

# Preparation Notes

Please review and customize this deck to prepare it for use. Some notes:

- These professional learning (PL) materials (slide deck and accompanying handout) are being offered in editable forms so that you may make adjustments to better support the specific work happening in your school or district.
- These PL materials are designed to easily accommodate remote delivery:
  - A [Jamboard template](#) is provided to facilitate discussion of student work; the facilitator will need to make a copy of this and be ready to share the link with participants as noted in the deck.
  - Text that can be readily pasted (marked with “—”) into a video call chat feature is included when participants need to reference the handout.
  - There are placeholders for handout links to be shared with participants in the notes field of selected slides; the facilitator will need to add a link to the handout where indicated by “[insert link].”

# M104 Overview

**XQ Badge Project PL Series Baseline  
Session**

Month XX, XXXX

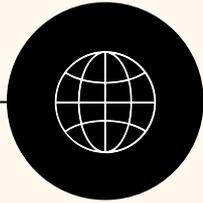


Welcome!

**Community Builder:**

Write a “tweet” in 140 characters or less to describe a moment/interaction that pushed your teaching practice. Get ready to share!

# Outcomes and Agenda



## Participants will be able to:

- Explain the content and practice expectations for the M104 badge
- Analyze tasks through the lenses of (1) content and practice expectations and (2) learning principles
- Analyze student work for evidence of learning

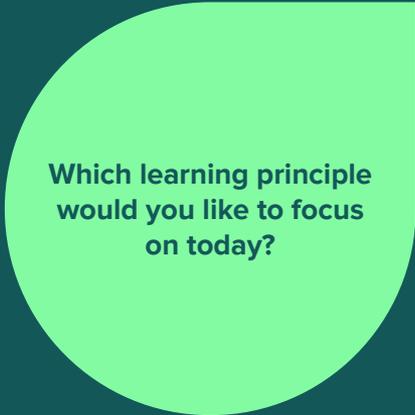


## Agenda:

- Exploring the Content
- Task 1: Expectations and Learning Principles
- Task 1: Student Work
- Task 2: Expectations and Learning Principles
- Task 2: Student Work
- Closing

# Learning Principles

1. Engage with cognitively demanding tasks in heterogeneous settings.
2. Engage in social activities.
3. Build conceptual understanding through reasoning.
4. Have agency in their learning.
5. View mathematics as a human endeavor across centuries.
6. See mathematics as relevant.
7. Employ technology as a tool for problem-solving and understanding.



**Which learning principle  
would you like to focus  
on today?**

01

# Exploring the Content

What comes to mind?  
What knowledge and skills  
should students learn to  
earn this badge?



**Come off mute  
or put your  
thoughts in the  
chat!**

# What's the Story of these Standards?

## Selected Common Core Standards for Mathematics High School – Functions

### Understand the concept of a function and use function notation

1. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If  $f$  is a function and  $x$  is an element of its domain, then  $f(x)$  denotes the output of  $f$  corresponding to the input  $x$ . The graph of  $f$  is the graph of the equation  $y = f(x)$
2. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.

### Interpret functions that arise in applications in terms of the context

1. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; and behavior; and periodicity
2. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function  $h(n)$  gives the number of person-hours it takes to assemble  $n$  engines in a factory, then the positive integers would be an appropriate domain for the function.
3. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.

