LAUNCH NEBRASKA

Strengthening the Core: Remote Learning for Mathematics

Dec. 2, 2020

School Reentry: Foundational Values

Equity: We must ensure our students, especially those who have been historically underserved, maintain access to high quality teaching.

Quality: While flexibility and innovation must be pursued, we must not back down from our standards for quality.

Flexibility: We must pursue flexibilities in regulations and innovations to ensure students have access to high quality teaching.

Safety: Learning cannot occur if the school community does not feel safe in its environment

Decisive: Given the size and scope of the challenge, we must move deliberately and make tough choices. We will make mistakes, and we will adapt quickly as variables on the ground change.

Our Current Realities:

Schools are experiencing constant change.

Student learning environments are shifting between in-person and remote settings at different points throughout this fall.

It can be time consuming to prepare instruction for remote learning, and time is limited.

High-quality instructional materials support coherence and offer consistency as students move between remote and in-person learning scenarios.

Strengthening Core Instruction

- Professional learning sessions focused on strengthening core instruction for ***literacy***, ***mathematics***, and ***science*** to provide ***content-specific*** knowledge and skills related to remote instruction and essential instructional content.
- Complementary to previous Launch Nebraska Webinar Series.
- Each session be recorded and archived on the Launch Nebraska website (www.launchne.com).

Meet Greta Anderson

Current beach volleyball team- 2019 Best of Net champs for intermediate players!

- Illustrative Mathematics Facilitator and Consultant
- Based in New Orleans, LA
- 5th and 8th/Algebra I teacher from 2005-2015
- Fun fact: I was a college volleyball walk-on and earned Super Bench Support Player of the Year every year!

Before we get started...

- Use the Q & A feature if you have questions about technology or logistics
- Use "Chat All Panelists" or "Chat all Panelists and Attendees" when prompted to respond
- Go to "View Options" to exit full screen to access the links in your web browser
- Recorded session and this PPT deck will be available at www.launchne.com

Objectives

Participants will…

- Understand how remote learning impacts student cognition and engagement
- Identify effective strategies for **synchronous** remote instruction in three target areas:
  - Teacher Checks for Understanding and Misconceptions
  - Students Receive Feedback on Their Work
  - Students Own Their Learning

Our Mindset About Remote Learning

“We can choose to envision opportunities as challenges, or to envision challenges as opportunities.”

Why are we focusing on this content now?

- **Equity.** All of our students deserve access to engaging, at-grade-level instruction aligned to high quality instructional materials.
- **Increased remote learning.** Due to increases in COVID cases, we are seeing more school building closure and more teachers and school systems rolling over to remote learning.
- **A focus on essential content.** NDE has provided Essential Content resources to help educators focus their planning and instruction on the learning that matters most.

Agenda

Time	Task
5 minutes	Getting Started
20 minutes	Cognitive Science + Remote Learning Considerations
20 minutes	Analyzing a 2nd Grade Lesson
30 minutes	Planning a 7th Grade Lesson
10 minutes	Wrapping Up

Let's Hear From You

"Chat All Panelists":

- Which aspects of remote learning have been going well?
- Which aspect(s) of distance learning do you find most challenging or complex?

Let's Prepare

Doug Lemov

Managing Director of Uncommon Schools; author of "Teach Like a Champion"

As you watch the video, jot down:

- What key points and recommendations does he make?
- What resonates with you most? Why?

Let’s Watch

Video Debrief

“Chat All Panelists”:

- What key points and recommendations does he make?
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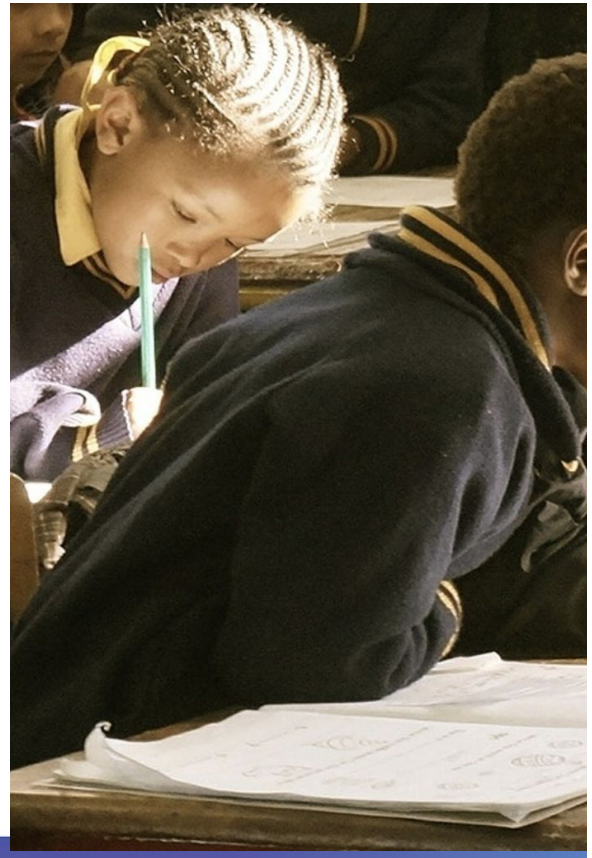
Key Points and Recommendations

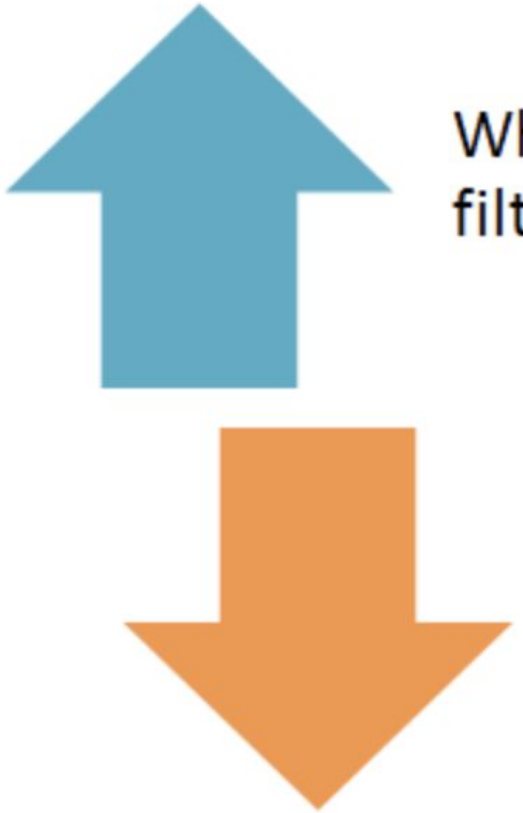
- **Short bursts** of information paired with opportunities for students to DO something with the content we are giving them
- Plan and structure lessons so that students are **always working**!
- Hold students **accountable** for doing the work in the lesson
- Provide opportunities for students to engage in **formative thinking**
- Collect formative data → **check for understanding** often!

