

Name: Marcus Dooley

Date: \_\_\_\_\_

Daily Check In

Learning Goal 4.1	Identify and order irrational numbers.
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Use a number line to order these numbers least to greatest.

$\sqrt{2}, \sqrt[3]{-5}, \sqrt[3]{13}, \sqrt{9}, \sqrt[4]{27}$

$1 < \sqrt{2} < 2$        $< \sqrt{9} = 3$

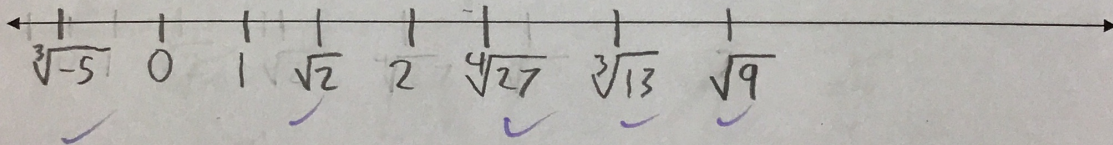
$\begin{matrix} 2 \\ 27 \\ \times 3 \\ \hline 81 \end{matrix}$

$0 > \sqrt[3]{-5} < 2$        $2 < \sqrt[4]{27} < 3$

$\sqrt[4]{16}$        $\sqrt[4]{81}$

$2 < \sqrt[3]{13} < 3$

$\sqrt[3]{8}$        $\sqrt[3]{27}$



Fantastic!!

How did you do? (Circle one)	Emerging	Developing	Proficient	Extending



Name: Kirchiro

Date: \_\_\_\_\_

Daily Check In

Learning Goal 4.1	Identify and order irrational numbers.
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Use a number line to order these numbers least to greatest.

$\sqrt{2}, \sqrt[3]{-6}, \sqrt[3]{12}, \sqrt{16}, \sqrt[4]{64}$

$\begin{array}{r} 4 \\ \times 12 \\ \hline 48 \end{array}$

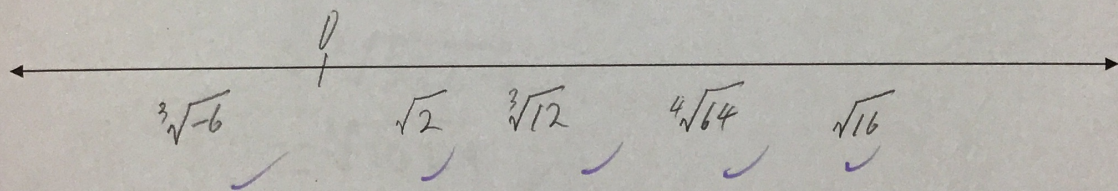
$\begin{array}{r} 3 \\ \times 9 \\ \hline 27 \end{array}$

$\sqrt[3]{64}$

8 x 8 = 64  
2.5 x 2.5 = 6.25

$\begin{array}{r} 76 \\ \times 4 \\ \hline 304 \end{array}$

$\begin{array}{r} 20 \\ \times 3 \\ \hline 60 \end{array}$



Nice Work!

How did you do? (Circle one)	Emerging 	Developing 	Proficient 	Extending 
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Name: Iker BonlanDate: 26/04/20

## Daily Check In

## Learning Goal 4.2

Express an entire radical as a simplified mixed radical and vice versa.

Here is a student's solution for writing  $8\sqrt[3]{2}$  as an entire radical.

$$\begin{aligned}
 8\sqrt[3]{2} &= 8 \cdot \sqrt[3]{2} \quad \times \\
 &= \sqrt[3]{2} \cdot \sqrt[3]{2} \\
 &= \sqrt[3]{2 \cdot 2} \\
 &= \sqrt[3]{4}
 \end{aligned}$$

Identify the error the student made, then write the correct solution.

$$\begin{aligned}
 8 \times 8 \times 8 &= 512 & 8\sqrt[3]{2} &= \sqrt[3]{8^3 \cdot 2} \\
 & & &= \sqrt[3]{512 \cdot 2} \\
 & & &= \sqrt[3]{1024} \quad \checkmark \\
 & & &= \sqrt[3]{8^3 \times 2} \\
 & & &= \sqrt[3]{2^{10}}
 \end{aligned}$$

Fantastic!!

How did you do? (Circle one)	Emerging 	Developing 	Proficient 	Extending 
				<input checked="" type="radio"/>



Name: Rachel GDate: Feb 26 2020

## Daily Check In

## Learning Goal 4.2

Express an entire radical as a simplified mixed radical and vice versa.

Here is a student's solution for writing  $9\sqrt{3}$  as an entire radical.





$$\begin{aligned}
 9\sqrt{3} &= 9 \cdot \sqrt{3} \\
 &= \sqrt{3} \cdot \sqrt{3} \\
 &= \sqrt{3 \cdot 3} \\
 &= \sqrt{9}
 \end{aligned}$$

Identify the error the student made, then write the correct solution.

$$9\sqrt{3} = \sqrt{9^2 \times 3} \quad \checkmark$$

If the 9 is outside, to get inside it must be squared<sup>2</sup>

Outstanding!!

