

PRACTICE WITH POWERS

PART A

Write and solve exponent problems using each of the 4 exponents below with the 9 pairs of numerators and denominators. A couple have been done for you. When you are finished, you will have done 36 individual questions(including the examples).

-5	4	1
3	2	-4
2	5	5
NUMERATOR		

2	-2
3	-3
EXPONENT	

2	-3	4
1	5	5
4	-4	3
DENOMINATOR		

EXAMPLE 1

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

EXAMPLE 2

$$\begin{aligned} &\left(\frac{5}{-4}\right)^{-3} \\ &= \left(\frac{-4}{5}\right)^3 \\ &= \frac{-64}{125} \end{aligned}$$

PART B1

Write and solve exponent problems using each of the 2 exponents below with the 9 pairs of numerators and denominators. One has been done for you. When you are finished, you will have done 18 individual questions(including the example).

25	16	1
9	4	25
4	9	36
NUMERATOR		

1/2	3/2
EXPONENT	

4	9	36
1	16	49
36	4	25
DENOMINATOR		

EXAMPLE

$$\begin{aligned} &\left(\frac{25}{49}\right)^{\frac{3}{2}} \\ &= \left(\left(\frac{25}{49}\right)^{\frac{1}{2}}\right)^3 \\ &= \left(\frac{5}{7}\right)^3 \\ &= \frac{125}{343} \end{aligned}$$

PART B2

Write and solve exponent problems using each of the 2 exponents below with the 4 pairs of numerators and denominators. One has been done for you. When you are finished, you will have done 8 individual questions(including the example).

8	-27
-64	125
NUMERATOR	

2/3	4/3
EXPONENT	

125	64
27	-8
DENOMINATOR	

EXAMPLE

$$\begin{aligned} &\left(\frac{-64}{27}\right)^{\frac{4}{3}} \\ &= \left(\left(\frac{-64}{27}\right)^{\frac{1}{3}}\right)^4 \\ &= \left(\frac{-4}{3}\right)^4 \\ &= \frac{256}{81} \end{aligned}$$

PRACTICE WITH POWERS

PART C1

Write and solve exponent problems using each of the 9 bases below with the 9 pairs of exponents.

One has been done for you as an example.

$$x^a \cdot x^b$$

32	4	7
2	5	8
81	3	x
BASE (x)		

3/5	-4	7
1	5	2/3
-3	-3	6
EXPONENT(a)		

EXAMPLE

$$\begin{aligned} & 32^{\frac{3}{5}} \cdot 32^1 \\ &= 32^{\frac{3}{5}+1} \\ &= 32^{\frac{3}{5}+1\left(\frac{5}{5}\right)} \\ &= 32^{\frac{3}{5}+\frac{5}{5}} \\ &= 32^{\frac{8}{5}} \\ &= \left(\left(32\right)^{\frac{1}{5}}\right)^8 \\ &= 2^8 \\ &= 256 \end{aligned}$$

1	4	7
-1	26	8
7/4	2	-1
EXPONENT(b)		

EXAMPLE

$$\begin{aligned} & \frac{4^7}{4^9} \\ &= 4^{7-9} \\ &= 4^{-2} \\ &= \frac{1}{4^2} \\ &= \frac{1}{16} \end{aligned}$$

PART C2

Write and solve exponent problems using each of the 9 bases below with the 9 pairs of exponents.

One has been done for you as an example.

$$\frac{x^a}{x^c}$$

32	3	4
2	1	8
81	6	x
BASE (x)		

3/5	-4	7
1	5	5/3
2	4	6
EXPONENT(a)		

2	-6	9
-2	20	3
9/4	2	9
EXPONENT(c)		

PART C3

Write and solve exponent problems using each of the 9 bases below with the 9 triplets of exponents.

One has been done for you as an example.

$$\frac{x^a \cdot x^b}{x^c}$$

32	3	4
2	1	8
81	6	x
BASE (x)		

3/5	-4	8
1	5	2/3
4	-3	6
EXPONENT(a)		

EXAMPLE

$$\begin{aligned} & \frac{8^{\frac{2}{3}} \cdot 8^4}{8^6} \\ &= 8^{\frac{2}{3}+4-6} \\ &= 8^{\frac{2}{3}-2} \\ &= 8^{\frac{2}{3}-\frac{6}{3}} \\ &= 8^{\frac{-4}{3}} \\ &= \frac{1}{8^{\frac{4}{3}}} \\ &= \frac{1}{2^4} \\ &= \frac{1}{16} \end{aligned}$$

3	4	-2
-1	5	4
7/4	9	-1
EXPONENT(b)		

3	4	7
-1	5	6
9/4	4	3
EXPONENT(c)		