Think About the Shift from a Student Perspective



Affective Filters

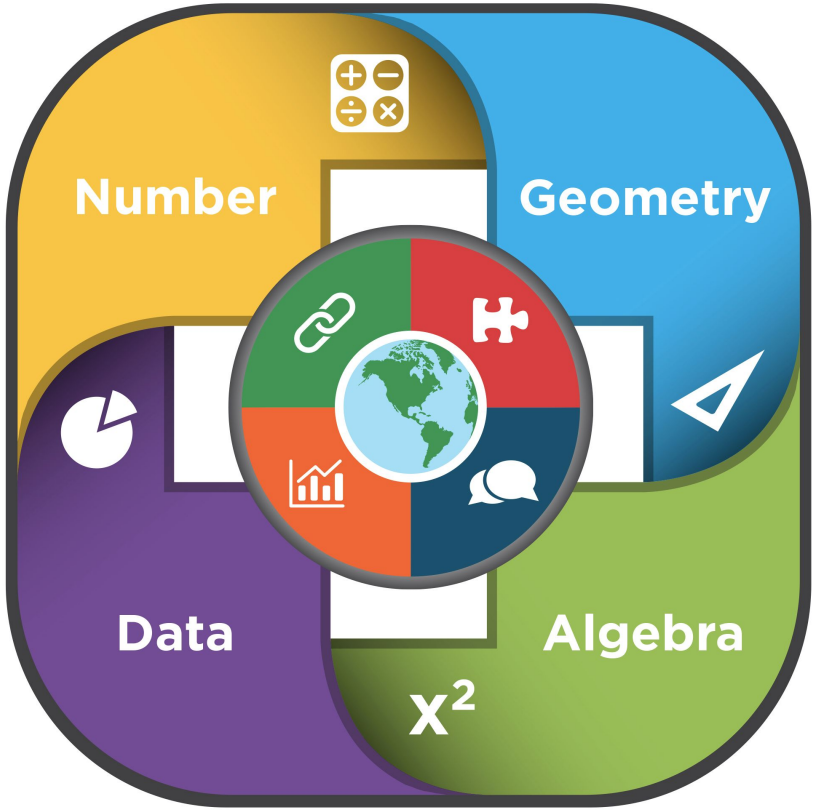
"The *affective filter* is a term made popular by Stephen Krashen, a famous American researcher on second language acquisition, during the 1980s. It is an attempt to describe how a **student's attitudes or emotional variables** can impact the success of learning a new language." --Rocio Figuero



What can we do to minimize this?

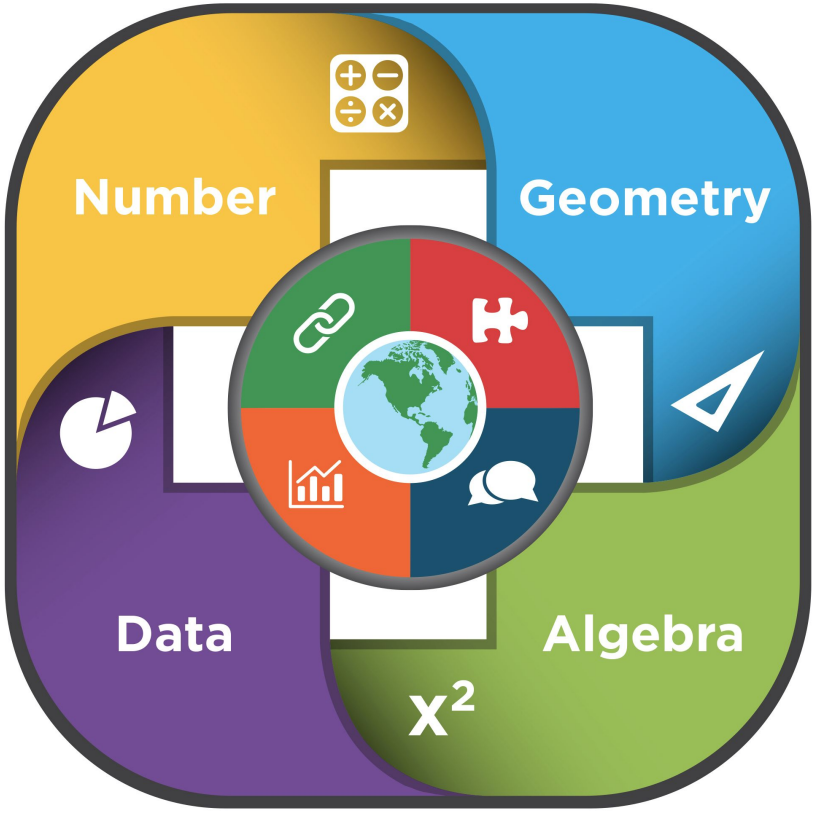
1. Recreate low stakes speaking opportunities
2. Avoid overcorrecting
3. “Celebrate failure” to promote a growth mindset
4. Build in “joy factor” and create time and space for students to have fun with their classmates

Now, let's talk math.



The Foundations of Our Work

Provide all students grade-level learning, regardless of their starting points.



Implement high-quality instructional materials to ensure all students have a coherent academic experience.

The Foundations of Our Work

Essential Content in Math

https://www.education.ne.gov/tl/essential-content-for-20-21/

- Consider the importance of coherence across and within grade levels in mathematics
- Use the NDE Essential Content guidance to keep the major of the work of the grade and pre-requisite standards clear.
- Connect ideas across mathematics domains and courses through using representations and asking students to connect their learning to a new concept/skill. Use "Just In Time" connections.

The Instructional Shifts in Mathematics

Mathematics

Adopted September 4, 2015

Instruction allows students to...	Key Instructional Shifts
Focus on fewer concepts	The ability to focus on fewer concepts at a grade level frees up time to go into depth on concepts. Moving slower to allow for conceptual understanding leads to speed of procedural skills and fluency (Quality versus Quantity). Lessons must align to *grade level* standards, which include high quality questions and tasks.
Have the opportunity to understand mathematics through coherence	Mathematical concepts are interconnected within grade level and the following grades levels. The four mathematical processes (Problem solving, Representations, Communication and Connections) support the learning across the grades. Teacher must make connects within mathematics and cross other content areas. All students must have opportunity to exhibit mathematical processes while engaging in the content of the lesson.
Experience rigorous mathematical content	Expectations for ALL students to have deep understanding of mathematical concepts so they are able to explain why it works, demonstrate relationships between other concepts, and apply to real world situations. Teachers must believe ALL students can access learning and then use strategies that help students access the mathematics. An intentional math community must be built where it is safe to take risk by forming relationships, setting up routines and using engaging activities. Teacher must lead by example which is risk taking by letting go of control. Offer opportunity for productive struggle so students have to explain and verify their work and encourage students to talk about each other's thinking.

Grounding Principle: Prioritization

Sample Old Normal

50 minutes in person

Sample New Normal

30 min. synchronous

20 min. asynchronous

Grounding Principle: Prioritization

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50 minutes in person

Enact lesson as intended.

Grounding Principle: Prioritization

Choose **high leverage part(s) of the lesson** to maximize learning instead of condensing entire lesson.

