keep scrolling to get a sneak peek!

Help your Algebra students practice applying linear, quadratic, and exponential regression given a set of data. Students will be eager to get the self-checking benefits from this circuit activity!

LINEAR, QUADRATIC, & EXPONENTIAL REGRESSION
Differentiated Circuit Worksheet

2 versions + answer key included

why do you need this?

Linear, Quadratic, Exponential Regression 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: _____

WRITING QUADRATIC EQUATIONS IN VERTEX FORM 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 → _____ → _____ → _____ → _____ → _____ →

Previous Answer: $y = 2(x + 3)^2 - 2$ #_____

1. Write a quadratic equation in vertex form that goes through the point (3, 12) and has a vertex of (1, 4).

Previous Answer: $y = -4/3(x - 5)^2 + 3$ #_____

3. Write a quadratic equation in vertex form that goes through the point (2, 2) and has a vertex of (0, 6).

Previous Answer: $y = (x + 1)^2 + 4$ #_____

5. Write a quadratic equation in vertex form that goes through the point (-1, 6) and has a vertex of (-3, -2).

2. Write ...
that go...
vertex ...

Previou...
4. Write...
that goe...
vertex ...

Previou...
6. Write...
that goe...
vertex ...

WRITING QUADRATIC EQUATIONS IN VERTEX FORM CIRCU

Previous Answer: $y = x^2 - 7$ #_____

7. Write a quadratic equation in vertex form that goes through the point (-3, -2) and has a vertex of (-5, 2).

Previous Answer: $y = (x - 4)^2 - 3$ #_____

9. Write a quadratic equation in vertex form and has a that goes through the point (2, -4) and has a vertex of (1, -6).

Previous Answer: $y = (x - 2)^2 + 3$

8. Write a quadratic equation in vertex that goes through the point (5, 8) and h vertex of (3, 4).

Previous Answer: $y = (x + 3)^2$

10. Write a quadratic equation that goes through the point (0, vertex of (0, -7).

Toolbox: Use these tools to help you solve the problems.

Vertex Form: $y = a(x - h)^2 + k$

Vertex: (h, k)

Helpful steps:
1) Substitute the g... the equation.
2) Use the additio... substitute into... solve for a.
3) Write the fin... using the giv...

Linear, Quadratic, Exponential Regression *includes:*

Challenge: Given data below, determine whether the data set is best represented by a linear, quadratic, or exponential regression, and find the equation of the curve of best fit. Then use your equation to extrapolate the data at x = -3.

(-4, 100), (-2, 62), (-1, 55), (1, 26), (2, 16), (3, 10)

How are you feeling about this topic? Circle one:

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Helpful steps:

1) Add the data into a table: STAT → EDIT
2) Determine if the data would best fit a linear, quadratic, or exponential regression model.
3) Perform the regression to find the equation: STAT → EDIT → CALC
   1) for linear regression, press 4
   2) for quadratic regression, press 5
   3) for exponential regression, press 0

How are you feeling about this topic? Circle one:

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✅ 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

Linear, Quadratic, Exponential Regression

standards covered:

CCSS: HSF-LE.A.1, HSF-LE.A.2, HSS-ID.B.6a, HSS-ID.B.6c

TEKs: A.8.B, A.9.E, A2.B, A2.C

VA SOLs: S.A.9, S.AII.9

LINEAR, QUADRATIC, & EXPONENTIAL REGRESSION CIRCUIT

Previous Answer: $y = 2.64x2 - 4.53x + 1.09$ # **2**

7. Determine whether the data set is best represented by a linear, quadratic, or exponential regression, and find the equation of the curve of best fit.

(-3, 15), (-1, 30), (0, 25), (2, 8), (3, 6), (5, 5)

Circle one: Linear   Quadratic   (Exponential)

Equation: $y = (14.53)*(0.81)^x$

Previous Answer: $y = -17.41x + 9.31$ # **4**

9. Determine whether the data set is best represented by a linear, quadratic, or exponential regression, and find the equation of the curve of best fit.

x	-3	-1	0	1	2	5
y	150	30	10	15	25	90

Circle one: (Linear)   Quadratic   Exponential

Equation: $y = -4x.78x + 56.52$

Challenge: Given data below, determine whether the data set is best represented by a linear, quadratic, or exponential regression, and find the equation of the curve of best fit. Then use your equation to extrapolate the data at x = -3.

(-4, 100), (-2, 62), (-1, 55), (1, 26), (4, 16), (8, 10)

Previous Answer: $y = 10.58x2 - 18.85x + 3.31$ # **5**

8. Determine whether the data set is best represented by a linear, quadratic, or exponential regression, and find the equation of the curve of best fit.

(-5, 30), (-1, 10), (1, 8), (3, 18), (4, 40), (6, 70)

Circle one: Linear   (Quadratic)   Exponential

Equation: $y = 1.42x^2 + 2x + 5.79$

Previous Answer: $y = (14.53)*(0.81)^x$ # **7**

10. Determine whether the data set is best represented by a linear, quadratic, or exponential regression, and find the equation of the curve of best fit.

(-4, 300), (-2, 80), (-1, 50), (0, 30), (2, 20), (3, 10), (4, 5)

Circle one: Linear   Quadratic   (Exponential)

Equation: $y = (36.82)*(0.63)^x$

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.

