

Name: \_\_\_\_\_

Period: 5

## Cutting Corners



**Essential Question: What size cut will maximize the volume of a rectangular prism?**

### 1. Make a conjecture:

I think the 3 cut will maximize the volume of the box because ... It's gonna shrink the size of the whole shape in general. It will lower 9 boxes on each corner to shrink about 36 ~~sq~~ single squares <sup>3cm cut</sup>

I think the linear model will fit the data we gather best because ...

### 2. Consider the data collected by our class.

	
I notice ... that if one of the numbers contain a 5 or a 0 can work it will end with a 0 or an 5	I wonder ... why the cut size that are small have a much bigger volume than a larger cut size with a smaller volume

a. What is the maximum volume found?

The volume with the largest number, 798 cm

b. What are the dimensions of the rectangular prism with the maximum volume?

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**3. Revisit and revise your conjecture:** Did your conjecture change? Why?

I think the 4 cut will maximize the volume of the box because ...

I think the \_\_\_\_\_ model will fit the data we gather best because ...

**4. Grab a computer:**

- a. Log in to Desmos.
- b. Create a scatterplot and PAUSE to discuss the following:

***What type of function could we use to model the data?***

**Resource Manager:** Call over Ms. Burke to share your group's thinking and to get instructions for the next steps.

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**5. Revisit and revise your conjecture:** Revisit your conjecture with partner before writing. Was it accurate? How would you change it based on what you know now?

It was wrong it should be cubic because the plot points are matching with the equation for cubic

Name: \_\_\_\_\_

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## Cutting Corners

**Essential Question: What size cut will maximize the volume of a rectangular prism?**

### 1. Make a conjecture:



I think the 1cm cut will maximize the volume of the box because ...

it only has 1 box to cut, maximizing the volume of the box.

I think the linear model will fit the data we gather best because ...

the bigger the cut, the less length and width.

### 2. Consider the data collected by our class.

	
<p><b>I notice ...</b> 9cm is the lowest <math>V</math> 2cm has the highest <math>V</math></p>	<p><b>I wonder ...</b> why the 2cm had highest <math>V</math> what <math>V</math> would 1cm have</p>

a. What is the maximum volume found?

$$2\text{cm cut} \Rightarrow 98\text{cm}^3$$

b. What are the dimensions of the rectangular prism with the maximum volume?

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**3. Revisit and revise your conjecture:** Did your conjecture change? Why?

I think the 4cm cut will maximize the volume of the box because ...  
they counted correctly

I think the Cubic model will fit the data we gather best because ...

**4. Grab a computer:**

- a. Log in to Desmos.
- b. Create a scatterplot and PAUSE to discuss the following:

***What type of function could we use to model the data?***

**Resource Manager:** Call over Ms. Burke to share your group's thinking and to get instructions for the next steps.

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**5. Revisit and revise your conjecture:** Revisit your conjecture with partner before writing. Was it accurate? How would you change it based on what you know now?

The 4cm cut will maximize the volume of the box at 242cm<sup>3</sup>

I think the cubic model fits the best

## Cutting Corners

**Essential Question: What size cut will maximize the volume of a rectangular prism?**

### 1. Make a conjecture:

I think the 1cm cut will maximize the volume of the box because ... we aren't cutting anything else rather than just some corners to create our box, just 4 boxes total

I think the cubic model will fit the data we gather best because ... we are finding volume which requires multiplying 3 times like cubing

### 2. Consider the data collected by our class.



I notice ... that the 9cm cut has the lowest volume, the 2cm cut has the highest volume

I wonder ... why does the lower cut have the highest volume? wonder what the 1cm cut would be?

a. What is the maximum volume found?

The maximum volume found was  $798 \text{ cm}^3$

b. What are the dimensions of the rectangular prism with the maximum volume?

The dimensions were 21 cm by 19 cm by 2 cm

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3. **Revisit and revise your conjecture:** Did your conjecture change? Why?

I think the 4cm cut will maximize the volume of the box because ... the max volume on the data set is  $748 \text{ cm}^3$

I think the cubic model will fit the data we gather best because ... you multiply 3 times so cube

4. **Grab a computer:**

- Log in to Desmos.
- Create a scatterplot and PAUSE to discuss the following:

***What type of function could we use to model the data?***

**Resource Manager:** Call over Ms. Burke to share your group's thinking and to get instructions for the next steps.

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5. **Revisit and revise your conjecture:** Revisit your conjecture with partner before writing. Was it accurate? How would you change it based on what you know now?

The 4cm cut will maximize the volume of the box at  $748 \text{ cm}^3$

I think the cubic model fits the best when we enter the cubic regression line

Name: \_\_\_\_\_

Period: \_\_\_\_\_

## Cutting Corners



**Essential Question: What size cut will maximize the volume of a rectangular prism?**

### 1. Make a conjecture:

I think the 1cm cut will maximize the volume of the box because ... it will probably be one big of a size for the box. The length and the

I think the leanor model will fit the data we gather best because ... it will fit the first graph.

### 2. Consider the data collected by our class.

	
<p><b>I notice ...</b> I notice that a cm is has the less volume then the other volume</p>	<p><b>I wonder ...</b> I think the 1 cm would be the highest volume</p>

a. What is the maximum volume found?

The maximum volume  $798 \text{ cm}^2$

b. What are the dimensions of the rectangular prism with the maximum volume?

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Period: 2

**3. Revisit and revise your conjecture: Did your conjecture change? Why?**

I think the 4 cut will maximize the volume of the box because ... ~~they counted~~  
is correct.

I think the cubic model will fit the data we gather best because ... ~~it~~  
connects to the dots

**4. Grab a computer:**

- a. Log in to Desmos.
- b. Create a scatterplot and PAUSE to discuss the following:

***What type of function could we use to model the data?***

**Resource Manager:** Call over Ms. Burke to share your group's thinking and to get instructions for the next steps.

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- 5. Revisit and revise your conjecture:** Revisit your conjecture with partner before writing. Was it accurate? How would you change it based on what you know now?

The accurate base was the cubic because it's fits the graph better and it attach to the dots.



Name: \_\_\_\_\_

Period: 5

## Cutting Corners



**Essential Question: What size cut will maximize the volume of a rectangular prism?**

### 1. Make a conjecture:

I think the 1x1 cut will maximize the volume of the box because ... the box will be larger.

I think the \_\_\_\_\_ model will fit the data we gather best because ...