**How would you synthesize these?  
What are the key takeaways  
for students?**

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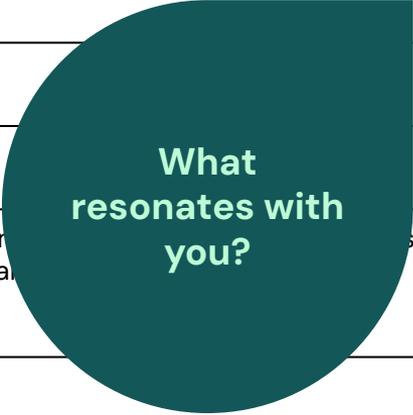
**Share your thinking!**

# M104 Content and Practice Expectations (CPE)

104.a	Engage in the modeling cycle.
104.b	Interpret exponential functions that arise in applications in terms of the context.
104.c	Analyze exponential functions using different representations.
104.d	Build an exponential function that models a relationship between two quantities.
104.e	Construct and compare linear and exponential models and solve problems to draw conclusions.
104.f	Interpret expressions for exponential functions in terms of the situation they model.
104.g	Summarize, represent, and interpret data on two quantitative variables for linear and exponential model fits. In this badge, students are encouraged to investigate patterns of association in bivariate data, which includes the informal description of the fit of the curve and addresses the usefulness of the model for the particular context.
104.h	Understand the relevance of modeling with exponential functions.
104.i	Use a functions of exponential type model to determine values of interest in a real-world problem.

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104.g	Summarize, represent, and interpret data on two quantitative variables for linear and exponential models. Students are encouraged to investigate patterns of association in bivariate data, which includes the information about the model's fit, the curve and addresses the usefulness of the model for the particular context.
104.h	Understand the relevance of modeling with exponential functions.
104.i	Use a functions of exponential type model to determine values of interest in a real-world problem.



What  
resonates with  
you?

# M104 Content and Practice Expectations and Indicators

Content and Practice Expectations	Indicators Choose an artifact where you...
104.a: Engage in the modeling cycle (performance assessment).	i. engage with the full modeling cycle (problem, formulate, compute, interpret, validate, revise as necessary, report).
104.b: Interpret exponential functions that arise in applications in terms of the context.	i. select two different data points that illustrate something interesting or important about the context you are modeling and describe what these points tell you about the topic.
	ii. use a model to compute output values and then interpret the values in the context of the problem.
	iii. describe the domain of the exponential function, including anything noticed about values that are not part of the domain or why the shape of the model might change for particular values of the domain.
	iv. describe the contextual meaning of the average rate of change between two points for an exponential function.



What new  
insights do you  
have?

# Let's Investigate

Choose at least one task to explore:

- Lake Algae
- Interesting Interest Rates

Which content and practice expectations are evident in each one?

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Choose at least one task to explore:

- Lake Algae
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Which content and practice expectations are evident in each one?

**Come off mute  
or put your  
thoughts in the  
chat! What did  
you find?**

# What's the Same?

# What's Different?

1. How do these content and practice expectations align to ways you've taught this topic before?
2. How are they different?

**Come off mute  
or put your  
thoughts in the  
chat!**

# Inequity Is our Reality

**About**

60%

of community college students and 40 percent of four-year students are placed into non-credit bearing developmental mathematics (Ganga et al., 2018)

**Only**

33%

of community college students complete the developmental math sequence. Only 20 percent complete a college-level math course over three years (Bailey, Jeong, & Cho, 2010).

# We Must Lead the Movement

How can this approach give space for what math can be?

## Is math...?

- About getting one right answer, the teacher's way
- Irrelevant
- About doing procedures
- Independent work
- Something my teacher made up
- Formulaic

## Or could be math...?

- About using multiple strategies flexibly
- Connected to the real-world in ways that make sense
- About understanding and applying
- Collaborative work
- Lived across continents and centuries
- Novel, challenging problems

02

# Task 1: Expectations and Learning Principles

# Let's Do Some Math!

The original Superman movie came out in 1978 and made about \$300 million at the box office. If the yearly inflation rate is about 4%, how much money would this be equivalent to in 2022?

**Do the task as a student would. Jot down any reflections that you have as you do the math!**

# Content and Practice Expectations

The original Superman movie came out in 1978 and made about \$300 million at the box office. If the yearly inflation rate is about 4%, how much money would this be equivalent to in 2022?

Choose 1–2 Content and Practice Expectations that student work could give evidence of.