How did you do? (Circle one)	Emerging 	Developing 	Proficient 	Extending 
				<input checked="" type="radio"/>

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Using exponent laws to simplify expressions with fractional and negative exponents.

Recall the exponent laws for integer bases and whole number exponents.

Product of Powers	$a^m \cdot a^n =$	$a^{m+n}$ $2^4 \times 3^2 = 16 \times 9$ <del><math>\neq 6^6</math></del>
Quotient of Powers	$a^m \div a^n =$	$a^{m-n}$ $5^6 \div 5^{12}$ $= 5^{6-12}$ $= 5^{-6} = \frac{1}{5^6} = \left(\frac{1}{5}\right)^6$
Power of a Power	$(a^m)^n =$	$a^{m \times n}$
Power of a Product	$(ab)^m =$	$a^m b^m$ $(4x^3)^2$ $= 4^2 x^{3 \times 2}$ $= 16x^6$
Power of a Quotient	$\left(\frac{a}{b}\right)^m =$	$\frac{a^m}{b^m}$ $\left(\frac{3}{5}\right)^4 = \frac{3^4}{5^4}$

These all work the same way as they did last year, we can just use them with

fractional and negative.

exponents now!

Goodbye!

No homework!

**Example** Simplify by writing as a single power. Do not evaluate.

1.  $0.8^2 \cdot 0.8^{-7}$

$$= 0.8^{2+(-7)}$$

$$= 0.8^{-5} = \left(\frac{8}{10}\right)^{-5}$$

$$= \frac{1}{0.8^5} = \frac{10^5}{8^5}$$

$$\left(\frac{1}{0.8}\right)^5$$

$$= \frac{0.8^2}{0.8^7}$$

$$= 0.8^{2-7}$$

$$= 0.8^{-5}$$

2.  $\left(-\frac{4}{5}\right)^2 \div \left(-\frac{4}{5}\right)^{-5}$

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

$$= \left(-\frac{4}{5}\right)^7$$

$$= \frac{(-4)^7}{5^7}$$

$$= \left(-\frac{4}{5}\right)^2 \times \left(-\frac{4}{5}\right)^5$$

$$= \left(-\frac{4}{5}\right)^{2+5}$$

$$= \left(-\frac{4}{5}\right)^7$$

$$= \frac{(-4)^7}{5^7}$$

Remember your order of operations!

3.  $\frac{(1.5^{-3})^{-5}}{1.5^5}$

$$= \frac{(1.5)^{-3 \times -5}}{1.5^5}$$

$$= \frac{1.5^{15}}{1.5^5}$$

$$= 1.5^{15-5} = 1.5^{10} = \left(\frac{3}{2}\right)^{10} = \frac{3^{10}}{2^{10}}$$

4.  $\frac{9^{5/4} \cdot 9^{-1/4}}{9^{3/4}}$

$$= \frac{9^{5/4 + (-1/4)}}{9^{3/4}}$$

$$= \frac{9^{4/4}}{9^{3/4}} = 9^{4/4 - 3/4}$$

$$= 9^{1/4}$$

$$= (9^{5/4 - 3/4}) \times 9^{-1/4}$$

$$= 9^{2/4} \times 9^{-1/4}$$

$$= 9^{2/4 + (-1/4)}$$

$$= 9^{1/4}$$

5.  $\left[\left(\frac{3}{2}\right)^2\right]^{-3} \div \left[\left(\frac{3}{2}\right)^{-5}\right]^4$

$$= \left(\frac{3}{2}\right)^{2 \times -3} \div \left(\frac{3}{2}\right)^{-5 \times 4}$$

$$= \left(\frac{3}{2}\right)^{-6} \div \left(\frac{3}{2}\right)^{-20}$$

$$= \left(\frac{3}{2}\right)^{-6 + 20}$$

$$= \left(\frac{3}{2}\right)^{14}$$

$$= \frac{3^{14}}{2^{14}}$$

6.  $\left(\frac{7^{2/3}}{7^{1/3} \cdot 7^{5/3}}\right)^6$

$$= \left(\frac{7^{2/3}}{7^{6/3}}\right)^6$$

$$= \left(7^{-4/3}\right)^6$$

$$= 7^{-8}$$

$$= \frac{1}{7^8}$$

$$= \frac{7^4}{7^2 \times 7^{10}}$$

$$= \frac{7^4}{7^{12}}$$

$$= 7^{-8}$$

$$= \frac{1}{7^8}$$

$$-\frac{4}{3} \times 6^2$$

B  
E  
D  
M  
A  
S

**Example** Simplify.

1.  $m^4n^{-2} \cdot m^2n^3$

2.  $\frac{6x^4y^{-3}}{14xy^2}$

A good first step if you're feeling overwhelmed: change the expression so all the exponents are positive.

3.  $(25a^4b^2)^{3/2}$

4.  $(x^3y^{-3/2})(x^{-1}y^{1/2})$

Again, remember your order of operations!

5.  $\frac{12x^{-5}y^{5/2}}{3x^{1/2}y^{-1/2}}$

6.  $\left(\frac{50x^2y^4}{2x^4y^7}\right)^{1/2}$

