

keep scrolling to
get a sneak peek!

Help your Algebra 2 students
practice **identifying
transformations of parent
functions from graphs &
equations**. Students will be
eager to get the self-checking
benefits from this circuit
activity!

IDENTIFY TRANSFORMATIONS OF PARENT FUNCTIONS FROM GRAPHS & EQUATIONS

Differentiated Circuit worksheet

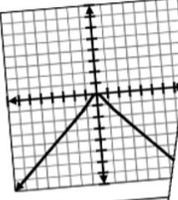
Identifying Transformations of Parent Functions

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 to that question. Continue until you have completed the questions and you are back to the original question. Record your path below.

1 → _____ → _____ → _____ → _____ → _____ → _____

Previous Answer: horizontal compression by a scale factor of 2.

2. Identify the transformation of the function:



Previous Answer: reflection over the y-axis, 5 units up

1. Identify the transformation of the function:

$$f(x) = \frac{1}{2}(x - 2)^2$$

Previous Answer: 3 units to the right of the x-axis

2. Identify the transformation of the function:

$$f(x) = -2|x|$$

Previous Answer: down 5 units

7

Previous Answer: horizontal stretch by a scale factor of 2.

2. Identify the transformation of the function:

Previous Answer: 8 units to the left, horizontal stretch by a scale factor of 4

1. Identify the transformation of the function:

Previous Answer: 4 units right by a scale of 3, reflection over the x-axis

4. Identify the transformation of the function:

Previous Answer: down 2 units

9

4. Identify the transformation of the function:



2 versions + answer key included

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Why do you need this?

Identifying Transformations of Parent Functions 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.

Name: _____ Date: _____

IDENTIFYING TRANSFORMATIONS OF PARENT FUNCTIONS

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 → _____ → _____ → _____ → _____ → _____

Previous Answer: reflection over the y-axis, 5 units up # _____	2. Identify the transformation of the function: $f(x) = \frac{1}{2}(x - 2)^2$	Previous Answer: vertical stretch by a scale factor of 2 # 5	8. Identify the transformation of the function: $g(x) = \sqrt{x} - 2$
Previous Answer: 8 units to the left, horizontal stretch by a scale factor of 4 # _____	3. Identify the transformation of the function: 	Previous Answer: reflection over the x-axis # 2	10. Identify the transformation of the function: $g(x) = \frac{1}{2}x^2$
Previous Answer: 4 units right, vertical stretch by a scale factor of 3/2 # _____	5. Identify the transformation of the function: 	Helpful Hints: Use these hints to help you solve the problems. There is a reflection over the x-axis when there is a negative <u>in front of</u> $f(x)$. There is a reflection over the y-axis when there is a negative <u>inside of</u> $f(x)$. Vertical Translations: • $f(x) + k$ = shift up k units • $f(x) - k$ = shift down k units Horizontal Translations: • $f(x - h)$ = shift right h units • $f(x + h)$ = shift left h units Vertical stretch when the function is multiplied by a number $a > 1$. Horizontal stretch when the function is multiplied by a number $0 < a < 1$.	

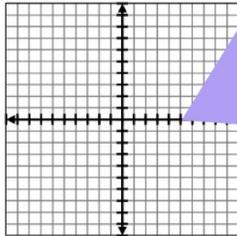
Transformations of Parent Functions *includes:*

Challenge: Write the equation and sketch the graph of an absolute value function that includes the requirements below.

Requirements:

- Must include a horizontal compression
- Two other transformations of your choice

My function is _____ . It represents the following transformations.



How are you feeling about this topic? Circle one:

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

There is a **reflection** over the x-axis when there is a negative in front of the function.
There is a **reflection** over the y-axis when there is a negative inside of the function.

Horizontal Translations:	Vertical Translations:
<ul style="list-style-type: none">• $f(x - h)$ = shift right h units• $f(x + h)$ = shift left h units	<ul style="list-style-type: none">• $f(x) + k$ = shift up k units• $f(x) - k$ = shift down k units

There is a **vertical stretch** when the function is multiplied by a number **greater than 1**.
There is a **vertical compression** when the function is multiplied by a number **between 0 and 1**.