Position students to take on **remaining parts of the lesson with resources for self-guidance**.

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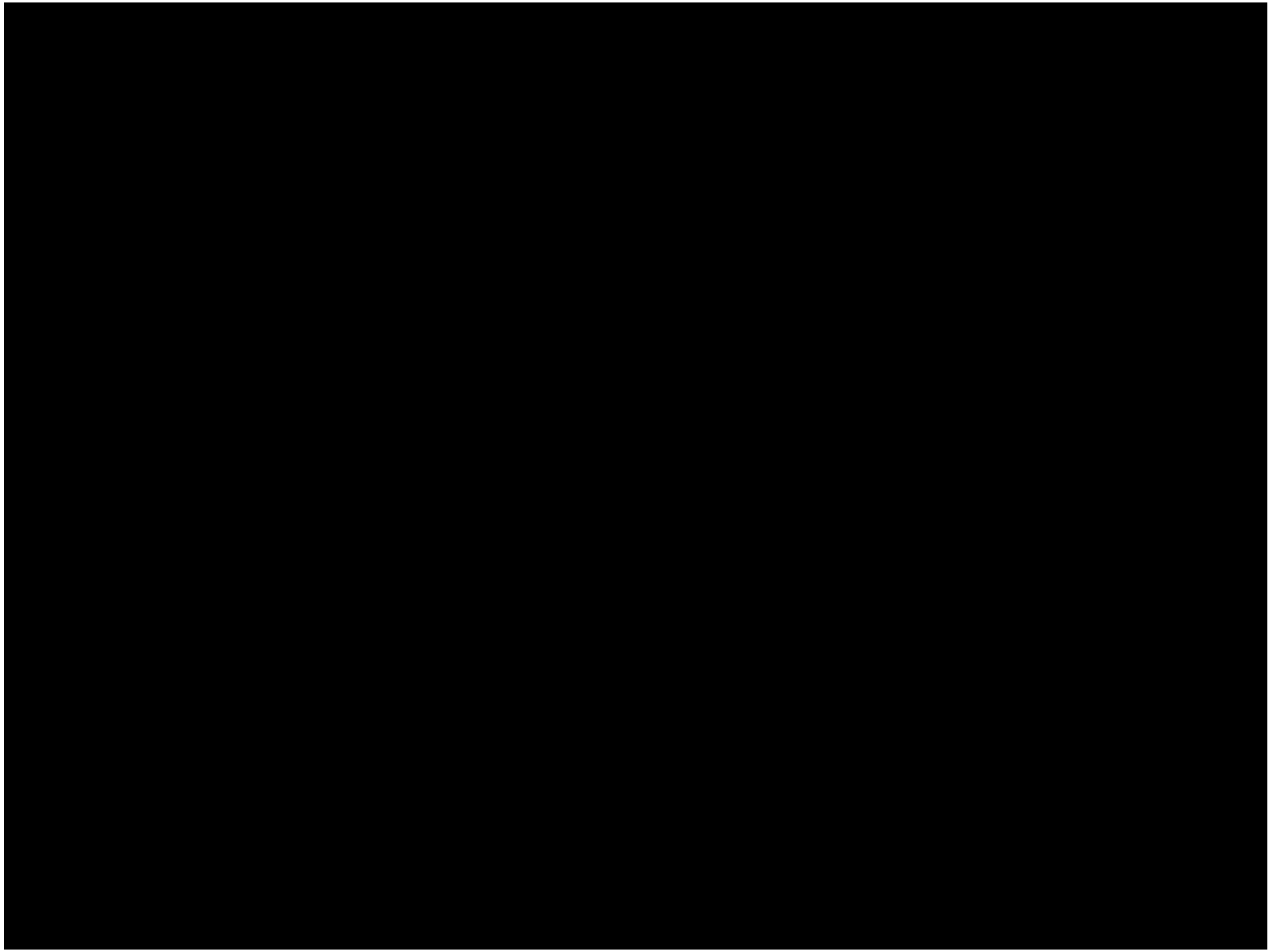

Jenna Bicierro
AF Bushwick Elementary

2nd Grade Math Story

Video Debrief

“Chat All Attendees and Panelists”:

- What effective practices did you notice?

Areas to Target in Remote Instruction

- Teacher Checks for Understanding and Misconceptions
- Students Receive Feedback on Their Work
- Students Own Their Learning

In Ms. Bicierro's class...

- **Teacher Checks for Understanding and Misconceptions**
  - Students write out their strategies and hold the whiteboards up
  - Teacher makes notes on student strategies
  - Students use agree/disagree/build on hand signals
  - Teacher addresses a common misconception

In Ms. Bicierro's class...

- **Students Receive Feedback on their Work**
  - The teacher uses student work to determine which questions to ask and which students to call on
  - The teacher plans a clear synthesis to ensure students with the misconception have a clear explanation of why 'more' does not mean 'add'
  - The teacher reflects on what all students successfully did (the jot with more or less) and what to focus on next

In Ms. Bicierro's class...

- **Students Own Their Learning**
  - Students learn strategies to help them stay engaged and set goals for their scholarly habits
  - Students use hand signals to show their engagement

Strategies for Focus Areas Ordered by Accessibility

Teacher Checks for Understanding and Misconceptions	Students Receive Feedback on Their Work	Students Own Their Learning
• Students hold up **workbooks or whiteboards** • Teachers presents two sample strategies (one has a common misconception) and has **students vote** through polls or fingers on which is accurate • Students use the **chat** feature (private to teacher or whole group) • Students use a **discussion board** • Students use **virtual site** like PearDeck or Desmos to create and share their work	• Teacher **facilitates discussion** that surfaces clear information on why the common misconception is incorrect • Students evaluate their work against a **rubric or criteria for success** with clear markers of understanding • Teacher prepares pre-set messages to **privately chat** to students based on their anticipated answers • Teacher or students **comment on each others' ideas** in discussion boards	• Students **self-assess** on progress relative to learning goals • Students **set non-academic goals** to develop effective remote learning study habits • Students use and **annotate available lesson summaries** to support independent work

Let’s Dig Into a Lesson

Scenario: 7th Grade Math Class

Class structure:

- 30 minutes of synchronous instruction 4 times a week
- 20 minutes asynchronous work

Class format and tools:

- Zoom used for synchronous instruction
- Google Slides are used for presentation
- Students have their curriculum workbooks

Grounding Principle: Prioritization

Choose **high leverage part(s) of the lesson** to maximize learning instead of condensing entire lesson.

Position students to take on **remaining parts of the lesson with resources for self-guidance**.

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30 min. synchronous

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Grounding Principle: Prioritization

Choose **high leverage part(s) of the lesson** to maximize learning instead of condensing entire lesson.

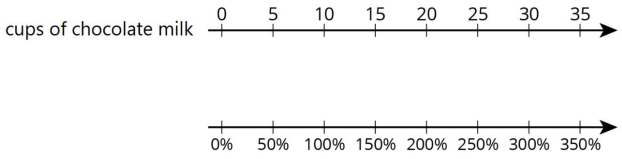
Position students to take on **remaining parts of the lesson with resources for self-guidance**.

