Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

PERFECT SQUARES

A number is a PERFECT SQUARE if \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |
| --- |
| First 12 Perfect Squares:  |
| NUMBER MULTIPLIED BY ITSELF | PERFECT SQUARES |  | NUMBER MULTIPLIED BY ITSELF | PERFECT SQUARES |
| 1 X 1 = | \_\_\_\_\_\_\_\_\_\_\_ |  | 7 X 7 = | \_\_\_\_\_\_\_\_\_\_\_ |
| 2 X 2 = | \_\_\_\_\_\_\_\_\_\_\_ |  | 8 X 8 = | \_\_\_\_\_\_\_\_\_\_\_ |
| 3 X 3 = | \_\_\_\_\_\_\_\_\_\_\_ |  | 9 X 9 = | \_\_\_\_\_\_\_\_\_\_\_ |
| 4 X 4 = | \_\_\_\_\_\_\_\_\_\_\_ |  | 10 X 10 = | \_\_\_\_\_\_\_\_\_\_\_ |
| 5 X 5 = | \_\_\_\_\_\_\_\_\_\_\_ |  | 11 X 11 = | \_\_\_\_\_\_\_\_\_\_\_ |
| 6 X 6 = | \_\_\_\_\_\_\_\_\_\_\_ |  | 12 X 12 = | \_\_\_\_\_\_\_\_\_\_\_ |

A variable is a perfect square if it has an \_\_\_\_\_\_\_\_\_\_\_\_\_ exponent.

|  |  |
| --- | --- |
| VARIABLES MULTIPLIED BY ITSELF | PERFECT SQUARES |
| $$x∙x=$$ | \_\_\_\_\_\_\_\_\_\_\_ |
| $$x^{2}∙x^{2}=$$ | \_\_\_\_\_\_\_\_\_\_\_ |
| $$x^{3}∙x^{3}=$$ | \_\_\_\_\_\_\_\_\_\_\_ |
| $$x^{4}∙x^{4}=$$ | \_\_\_\_\_\_\_\_\_\_\_ |

SQUARE ROOTS

Taking the square root of a number is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

For example if $3^{2}= \\_\\_\\_\\_\\_\\_\\_\\_\\_$, then $\sqrt{9}=\\_\\_\\_\\_\\_\\_\\_\\_\\_$. The symbol $\sqrt{}$ tells you to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

PARTS OF A RADICAL

 An expression that contains a square root is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. It can have three parts.

Radicand: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



Coefficient: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Index: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Simplify the following radical expressions.

|  |  |
| --- | --- |
| $\sqrt{100}=$ \_\_\_\_\_\_\_\_\_\_\_ | $\sqrt{x^{4}}=$ \_\_\_\_\_\_\_\_\_\_\_ |
| $\sqrt{25}=$ \_\_\_\_\_\_\_\_\_\_\_ | $\sqrt{4x^{2}}=$\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| $\sqrt{141}=$ \_\_\_\_\_\_\_\_\_\_\_ | $\sqrt{81x^{8}y^{2}}=$\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| $\sqrt{x^{2}=}$ \_\_\_\_\_\_\_\_\_\_\_ | $\sqrt{36a^{6}b^{4}}=$\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

When dealing with exponents, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to get the exponent of the roots.

If your radicand has more than one factor, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

NON-PERFECT SQUARES

Simplify: $\sqrt{24}$

Since 24 is not a perfect square, its \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. To simplify

this radical, 24 needs to be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

However, one of the factors must be a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

What is the highest factor of 24 that is also a perfect square? \_\_\_\_\_\_. Therefore, 24 = \_\_\_\_ X \_\_\_\_\_

$\sqrt{24}=\sqrt{\\_\\_\\_\\_\\_∙\\_\\_\\_\\_\\_\\_}=\sqrt{\\_\\_\\_\\_\\_\\_}∙ \sqrt{\\_\\_\\_\\_\\_\\_}=\\_\\_\\_\\_\sqrt{\\_\\_\\_\\_\\_\\_}$

Simplify: $\sqrt{32}$

What is the highest factor of 32 that is also a perfect square? \_\_\_\_\_\_. Therefore, 32 = \_\_\_\_ X \_\_\_\_\_

$\sqrt{32}=\sqrt{\\_\\_\\_\\_\\_∙\\_\\_\\_\\_\\_\\_}=\sqrt{\\_\\_\\_\\_\\_\\_}∙ \sqrt{\\_\\_\\_\\_\\_\\_}=\\_\\_\\_\\_\sqrt{\\_\\_\\_\\_\\_\\_}$

Simplify: $\sqrt{54}$

What is the highest factor of 54 that is also a perfect square? \_\_\_\_\_\_. Therefore, 54 = \_\_\_\_ X \_\_\_\_\_