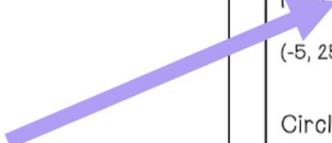**The last question they answer should lead back to problem #1 to "close" the circuit.**

Name: _____   Date: _____

LINEAR, QUADRATIC, & EXPONENTIAL REGRESSION 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: $y = -4x.78x + 56.52$ #____	Previous Answer: $y = 1.20x^2 + 0.71x - 1.86$ #____

1. Determine whether the data set is best represented by a linear, quadratic, or exponential regression, and find the equation of the curve of best fit.

(-5, 25), (-4, 16), (-3, 5), (-2, 0), (0, -2), (1, 3), (3, 10), (4, 20)

Circle one: Linear   Quadratic   Exponential

Equation: _____

2. Determine whether the data set is best represented by a linear, quadratic, or exponential regression, and find the equation of the curve of best fit.

x	-3	-2	-1	0	1	3
y	40	20	5	1	3	10

Circle one: Linear   Quadratic   Exponential

Equation: _____

Previous Answer: $y = (36.82)*(0.63)^x$ #____	Previous Answer: $y = (70.27)*(0.76)^x$ #____

3. Determine whether the data set is best represented by a linear, quadratic, or exponential regression, and find the equation of the curve of best fit.

(-6, 50), (-5, 45), (-3, 30), (-2, 20), (1, 5), (2, 12), (3, 25)

Circle one: Linear   Quadratic   Exponential

Equation:

4. Determine whether the data set is best represented by a linear, quadratic, or exponential regression, and find the equation of the curve of best fit.

(-4, 80), (-3, 60), (-1, 20), (0, 5), (1, 15), (2, -30), (3, -50)

Circle one: Linear   Quadratic   Exponential

Equation:

This is a great activity to use when reviewing how to perform linear, quadratic, and exponential regression.

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

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

Name: **Answer Key** _____ Date: _____

LINEAR, QUADRATIC, & EXPONENTIAL REGRESSION 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.

$1 \rightarrow$ **2** $\rightarrow$ **7** $\rightarrow$ **10** $\rightarrow$ **3** $\rightarrow$ **5** $\rightarrow$ **8** $\rightarrow$ **6** $\rightarrow$ **4** $\rightarrow$ **9** $\rightarrow 1$

Previous Answer: $y = -4x.78x + 56.52$ # **9**

Previous Answer: $y = 1.20x^2 + 0.71x - 1.86$ # **1**

1. Determine whether the data set is best represented by a linear, quadratic, or exponential regression, and find the equation of the curve of best fit.

(-5, 25), (-4, 16), (-3, 5), (-2, 0), (0, -2)

Circle one: Linear (Quadratic) Exponential

Equation: $y = 1.20x^2 + 0.71x$

2. Determine whether the data set is best represented by a linear, quadratic...

Previous Answer: $y = (36.82)$...

3. Determine whether the data represented by a linear, quad exponential regression, and fir the curve of best fit.

(-6, 50), (-5, 45), (-3, 30), (-2, 20), (1,...

Circle one: Linear (Quadra...

Equation: $y = 0.97x^2 - 1.02x$...

Previous Answer: $y = 0.97x^2 - ...$

5. Determine whether the data represented by a linear, quad exponential regression, and fir the curve of best fit.

x	-4	-3	-2	
y	300	100	60	

LINEAR, QUADRATIC, & EXPONENTIAL REGRESSION CIRCUIT

Previous Answer: $y = 2.64x2 - 4.53x + 1.09$ # **2**

Previous Answer: $y = 10.58x2 - 18.85x + 3.31$ # **5**

7. Determine whether the data set is best represented by a linear, quadratic, or exponential regression, and find the equation of the curve of best fit.

(-3, 15), (-1, 30), (0, 25), (2, 8), (3, 6), (5, 5)

Circle one: Linear Quadratic (Exponential)

Equation: $y = (14.53)*(0.81)^x$

8. Determine whether the data set is best represented by a linear, quadratic, or exponential regression, and find the equation of the curve of best fit.

(-5, 30), (-1, 10), (1, 8), (3, 18), (4, 40), (6, 70)

Circle one: Linear (Quadratic) Exponential

Equation: $y = 1.42x^2 + 2x + 5.79$

Previous Answer: $y = -17.41x + 9.31$ # **4**

Previous Answer: $y = (14.53)*(0.81)^x$ # **7**

9. Determine whether the data set is best represented by a linear, quadratic, or exponential regression, and find the equation of the curve of best fit.

x	-3	-1	0	1	2	5
y	150	30	10	15	25	90

Circle one: (Linear) Quadratic Exponential

Equation: $y = -4x.78x + 56.52$

10. Determine whether the data set is best represented by a linear, quadratic, or exponential regression, and find the equation of the curve of best fit.

(-4, 300), (-2, 80), (-1, 50), (0, 30), (2, 20), (3, 10), (4, 5)

Circle one: Linear Quadratic (Exponential)

Equation: $y = (36.82)*(0.63)^x$

Challenge: Given data below, determine whether the data set is best represented by a linear...

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Rational Expression Operations - Addition & Subtraction

Directions: Answer each question and type the question number with the matching answer in the answer column to the right.

#	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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