# Content and Practice Expectations

The original Superman movie came out in 1978 and made about \$300 million at the box office. If the yearly inflation rate is about 4%, how much money would this be equivalent to in 2022?

**104.i:** Use a function of exponential type I to determine values of interest in a real-world problem.

# Learning Principles

**In M104 Modeling with Functions of Exponential Type, students will employ the following learning principles:**

- Engage with cognitively demanding tasks in heterogeneous settings (LP 1).
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**Which of these principles does this task lend itself to? Which ones can the task be easily adapted to accommodate?**

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**Share what  
you came up  
with!**

03

# Task 1: Student Work

# What is the impact of our labels?

“Undoing the harms of ability labeling is not just an issue of changing our language or implementing a standardized set of “best practices” or policies. It requires sustained action and ongoing learning at every level of our educational system, from individual classrooms to schools, school districts, universities, regions, states/provinces, and the nation. Many curricula, assessments, and instructional practices reproduce stratification—labeling students, their problem-solving strategies, and the learning opportunities they should receive on a scale from “remedial” to “sophisticated” (e.g., test score categories, systems for grouping students based on perceived ability, and strategies for sequencing student work for mathematical discussions).”

–National Council of Teachers of Mathematics

# Round 1: What do you notice?

## Jot down

- One thing you notice about each piece of student work.

1 2 3 4 5 6 7

TASK: The original Superman movie came out in 1978 and made about \$300 million at the box office. If the yearly inflation rate is about 4%, how much money would this be equivalent to in 2022?



1. What questions come to mind you read the task?  
**How many years is that? How much was a movie ticket then? What exactly is inflation? Is there an equation or formula for inflation rate I can use? What was the inflation rate in 1978?**

2. What could you use to help figure this out? Table, equation, Desmos, etc?  
**Maybe a table but prefer an equation. I googled and found a formula but not sure it's correct. I could use a table with x being number of years and Y being  $4\% \times 300$  million but not sure. I thought about using an inflation calculator.  $(4\% \text{ of } 300 \text{ million}) * 44$ .**

3. Demonstrate your understanding by solving the task using the model(s) you mentioned in number 2.  
**I think I need to multiply 300 million by the inflation rate 44 times or the 44th power.  $300 \times (4\% + 1)^{44}$ ?**

XQ Title of Presentation 27

# Round 1: What do you notice?

## Jot down

- One thing you notice about each piece of student work.

**Come off mute  
and share what  
you saw!**

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1. What questions come to mind you read the task?

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**I think I need to multiply 300 million by the inflation rate 44 times or the 44th power.  $300 \times (4\% + 1)^{44}$ ?**

# Criteria for Success

<b>Conference and Provide Revision Support</b>	<b>Accept with Revision</b>	<b>Accept</b>
<p>The student's artifact shows an emerging understanding of the expectations of the indicator(s). After conferencing and additional instruction/learning, the student may provide a revised or different artifact as evidence of the indicator(s).</p>	<p>The student's artifact is approaching a full understanding of the expectations of the indicator(s). The artifact may contain execution errors that should be corrected in revision. The student may revise the selected artifact or submit a different artifact.</p>	<p>The student's artifact demonstrates evidence that they have met the expectations of the indicator(s).</p>

**What resonates with you? What questions surface for you?**

# Humanizing Assessment

Project-based learning, performance assessment, and discussion-based classrooms, on the other hand, create an infrastructure for students to explore, construct, reflect on, and publicly demonstrate knowledge. Students become agents in their own learning rather than consumers of curriculum. (Safir and Dugan, 2021, p. 102)

Source: Safir, Shane, and Jamila Dugan. *Street Data: A Next-Generation Model for Equity, Pedagogy, and School Transformation*. Corwin, 2021.