Student learning targets:

- I can use a **double number line diagram** to help me **solve percent increase and decrease problems**.
- I understand that if I know how much a quantity has grown, then the **original amount represents 100%**.
- When I know the new amount and the percentage of increase or decrease, **I can find the original amount**.

Rad over the student task statements to get a sense of the activities. You do not need to do the math!

Warm-Up: Notice and Wonder



Activity 2: Double Number Lines

For each problem, complete the double number line diagram to show the percentages that correspond to the original amount and to the new amount.

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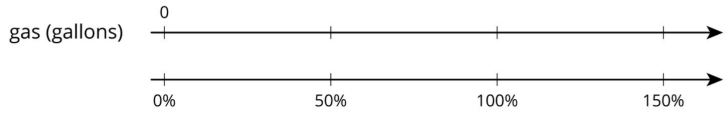

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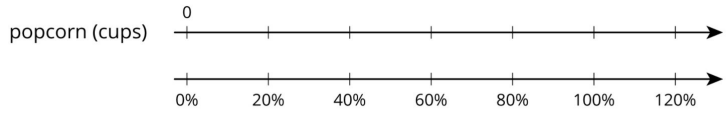

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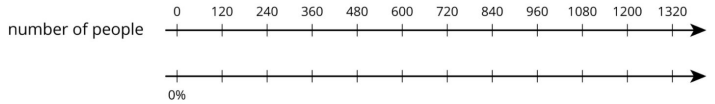

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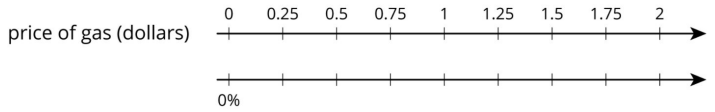

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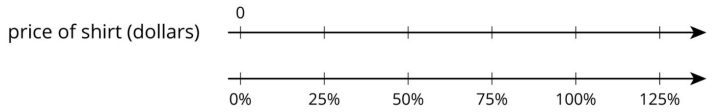

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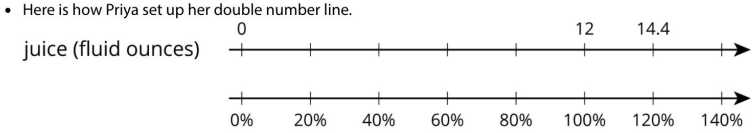

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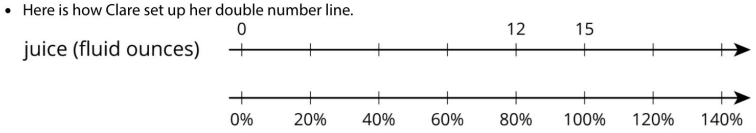


Activity 4: Protecting the Green Sea Turtle

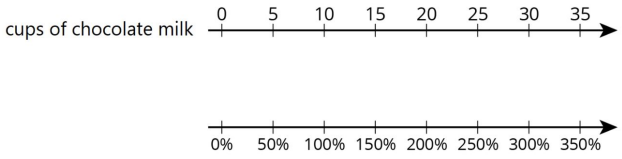
Green sea turtles live most of their lives in the ocean, but come ashore to lay their eggs. Some beaches where turtles often come ashore have been made into protected sanctuaries so the eggs will not be disturbed.

Expand Image

1. One sanctuary had 180 green sea turtles come ashore to lay eggs last year. This year, the number of turtles increased by 10%. How many turtles came ashore to lay eggs in the sanctuary this year?
2. At another sanctuary, the number of nesting turtles decreased by 10%. This year there were 234 nesting turtles. How many nesting turtles were at this sanctuary last year?

Lesson Overview

Warm-Up: Notice and Wonder



Ideas can be collected ahead of time or a discussion board can be used.

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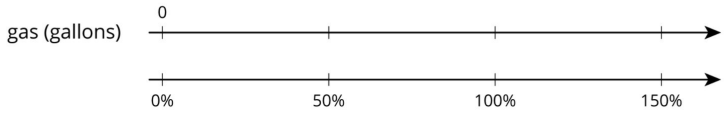

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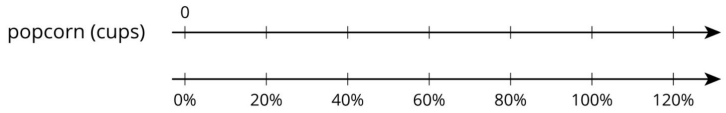

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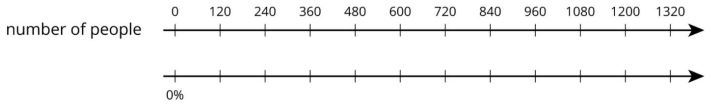

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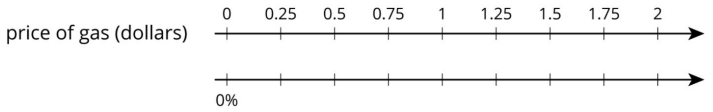

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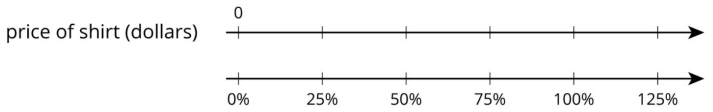

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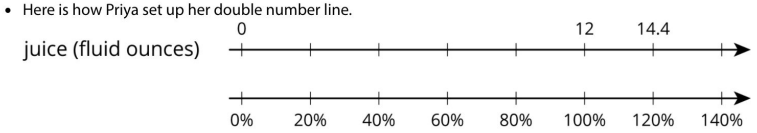

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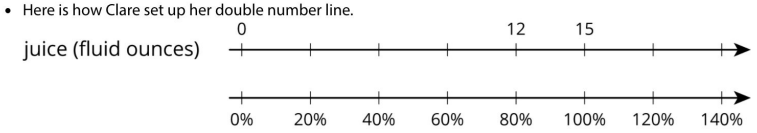