### 2. Consider the data collected by our class.

	
I notice ... The bigger the cut size, the smaller the volume.	I wonder ... what a graph of this would look like? I think it'll be a parabola.

a. What is the maximum volume found?

b. What are the dimensions of the rectangular prism with the maximum volume?

Name: \_\_\_\_\_

Period: 5

**3. Revisit and revise your conjecture:** Did your conjecture change? Why?

I think the 1x1 cut will maximize the volume of the box because ... it takes less out of the box.

I think the quadratic model will fit the data we gather best because ... it will create a parabola.

**4. Grab a computer:**

- a. Log in to Desmos.
- b. Create a scatterplot and PAUSE to discuss the following:

***What type of function could we use to model the data?***

**Resource Manager:** Call over Ms. Burke to share your group's thinking and to get instructions for the next steps.

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**5. Revisit and revise your conjecture:** Revisit your conjecture with partner before writing. Was it accurate? How would you change it based on what you know now?

## Cutting Corners

**Essential Question:** What size cut will maximize the volume of a rectangular prism?



4cm    17cm    11cm    4cm    748 cm<sup>3</sup>

**1. Make a conjecture:**

I think the 5 cut will maximize the volume of the box because ...  
 in order to create a box you need to have a center where they all combine

I think the 1x1x1 model will fit the data we gather best because ...  
 that is the highest amount you can go

**2. Consider the data collected by our class.**

	
<p><b>I notice ...</b></p> <ul style="list-style-type: none"> <li>• The 9cm cut size is the only one with a volume of smaller than the others</li> <li>• the bigger the cut size the lower the volume</li> </ul>	<p><b>I wonder ...</b></p> <p>why does the smaller cut size have a bigger volume?</p>

a. What is the maximum volume found?

748 cm<sup>3</sup>

b. What are the dimensions of the rectangular prism with the maximum volume?

2cm

Name: \_\_\_\_\_

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**3. Revisit and revise your conjecture:** Did your conjecture change? Why?

I think the 1 cut will maximize the volume of the box because ...  
the smaller the cut the bigger the volume

I think the 1/1 model will fit the data we gather best because ...  
It is small with a big volume

**4. Grab a computer:**

- a. Log in to Desmos.
- b. Create a scatterplot and PAUSE to discuss the following:

***What type of function could we use to model the data?***

**Resource Manager:** Call over Ms. Burke to share your group's thinking and to get instructions for the next steps.

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**5. Revisit and revise your conjecture:** Revisit your conjecture with partner before writing. Was it accurate? How would you change it based on what you know now?

Name: \_\_\_\_\_

Period: 5

## Cutting Corners



**Essential Question: What size cut will maximize the volume of a rectangular prism?**

### 1. Make a conjecture:

I think the 1 cut will maximize the volume of the box because ... it will still be big and it is only one cut.

I think the Cubic model will fit the data we gather best because ... it has 3 sides (L·W·H)

### 2. Consider the data collected by our class.

	
I notice ... that the bigger the cut the smaller the volume.	I wonder ... why do the bigger #'s have the smallest #.

a. What is the maximum volume found?

798 cm<sup>3</sup> are the maximum volume

b. What are the dimensions of the rectangular prism with the maximum volume?

The dimension is 2 cm

Name: \_\_\_\_\_

Period: \_\_\_\_\_

3. **Revisit and revise your conjecture:** Did your conjecture change? Why?

NO, I was correct

I think the 1 cut will maximize the volume of the box because ... the smaller the # the bigger the volume will be

I think the cubic model will fit the data we gather best because ... it is l.w.h, also it has 3 sides.

4. **Grab a computer:**

- a. Log in to Desmos.
- b. Create a scatterplot and PAUSE to discuss the following:

***What type of function could we use to model the data?***

**Resource Manager:** Call over Ms. Burke to share your group's thinking and to get instructions for the next steps.

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5. **Revisit and revise your conjecture:** Revisit your conjecture with partner before writing. Was it accurate? How would you change it based on what you know now?

Name: \_\_\_\_\_

Period: 5

# Cutting Corners

**Essential Question: What size cut will maximize the volume of a rectangular prism?**



$W = 17$     $L = 23$     $H = 1$

## 1. Make a conjecture:

I think the 1x1 cut will maximize the volume of the box because ...  
I'll give the box a large width & length by just only get 1 volume

I think the CUBIC model will fit the data we gather best because ... b/c it's  
a 3-D model

## 2. Consider the data collected by our class.

	
<p><b>I notice ...</b> There's only one that's not a 3-digit #.</p>	<p><b>I wonder ...</b> Does the surface size matters</p>

a. What is the maximum volume found?

$2 \text{ cm} = 796 \text{ cm}^3$

b. What are the dimensions of the rectangular prism with the maximum volume?

cut size: 2      Length 21

Name: \_\_\_\_\_

Period: \_\_\_\_\_

**3. Revisit and revise your conjecture:** Did your conjecture change? Why?

I think the low cut will maximize the volume of the box because ...  
it seems that the lower the cut size the higher the volume

I think the cubic model will fit the data we gather best because ...  
it's consider a 3-D scaled

**4. Grab a computer:**

- a. Log in to Desmos.
- b. Create a scatterplot and PAUSE to discuss the following:

***What type of function could we use to model the data?***

**Resource Manager:** Call over Ms. Burke to share your group's thinking and to get instructions for the next steps.

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**5. Revisit and revise your conjecture:** Revisit your conjecture with partner before writing. Was it accurate? How would you change it based on what you know now?



Name: \_\_\_\_\_

Period: 5<sup>o</sup>

## Cutting Corners

Essential Question: What size cut will maximize the volume of a rectangular prism?



cut size: 9    Length: 11    width: 7    Height: 9    volume: 63

### 1. Make a conjecture:

I think the ~~4x3~~<sup>1cm</sup> cut will maximize the volume of the box because ... it saves the most space

I think the cubic model will fit the data we gather best because ... the cuts are involving a cubic like shape

### 2. Consider the data collected by our class.

	
I notice ... That all volumes except for one are 3 digit numbers.	I wonder ... why our group got the smallest one

a. What is the maximum volume found?

The maximum volume found is  $798 \text{ cm}^3$

b. What are the dimensions of the rectangular prism with the maximum volume?

cut size: 2cm    L: 21cm    W: 19cm    H: 2cm

Name: \_\_\_\_\_

Period: \_\_\_\_\_

3. **Revisit and revise your conjecture:** Did your conjecture change? Why?

