Grade 8 Unit 2 Week 2

Parents: Please help your child choose the most appropriate assignment(s) to complete each day. When the day's assignment is done, students finish the two reflection statements on this page.

Please note Extra Practice activities are on-level for the grade level. Re-Engage activities give students additional support.

	Monday	Tuesday	Wednesday	Thursday	Friday
Topic	Simplify expressions using the properties of exponents.	Simplify expressions using the properties of exponents when dividing.	Evaluate expressions with zero and negative exponents.	Solve equations using square roots.	Solve equations using square and cube roots.
Assignment	Unit 2 Lesson 2 Re-Engage A Re-Engage B Extra Practice	Unit 2 Lesson 4 Re-Engage Extra Practice	Unit 2 Lesson 6 Re-Engage Unit 2 Lesson 7 Re-Engage Extra Practice	Unit 2 Lesson 9 Re-Engage A Re-Engage B	Unit 2 Lesson 11 Re-Engage C Extra Practice
Video link	Unit 2 Lesson 2	Unit 2 Lesson 4	Unit 2 Lesson 6 Unit 2 Lesson 7	Unit 2 Lesson 9	Unit 2 Lesson 11
Reflection	One thing I was successful with is… One thing I need more help with is…	One thing I was successful with is… One thing I need more help with is…	One thing I was successful with is… One thing I need more help with is…	One thing I was successful with is… One thing I need more help with is…	One thing I was successful with is… One thing I need more help with is…

Find this packet on swunmath.com. Click on the hyperlinks to jump to the lesson videos.

Re-Engage

Unit 2 Lesson 1-2a: Expand Exponents

Name: _____

Date: _____

Model

2^5 Directions: Expand and solve.

Step 1. Rewrite 2^5 as the expanded version of 2 multiplied by itself 5 times

Step 2. Multiply $2 \times 2 \times 2 \times 2 \times 2 = 32$

Structured Guided Practice

Directions: Expand and solve.

1. 3^4

2. 4^5

Re-Engage

Unit 2 Lesson 1-2a: Expand Exponents

Student Practice

Directions: Expand and solve.

1. 7^3	2. 8^3
3. 6^3	4. 3^5
5. 2^6	6. 5^4

Re-Engage

Unit 2 Lesson 1-2b: Expand Exponents of Negative Numbers

Name: _____

Date: _____

Model

Model 1

$$(-6)^4$$

Directions: Expand and solve.

Step 1. Rewrite $(-6)^4$ as the expanded version of (-6) multiplied by itself 4 times

Step 2. Multiply $(-6) \times (-6) \times (-6) \times (-6)$

36×36

$= 1296$

Model 2

$$(-4)^3$$

Directions: Expand and solve.

Step 1. Rewrite $(-4)^3$ as the expanded version of -4 multiplied by itself 3 times

Step 2. Multiply $(-4) \times (-4) \times (-4)$

$16 \times (-4)$

$= -64$

Structured Guided Practice

Directions: Expand and solve.

1. $(-3)^4$

2. $(-2)^5$

Re-Engage

Unit 2 Lesson 1-2b: Expand Exponents of Negative Numbers

Student Practice

Directions: Expand and solve.

1. $(-7)^3$	2. $(-8)^3$
3. $(-6)^3$	4. $(-3)^5$
5. $(-2)^6$	6. $(-5)^4$

Extra Practice

Unit 2 · Lesson 1-2: Properties of Exponents: Multiplication

Name: _____

Date: _____

Directions: Simplify. Write solution in exponential and standard form.

1. $5^2 \cdot 5^3$	2. $(4n)^2$
3. $(-4)^4(-4)^2$	4. $(z^4t)^3$
5. $(m^4)^5$	6. $((3)^3)^4$

Re-Engage

Unit 2 Lesson 4: Dividing Exponents (Using Properties)

Name: _____

Date: _____

Model

Example #1

Since,

$$\frac{n^5}{n^3} = \frac{n \cdot n \cdot \cancel{n} \cdot \cancel{n} \cdot \cancel{n}}{\cancel{n} \cdot \cancel{n} \cdot \cancel{n}} = n^2$$

Then,

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

Example #2

*The *Division Property of Exponents* states to *subtract* exponents with like bases.

$$\frac{c^4 n^5}{c^2 n^3} = c^{4-2} n^2$$

Structured Guided Practice

Directions: Divide. Keep answers in exponential form.

1. $\frac{8c^5}{4c^3}$

2. $\frac{c^{12} n^{10}}{c^2 n^{12}}$

Re-Engage

Unit 2 Lesson 4: Dividing Exponents (Using Properties)

Student Practice

Directions: Divide.