# Round 2: What evidence of learning is there?

**104.i: Use a function of exponential type to determine values of interest in a real-world problem.**

## Let's examine some work together:

### **Conference and Provide Revision Support**

The student's artifact shows evidence of an emerging understanding of the expectations of the indicator(s). After conferencing and additional instruction/learning, the student may provide a revised or different artifact as evidence of the indicator(s).

### **Accept with Revision**

The student's artifact shows evidence of approaching a full understanding of the expectations of the indicator(s). The artifact may contain execution errors that should be corrected in revision. The student may revise the selected artifact or submit a different artifact.

### **Accept**

The student's artifact demonstrates evidence that they have met the expectations of the indicator(s).

# Examining Student Work

The image shows a digital workspace interface for reviewing student work. At the top, there are three buttons: "Conference and Provide Revision Support", "Accept with Revision", and "Accept". On the left side, there is a vertical toolbar with several icons: a pencil, an eraser, a mouse cursor, a document icon (highlighted with a red circle and a red arrow), a photo icon, a circle icon, a text box icon, and a scissors icon. In the center of the workspace, there is a large red callout bubble with the text "Put your thoughts on the Jamboard!". In the bottom right corner, there is a red circular badge with the text "Work Sample 1".

# Example #1

TASK: The original Superman movie came out in 1978 and made about \$300 million at the box office. If the yearly inflation rate is about 4%, how much money would this be equivalent to in 2022?



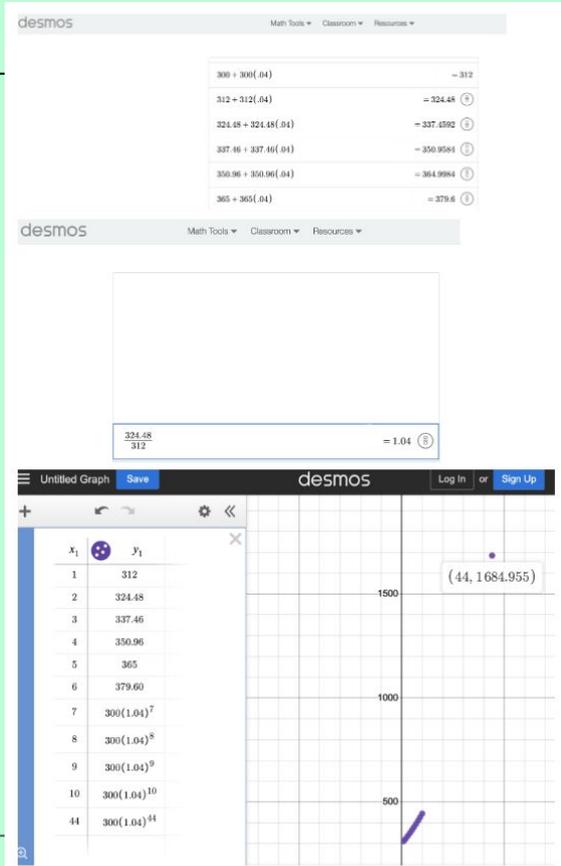
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2. What could you use to help figure this out? Table, equation, Desmos, etc?  
**Maybe a table but prefer an equation. I googled and found a formula but not it's correct. I could use a table with x being number of years and Y being 4% million but not sure. I thought about using an inflation calculator. (4% of 300 million) \*44.**

3. Demonstrate your understanding by solving the task using the model(s) you mentioned in number 2.  
**I think I need to multiply 300 million by the inflation rate 44 times or the 44th power.  $300 \times (4\% + 1)^{44}$ ?**

Let's compare notes.

# Example #2



## Model Expression:

$$y = 300(1.04)^x$$

In 2022, according to my table and substituting in 44 (because I made 1978 the number 1) the \$300 million from 1978 will be equivalent to approximately \$1,685,000,000.

What questions arose as you were working on this task?

How should I scale my years? Did I make sure to express the money in millions?  
What was my initial value? At what rate was this model growing?

Do you think your model is reasonable?

Yes, it seems to grow larger with each year.