I think the 1 cut will maximize the volume of the box because ... It takes away the least amount of space. The smallest cut (cm) had the largest volume

I think the cubic model will fit the data we gather best because ... we used a cubic equation to find the volume.

4. **Grab a computer:**

- Log in to Desmos.
- Create a scatterplot and PAUSE to discuss the following:

***What type of function could we use to model the data?***

**Resource Manager:** Call over Ms. Burke to share your group's thinking and to get instructions for the next steps.

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5. **Revisit and revise your conjecture:** Revisit your conjecture with partner before writing. Was it accurate? How would you change it based on what you know now?

Name: \_\_\_\_\_

Period: 5

## Cutting Corners



**Essential Question: What size cut will maximize the volume of a rectangular prism?**

### 1. Make a conjecture:

I think the 1cm cut will maximize the volume of the box because ... its taking less space from the grid making the box bigger with a larger volume

I think the cubic model will fit the data we gather best because ... it has length, width, and height.

### 2. Consider the data collected by our class.

	
<p>I notice ... <math>13 \cdot 6 \cdot 7 = 546 \text{ cm}^3</math> <math>310</math></p> <ul style="list-style-type: none"><li>• The smaller the cut size the bigger the volume.</li><li>• The cut size and height are the same.</li><li>• cut from 2 - a cm</li></ul>	<p>I wonder ...</p> <ul style="list-style-type: none"><li>• The bigger length and height</li></ul>

a. What is the maximum volume found?

$798 \text{ cm}^3$  is the maximum volume found

b. What are the dimensions of the rectangular prism with the maximum volume?

2cm.

Name: \_\_\_\_\_

Period: \_\_\_\_\_

3. **Revisit and revise your conjecture:** Did your conjecture change? Why?

I think the 1cm cut will maximize the volume of the box because ... the smaller the cut the more grid space left over to make the box.

I think the cubic model will fit the data we gather best because ...  
the volume is in  $\text{cm}^3$

4. **Grab a computer:**

- a. Log in to Desmos.
- b. Create a scatterplot and PAUSE to discuss the following:

**What type of function could we use to model the data?**

cubic

**Resource Manager:** Call over Ms. Burke to share your group's thinking and to get instructions for the next steps.

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5. **Revisit and revise your conjecture:** Revisit your conjecture with partner before writing. Was it accurate? How would you change it based on what you know now?

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## Cutting Corners

Essential Question: What size cut will maximize the volume of a rectangular prism?

4

### 1. Make a conjecture:



I think the 9x9 cut will maximize the volume of the box because ...

It will use all that can be used in this rectangle

I think the 9 x 9 model will fit the data we gather best because ...

It will be half the grid

### 2. Consider the data collected by our class.

	
<p>I notice ... That there is a lot of different volumes but also some are the same.</p>	<p>I wonder ... Is there one wrong?</p>

a. What is the maximum volume found?

798 cm<sup>3</sup>

b. What are the dimensions of the rectangular prism with the maximum volume?

Name: \_\_\_\_\_

Period: \_\_\_\_\_

**3. Revisit and revise your conjecture: Did your conjecture change? Why?**

I think the 11 cut will maximize the volume of the box because ...  
The lower you go in cut size the higher you go in volume.

I think the 1 x 1 model will fit the data we gather best because ...  
of the volume that is represented in the graph.  
1x1 would have the largest volume.

**4. Grab a computer:**

- a. Log in to Desmos.
- b. Create a scatterplot and PAUSE to discuss the following:

***What type of function could we use to model the data?***

**Resource Manager:** Call over Ms. Burke to share your group's thinking and to get instructions for the next steps.

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**5. Revisit and revise your conjecture: Revisit your conjecture with partner before writing. Was it accurate? How would you change it based on what you know now?**

\_\_\_\_\_

Name: \_\_\_\_\_

Period: 11-17-17

## Cutting Corners



**Essential Question: What size cut will maximize the volume of a rectangular prism?**

### 1. Make a conjecture:

I think the 5x5 cut will maximize the volume of the box because ... It's Higher and wider cause bigger and wide would have bigger area and volume

I think the 5x9x15 model will fit the data we gather best because ...

### 2. Consider the data collected by our class.

	
<p>I notice ... volume very high, some low. - some has close volume</p>	<p>I wonder ... all from same grid yet different volume</p>

a. What is the maximum volume found? max 798 less + 63

b. What are the dimensions of the rectangular prism with the maximum volume?

$$L = 21 \quad W = 19 \quad h = 20 \text{ m}$$

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This material accompanies a videotaped lesson on Inside Mathematics ([www.insidemathematics.org](http://www.insidemathematics.org)): Cutting Corners: Public Lesson. Austin, Texas: the Charles A. Dana Center at The University of Texas at Austin.

Name: \_\_\_\_\_

Period: 11-17-17

3. **Revisit and revise your conjecture:** Did your conjecture change? Why?

I think the 2 cut will maximize the volume of the box because ...

I think the 21x19x2 model will fit the data we gather best because ...

I has the max

4. **Grab a computer:**

- a. Log in to Desmos.
- b. Create a scatterplot and PAUSE to discuss the following:

***What type of function could we use to model the data?***

**Resource Manager:** Call over Ms. Burke to share your group's thinking and to get instructions for the next steps.

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5. **Revisit and revise your conjecture:** Revisit your conjecture with partner before writing. Was it accurate? How would you change it based on what you know now?



Name: \_\_\_\_\_

Period: 5

## Cutting Corners

3  
19 13 3 741

**Essential Question: What size cut will maximize the volume of a rectangular prism?**

### 1. Make a conjecture:



I think the 6 cm cut will maximize the volume of the box because ...

It will give it a longer height.

I think the linear model will fit the data we gather best because ...

the volume will increase by the cut increase

### 2. Consider the data collected by our class.

	
<p><b>I notice ...</b> The ones with a larger cut size have a smaller volume</p>	<p><b>I wonder ...</b></p>

a. What is the maximum volume found?

798 cm<sup>3</sup>

b. What are the dimensions of the rectangular prism with the maximum volume?

2 cm cut, 21 cm x 19 cm x 2 cm

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Name: \_\_\_\_\_

Period: \_\_\_\_\_

**3. Revisit and revise your conjecture:** Did your conjecture change? Why?

I think the 2 cm cut will maximize the volume of the box because ...

it will have a large length and width.