1. $\frac{x^{20}}{x^{14}}$

2. $\frac{4c^4 n^5}{2c^2 n^3}$

3. $\frac{p^{21}}{p^{15}}$

4. $\frac{c^9 n^5}{c^5 n^7}$

5. $\frac{4a^{13}}{16a^3}$

6. $\frac{5c^8 n^9}{10c^5 n^5}$

Extra Practice

Unit 2 · Lessons 3-4: Properties of Exponents: Division

Name: _____

Date: _____

Directions: Simplify. Write answer in standard form.

1. $\frac{5^9}{5^4}$	2. $\frac{4^2 \cdot 4^5}{4^4}$
3. $\frac{f^{26}}{f^{15} \cdot f^5}$	4. $\frac{r^6}{7^2 \cdot r^4}$
5. $\frac{2^5 m^2}{2^5 m}$	6. $\frac{l^2 m^6 n^7}{m^4 n^6}$

Re-Engage

Unit 2 Lesson 6: Convert Negative Exponents

Name: _____

Date: _____

Model

Expand Strategy	Reciprocal Strategy
A negative exponent means how many times to DIVIDE a number. $2^{-3} = 1 \div 2 \div 2 \div 2 = \frac{1}{2^3}$	A negative exponent also means that the base is on the wrong side of the fraction line, so you need to flip the base to the other side. $5^{-2} = \frac{5^{-2}}{1} = \frac{1}{5^2}$

Structured Guided Practice

Directions: Rewrite the negative exponent to make a positive one.

1. 3^{-2}	2. $4n^{-2}$
3. 9^{-3}	4. $7p^{-5}$

Re-Engage

Unit 2 Lesson 6: Convert Negative Exponents

Student Practice

Directions: Rewrite each exponent to make a positive one.

1. 2^{-8}	2. $6x^{-7}$
3. 4^{-5}	4. $-8n^{-2}$
5. -5^{-3}	6. $3m^{-7}$

Re-Engage

Unit 2 Lesson 7: Multiply & Divide Negative Exponents

Name: _____

Date: _____

Expanded Strategy: Multiply

Step 1: Rewrite showing only positive exponents.

$$2^{-3} \cdot 2^4 = \frac{1}{2^3} \cdot 2^4$$

Step 2: Write the problem in expanded form.

$$\frac{1 \cdot 2 \cdot 2 \cdot 2 \cdot 2}{2 \cdot 2 \cdot 2}$$

Step 3: Cancel common factors.

$$\frac{1 \cdot 2 \cdot \cancel{2} \cdot \cancel{2} \cdot \cancel{2}}{\cancel{2} \cdot \cancel{2} \cdot \cancel{2}}$$

Step 4: Simplify.

$$1 \cdot 2 = 2$$

Expanded Strategy: Divide

Step 1: Rewrite showing only positive exponents.

$$\frac{5^3}{5^{-2}} = 5^3 \div \frac{1}{5^{-2}} = 5^3 \div \frac{5^2}{1}$$

Step 2: Write the problem as multiplication. Remember to flip the fraction.

$$5^3 \cdot \frac{1}{5^2}$$

Step 3: Expand, cancel and simplify.

$$\frac{5 \cdot 5 \cdot 5}{5 \cdot 5} = \frac{5 \cdot \cancel{5} \cdot \cancel{5}}{\cancel{5} \cdot \cancel{5}}$$

$$= 5$$

Structured Guided Practice

Directions: Use the expanded strategy to multiply or divide. Leave in exponential form.

1. $8^{-2} \cdot 8^5$

2. $\frac{10^{-5}}{10^2}$

3. $7^7 \cdot 7^{-9}$

4. $\frac{2^8}{2^{-10}}$

Re-Engage

Unit 2 Lesson 7: Multiply & Divide Negative Exponents

Student Practice

Directions: Use the expanded strategy to multiply or divide. Leave in exponential form.

1. $2^{-8} \cdot 2^{6}$	2. $\dfrac{x}{x^{-3}}$
3. $9^{5} \cdot 9^{-4}$	4. $\dfrac{4^{-5}}{4^{2}}$
5. $n^{-10} \cdot n^{5}$	6. $\dfrac{3^{6}}{3^{-10}}$

Extra Practice

Unit 2 · Lessons 5-7: Zero and Negative Exponents

Name: _____

Date: _____

Directions: Simplify the expression. Write the solution using a positive exponent.

