keep scrolling to get a sneak peek!

Help your Algebra students practice solving exponential equations with and without base changes. Students will be eager to get the self-checking benefits from this circuit activity!

SOLVING EXPONENTIAL EQUATIONS
Differentiated Circuit Worksheet

Date: _____

...G EXPONENTIAL EQUATIONS CIRCUIT

...s a route that starts and ends at the same place. Start in the first box la... ...em. Search through the remaining boxes for the answer you got for que... ...question. Continue until you have completed the questions and you are... ...on. Record your path below.

___ → ___ → ___ → ___
→ ___ → ___

| ...x = 2/3 | # ___ | Previous Answer: x = 1/2 |
| | | 2. $\frac{1}{3}^x = \frac{1}{27}$ |

| Previous Answer: x = -6 | # ___ |
| 4. $4^{2x} = 64$ | |

Answer Key

SOLVING EXPONENTIAL EQUATIO...

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

1 → **3** → **6** → **7** → **4** → **8** → **2** → **10** →

1. $3^x = 27$	# **9**	Previous Answer: x = ...
$3^x = 3^3$		2. $2^{x-1} = 16$
x=3		$2^{x-1} = 2...$
		x-1 = ...
		x=5

Previous Answer: x = 3	# **1**	Previous Answer: x = -2
3. $5^x = 25$		4. $4^{x+2} = 4^6$
$5^x = 5^2$		

Math with Ms. Rivera

2 versions + answer key included

why do you need this?

Solving Exponential Equations 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.

SOLVING EXPONENTIAL EQUATIONS 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: $x = 2/3$

1. $2^x = 32$

Previous Answer: $x = 5$

3. $5^{x+1} = 125$

Previous Answer: $x = 1/4$

5. $3^{x-2} = 9^{x-3}$

2. $\frac{1}{3}^x =$

4. $4^{2x} =$

6. $\frac{1}{2}^x = 1$

SOLVING EXPONENTIAL EQUATIONS CIRCUIT

Previous Answer: $x = 4$

8. $3^x = \frac{1}{27}$

Previous Answer: $x = -4$

7. $2^x = \frac{1}{4}$

Previous Answer: $x = 5$

10. $5^x = 1$

Previous Answer: $x = 1$

9. $3^{x+5} = 1$

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

Make the bases the same, then set the exponents equal to ea

Exponent Rules:

$a^{-n} = \frac{1}{a^n}$

Solving Exponential Equations Circuit *includes:*

Challenge: Solve the exponential equation below. Show your work.

$$9^{x+1} = 27(3^{4x})$$

How are you feeling about this topic? Circle one:

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

Make the bases the same, then set the exponents equal to each other.

Exponent Rules:

$$a^n \cdot a^m = a^{n+m} \qquad a^{-n} = \frac{1}{a^n} \qquad a^1 = a$$

$$(a^n)^m = a^{n \cdot m} \qquad \frac{1}{a^{-n}} = a^n \qquad a^0 = 1$$

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

Solving Exponential Equations Cirucit

standards covered:

CCSS: HSF-BF.B.5

TEKs: A2.5.CDE

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: _____

SOLVING EXPONENTIAL EQUATIONS 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.

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

Previous Answer: $x = 2/3$ #____	Previous Answer: $x = 1/2$ #____
1. $2^x = 32$	2. $\frac{1}{3}^x = \frac{1}{27}$
Previous Answer: $x = 5$ #____	**Previous Answer: $x = -6$** #____
3. $5^{x+1} = 125$	4. $4^{2x} = 64$

how to use this resource

This is a great activity to use when reviewing how to write quadratic equations in vertex form.

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

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

The worksheet shown reads:

Name: **Answer Key** Date: _____

SOLVING EXPONENTIAL EQUATIONS 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.

$1 \rightarrow \underline{3} \rightarrow \underline{6} \rightarrow \underline{7} \rightarrow \underline{4} \rightarrow \underline{8} \rightarrow \underline{2} \rightarrow \underline{10} \rightarrow \underline{5} \rightarrow \underline{9} \rightarrow 1$

Previous Answer: x = -8   # **9**

Previous Answer: x = -3   # **8**

1. $3^x = 27$

$3^x = 3^3$

$x = 3$

2. $2^{x-1} = 16$

Previous Answer: x = 3

3. $5^x = 25$

$5^x = 5^2$

$x = 2$

Previous Answer: x = 0

5. $7^{2x} = 49$

$7^{2x} = 7^2$

$2x = 2$

$x = 1$

SOLVING EXPONENTIAL EQUATIONS CIRCUIT

Previous Answer: x = -4   # **6**

Previous Answer: x = 3/2   # **4**

7. $2^{x+2} = \frac{1}{16}$

$2^{x+2} = \frac{1}{2^4}$

$2^{x+2} = 2^{-4}$

$x + 2 = -4$

$x = -6$

8. $3^{x+1} = 27^x$

$3^{x+1} = 3^{3x}$

$x + 1 = 3x$

$1 = 2x$

$x = \frac{1}{2}$

Previous Answer: x = 4   # **5**

Previous Answer: x = 3   # **2**

9. $6^x = \frac{1}{36^x - 1}$

$6^x = 36^{-(x-1)}$

$6^x = 6^{-2(x-1)}$

$x = -2x + 2$

$3x = 2$

$x = \frac{2}{3}$

10. $\frac{1}{5}^{x-1} = 125^x$

$\frac{1}{5}^{x-1} = 5^{3x}$

$\frac{1}{5}^{x+1} = \frac{1}{5}^{-3x}$

$x - 1 = -3x$

$4x = 1$

$x = \frac{1}{4}$

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Answer key included

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