sqrt{36}$
 $= 6$

v) $1.21^{3/2}$
 $= (\sqrt{1.21})^3$
 $= 1.1^3$
 $= 1.331$

Evaluate



What do negative exponents represent??

$$\frac{8^5}{8^3} = 8^2$$



LOOK

$$\frac{8^3}{8^5} = 8^{-2}$$



$$\frac{\cancel{8} \cancel{8} \cancel{8} 8 8}{\cancel{8} \cancel{8} \cancel{8}}$$

$$8^2$$

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

$$8^{-2}$$

Express with positive exponents:

$$\frac{15 y^4}{x^5}$$

Express with positive exponents:

$$\frac{25 n^4 z^6}{m^7 p}$$

Express with positive exponents:

$$\frac{12 a^{-2} b^5 c^{-7}}{a^2 c^7}$$

Handwritten work:

$$\frac{12 b^5}{a^2 c^7}$$



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

$$\left(\frac{9}{4}\right)^2$$

Powers with Negative Exponents

$$x^{-n} = 1/x^n \quad \text{AND} \quad 1/x^n = x^{-n} \quad x \neq 0$$

Flip It and Turn the Exponent Positive



Let's Give it a Try!

a) $\frac{3^{-2}}{1}$
 $\frac{1}{3^2}$

b) $(4/5)^{-2}$
 $\left(\frac{4}{5}\right)^{-2}$
 $\left(\frac{5}{4}\right)^2$

c) $(1/2)^{-2}$
 $\left(\frac{1}{2}\right)^{-2}$
 $\left(\frac{2}{1}\right)^2$

d) $\frac{(-5)^{-3}}{1}$

$$\frac{1}{(-5)^3}$$

e) $\frac{8^{-2/3}}{1}$

$$\frac{1}{8^{2/3}}$$

f) $\frac{(1/9)^{-3/2}}{1}$

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

g) $(8/27)^{-2/3}$

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

$$\left(\frac{27}{8}\right)^{2/3}$$

h) $(-125)^{-1/3}$

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

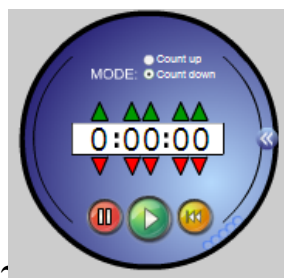
$$\frac{1}{(-125)^{1/3}}$$

i) $(-14/5)^0$

$$\left(-\frac{14}{5}\right)^0$$

$$1$$

Try These !!



a) $144^{-1/2}$

b) $(9/64)^{-1/2}$

c) $81^{-3/2}$

a) $(-64)^{-1/3}$

b) $(100/49)^{-3/2}$

c) $0.36^{-1/2}$

Try These !!

a) $144^{-1/2}$

$$= 1/144^{1/2}$$

$$= 1/\sqrt{144}$$

$$= 1/12$$

$$\frac{1}{144}^{1/2}$$

$$\frac{1}{12}$$

b) $(9/64)^{-1/2}$

$$= (64/9)^{1/2}$$

$$= \sqrt{64} / \sqrt{9}$$

$$= 8/3$$

$$\left(\frac{64}{9}\right)^{1/2}$$

$$\frac{64^{1/2}}{9^{1/2}}$$

c) $81^{-3/2}$

$$= 1/81^{3/2}$$

$$= 1/(\sqrt{81})^3$$

$$= 1/9^3$$

$$= 1/729$$

a) $(-64)^{-1/3}$

$$= (1/-64)^{1/3}$$

$$= (1 / -64)^{1/3}$$

$$= 1 / -4$$

b) $(100/49)^{-3/2}$

$$= (49/100)^{3/2}$$

$$= (\sqrt{49})^3 / (\sqrt{100})^3$$

$$= 7^3 / 10^3$$

$$= 343/1000$$

c) $0.36^{-1/2}$

$$= 1/0.36^{1/2}$$

$$= 1/\sqrt{0.36}$$

$$= 1/0.6$$

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Questions:

6,7,8,9,12 and 13 please