How can you take this task and apply it to your own work?

If something is growing each year based on the year before it, faster than if just based on the initial year.

Let's compare notes.

# Example #3

## Equation

$(3000000 \times 4$  to the power of 44

Between 1978-2022 there are 44 years. The question is asking how much money would be equivalent to the year 22 and the movie came out in 1978. I feel if we multiply the 4% inflation rate by 3M which is the amount made, than we would get an accurate amount of 1200. This makes sense because 3 and 4 make 12. So if we added 4 percent each year for 44 years, I feel we could get pretty close to 9.284 repeating. All I did was take the 3M and multiplied it to 4 to the power of 44 which is the amount of years. It could adobe close to 12 million.

Handwritten notes on lined paper showing calculations and a list of values from 1978 to 2022.

1978  
300mil  
yearly is 4%  
2022 =  
44 years ago  
1100 a year  
42400 = 2023  
3,048,400  
2022 = 3,048,400

1978 - 2022 = -44  
44 ÷ 4% = 1100  
44 × 1100 = 48,400  
3000000 × 1100 = 3300000000  
48,400  
3048400

1100 × 4% = 440  
440 × 4% = 176  
176 × 4% = 70.4  
70.4 × 4% = 28.16

2022 = 3,048,400

1979 312  
1980 324.48  
1981 337.4592  
1982 350.957568  
1983 364.9958707  
1984 379.5957055  
1985 394.7795338  
1986 410.5707151  
1987 426.9935437  
1988 444.0732855  
1989 461.8362169  
1999 480.3096656

1999 - 499,5770572  
2000 - 519,5079343  
2001 - 540,283051672  
2002 - 561,89437373288  
2003 - 584,37014868843  
2004 - 607,74495463597  
2005 - 632,05475282141  
2006 - 657,33694293476  
2007 - 683,63047065163  
2008 - 710,97563747770  
2009 - 739,411466297621  
2010 - 768,9912499588  
2011 - 799,75089941572  
2012 - 831,74093545474  
2013 - 865,01057287293  
2014 - 899,61099578785  
2015 - 935,59543561937  
2016 - 973,01925304414  
2017 - 1,011,9400231659  
2018 - 1,052,4176240925  
2019 - 1,094,5143290562  
2020 - 1,138,2949022184  
2021 - 1,183,8266983072  
2022 - 1,231,1797662395

Let's compare notes.

# Three Key Components of the Math Badging System

- Content and Practice Expectations
- Learning Principles
- Criteria for Success

Which one excites you the most?

What one will have the greatest impact on students?

What questions surface for you?



**Come off  
mute or share in  
the chat!**

04

# Task 2: Expectations and Learning Principles

# Let's Do Some Math!

2. The chart below shows data related to COVID-19 infections in three ZIP codes in April of 2020.

COVID-19 Infections in Three ZIP Codes

ZIP Code	Number of Infections (4/9/20)	Rate of Increase (4/2/20 - 4/9/20)
10025	343	5.6%
10029	462	26.4%
10035	56	3.2%

Imagine that you work as a city administrator and need to make a prediction of the number of infections in these ZIP codes in July 2020. Be sure to be ready to explain your thinking and rationale.

**Do the task as a student would. Jot down any reflections that you have as you do the math!**

# Content and Practice Expectations

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**104.i: Use a functions of exponential type model to determine values of interest in a real-world problem.**

# Learning Principles

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**Share what  
you came up  
with!**

05

# Task 2: Student Work

# Round 1: What do you notice?

## Jot down

- One thing you notice about each piece of student work.

When the coronavirus came to the United States, we developed a new mantra: "Flatten the curve." The goal was to stem the runaway exponential growth in infections, in that way preventing hospitals from becoming overrun.

