Exponent Practice

Name: _____ Date: _____

Question 1

Solve and indicate any exponent rules applied

I. 9^{2} =

II. 4^{3} =

III. 4^{-2} =

IV. 7^{0} =

V. 8^{0} =

VI. 6^{1} =

VII. -6^{2} =

VIII. $(-6)^{3}$ =

Exponent Practice

IX. $(-6)^{2} =$

XIII. $\left(\frac{2}{5}\right)^{-2} =$

X. $9^{\frac{1}{2}} =$

XIV. $\left(\frac{9}{25}\right)^{\frac{1}{2}} =$

XI. $27^{\frac{1}{3}} =$

XV. $\left(\frac{9}{25}\right)^{-\frac{1}{2}} =$

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

XVI. $(3 \cdot 3)^{2} =$

Exponent Practice

XVII. $6^4 \div 6^2 =$

XVIII. $2^2 \cdot 2^2 =$

XIX. $2^2 + 2^2 =$

XX. $2^4 - 2^2 =$

XXI. $(2^2)^2 =$

Exponent Practice

Name: **Key** Date: _____

Question 1

Solve and indicate any exponent rules applied

I. $9^{2} = 81$

#1 9.
#2 × 9.
81.

II. $4^{3} = 64$

#1 4.
#2 × 4.
16.

#3 16.
× 4.
64.

III. $4^{-2} = 0.0625$

$\frac{1}{4^{2}} \longrightarrow$ 4. × 4. = 16. $\longrightarrow \frac{1}{16} \longrightarrow$

0.0625
16 | 1.0000
- 96
40
- 32
80
- 80
0

Negative Exponent Rule

IV. $7^{0} = 1$

Zero Exponent Rule

V. $8^{0} = 1$

Zero Exponent Rule

VI. $6^{1} = 6$

VII. $-6^{2} = -36$

#1 6.
#2 × 6.
36.

apply negative → -36

VIII. $(-6)^{3} = -216$

#1 -6.
#2 × -6.
36.

#3 36.
× -6.
-216.

Exponent Practice

IX. $(-6)^{2} = 36$

#1 -6.
#2 × -6.
36.

XIII. $\left(\frac{2}{5}\right)^{-2} = 6.25$

$\left(\frac{5}{2}\right)^{2} \longrightarrow \frac{5^{2}}{2^{2}} \longrightarrow \frac{25}{4} \longrightarrow$

Negative Exponent Rule — Power of a Fraction Rule

#1 5.
#2 × 5.
25.

#1 2.
#2 × 2.
4.

$$\begin{array}{r} 06.25 \\ 4\overline{)25.00} \\ -24 \\ \hline 10 \\ -8 \\ \hline 20 \\ -20 \\ \hline 0 \end{array}$$

X. $9^{\frac{1}{2}} = 3$

$\sqrt[2]{9^{1}} = 3$

Fractional Exponent Rule

XIV. $\left(\frac{9}{25}\right)^{\frac{1}{2}} = 0.6$

$\frac{9^{\frac{1}{2}}}{25^{\frac{1}{2}}} \longrightarrow \frac{\sqrt[2]{9^{1}}}{\sqrt[2]{25^{1}}} \longrightarrow \frac{3}{5} \longrightarrow$

Power of a Fraction Rule — Fractional Exponent Rule

$$\begin{array}{r} 0.6 \\ 5\overline{)3.0} \\ -30 \\ \hline 0 \end{array}$$

XI. $27^{\frac{1}{3}} = 3$

$\sqrt[3]{27^{1}} = 3$

Fractional Exponent Rule

XV. $\left(\frac{9}{25}\right)^{-\frac{1}{2}} = 1.667$

$\left(\frac{25}{9}\right)^{\frac{1}{2}} \longrightarrow \frac{25^{\frac{1}{2}}}{9^{\frac{1}{2}}} \longrightarrow \frac{\sqrt[2]{25^{1}}}{\sqrt[2]{9^{1}}} \longrightarrow \frac{5}{3} \longrightarrow$

Negative Exponent Rule — Power of a Fraction Rule — Fractional Exponent Rule

$$\begin{array}{r} 1.6666 \\ 3\overline{)5.0000} \\ -3 \\ \hline 20 \\ -18 \\ \hline 20 \\ -18 \\ \hline 20 \\ -18 \\ \hline 20 \\ -18 \\ \hline 2 \end{array}$$

XII. $\left(\frac{2}{5}\right)^{2} = 0.16$

$\frac{2^{2}}{5^{2}} \longrightarrow \frac{4}{25} \longrightarrow$

Power of a Fraction Rule

$$\begin{array}{r} 0.16 \\ 25\overline{)4.00} \\ -25 \\ \hline 150 \\ -150 \\ \hline 0 \end{array}$$

#1 2.
#2 × 2.
4.

#1 5.
#2 × 5.
25.

XVI. $(3 \cdot 3)^{2} = 81$

$3^{2} \cdot 3^{2} \longrightarrow 3^{2+2} \longrightarrow 3^{4}$

Power of a Product Rule — Product Rule

#1 3.
#2 × 3.
9.
#3 × 3.
27.
#4 × 3.
81.

Exponent Practice

XVII. $6^{4} \div 6^{2} = 36$

$6^{4-2} \longrightarrow 6^{2} \longrightarrow$ #1 6. #2 × 6. = 36.

Quotient Rule

XVIII. $2^{2} \cdot 2^{2} = 16$

$2^{2+2} \longrightarrow 2^{4} \longrightarrow$ #1 2. #2 × 2. = 4. #3 × 2. = 8. #4 × 2. = 16.

Product Rule

XIX. $2^{2} + 2^{2} = 8$

4.
+ 4.
8.

#1 2.
#2 × 2.
4.

XX. $2^{4} - 2^{2} = 12$

16.
- 4.
12.

#1 2. #2 × 2. = 4. #3 × 2. = 8. #4 × 2. = 16.

XXI. $(2^{2})^{2} = 16$

$2^{2 \cdot 2} \longrightarrow 2^{4} \longrightarrow$ #1 2. #2 × 2. = 4. #3 × 2. = 8. #4 × 2. = 16.

Power Rule