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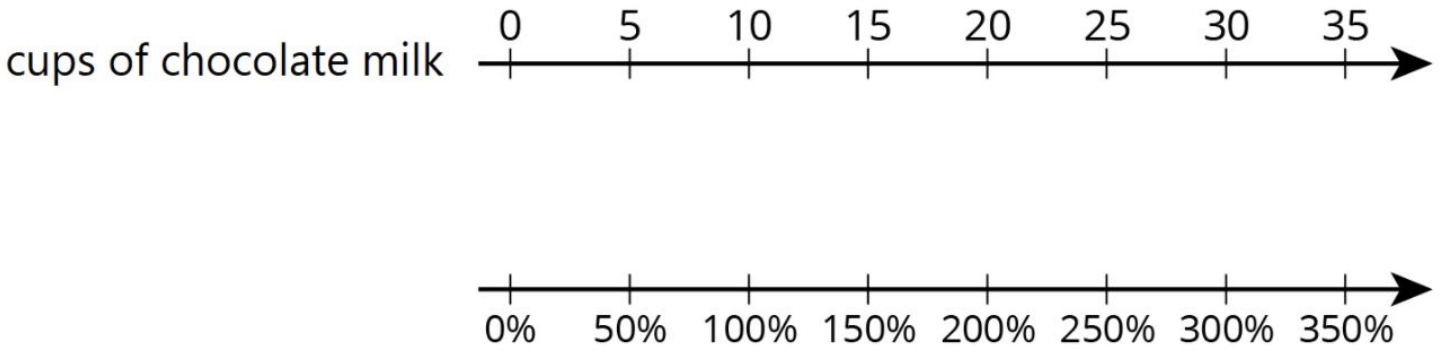
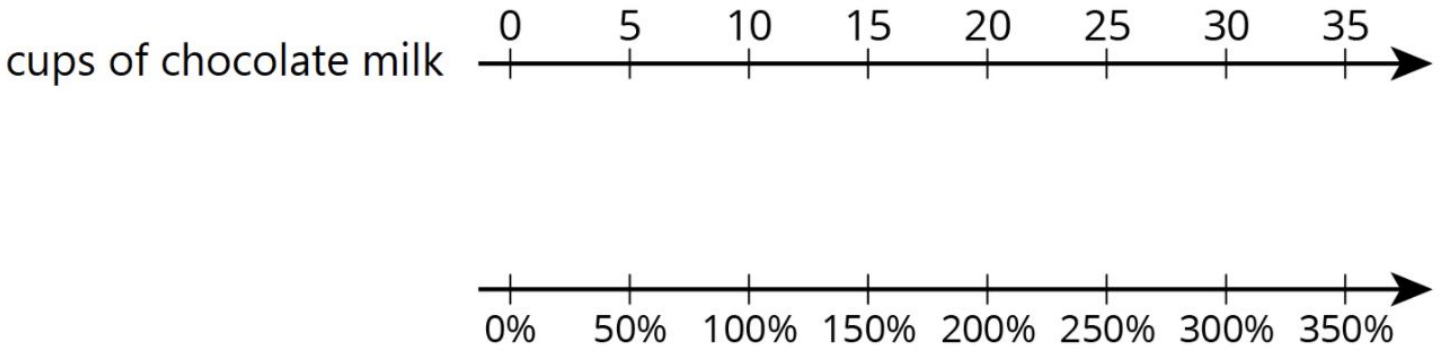


Lesson plan:
"If the original quantity, represented by 100%, does not come up during the conversation, ask students to discuss this idea."

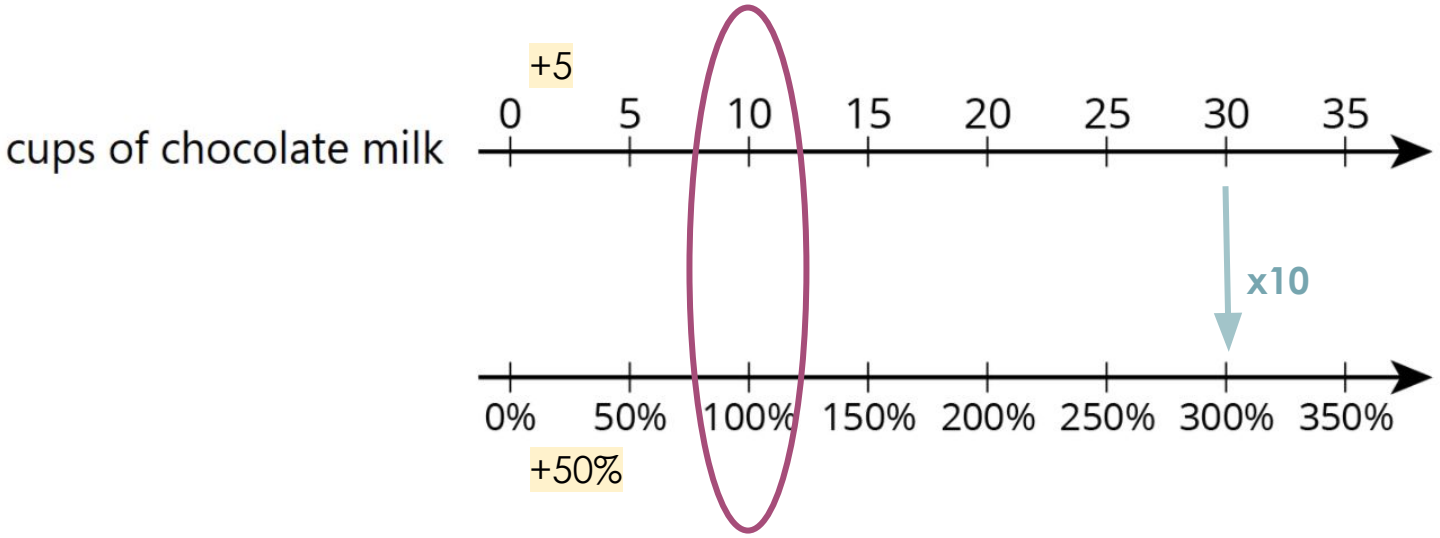
Facilitating the Warm-Up



Notice	Wonder
• Both number lines use skip counting • Top row alternates ending in 0 or 5 • Bottom row is percents • There are percents bigger than 100% • The bottom row has no word label • The tick marks have a relationship of x10 between choc milk and numbers before %	• Why isn't there a label on the bottom? • Shouldn't 100% be one cup of choc. milk? • What does 100% mean here?

Facilitating the Warm-Up

10 cups (100%) can be seen as the original amount of chocolate milk



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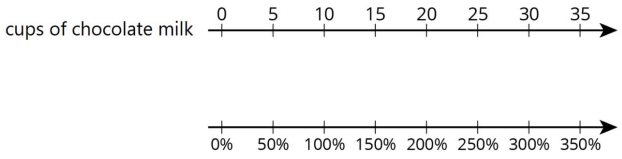

The different parts of this activity address all three learning targets.

It's best to focus the majority of synchronous time on this one activity.

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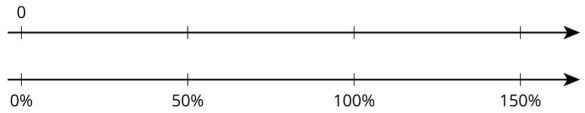

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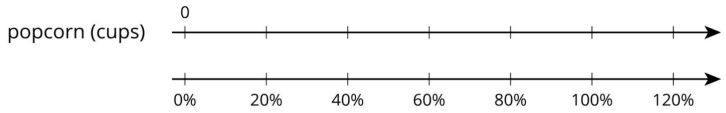

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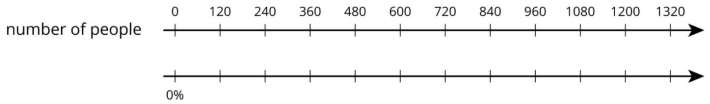

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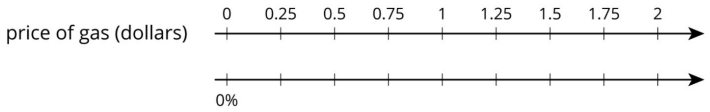