### TASK:

You are given a table that shows the number of positive COVID-19 cases and the weekly rate of increase of infections for different US ZIP codes in April 2020:

ZIP Code	Number of Infections	Rate of Increase (4/2/20 - 4/9/20)
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- What do you notice about the table above? What questions come to mind?  
*How many weeks are between 4/9 2020 and July 2020?  
What is the population of each zip code?*
- Imagine that you work as a city administrator and need to make a prediction of the number of infections in these ZIP codes in July 2020. Would you use an equation, a table, google sheets, etc to help you do this?
- Look at the table below and use the equation we discussed to measure exponential growth and complete the chart.

10025 Equation:  $y = 343(1 + 0.056)^x$       10029 Equation:  $y = 462(1 + 0.264)^x$       10035 Equation:  $y = 56(1 + 0.032)^x$

Week of...	Number of infections	Week of...	Number of infections	Week of	Number of Infections
0 4/2 to 4/9	343	4/2 to 4/9	462	4/2 to 4/9	56
1 4/10 to 4/16	362	4/10 to 4/16	583	4/10 to 4/16	57
2 4/17 to 4/23	382	4/17 to 4/23	735	4/17 to 4/23	58
3 4/24 to 4/30	403	4/24 to 4/30	930	4/24 to 4/30	59
12 July	659	July	2,689	July	82

- What impact does this chart have on this state - New York?  
*Why did 10029 have a lot of infected but 10035 had barely any?  
What precautions did that city take?  
What age were the majority of the people?*

# Round 1: What do you notice?

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Come off mute and share what you saw!

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- Imagine that you work as a city administrator and need to make a prediction of the number of infections in these ZIP codes in July 2020. Would you use an equation, a table, google sheets, etc to help you do this?
- Look at the table below and use the equation we discussed to measure exponential growth and complete the chart.

10025 Equation:  $y = 343(1 + 0.056)^x$       10029 Equation:  $y = 462(1 + 0.264)^x$       10035 Equation:  $y = 56(1 + 0.032)^x$

Week of...	Number of infections	Week of...	Number of infections	Week of	Number of infections
0 4/2 to 4/9	343	4/2 to 4/9	462	4/2 to 4/9	56
1 4/10 to 4/16	362	4/10 to 4/16	583	4/10 to 4/16	57
2 4/17 to 4/23	382	4/17 to 4/23	736	4/17 to 4/23	58
3 4/24 to 4/30	403	4/24 to 4/30	930	4/24 to 4/30	59
12 July	659	July	2,684	July	82

- What impact does this chart have on this State - New York?  
*Why did 10029 have a lot of infected but 10035 had barely any?  
What precautions did that city take?  
What age were the majority of the people?*

# Round 2: What evidence of learning is there?

**104.i: Use a functions of exponential type model to determine values of interest in a real-world problem.**

## Let's examine some work together:

### **Conference and Provide Revision Support**

The student's artifact shows evidence of an emerging understanding of the expectations of the indicator(s). After conferencing and additional instruction/learning, the student may provide a revised or different artifact as evidence of the indicator(s).

### **Accept with Revision**

The student's artifact shows evidence of approaching a full understanding of the expectations of the indicator(s). The artifact may contain execution errors that should be corrected in revision. The student may revise the selected artifact or submit a different artifact.

### **Accept**

The student's artifact demonstrates evidence that they have met the expectations of the indicator(s).

# Examining Student Work

The image shows a digital workspace interface for reviewing student work. At the top, there are three buttons: "Conference and Provide Revision Support", "Accept with Revision", and "Accept". On the left side, there is a vertical toolbar with several icons: a pencil, an eraser, a mouse cursor, a document icon (highlighted with a red circle and a red arrow), a photo icon, a circle icon, a text box icon, and a scissors icon. In the center of the workspace, there is a large red callout bubble with the text "Put your thoughts on the Jamboard!". In the bottom right corner, there is a red circular badge labeled "Work Sample 1".