There is a **horizontal stretch** when the input is multiplied by a number **between 0 and 1**.
There is a **horizontal compression** when the input is multiplied by a number **greater than 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

Transformations of Parent Functions

standards covered:

CCSS: HSF-BF.B.3

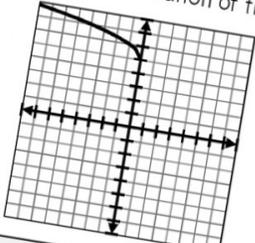
TEKs: A2.2.A

VA SOLs: F.All.6.ab

IDENTIFYING TRANSFORMATIONS OF PARENT FUNCTIONS

Previous Answer: 2 units right, 4 units down # **5**

7. Identify the transformation of the function:



Previous Answer: 3 units right, 2 units up reflection over x-axis # **3**

8. Identify the transformation of the function:

$$g(x) = -3\sqrt{x - 4}$$

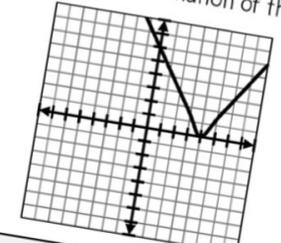
Previous Answer: 1 unit to the left, vertical stretch by a scale factor of 2, reflection over the x-axis # **2**

9. Identify the transformation of the function:

$$h(x) = \frac{1}{4}x + 21$$

Previous Answer: horizontal compression by a scale factor of 1/2, reflection over the y-axis # **4**

10. Identify the transformation of the function:



Challenge: Write the equation and sketch the graph of an absolute value function that includes the requirements below.

Requirements:

- Must include a horizontal compression
- Two other transformations of your choice

My function is _____

how this circuit resource works

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

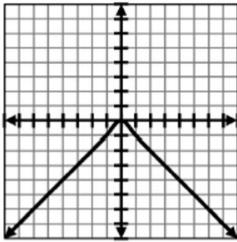
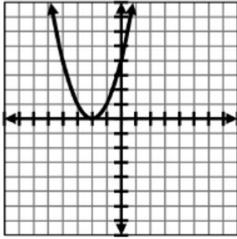
Students can track their path at the top.

Name: _____ Date: _____

IDENTIFYING TRANSFORMATIONS OF PARENT FUNCTIONS

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 → _____ → _____ → _____ → _____ → _____ → _____ → _____ → _____ → _____ → 1

Previous Answer: down 5 units # _____	Previous Answer: horizontal compression by a scale factor of 2. # _____
1. Identify the transformation of the function: $f(x) = (x - 3)^2$	2. Identify the transformation of the function: 
Previous Answer: left 1 unit # _____	Previous Answer: down 2 units # _____
3. Identify the transformation of the function: $g(x) = \sqrt{x} + 1$	4. Identify the transformation of the function: 

Students start with the first question.

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

how to use this resource

Name: **Answer Key** Date: _____

IDENTIFYING TRANSFORMATIONS OF PARENT FUNCTIONS

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 → **6** → **2** → **9** → **3** → **8** → **4** → **10** → **5** → **7** → 1

Previous Answer: reflection over the y-axis, 5 units up # 7	Previous Answer: 3 units left, reflection over the x-axis # 6
---	---

1. Identify the transformation of the function:

$$f(x) = \frac{1}{2}(x - 4) + 3$$

Previous Answer: 8 units to the left, stretch by a scale factor of 4

3. Identify the transformation of the function:

Previous Answer: 4 units right by a scale factor of 3/2

5. Identify the transformation of the function:

IDENTIFYING TRANSFORMATIONS OF PARENT FUNCTIONS

Previous Answer: vertical stretch by a scale factor of 2 # _____	Previous Answer: up 1 units # _____
---	--

7. Identify the transformation of the function:

8. Identify the transformation of the function:

$$g(x) = \sqrt{x} - 2$$

Previous Answer: reflection over the x-axis # _____	Previous Answer: left 2 units # _____
--	--

9. Identify the transformation of the function:

$$f(x) = |x + 1|$$

10. Identify the transformation of the function:

$$g(x) = \frac{1}{2}x^2$$

This is a great activity to use when reviewing how to identifying transformations of parent functions from graphs and equations.

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

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

You may also enjoy ...

TRANSFORMATIONS OF PARENT FUNCTIONS

from graphs & equations

TRANSFORMATIONS OF PARENT FUNCTIONS FROM GRAPHS

IDENTIFYING TRANSFORMATIONS

Equation	Parent Function	Transformation(s)
$f(x) = (x - 2)^2$		
$f(x) = \sqrt{x} + 4$		
$f(x) = -1 x $		
$f(x) = \frac{1}{2} x $		
$f(x) = (2x)^3$		
$f(x) = x - 3 $		
$f(x) = \sqrt{x + 7}$		
$f(x) = x + 9$		
$f(x) = x^2 - 6$		
$f(x) = \frac{3}{4}\sqrt{x + 1}$		
$f(x) = 2 x + 4 $		

Answer key included

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FUNCTIONS & GRAPHS

Algebra 2 Guided Notes

TRANSFORMATIONS OF FUNCTION

$$y = a f(bx - c) + d$$

Dilations of Absolute Value Functions

Vertical

Horizontal

Linear Programming

Answer key included

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TRANSFORMATIONS OF ABSOLUTE VALUE FUNCTIONS

TRANSFORMATIONS OF ABSOLUTE VALUE FUNCTIONS

Directions: Identify the transformations of each absolute value function. Match the question number to the correct answer by typing it into the column to the right of the answers.