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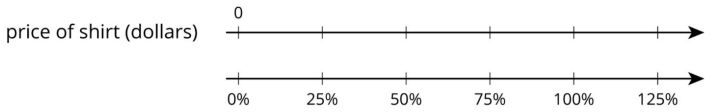

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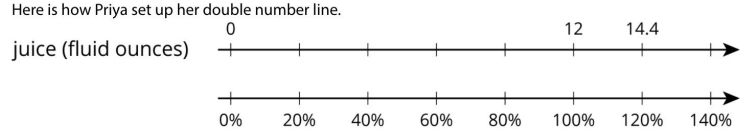

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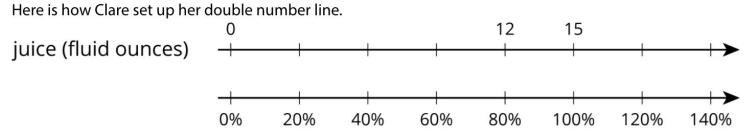

Activity 4: Protecting the Green Sea Turtle

Green sea turtles live most of their lives in the ocean, but come ashore to lay their eggs. Some beaches where turtles often come ashore have been made into protected sanctuaries so the eggs will not be disturbed.

Expand Image

1. One sanctuary had 180 green sea turtles come ashore to lay eggs last year. This year, the number of turtles increased by 10%. How many turtles came ashore to lay eggs in the sanctuary this year?
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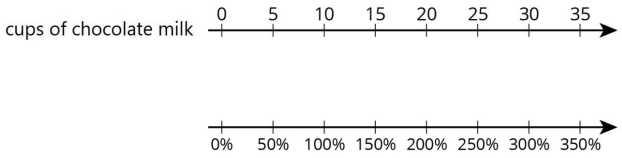
Lesson Overview

Warm-Up: Notice and Wonder

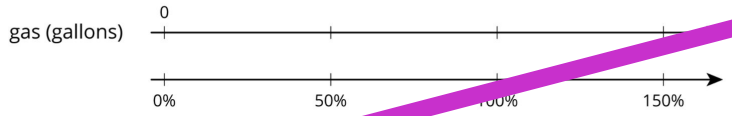


These activities can be done independently after Activity 2 given limited synchronous time.

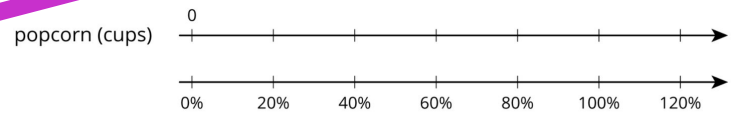
Activity 2: Double Number Lines

For each problem, complete the double number line diagram to show the percentages that correspond to the original amount and to the new amount.

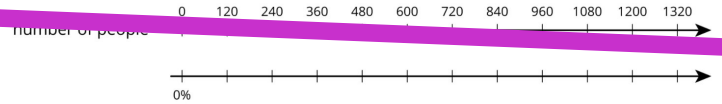
1. The gas tank in dad's car holds 12 gallons. The gas tank in mom's truck holds 50% more than that. How much gas does the truck's tank hold?



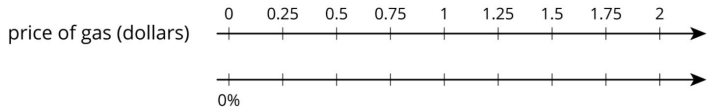
2. At a movie theater, the [illegible] popcorn bags decreased 20%. If the old bags held 15 cups of popcorn, how much do th[illegible]ags hold?



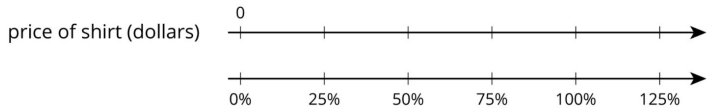
3. A school had 1,200 students last year and only 1,080 students this year. What was the percentage decrease in the number of students?



4. One week gas was $1.25 per gallon. The next week gas was $1.50 per gallon. By what percentage did the price increase?



5. After a 25% discount, the price of a T-shirt was $12. What was the price before the discount?



Activity 3: Representing More Juice

Two students are working on the same problem:

A juice box has 20% more juice in its new packaging. The original packaging held 12 fluid ounces. How much juice does the new packaging hold?

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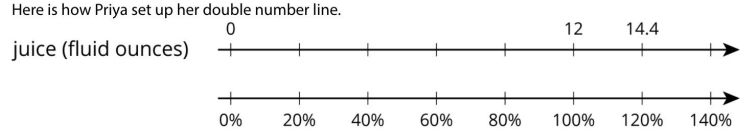

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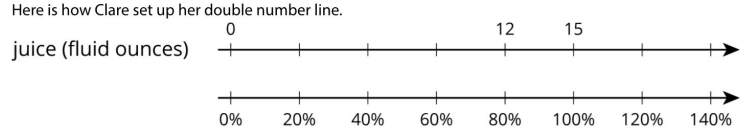

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Lesson Overview

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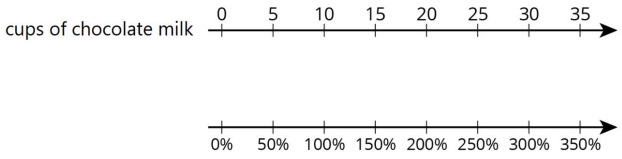

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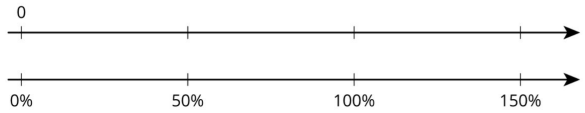

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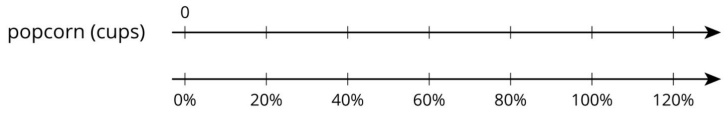

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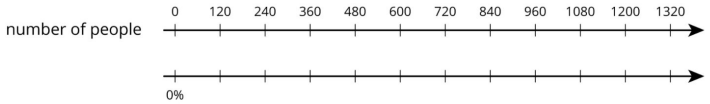

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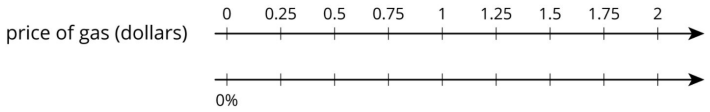

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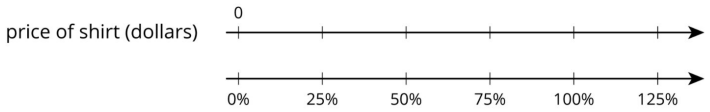

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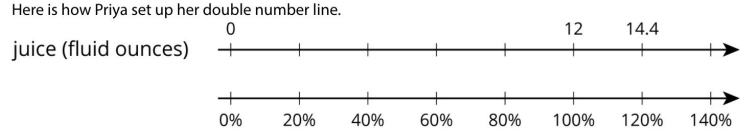