I think the linear model will fit the data we gather best because ...

**4. Grab a computer:**

- a. Log in to Desmos.
- b. Create a scatterplot and PAUSE to discuss the following:

***What type of function could we use to model the data?***

**Resource Manager:** Call over Ms. Burke to share your group's thinking and to get instructions for the next steps.

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**5. Revisit and revise your conjecture:** Revisit your conjecture with partner before writing. Was it accurate? How would you change it based on what you know now?

Name: \_\_\_\_\_

Period: \_\_\_\_\_

## Cutting Corners



**Essential Question: What size cut will maximize the volume of a rectangular prism?**

### 1. Make a conjecture:

I think the 2x2 cut will maximize the volume of the box because ... least amount of corners cut maximizes box volume

I think the \_\_\_\_\_ model will fit the data we gather best because ...

### 2. Consider the data collected by our class.

	
I notice ...	I wonder ...

a. What is the maximum volume found?

b. What are the dimensions of the rectangular prism with the maximum volume?

Name: \_\_\_\_\_

Period: \_\_\_\_\_

**3. Revisit and revise your conjecture:** Did your conjecture change? Why?

I think the 2x2 cut will maximize the volume of the box because ...

I think the quadratic model will fit the data we gather best because ...

**4. Grab a computer:**

- a. Log in to Desmos.
- b. Create a scatterplot and PAUSE to discuss the following:

***What type of function could we use to model the data?***

**Resource Manager:** Call over Ms. Burke to share your group's thinking and to get instructions for the next steps.

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**5. Revisit and revise your conjecture:** Revisit your conjecture with partner before writing. Was it accurate? How would you change it based on what you know now?

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Period: 11717  
5-

## Cutting Corners



**Essential Question: What size cut will maximize the volume of a rectangular prism?**

### 1. Make a conjecture:

I think the 3cm cut will maximize the volume of the box because ...  
it will make the volume even.

I think the linear model will fit the data we gather best because ...  
it will show the volume better

### 2. Consider the data collected by our class.

	
<p><b>I notice ...</b> the larger cut sizes has a smaller volume</p>	<p><b>I wonder ...</b></p>

a. What is the maximum volume found?

Maximum volume is

b. What are the dimensions of the rectangular prism with the maximum volume?

Name: \_\_\_\_\_

Period: \_\_\_\_\_

**3. Revisit and revise your conjecture:** Did your conjecture change? Why?

I think the 2cm cut will maximize the volume of the box because ...  
it will make the shape even

I think the quadratic model will fit the data we gather best because ...  
It will make it easier

**4. Grab a computer:**

- a. Log in to Desmos.
- b. Create a scatterplot and PAUSE to discuss the following:

***What type of function could we use to model the data?***

**Resource Manager:** Call over Ms. Burke to share your group's thinking and to get instructions for the next steps.

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**5. Revisit and revise your conjecture:** Revisit your conjecture with partner before writing. Was it accurate? How would you change it based on what you know now?

Name: \_\_\_\_\_

Period: \_\_\_\_\_

## Cutting Corners



**Essential Question: What size cut will maximize the volume of a rectangular prism?**

### 1. Make a conjecture:

I think the 4cm cut will maximize the volume of the box because ...

I think the \_\_\_\_\_ model will fit the data we gather best because ...

### 2. Consider the data collected by our class.

	
I notice ... The smallest cut has the greatest volume	I wonder ... what size cut would have the Biggest volume.

a. What is the maximum volume found?

748 cm<sup>3</sup>

b. What are the dimensions of the rectangular prism with the maximum volume?

The dimensions of the Biggest cut

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Name: \_\_\_\_\_

Period: \_\_\_\_\_

**3. Revisit and revise your conjecture:** Did your conjecture change? Why?

I think the 2cm cut will maximize the volume of the box because ... It comes out with the biggest volume.

I think the \_\_\_\_\_ model will fit the data we gather best because ...

**4. Grab a computer:**

- a. Log in to Desmos.
- b. Create a scatterplot and PAUSE to discuss the following:

***What type of function could we use to model the data?***

Cubic.

**Resource Manager:** Call over Ms. Burke to share your group's thinking and to get instructions for the next steps.

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**5. Revisit and revise your conjecture:** Revisit your conjecture with partner before writing. Was it accurate? How would you change it based on what you know now?



Name: \_\_\_\_\_

Period: 5

## Cutting Corners



Essential Question: What size cut will maximize the volume of a rectangular prism?

1. Make a conjecture:

I think the 5cm cut will maximize the volume of the box because ... it will give us enough room for a square.

I think the \_\_\_\_\_ model will fit the data we gather best because ...

2. Consider the data collected by our class.

	
<p>I notice ...</p> <p>Smallest cut has the greatest volume while bigger cut has less volume.</p>	<p>I wonder ...</p> <p>Why does 2 cm have more volume than four, but 3 has less.</p>

a. What is the maximum volume found?

798 cm<sup>3</sup>

b. What are the dimensions of the rectangular prism with the maximum volume?

21 x 19 x 2

Name: \_\_\_\_\_

Period: \_\_\_\_\_

**3. Revisit and revise your conjecture:** Did your conjecture change? Why?

I think the 2cm cut will maximize the volume of the box because ...

It leaves the most room for left over space.

I think the \_\_\_\_\_ model will fit the data we gather best because ...

**4. Grab a computer:**

- a. Log in to Desmos.
- b. Create a scatterplot and PAUSE to discuss the following:

***What type of function could we use to model the data?***

Cubic model

**Resource Manager:** Call over Ms. Burke to share your group's thinking and to get instructions for the next steps.

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**5. Revisit and revise your conjecture:** Revisit your conjecture with partner before writing. Was it accurate? How would you change it based on what you know now?

Name: \_\_\_\_\_

Period: 5

## Cutting Corners



Essential Question: What size cut will maximize the volume of a rectangular prism?

### 1. Make a conjecture:

I think the 7cm cut will maximize the volume of the box because ...  
*higher walls allow for more liquid.*

I think the 7cm model will fit the data we gather best because ...  
*it appears to have the greatest volume.*

### 2. Consider the data collected by our class.

	
I notice ... that the <u>smallest</u> cut size has the greatest volume.	I wonder ... Why does the <u>largest</u> cut-size have the smallest volume.

a. What is the maximum volume found?

*798cm<sup>3</sup> for 2cm cut size*

b. What are the dimensions of the rectangular prism with the maximum volume?