$\sqrt{54}$ =

Simplify: $\sqrt{x^{5}}$

What is the highest factor of $\sqrt{x^{5}}$ that is also a perfect square? \_\_\_\_\_\_. Therefore, $x^{5}$= \_\_\_\_ X \_\_\_\_\_

$\sqrt{x^{5}}=\sqrt{\\_\\_\\_\\_\\_∙\\_\\_\\_\\_\\_\\_}=\sqrt{\\_\\_\\_\\_\\_\\_}∙ \sqrt{\\_\\_\\_\\_\\_\\_}=\\_\\_\\_\\_\sqrt{\\_\\_\\_\\_\\_\\_}$

Simplify: $\sqrt{50x^{2}y}$

What’s the highest factor and perfect square of $\sqrt{50x^{2}} $? \_\_\_\_\_\_\_\_\_. Therefore, $50x^{2}$= \_\_\_\_ X \_\_\_\_\_

$\sqrt{50x^{2}y}=\sqrt{\\_\\_\\_\\_\\_∙\\_\\_\\_\\_\\_\\_}=\sqrt{\\_\\_\\_\\_\\_\\_}∙ \sqrt{\\_\\_\\_\\_\\_\\_}=\\_\\_\\_\\_\sqrt{\\_\\_\\_\\_\\_\\_}$

Simplify: $\sqrt{42x^{9}}$

What is the highest factor and perfect square of $\sqrt{42x^{9}}$ ? \_\_\_\_\_\_\_. Therefore $42x^{9}$= \_\_\_\_ X \_\_\_\_\_

 $\sqrt{42x^{9}}=$

PERFECT CUBES

A number is a PERFECT CUBE if \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |
| --- |
| First 5 Perfect CUBES and Perfect CUBES Variables |
| NUMBER MULTIPLIED BY ITSELF 3 TIMES | PERFECT CUBES |  | VARIABLE MULTIPLIED BY ITSELF 3 TIMES | PERFECT CUBES |
| 1 X 1 X 1 = | \_\_\_\_\_\_\_\_\_\_\_ |  | $$x∙x∙x=$$ | \_\_\_\_\_\_\_\_\_\_\_ |
| 2 X 2 X 2 = | \_\_\_\_\_\_\_\_\_\_\_ |  | $$x^{2}∙x^{2}∙x^{2}=$$ | \_\_\_\_\_\_\_\_\_\_\_ |
| 3 X 3 X 3 = | \_\_\_\_\_\_\_\_\_\_\_ |  | $$x^{3}∙x^{3}∙x^{3}=$$ | \_\_\_\_\_\_\_\_\_\_\_ |
| 4 X 4 X 4 = | \_\_\_\_\_\_\_\_\_\_\_ |  | A variable is a perfect square if the exponent is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 5 X 5 X 5 = | \_\_\_\_\_\_\_\_\_\_\_ |  |

Taking the cube root of a number is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

For example if $2^{3}= \\_\\_\\_\\_\\_\\_\\_\\_\\_$, then $\sqrt[3]{8}=\\_\\_\\_\\_\\_\\_\\_\\_\\_$. The symbol $\sqrt[3]{}$ tells you to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Simplify the following radical expressions:

|  |
| --- |
| $\sqrt[3]{125}=$ \_\_\_\_\_\_\_\_\_\_\_ |
| $\sqrt[3]{27}=$ \_\_\_\_\_\_\_\_\_\_\_ |
| $\sqrt[3]{x^{3}}=$ \_\_\_\_\_\_\_\_\_\_\_ |
| $\sqrt[\begin{array}{c}\\3\end{array}]{64x^{12}}= $\_\_\_\_\_\_\_\_\_\_\_ |

NON-PERFECT CUBES

Simplify: $\sqrt[3]{54}:$

What is its highest factor and perfect cube the radicand? \_\_\_\_\_\_. Therefore, 54? = \_\_\_\_ X \_\_\_\_\_

$$\sqrt[3]{54 }=\sqrt[3]{\\_\\_\\_\\_\\_∙\\_\\_\\_\\_\\_\\_}=\sqrt[3]{\\_\\_\\_\\_\\_}∙\sqrt[3]{\\_\\_\\_\\_\\_}=$$

Simplify: $\sqrt[3]{24x^{8}}:$

What is its highest factor and perfect cube of the radicand? \_\_\_\_\_\_. Therefore, $24x^{8}$? = \_\_\_\_ X \_\_\_\_\_

$$\sqrt[3]{24x^{8} }=\sqrt[3]{\\_\\_\\_\\_\\_∙\\_\\_\\_\\_\\_\\_∙\\_\\_\\_\\_\\_\\_}=\sqrt[3]{\\_\\_\\_\\_\\_}∙\sqrt[3]{\\_\\_\\_\\_\\_}∙\sqrt[3]{\\_\\_\\_\\_\\_}=$$