1. $5^{-4} \cdot 5^{4}$	2. $\frac{8^{2}}{8^{-3}}$
3. $\frac{2^{6} \cdot 2^{-10}}{2^{-3}}$	4. $\frac{d^{-4}e^{5}f^{0}}{d^{2}e^{3}}$
5. $\frac{1}{3^{7}} \cdot \frac{1}{3^{-7}}$	6. $\frac{12^{-5} \cdot 12^{5}}{12^{3}}$

Re-Engage

Unit 2 Lesson 9-11a: Finding Squares of Integers

Name: _____

Date: _____

Model

Model 1	Model 2
$(5)^2$	$(-5)^2$
Directions: Find the Square	Directions: Find the Square
Step 1. Rewrite $(5)^2$ as the expanded version of (5) multiplied by itself twice.	Step 1. Rewrite $(-5)^2$ as the expanded version of (-5) multiplied by itself twice.
Step 2. Multiply $(5) \times (5) = 25$	Step 2. Multiply $(-5) \times (-5) = 25$
Notice that the answer will always be positive when taking the square of any integer.	Notice that the answer will always be positive when taking the square of any integer.

Structured Guided Practice

Directions: Find the Square.

1. $(3)^2$	2. $(4)^2$
3. $-(3)^2$	4. $-(4)^2$

Re-Engage

Unit 2 Lesson 9-11a: Finding Squares of Integers

Student Practice

Directions: Find the Square.

1. 5^2	2. 6^2
3. 7^2	4. -5^2
5. -6^2	6. -7^2

Re-Engage

Unit 2 Lesson 9-11b: Finding Squares of Rational Numbers

Name: _____

Date: _____

Model

Model 1

$$(\sqrt{7})^2$$

Directions: Find the Square

Step 1. Rewrite $(\sqrt{7})^2$ as the expanded version of $(\sqrt{7})$ multiplied by itself twice.

Step 2. Multiply $(\sqrt{7})\times(\sqrt{7})=\sqrt{49}$
Notice that the number 49 is a perfect square and is equal to 7^2.

Step 3. Solve $\sqrt{49}=7$.

Therefore the solution is 7.

Model 2

$$(\sqrt{15})^2$$

Directions: Find the Square

Step 1. Rewrite $(\sqrt{15})^2$ as the expanded version of $(\sqrt{15})$ multiplied by itself twice.

Step 2. Multiply $(\sqrt{15})\times(\sqrt{15})=\sqrt{225}$

Notice that the number 225 is a perfect square and is equal to 15^2.

Step 3. Solve $\sqrt{225}=15$

Therefore the solution is 15.

Structured Guided Practice

Directions: Find the Square.

1. $(\sqrt{3})^2$

2. $(\sqrt{4})^2$

3. $(\sqrt{12})^2$

4. $(\sqrt{14})^2$

Re-Engage

Unit 2 Lesson 9-11b: Finding Squares of Rational Numbers

Student Practice

Directions: Find the Square.

1. $(\sqrt{9})^2$	2. $(\sqrt{6})^2$
3. $(\sqrt{4})^2$	4. $(\sqrt{10})^2$
5. $(\sqrt{11})^2$	6. $(\sqrt{13})^2$

Re-Engage

Unit 2 Lesson 9-11c: Finding Cubes of Integers

Name: _____

Date: _____

Model

Model 1	Model 2
$(6)^3$	$-(6)^3$
Directions: Find the Cube Step 1. Rewrite $(6)^3$ as the expanded version of (6) multiplied by itself three times. Step 2. Multiply (6) × (6) × (6) = 216 Notice that the answer will always be positive when taking the cube of any positive integer.	Directions: Find the Cube Step 1. Rewrite $-(6)^3$ as -1 times $(6)^3$. Step 2. Multiply -(6)(6)(6) = -216 Notice that the answer will always be negative when taking the cube of any negative integer.

Structured Guided Practice

Directions: Find the Cube.

1. $(2)^3$	2. $(5)^3$
3. $-(2)^3$	4. $-(5)^3$

Re-Engage

Unit 2 Lesson 9-11c: Finding Cubes of Integers

Student Practice

Directions: Find the Cube.

1. $(3)^3$	2. $(7)^3$
3. $(1)^3$	4. $-(3)^3$
5. $-(7)^3$	6. $-(1)^3$

Extra Practice

Unit 2 · Lessons 9-11: Square & Cube Roots

Name: _____

Date: _____

Directions: Solve. Determine if the solution is rational or irrational.

1. $y^3 = 64$	2. $729 = c^3$
3. $g^2 = 225$	4. $m^3 = 625$
5. $n^2 = 1000$	6. $r^3 = 1$