Question	Answer
1 $f(x) = x + 3$	Horizontal stretch by a factor of $\sqrt{2}$ Vertical shift 3 units down
2 $f(x) = x - 4 $	Reflection over the x-axis Vertical shift 4 units up
3 $f(x) = \frac{1}{2} x $	Vertical stretch by a factor of 4 Horizontal shift 3 units right Vertical shift 1 unit down
4 $f(x) = 2x - 5$	Vertical shift 3 units up
5 $f(x) = - x + 2 $	Reflection over the x-axis Horizontal shift 2 units right Vertical shift 2 units up
6 $f(x) = x + 6$	Reflection over the x-axis Vertical stretch by a factor of 3 Horizontal shift 1 unit
7 $f(x) = x - 3 + 4$	Horizontal shift 4 units right
8 $f(x) = -3 x + 1 $	Reflection over the x-axis Horizontal shift 2 units left
9 $f(x) = x + 5 - 2$	Horizontal stretch by a factor of 3 Horizontal shift 5 units right Vertical shift 1 unit up
10 $f(x) = - x - 1 + 2$	Horizontal shift 1 unit left Vertical shift 2 units down
11 $f(x) = \frac{1}{3} x - 2 + 1$	Vertical stretch by a factor of $\sqrt{2}$
12 $f(x) = 4 x - 3 - 7$	Horizontal shift 3 units right Vertical shift 4 units up

Self-Checking

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Free Algebra Activities!

When you join my email list, I'll send you a free Algebra print & digital self-checking activities. There is an Algebra 1 and Algebra 2 version!

You'll also be getting exclusive freebies and content to help your Algebra students be successful this school year!

check it out!

The image shows a collage of algebra worksheets and a digital tablet. The worksheets include:

- Answer Key** for **ADDING & SUBTRACTING RATIONAL EXPRESSIONS** and **SOLVING SYSTEMS OF EQUATIONS**.
- MULTIPLYING & DIVIDING RATIONAL EXPRESSIONS** worksheet with problems like $2. \frac{x}{x+4} \cdot \frac{x^2}{x^2-16}$.
- SOLVING SYSTEMS OF EQUATIONS** worksheet with problems like $2. 2x - 6y = -18$ and $x = 3y - 4$.

The digital tablet displays a self-checking activity titled **Rational Expression Operations - Addition & Subtraction**. The directions are: "Answer each question and type the question number with the matching answer in the answer column to the right." The activity consists of a table with 8 questions and 8 answers. A path is drawn through the table, starting from question 1, moving right to answer 1, then up to question 2, right to answer 2, down to question 3, right to answer 3, down to question 4, right to answer 4, down to question 5, right to answer 5, down to question 6, right to answer 6, down to question 7, right to answer 7, and finally down to question 8, right to answer 8.

#	Question	Answer	Type the matching question numbers here
1	$\frac{5}{x} + \frac{3}{x+1}$	$\frac{2x+1}{x+2}$	
2	$\frac{2}{x+4} - \frac{x^2}{x^2-16}$	$-\frac{1}{x^2-1}$	
3	$\frac{x+2}{x^2+4x+4} + \frac{2x}{x+2}$	$\frac{2x^2+2x+5}{x^2+x-2}$	
4	$\frac{x}{x-2} + \frac{3}{x-1}$	$-\frac{x^2+2x-8}{x^2-16}$	
5	$\frac{x}{4x+8} - \frac{1}{x^2+2x}$	$\frac{8x+5}{x^2+1}$	
6	$\frac{x+2}{x-1} + \frac{x-1}{x+2}$	$\frac{x^2-3x+7}{x^2-4}$	
7	$\frac{2x+1}{x^2-4} + \frac{x-3}{x+2}$	$\frac{x^2+2x-6}{x^2-3x+2}$	
8	$\frac{x^2+2x}{x^2-1} - \frac{x+1}{x-1}$	$\frac{x-2}{4x}$	

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hey there!

My name is Malia and I'm passionate about making learning and practicing math fun. I love creating engaging math resources for my students and I hope your students enjoy this activity too!

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