keep scrolling to get a sneak peek!

Help your Algebra students practice applying the quotient exponent rule. Students will be eager to get the self-checking benefits from this circuit activity!

EXPONENT RULES: QUOTIENT RULE

Differentiated Circuit Worksheet

EXPONENT RULES: QUOTIENT RULE CIRC

circuit is a route that starts and ends at the same place. Start in the fir
ne problem. Search through the remaining boxes for the answer you g
lete that question. Continue until you have completed the questions an
al question. Record your path below.

Answer: $\frac{x^3}{y^3}$ #____   Previous Answer: $\frac{x}{2}$

2. Simplify.

$\left(\frac{x}{y}\right)^3$

$\frac{x^{15}}{x^7}$

#____   Previous Answer: $\frac{x^1}{}$

4. Simplify.

EXPONENT RULES: QUOTIENT R

Directions: A circuit is a route that starts and ends at the same place
1 and solve the problem. Search through the remaining boxes for the
1. Now complete that question. Continue until you have completed the
to the original question. Record your path below.

1 → **7** → **10** → **5** → **8** → **4** → **3** → **9** → ____

Previous Answer: x

1. Simplify.   #____ **2**   Previous Answer: $\frac{5}{x^4}$

$\frac{x^{16}}{x^{10}}$ 2. Simplify.

x^{16-10} $\frac{x^3}{x}$

$\boxed{x^6}$ $\frac{x^6}{x^3}$

Previous Answer: $\frac{x^6}{y^4}$

3. Simplify.   #____ **4**   Previous Answer: $\frac{x^3}{y^3}$

4. Simplify.

Math with Ms. Rivera

2 versions + answer key included

why do you need this?

Exponent Rules: Quotient Rule Circuit

🖍️ It's self-checking! Your students will know if they are correct or not.

🖍️ 2 differentiated versions for all students practice this essential math skill.

EXPONENT RULES: QUOTIENT RULE CIRCUIT

Name: _____ Date: _____

Directions: A circuit is a route that starts and ends at the same place. Start in the first box labeled 1 and solve the problem. Search through the remaining boxes for the answer you got for question 1. Now complete that question. Continue until you have completed the questions and you are back to the original question. Record your path below.

$1 \rightarrow$ ____ $\rightarrow$ ____ $\rightarrow$ ____ $\rightarrow$ ____ $\rightarrow$

Previous Answer: $\frac{x^3}{y^3}$

1. Simplify. $\dfrac{x^{15}}{x^7}$

Previous Answer: x^6

3. Simplify. $\left(\dfrac{x^4}{2y^6}\right)^3$

Previous Answer: x^4

5. Simplify. $\left(\dfrac{x^7}{x^2}\right)^2$

Previous Answer:
2. Simplify.

4. Simplify.

6. Simplify.

EXPONENT RULES: QUOTIENT RULE CIRCUIT

Previous Answer: x^{11}

8. Simplify. $\left(\dfrac{x}{y}\right)^3$

Previous Answer: x^6

7. Simplify. $x^3 \cdot \dfrac{1}{x^7}$

Previous Answer: $\dfrac{1}{x^4}$

10. Simplify. $\dfrac{6x^8}{24x^2}$

Previous Answer: x^8

9. Simplify. $\dfrac{x^6 \cdot x \cdot x^2}{x^5}$

Helpful Hints: Use these hints to help you solve the problems.

Quotient Rule:

$\dfrac{a^x}{a^y} = a^{x-y}$

Exponent Rules: Quotient Rule *includes*:

Challenge: Fill in the number(s) that would make the following statements true.

a) $\left(\frac{x^{[?]}}{y^2}\right)^3 = \frac{x^{15}}{y^{[?]}}$

b) $\frac{2x^8 \cdot [?]x^2}{5x^{[?]}} = 4x^6$

How are you feeling about this topic? Circle one:

Helpful Hints: Use these hints to help you solve the problems.

Quotient Rule:

$$\frac{a^x}{a^y} = a^{x-y}$$

"When the bases are the same, subtract the exponents - top minus bottom."

Example:

$$\frac{2^5}{2^2} = \frac{2 \cdot 2 \cdot (2 \cdot 2 \cdot 2)}{2 \cdot 2} = 2^3$$

How are you feeling about this topic? Circle one:

✅ 10 self-checking problems

✅ a detailed answer key

✅ a standard version with an extension question

✅ a basic version with helpful hints section

✅ student self assessment

Exponent Rules: Quotient Rule

standards covered:

CCSS: 8.EE.A.1

TEKs: A1.11.B

VA SOLs: EO.A.2.a

EXPONENT RULES: QUOTIENT RULE CIRCUIT

Previous Answer: x^8

7. Simplify. #___1___

$$\frac{15x^{15}}{3x^5}$$

$$\frac{15}{3}x^{15-5}$$

$$\boxed{5x^{10}}$$

Previous Answer: x^{10}

8. Simplify. #___5___

$$\left(\frac{x^3}{y}\right)^4$$

$$\frac{x^{3\cdot4}}{y^4}$$

$$\boxed{\frac{x^{12}}{y^4}}$$

Previous Answer: $\frac{x^{12}}{8y^{18}}$

9. Simplify. #___3___

$$x^8 \cdot \frac{1}{x^{12}}$$

$$\frac{x^8}{x^{12}}$$

$$\boxed{\frac{1}{x^4}}$$

Previous Answer: $5x^{10}$

10. Simplify. #___7___

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

$$\frac{x^{2+5}}{x^3}$$

$$\frac{x^7}{x^3} \quad x^{7-3}$$

$$\boxed{x^4}$$

Challenge: Fill in the number(s) that would make the following statements true.

a) $\left(\frac{x^{[?]}}{y^2}\right)^3 = \frac{x^{15}}{y^{[?]}} \leftarrow 6$

5

b) $\frac{2x^8 \cdot [?]x^2}{5x^{[?]}} = 4x^6$

how this circuit resource works

Students can track their path at the top.

Students start with the first question.

Then search for their answer on the worksheet. Once the answer is found, students complete the problem below it.

The last question they answer should lead back to problem #1 to "close" the circuit.

Name: _____ Date: _____

EXPONENT RULES: QUOTIENT RULE CIRCUIT

Directions: A circuit is a route that starts and ends at the same place. Start in the first box labeled 1 and solve the problem. Search through the remaining boxes for the answer you got for question 1. Now complete that question. Continue until you have completed the questions and you are back to the original question. Record your path below.

$1 \to$ ____ $\to$ ____ $\to$ ____ $\to$ ____ $\to$ ____ $\to$ ____ $\to$ ____ $\to$ ____ $\to$ ____ $\to 1$

Previous Answer: $\frac{x^3}{y^3}$ #____	Previous Answer: $\frac{x}{2}$ #____
1. Simplify. $$\frac{x^{15}}{x^7}$$	2. Simplify. $$\left(\frac{x}{y}\right)^3$$
Previous Answer: x^6 #____	Previous Answer: $\frac{x^{12}}{y^4}$ #____
3. Simplify. $$\left(\frac{x^4}{2y^6}\right)^3$$	4. Simplify. $$x^{14} \cdot \frac{1}{x^8}$$

how to use this resource

This is a great activity to use when reviewing how simplify exponents with the quotient rule.

It can be used right after teaching the concept or as homework.

This is also a **substitute-friendly** assignment!

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hey there!

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