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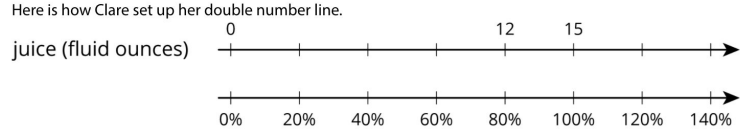

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Lesson Overview

Do the Math: Activity 2, Part 1

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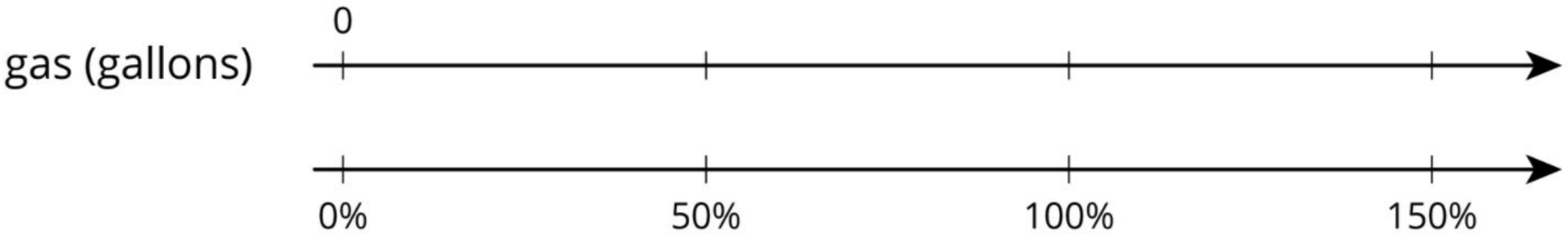

Complete the excerpt from Activity 2 in your notes to the best of your current understanding.

Debrief Activity 2, Part I

For each problem, complete the double number line diagram to show the percentages that correspond to the original amount and to the new amount.

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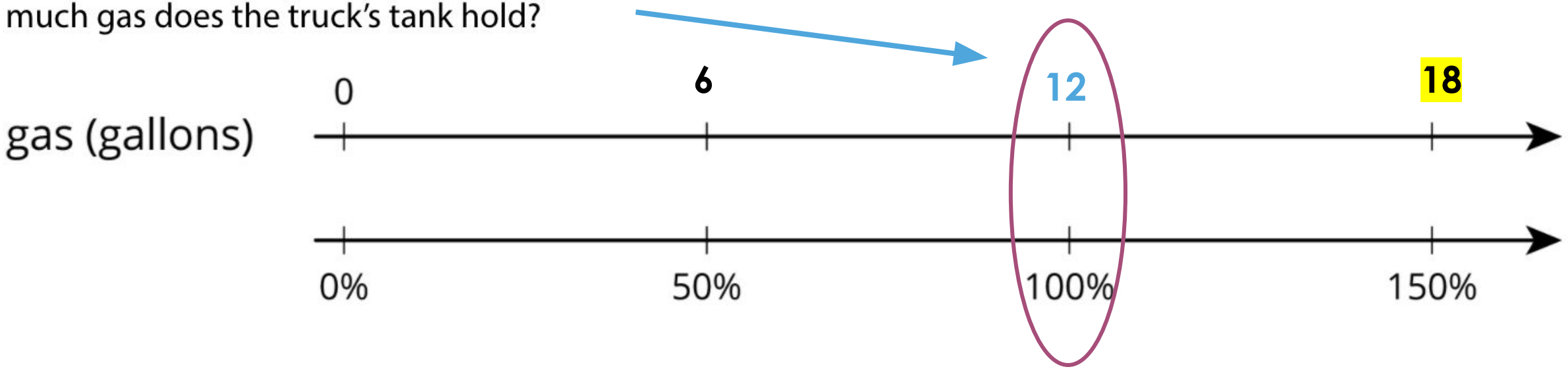
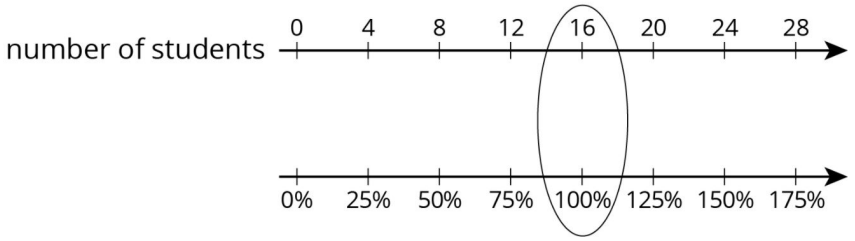


Vignette: Facilitating Activity 2

To solve percentage problems, we need to be clear about what corresponds to 100%. For example, suppose there are 20 students in a class, and we know this is an increase of 25% from last year. In this case, the number of students in the class *last* year corresponds to 100%. So the initial amount (100%) is unknown and the final amount (125%) is 20 students.



Expand Image

Looking at the double number line, if 20 students is a 25% increase from the previous year, then there were 16 students in the class last year.

Read the vignette in your handout. Mark:

CFU for places where you see checks for understanding

F for places where you see students receiving feedback

OL for places where students are being positioned to own their learning

Debrief of Vignette

“Chat All Attendees and Panelists”:

- What effective practices did you notice for checking for understanding?

Debrief of Vignette

“Chat All Attendees and Panelists”:

- What effective practices did you notice for providing students with feedback?

Debrief of Vignette

“Chat All Attendees and Panelists”:

- What effective practices did you notice for supporting students in owning their learning?

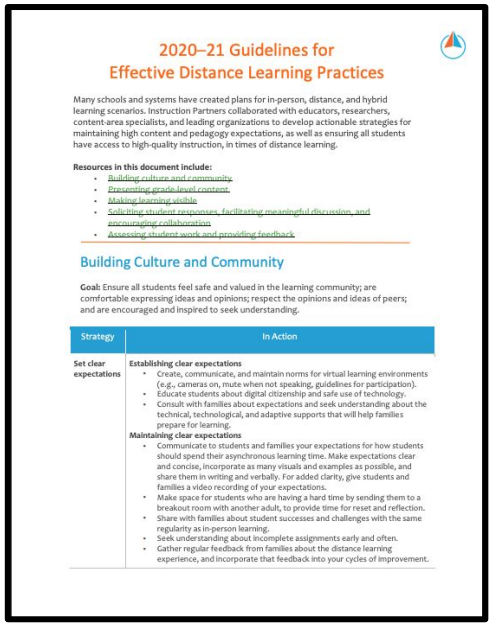
Summary of Cognitive Science

- **Short bursts** of information paired with opportunities for students to DO something with the content we are giving them
- Plan and structure lessons so that students are **always** working!
- Hold students **accountable** for doing the work in the lesson
- Provide opportunities for students to engage in **formative thinking**
- Collect formative data → **check for understanding** often!