*19 x 21 x 2*

Name: \_\_\_\_\_

Period: 5

3. Revisit and revise your conjecture: Did your conjecture change? Why?

I think the 2cm cut will maximize the volume of the box because ...  
*it holds the greatest volume.*

I think the 2cm model will fit the data we gather best because ...  
*the volume is the largest one found on the table.*

4. Grab a computer:

- a. Log in to Desmos.
- b. Create a scatterplot and PAUSE to discuss the following:

**What type of function could we use to model the data?**

*Regression line/cubic model  
because it seems to fit non-linear data sets*

**Resource Manager:** Call over Ms. Burke to share your group's thinking and to get instructions for the next steps.

*because volumes are always cubes, parabolas are always 2 dimensional data sets, linear lines are 1 dimensional line data sets.*

5. Revisit and revise your conjecture: Revisit your conjecture with partner before writing. Was it accurate? How would you change it based on what you know now?

P

Name: \_\_\_\_\_

Period: \_\_\_\_\_

## Cutting Corners



**Essential Question: What size cut will maximize the volume of a rectangular prism?**

### 1. Make a conjecture:

I think the 2x2 cut will maximize the volume of the box because ...

I think the \_\_\_\_\_ model will fit the data we gather best because ...

### 2. Consider the data collected by our class.

	
<p><b>I notice ...</b> cut size 2 has more volume</p>	<p><b>I wonder ...</b> what cut size I would look like</p>

a. What is the maximum volume found?

6798 cm<sup>3</sup>

b. What are the dimensions of the rectangular prism with the maximum volume?

L: 21 cm    H: 2 cm  
w: 14 cm

Name: \_\_\_\_\_

Period: \_\_\_\_\_

**3. Revisit and revise your conjecture:** Did your conjecture change? Why?

I think the 2x2 cut will maximize the volume of the box because ... *it gives it more length*

I think the \_\_\_\_\_ model will fit the data we gather best because ...

**4. Grab a computer:**

- a. Log in to Desmos.
- b. Create a scatterplot and PAUSE to discuss the following:

***What type of function could we use to model the data?***

**Resource Manager:** Call over Ms. Burke to share your group's thinking and to get instructions for the next steps.

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**5. Revisit and revise your conjecture:** Revisit your conjecture with partner before writing. Was it accurate? How would you change it based on what you know now?

Name: \_\_\_\_\_

Period: 5

## Cutting Corners



**Essential Question: What size cut will maximize the volume of a rectangular prism?**

### 1. Make a conjecture:

I think the 2x2 cut will maximize the volume of the box because ...  
if you cut more you lose more.

I think the \_\_\_\_\_ model will fit the data we gather best because ...

### 2. Consider the data collected by our class.

	
<p><b>I notice ...</b> the more you cut the less volume</p>	<p><b>I wonder ...</b></p>

a. What is the maximum volume found?

798 cm<sup>3</sup>

b. What are the dimensions of the rectangular prism with the maximum volume?

2 cm cut 21 x 19 x 2

Name: \_\_\_\_\_

Period: \_\_\_\_\_

**3. Revisit and revise your conjecture: Did your conjecture change? Why?**

I think the 2x2 cut will maximize the volume of the box because ...

It has more length and width

I think the \_\_\_\_\_ model will fit the data we gather best because ...

**4. Grab a computer:**

- a. Log in to Desmos.
- b. Create a scatterplot and PAUSE to discuss the following:

***What type of function could we use to model the data?***

**Resource Manager:** Call over Ms. Burke to share your group's thinking and to get instructions for the next steps.

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**5. Revisit and revise your conjecture:** Revisit your conjecture with partner before writing. Was it accurate? How would you change it based on what you know now?



# Cutting Corners



**Essential Question: What size cut will maximize the volume of a rectangular prism?**

**1. Make a conjecture:**

I think the corner cut will maximize the volume of the box because ... You can create a box and only lose 4 cm squares = the ~~biggest~~ <sup>biggest</sup> SA.  
 The surface will be as ~~wide~~ wide as possible creating the largest <sup>Surface Area</sup>.

I think the Cubic ~~Quadratic~~ model will fit the data we gather best because ... There's 4 sides, so 4 numbers to place into the eq formula.

**2. Consider the data collected by our class.**

	
<p><b>I notice ...</b> 8cm cut</p> <p> <math display="block">\left. \begin{matrix} 13 &amp; l \\ 7 &amp; w \\ 6 &amp; h \end{matrix} \right\} \text{ equals } 546 \text{ cm}^3</math> </p> <p>a group w/ 1 difference</p> <p>The smaller the bottom size the smaller the volume larger</p>	<p><b>I wonder ...</b></p> <p>the cubic volume will be graph</p> <p>The bigger h is l the greater the volume</p>

a. What is the maximum volume found?

$325 \text{ cm}^3$

b. What are the dimensions of the rectangular prism with the maximum volume?

*Author: Ruth...*

Name: \_\_\_\_\_

Period: 5

## Cutting Corners



**Essential Question: What size cut will maximize the volume of a rectangular prism?**

### 1. Make a conjecture:

I think the 1 cut will maximize the volume of the box because ... it reduces the boxes size and shape

I think the cubic model will fit the data we gather best because ... the box will have 3 sides to it, the length, width, and height

### 2. Consider the data collected by our class.

	
<p><b>I notice ...</b> that each centimeter that is lower than five will in box, a big box</p>	<p><b>I wonder ...</b> if the cubic volume is going to be graphed</p>

a. What is the maximum volume found?

The maximum volume found is  $798 \text{ cm}^3$

b. What are the dimensions of the rectangular prism with the maximum volume?

Name: \_\_\_\_\_

Period: 5

**3. Revisit and revise your conjecture: Did your conjecture change? Why?**

I think the Z cut will maximize the volume of the box because ... the length, width, and height increases and gives a higher or maximized volume

I think the cubic model will fit the data we gather best because ... in order to contain the volume, the graph must show a length, width, and height multiplied.

**4. Grab a computer:**

- a. Log in to Desmos.
- b. Create a scatterplot and PAUSE to discuss the following:

***What type of function could we use to model the data?***

**Resource Manager:** Call over Ms. Burke to share your group's thinking and to get instructions for the next steps.

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**5. Revisit and revise your conjecture:** Revisit your conjecture with partner before writing. Was it accurate? How would you change it based on what you know now?