# Example #1

When the coronavirus came to the United States, we developed a new mantra: "Flatten the curve." The goal was to stem the runaway exponential growth in infections, in that way preventing hospitals from becoming overrun.

TASK:

You are given a table that shows the number of positive COVID-19 cases and the weekly rate of increase of infections for different US ZIP codes in April 2020:

ZIP Code	Number of Infections	Rate of Increase (4/2/20 - 4/9/20)
10025	343	5.6%
10029	462	26.4%
10035	56	3.2%

1. What do you notice about the table above? What questions come to mind?  
*How many weeks are between 4/9 2020 and July 2020?  
 What is the population of each zip code?*
2. Imagine that you work as a city administrator and need to make a prediction of the number of infections in these ZIP codes in July 2020. Would you use an equation, a table, google sheets, etc to help you do this?
3. Look at the table below and use the equation we discussed to measure exponential growth and complete the chart.

10025 Equation:  $y = 343(1 + 0.056)^x$       10029 Equation:  $y = 462(1 + 0.264)^x$       10035 Equation:  $y = 56(1 + 0.032)^x$

	Week of...	Number of Infections	Week of...	Number of Infections	Week of	Number Infections
0	4/2 to 4/9	343	4/2 to 4/9	462	4/2 to 4/9	56
1	4/10 to 4/16	362	4/10 to 4/16	583	4/10 to 4/16	57
2	4/17 to 4/23	382	4/17 to 4/23	736	4/17 to 4/23	58
3	4/24 to 4/30	403	4/24 to 4/30	930	4/24 to 4/30	59
12	July	659	July	7,684	July	82

4. What impact does this chart have on this State - New York?  
*Why did 10029 have a lot of infected but 10035 had barely any.  
 What precautions did that city take?  
 What age were the majority of the people?*

Let's norm our feedback

# Example #2

## COVID CASES IN NEW YORK

We are going to track Covid cases in NY using Google Sheets. Please fill in the table below, and use an exponential equation to generate values on a Google Sheet. The initial number of infections is given for each location, along with the rate of increase.

Week	10025 Rate of Increase: 5.6%	10029 Rate of Increase: 26.4%	10035 Rate of Increase: 3.2%
0-4/2	343	462	56
1-4/9	$343(1+.056)^1$	584	58
2-4/16	404	738	60
3-4/23	427	933	62
4-4/30	450	1179	64
5-5/7	475	1498	66
Algebraic Equation:	$y = 343(1+.056)^x$	$y = 462(1+.264)^x$	$y = 56(1+.032)^x$
Google Sheets Equation:	$343 * 1.056^x$		

What will the number of infections will be on July 1, 2020, in each of these three locations?

10025: 698

10029: 2713

10035: 87

\*\*\*\*Please attach a screenshot of your Google Sheet on the assignment in Google Classroom showing the values that you generated.\*\*\*\*

## REFLECTION

Please answer each question in complete sentences.

Use online search tools to locate census data to learn more about these ZIP codes. What do you notice or wonder about each of these 3 locations?

10025: 24,600 people live here

10029: 76,003 people live here

10035: 33,969 people live here

Look up the actual rate of infection in each ZIP code on July 1, 2020. How accurate was your model? How would you change it? What additional assumptions or parameters might have caused the model to change?

10025:

10029:

10035:

What does the work you have done suggest about the need to have people who are constantly studying data and refining models as part of their work?

Because it's difficult but needed. It shows patterns that allow us to steer to specific people.

What additional questions surface for you as a result of the work above?

Why do we do it? Why is it hard?

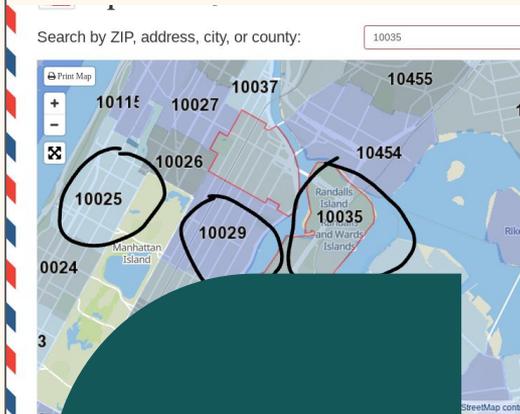
How could the work you have done be used to inform policymakers, such as health or government officials?