Areas to Target in Remote Instruction

- Teacher Checks for Understanding and Misconceptions
- Students Receive Feedback on Their Work
- Students Own Their Learning

Additional Resources



2020–21 Guidelines for
Effective Distance Learning Practices

Many schools and systems have created plans for in-person, distance, and hybrid learning scenarios. Instruction Partners collaborated with educators, researchers, content-area specialists, and leading organizations to develop actionable strategies for maintaining high content and pedagogy expectations, as well as ensuring all students have access to high-quality instruction, in times of distance learning.

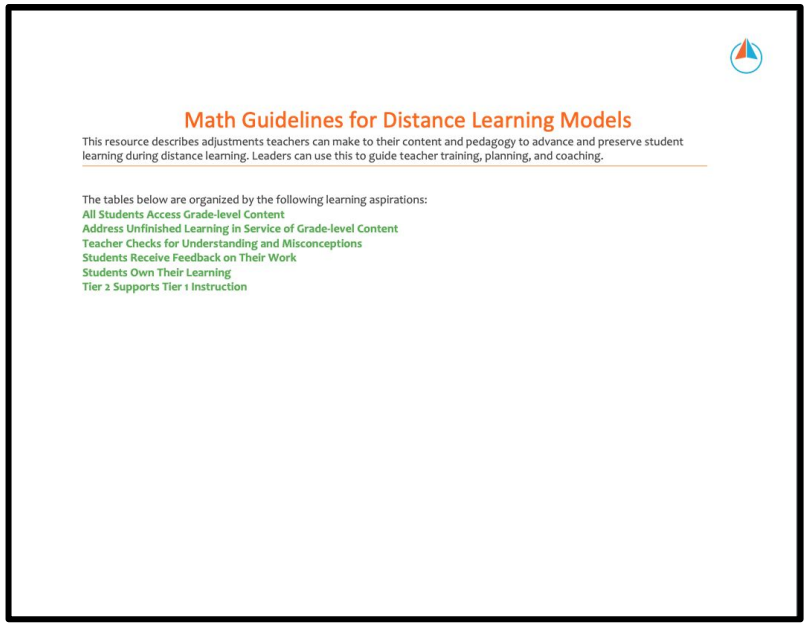
Resources in this document include:

- Building culture and community
- Presenting grade-level content
- Making learning visible
- Soliciting student responses, facilitating meaningful discussion, and encouraging collaboration
- Assessing student work and providing feedback

Building Culture and Community

Goal: Ensure all students feel safe and valued in the learning community; are comfortable expressing ideas and opinions; respect the opinions and ideas of peers; and are encouraged and inspired to seek understanding.

Strategy	In Action
Set clear expectations	**Establishing clear expectations** • Create, communicate, and maintain norms for virtual learning environments (e.g., cameras on, mute when not speaking, guidelines for participation). • Educate students about digital citizenship and safe use of technology. • Consult with families about expectations and seek understanding about the technical, technological, and adaptive supports that will help families prepare for learning. **Maintaining clear expectations** • Communicate to students and families your expectations for how students should spend their asynchronous learning time. Make expectations clear and concise, incorporate as many visuals and examples as possible, and share them in writing and verbally. For added clarity, give students and families a video recording of your expectations. • Make space for students who are having a hard time by sending them to a breakout room with another adult, to provide time for reset and reflection. • Share with families about student successes and challenges with the same regularity as in-person learning. • Seek understanding about incomplete assignments early and often. • Gather regular feedback from families about the distance learning experience, and incorporate that feedback into your cycles of improvement.



Math Guidelines for Distance Learning Models

This resource describes adjustments teachers can make to their content and pedagogy to advance and preserve student learning during distance learning. Leaders can use this to guide teacher training, planning, and coaching.

The tables below are organized by the following learning aspirations:

All Students Access Grade-level Content
Address Unfinished Learning in Service of Grade-level Content
Teacher Checks for Understanding and Misconceptions
Students Receive Feedback on Their Work
Students Own Their Learning
Tier 2 Supports Tier 1 Instruction

https://instructionpartners.org/distance-learning/

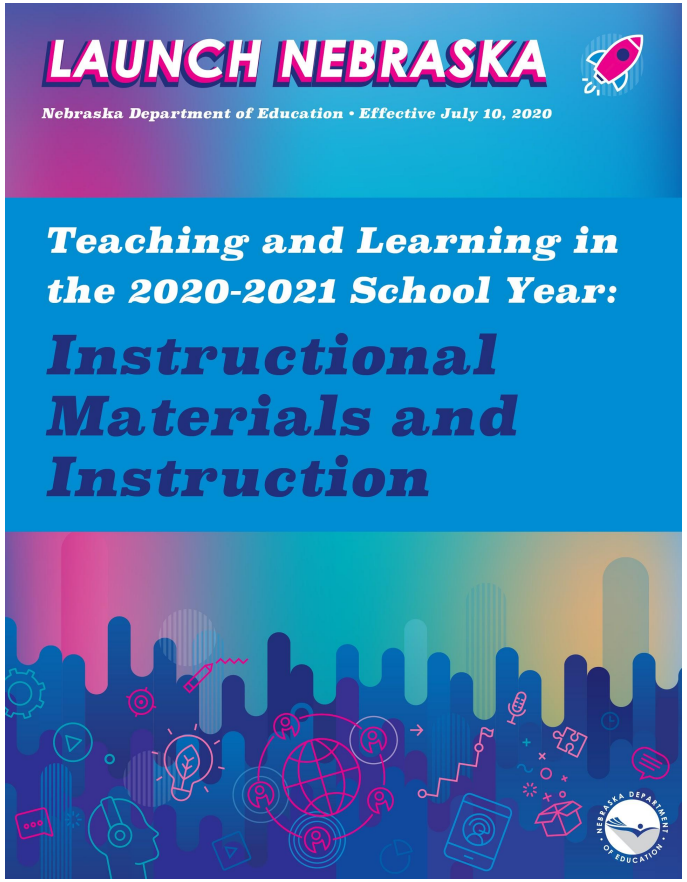
Resources for Nebraska Educators:

Be sure to check out additional resources and guidance:

- Instructional Materials & Instruction
- Assessment
- Wellbeing and Connection
- Student, Family, and Community Engagement
- Professional Learning

https://www.launchne.com/continuity-of-learning/instruction/

Resources for Nebraska Educators:



Appendix D: Remote Learning Instructional Considerations (page 56): This includes content considerations for a remote learning environment as well as conditions for engagement in a remote setting

Appendix E: Content-Specific Learning Routines for In-Person and Remote Learning (page 62): Specific routines that can be used to maintain consistency and facilitate deeper learning. Includes both in-person and remote considerations.

Appendix F: Steps to Align Instructional Materials to Remote and Hybrid Scenarios (page 66)

QUESTIONS?

Questions? Reach out to:

Deb Romanek (deb.romanek@nebraska.gov),
Mathematics Education Specialist at NDE

THANK YOU!

Remember, remote learning provides us with opportunities in spite of the challenges.

We appreciate the work you to do support excellent math instruction for Nebraska students!