Name: \_\_\_\_\_

Period: 5

## Cutting Corners



**Essential Question: What size cut will maximize the volume of a rectangular prism?**

### 1. Make a conjecture:

I think the 5cm cut will maximize the volume of the box because ...

I think the 2cm model will fit the data we gather best because ...

### 2. Consider the data collected by our class.

	
<p>I notice ... The smallest cut has the greater volume The biggest cut has the smallest volume</p>	<p>I wonder ... I wonder why 4 has a greater volume than 3?</p>

a. What is the maximum volume found?

798 cm<sup>3</sup>

b. What are the dimensions of the rectangular prism with the maximum volume?

Name: \_\_\_\_\_

Period: \_\_\_\_\_

**3. Revisit and revise your conjecture:** Did your conjecture change? Why?

I think the 20m cut will maximize the volume of the box because ...

I think the cubic model will fit the data we gather best because ... it  
curves like our scatter plot

**4. Grab a computer:**

- a. Log in to Desmos.
- b. Create a scatterplot and PAUSE to discuss the following:

***What type of function could we use to model the data?***

**Resource Manager:** Call over Ms. Burke to share your group's thinking and to get instructions for the next steps.

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**5. Revisit and revise your conjecture:** Revisit your conjecture with partner before writing. Was it accurate? How would you change it based on what you know now?

Name: \_\_\_\_\_

Period: \_\_\_\_\_

## Cutting Corners

**Essential Question: What size cut will maximize the volume of a rectangular prism?**

### 1. Make a conjecture:

I think the 3x3 cut will maximize the volume of the box because ...

I think the \_\_\_\_\_ model will fit the data we gather best because ...

### 2. Consider the data collected by our class.



**I notice ...**

The box is long but narrow.  
The box is  $216 \text{ cm}^3$  for ours  
The biggest boxes have smaller cuts

**I wonder ...**

How much

a. What is the maximum volume found?

$498 \text{ cm}^3$

b. What are the dimensions of the rectangular prism with the maximum volume?

2cm cuts

Name: \_\_\_\_\_

Period: \_\_\_\_\_

**3. Revisit and revise your conjecture:** Did your conjecture change? Why?

I think the 2x2 cut will maximize the volume of the box because ...  
It takes the least away and enables the box to be bigger

I think the \_\_\_\_\_ model will fit the data we gather best because ...

8.3

**4. Grab a computer:**

- a. Log in to Desmos.
- b. Create a scatterplot and PAUSE to discuss the following:

***What type of function could we use to model the data?***

**Resource Manager:** Call over Ms. Burke to share your group's thinking and to get instructions for the next steps.

---

**5. Revisit and revise your conjecture:** Revisit your conjecture with partner before writing. Was it accurate? How would you change it based on what you know now?



Name: \_\_\_\_\_

Period: 5<sup>o</sup>

$$\begin{matrix} 5 & \times & 15 & \times & 9 \\ L & & H & & W \end{matrix} = \frac{675}{\text{Cutting Corners}}$$



**Essential Question: What size cut will maximize the volume of a rectangular prism?**

**1. Make a conjecture:**

I think the 4 cut will maximize the volume of the box because ... it will have more space therefore more volume to hold up.

I think the linear model will fit the data we gather best because ... the points are better visual.

**2. Consider the data collected by our class.**

	
I notice ... cut size 2 cm has the most volume.	I wonder ... what cut size I will look like.

a. What is the maximum volume found?

798 cm<sup>3</sup>

b. What are the dimensions of the rectangular prism with the maximum volume?

cut size two

Name: \_\_\_\_\_

Period: \_\_\_\_\_

3. **Revisit and revise your conjecture:** Did your conjecture change? Why?

I think the 2 cm cut will maximize the volume of the box because ...  
798 cm<sup>3</sup> highest volume more space.  
I think the Cubic model will fit the data we gather best because ...

4. **Grab a computer:**

- a. Log in to Desmos.
- b. Create a scatterplot and PAUSE to discuss the following:

**What type of function could we use to model the data?**

**Resource Manager:** Call over Ms. Burke to share your group's thinking and to get instructions for the next steps.

0 10  
0 800

$\frac{1}{10}$

5. **Revisit and revise your conjecture:** Revisit your conjecture with partner before writing. Was it accurate? How would you change it based on what you know now?

Name: \_\_\_\_\_

Period: per. 5

$\frac{4}{75}$   
 $\frac{29}{675}$

# Cutting Corners

9, 15, 5

$9 \times 15 \times 5$   
 $9 \times 75$   
 $675$



**Essential Question: What size cut will maximize the volume of a rectangular prism?**

## 1. Make a conjecture:

I think the 4x5 cut will maximize the volume of the box because ... there will be more space.

I think the linear model will fit the data we gather best because ... the points are better visual.

## 2. Consider the data collected by our class.

	
<b>I notice ...</b> - the smaller the cut size, the greater the volume.	<b>I wonder ...</b>

a. What is the maximum volume found?  $798 \text{ cm}^3$

b. What are the dimensions of the rectangular prism with the maximum volume?

cut size 2

Name: \_\_\_\_\_

Period: \_\_\_\_\_

**3. Revisit and revise your conjecture:** Did your conjecture change? Why?

I think the 2 cut will maximize the volume of the box because ... *it has the most volume.*

I think the Cubic model will fit the data we gather best because ...

**4. Grab a computer:**

- a. Log in to Desmos.
- b. Create a scatterplot and PAUSE to discuss the following:

***What type of function could we use to model the data?***

**Resource Manager:** Call over Ms. Burke to share your group's thinking and to get instructions for the next steps.

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**5. Revisit and revise your conjecture:** Revisit your conjecture with partner before writing. Was it accurate? How would you change it based on what you know now?

Name: \_\_\_\_\_

Period: 5<sup>o</sup>

## Cutting Corners



**Essential Question: What size cut will maximize the volume of a rectangular prism?**

### 1. Make a conjecture:

I think the middle ground of the smallest and biggest cut will maximize the volume of the box because ... it will allow the box have the ability to hold more while retaining height

I think the \_\_\_\_\_ model will fit the data we gather best because ...

### 2. Consider the data collected by our class.

	
<p><b>I notice ...</b></p> <p>That the 2 cm cut has the biggest volume of _____ The smallest is a 8cm cut with a volume of 216</p>	<p><b>I wonder ...</b></p>

a. What is the maximum volume found?