It could show them conditions true affect on us.

A	B	C	D	E
WEEK #	WEEK DATE	ZIP: 10025	ZIP: 10029	ZIP: 10035
0	4/2	343	462	56
1	4/9	362.208	583.968	57.792
2	4/16	382.491648	738.135552	59.641344
3	4/23	403.9111803	933.0033377	61.54986701
4	4/30	426.5302064	1179.316219	63.51946275
5	5/7	450.4158979	1490.655701	65.55208556
6	5/14	475.6391882	1884.188806	67.6497523
7	5/21	502.2749828	2381.61465	69.81454437
8	5/28	530.4023818	3010.360918	72.04860979
9	6/4	560.1049152	3805.0962	74.35416531
10	6/11	591.4707904	4809.641597	76.73349859
11	6/18	624.5931547	6079.386979	79.18897055
12	6/25	659.5703714	7684.345141	81.72301761
13	7/2	696.5063122	9713.012259	84.33815417
14	7/9	735.5106656	12277.2475	87.0369751
15	7/16	776.6992629	15518.44083	89.82215831

Let's norm our feedback

# Example #3



Let's norm our feedback

What if we lived in New York during the COVID outbreak?

1. What assumptions can you make about the rate of infection globally, during these dates?  
They went up by a lot, and the rate of cases were going up.
2. What assumptions can you make about the difference between New York's infections compared to ours? There is way more people in New York than Paris.
3. Search the three zip codes provided, where are they? Use online search tools to describe the demographic differences and similarities between the four zip codes.  
  - 94,600 - 10025 - NY, W of Manhattan, heavily populated, old buildings
  - 76,003 - 10029 - NY, E Harlem, very populated, Apartments
  - 33,969 - 10035 - NY, populated, buildings, water around city
  - 23,660 - ID, Parma, a lot of land, not heavily populated
4. Will this be linear or exponential? What formula will you use?  
exponential, the rate will always change and go up by a lot

Week	10025	10029	10035	-83660
	# of infections	# of infections	# of infections	# of infections
4/2/2020	343	462	56	8.14
4/9/2020	362	583	57	6.16
4/16/2020	382	738	59	5
4/23/2020	404	933	61	4
4/30/2020	426	1179	63	9
5/7/2020	450	1490	65	2
7/1/2020	696	9713	84	48

5. Summarize and share your findings:  
10029 will overall have more cases than any other place. 10035 has the least amount of cases.
6. Look up the actual rate of infection in each ZIP code on July 1, 2020. How accurate was your model? How would you change it? What additional assumptions or parameters might have caused the model to change?  
My model was very accurate, the thing that I will change is to get the exact number.  
EX: 12.4 instead of 13
7. What does the work you have done suggest about the need to have people who are constantly studying data and refining models as part of their work?  
That one area is going to need more help than others.
8. What additional questions surface for you as a result of the work above?  
Why does one city have such a higher rate than the other one, when there close?
9. How could the work you have done be used to inform policymakers, such as health or government officials?  
because you can see the area that is going to have the biggest concern.

# Let's Hear Some Reflections

What kinds of support will students need to demonstrate evidence of learning?

Has your thinking changed at all on how to implement this task? If so, how?



**Come off  
mute or share in  
the chat!**

06

# Closing

# What Are Your Takeaways?

Choose one question to respond to:

1. Which content and practice expectation are you most excited about? Why?
2. Which learning principle are you most excited about connecting to M104 content? Why?
3. What impact do you think using a portfolio system will have on your students? Why?