196 cm<sup>3</sup>

b. What are the dimensions of the rectangular prism with the maximum volume?

Length = 21 cm

Name: \_\_\_\_\_

Period: \_\_\_\_\_

**3. Revisit and revise your conjecture:** Did your conjecture change? Why?

I think the 2cm cut will maximize the volume of the box because ...

I think the \_\_\_\_\_ model will fit the data we gather best because ...

**4. Grab a computer:**

- a. Log in to Desmos.
- b. Create a scatterplot and PAUSE to discuss the following:

***What type of function could we use to model the data?***

**Resource Manager:** Call over Ms. Burke to share your group's thinking and to get instructions for the next steps.

---

**5. Revisit and revise your conjecture:** Revisit your conjecture with partner before writing. Was it accurate? How would you change it based on what you know now?

Name: \_\_\_\_\_

Period: \_\_\_\_\_

## Cutting Corners

**Essential Question: What size cut will maximize the volume of a rectangular prism?**



### 1. Make a conjecture:

I think the 1cm cut will maximize the volume of the box because ...

Its the minimum amount to make an open sided prism and too little

I think the \_\_\_\_\_ model will fit the data we gather best because ...

### 2. Consider the data collected by our class.

	
<p><b>I notice ...</b> When the length, width, or height is not that long the length width or height compensates for the loss in others</p>	<p><b>I wonder ...</b></p>

a. What is the maximum volume found?

216cm<sup>3</sup>

b. What are the dimensions of the rectangular prism with the maximum volume?

Name: \_\_\_\_\_

Period: \_\_\_\_\_

**3. Revisit and revise your conjecture:** Did your conjecture change? Why?

I think the 2cm cut will maximize the volume of the box because ...

it takes away the least cms and multiplies the most

I think the \_\_\_\_\_ model will fit the data we gather best because ...

**4. Grab a computer:**

- a. Log in to Desmos.
- b. Create a scatterplot and PAUSE to discuss the following:

***What type of function could we use to model the data?***

**Resource Manager:** Call over Ms. Burke to share your group's thinking and to get instructions for the next steps.

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**5. Revisit and revise your conjecture:** Revisit your conjecture with partner before writing. Was it accurate? How would you change it based on what you know now?



Name: \_\_\_\_\_

Umont Tu, Walparr 7th  
Ermilb Barrot

Period: 5

## Cutting Corners

### Group Product

**Facilitator:** Read your job description and be sure to follow it!

**Recorder/Reporter:** Your job is to record your group's responses to the following.

1. Use the regression feature to find a function to model the data.
2. Copy down the equation that best fits your data.

$$y_1 \sim ax_1^3 + bx_1^2 + cx_1 + d$$

3. Use your model to find the maximum volume of the box.

The maximum is  $748 \text{ cm}^3$

4. What size cut from each corner should be used in order to maximize the volume?

4 size cut

5. What are the x-intercepts? Interpret the meaning of each in the context of this situation.

$0, 0$  and  $9.5, 0$ , also  $12.5, 0$   
means that the certain cut size will have no volume

6. What are the possible values for the height of the box? Why does that make sense?

2, 3, 4, 5, 6, 7, 8, 9 it makes sense  
because that's how much you're cutting away  
height

Name: \_\_\_\_\_

Period: \_\_\_\_\_

7. What part of this worksheet was easiest for your group?

entering the regression lines

8. Where did your group struggle the most?

thinking about the possible height values

Name: \_\_\_\_\_

Period: \_\_\_\_\_

## Cutting Corners

### Group Product

**Facilitator:** Read your job description and be sure to follow it!

**Recorder/Reporter:** Your job is to record your group's responses to the following.

1. Use the regression feature to find a function to model the data.
2. Copy down the equation that best fits your data.

$$y_1 \sim ax^{\frac{3}{5}} + bx^{\frac{2}{1}} + cx + d$$

3. Use your model to find the maximum volume of the box.

$$748 \text{ cm}^3$$

4. What size cut from each corner should be used in order to maximize the volume?

4 size cut

5. What are the x-intercepts? Interpret the meaning of each in the context of this situation.  $(-2.638, 0)$ ,  $(9.26, 0)$   $(24.411, 0)$

6. What are the possible values for the height of the box? Why does that make sense?

$(2, 798)$ , of the height of the box

Name: \_\_\_\_\_

Period: \_\_\_\_\_

7. What part of this worksheet was easiest for your group?

8. Where did your group struggle the most?

10/10

Name: \_

Period: 5

## Cutting Corners

### Group Product

**Facilitator:** Read your job description and be sure to follow it!

**Recorder/Reporter:** Your job is to record your group's responses to the following.

1. Use the regression feature to find a function to model the data.

2. Copy down the equation that best fits your data.

$$y_1 \sim ax^3 + bx^2 + cx + d$$
$$y_1 \sim (1.0303)x^3 + (-32)x^2 + (41.47)x + (46.6)$$

3. Use your model to find the maximum volume of the box.

4. What size cut from each corner should be used in order to maximize the volume?

5. What are the x-intercepts? Interpret the meaning of each in the context of this situation.

6. What are the possible values for the height of the box? Why does that make sense?

Name: \_\_\_\_\_

Period: \_\_\_\_\_

7. What part of this worksheet was easiest for your group?

8. Where did your group struggle the most?

## Cutting Corners

### Group Product

**Facilitator:** Read your job description and be sure to follow it!

**Recorder/Reporter:** Your job is to record your group's responses to the following.

1. Use the regression feature to find a function to model the data.

*Cubic function*

2. Copy down the equation that best fits your data.

$$y_1 \sim 1.0303x_1^3 + (-32)x_1^2 + 141.97x_1 + 616$$

3. Use your model to find the maximum volume of the box.

*The maximum volume according to the model is about 780.*

4. What size cut from each corner should be used in order to maximize the volume?

*2 cm.*

5. What are the x-intercepts? Interpret the meaning of each in the context of this situation.

*(9.286, 0)*

*When the cut size is 9.286 cm, the volume will be 0.*

6. What are the possible values for the height of the box? Why does that make sense?

Name: \_\_\_\_\_

Period: \_\_\_\_\_

7. What part of this worksheet was easiest for your group?

8. Where did your group struggle the most?



Name: \_\_\_\_\_

Period: 5

## Cutting Corners

### Group Product

**Facilitator:** Read your job description and be sure to follow it!

**Recorder/Reporter:** Your job is to record your group's responses to the following.

1. Use the regression feature to find a function to model the data.

$$y_1 \sim ax_1^2 + bx_1 + c$$

2. Copy down the equation that best fits your data.

$$y_1 \sim ax_1^3 + bx_1^2 + cx_1 + d$$

3. Use your model to find the maximum volume of the box.
4. What size cut from each corner should be used in order to maximize the volume?
5. What are the x-intercepts? Interpret the meaning of each in the context of this situation.
6. What are the possible values for the height of the box? Why does that make sense?

Name: \_\_\_\_\_

Period: 5

## Cutting Corners

### Group Product

**Facilitator:** Read your job description and be sure to follow it!

**Recorder/Reporter:** Your job is to record your group's responses to the following.

1. Use the regression feature to find a function to model the data.

~~$y = ax^3 + bx^2 + cx + d$~~   $a = 1.0303$   $b = -32$   $c = 141.97$   $d = 616$

2. Copy down the equation that best fits your data.

$$y_1 \sim ax^3 + bx^2 + cx + d$$

3. Use your model to find the maximum volume of the box.

2,798 is the maximum volume of a box

4. What size cut from each corner should be used in order to maximize the volume?

1 cm is going to maximize the volume b/c the pattern we found was the smaller the cut, the greater the SA.

5. What are the x-intercepts? Interpret the meaning of each in the context of this situation. (9, 286.0)

6. What are the possible values for the height of the box? Why does that make sense?

Name: \_\_\_\_\_

Period: 5

## Cutting Corners

### Group Product

**Facilitator:** Read your job description and be sure to follow it!

**Recorder/Reporter:** Your job is to record your group's responses to the following.

1. Use the regression feature to find a function to model the data.

$$a = 1.0303 \quad b = -32 \quad c = 141.97 \quad d = 616$$

2. Copy down the equation that best fits your data.

$$y_1 \sim ax_1^3 + bx_1^2 + cx_1 + d$$

3. Use your model to find the maximum volume of the box.

798 is the maximum volume of the Box.

4. What size cut from each corner should be used in order to maximize the volume?

1 cm is going to maximize the volume more

5. What are the x-intercepts? Interpret the meaning of each in the context of this situation.

The x-intercept is 9.286 meaning the volume is  $0 \text{ cm}^3$

6. What are the possible values for the height of the box? Why does that make sense?

Name: \_\_\_\_\_

Period: \_\_\_\_\_

## Cutting Corners

### Group Product

**Facilitator:** Read your job description and be sure to follow it!

**Recorder/Reporter:** Your job is to record your group's responses to the following.

1. Use the regression feature to find a function to model the data.
2. Copy down the equation that best fits your data.

$$y_1 \sim ax_1^3 + bx_1^2 + cx_1 + d$$

cubic

3. Use your model to find the maximum volume of the box.

(2, 798)

4. What size cut from each corner should be used in order to maximize the volume?

Cut size 2

5. What are the x-intercepts? Interpret the meaning of each in the context of this situation.

(9.225, 0)

highest

6. What are the possible values for the height of the box? Why does that make sense?

Name: \_

Period: 5<sup>o</sup>

## Cutting Corners

### Group Product

**Facilitator:** Read your job description and be sure to follow it!

**Recorder/Reporter:** Your job is to record your group's responses to the following.

1. Use the regression feature to find a function to model the data.
2. Copy down the equation that best fits your data.

$$Y_1 \sim ax^2 + bx + c$$

$$a = -15 \quad c = 735$$
$$b = 58$$

3. Use your model to find the maximum volume of the box.

$$791.067$$

4. What size cut from each corner should be used in order to maximize the volume?

$$1.933$$

5. What are the x-intercepts? Interpret the meaning of each in the context of this situation.

The x-intercept means if you cut  $9.195 \times 9.195$  the volume will be zero.

6. What are the possible values for the height of the box? Why does that make sense?

Cut size = height of the box

Name: \_\_\_\_\_

Period: \_\_\_\_\_

7. What part of this worksheet was easiest for your group?

plugging in the equation

8. Where did your group struggle the most?

Name: \_\_\_\_\_

Period: 5

## Cutting Corners

### Group Product

**Facilitator:** Read your job description and be sure to follow it!

**Recorder/Reporter:** Your job is to record your group's responses to the following.

1. Use the regression feature to find a function to model the data.
2. Copy down the equation that best fits your data.

$$Y_1 \sim ax_1^2 + bx_1 + c$$

$$a = -15$$

$$b = 58 \quad c = 735$$

3. Use your model to find the maximum volume of the box.

$$791.067$$

4. What size cut from each corner should be used in order to maximize the volume?

$$1.933$$

5. What are the x-intercepts? Interpret the meaning of each in the context of this situation.

The x-intercept means if you cut  $9.195 \times 9.995$  the volume will be zero.

6. What are the possible values for the height of the box? Why does that make sense?

$$\text{Cut size} = \text{Height of the Box}$$

Name: \_\_\_\_\_

Period: \_\_\_\_\_

7. What part of this worksheet was easiest for your group?

The equation was the easiest for my group since we looked it up.

8. Where did your group struggle the most?

The  $x$ -Intercepts because we were temporarily off track.



Name: \_\_\_\_\_

Period: \_\_\_\_\_

## Cutting Corners

### Group Product

**Facilitator:** Read your job description and be sure to follow it!

**Recorder/Reporter:** Your job is to record your group's responses to the following.

1. Use the regression feature to find a function to model the data.

2. Copy down the equation that best fits your data.

$$y_1 \sim mx_1^2 + d$$

3. Use your model to find the maximum volume of the box.

4. What size cut from each corner should be used in order to maximize the volume?

2 by 2

5. What are the x-intercepts? Interpret the meaning of each in the context of this situation.

6. What are the possible values for the height of the box? Why does that make sense?

Name: \_\_\_\_\_

Period: \_\_\_\_\_

## ***Cutting Corners***

### **Group Product**

**Facilitator:** Read your job description and be sure to follow it!

**Recorder/Reporter:** Your job is to record your group's responses to the following.

1. Use the regression feature to find a function to model the data.
2. Copy down the equation that best fits your data.
3. Use your model to find the maximum volume of the box.
4. What size cut from each corner should be used in order to maximize the volume?
5. What are the  $x$ -intercepts? Interpret the meaning of each in the context of this situation.
6. What are the possible values for the height of the box? Why does that make sense?