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How to Use This Addendum

Make sure you're ready to teach by noting the **Necessary Materials and Pre-Lesson Prep** you will need to gather or complete prior to the lesson

Find high-leverage instructional moves in the **Lesson Look Fors**. This is what leaders should see when observing your instruction

Note how your lesson objective ties to your state **Standards**

Use the **Mathematical Goal of the Lesson** to keep you focused on the appropriate student outcome

Plan purposeful questioning and responses using **Opportunities to CFU**

Plan instruction around what students need to Know & Do to be successful on the Exit Ticket using the identified **Student Criteria for Success**

Note exemplar pacing in the **Lesson Agenda**

Plan to stress **Important Vocabulary** in the lesson. New vocab for the unit is indicated in bold

Find recommended lesson modifications, content knowledge boosters, and/or high-leverage instructional moves that may not be in your Teacher Edition located in **Other Notes to Inform Your Planning**

Lesson 9: Find related multiplication facts by adding and subtracting equal groups in array models		Date: _____														
<p>Standard(s)</p> <p>3.4K solve one-step and two-step problems involving multiplication and division within 100 using strategies based on objects, pictorial models, including arrays, area models, and equal groups; properties of operations; or recall of facts</p>	<p>Notes for Intellectual Preparation and Lesson Planning</p> <p>Necessary Materials and Pre-Lesson Prep</p> <ul style="list-style-type: none"> ▪ (S) Multiply by 2 (1–5) Pattern Sheet ▪ (S) Personal white board ▪ (S) Threes array no fill template ▪ (S) Blank paper <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="text-align: left;">Lesson Agenda</th> <th style="text-align: left;">Time</th> </tr> </thead> <tbody> <tr> <td>I. Do Now (source: fluency #1)</td> <td>5 min</td> </tr> <tr> <td>II. Fluency*</td> <td>8 min</td> </tr> <tr> <td>III. Concept Development</td> <td>25 min</td> </tr> <tr> <td>IV. Student Practice</td> <td>15 min</td> </tr> <tr> <td>V. Student Debrief</td> <td>7 min</td> </tr> <tr> <td>VI. Exit Ticket*</td> <td>5 min</td> </tr> </tbody> </table> <p>Mathematical Goal of this Lesson</p> <p>Students learn they can use decomposition to break one larger number into two smaller numbers as a strategy for multiplication. The goal of this lesson is simply for student to understand how to interpret and create an array that demonstrates such decomposition. Students will build on this understanding in subsequent lessons. This lesson also supports the goal of student thinking in terms of counting units, an overarching goal for academy math.</p> <p>Opportunities to CFU</p> <ul style="list-style-type: none"> ✓ Concept Development, by way of eliciting student responses ✓ Problems Set problems: #2, #3 <p>Other Notes to Inform Your Planning</p> <p>For Do Now: Use the Multiply by 2 (1–5) Pattern Sheet for your Do Now. 3 minutes for completion, 2 minutes whole group classwork check.</p> <p>For Fluency: Complete the Group Counting activity (notice the inclusion of 4s in preparation for upcoming lessons) and Forms of Multiplication activity.</p> <p>For Concept Development: Consider prepping personal whiteboard in advance. Spend no more than 12 minutes for CD Problem 1 and 13 minutes for CD Prob 2.</p> <p>For Student Practice: consider creating an extra set of Qs like 1-3 in case students struggle with entry-level understanding. If they don't, move on to Qs 4 and above.</p> <p>For Student Debrief: consider using the Eureka assigned Exit Ticket for whole group debrief exercise; Suggested strategy – guided discourse.</p> <p>For Exit Ticket: Use Homework problems 2 & 3 for this lesson's Exit Ticket.</p> <p><small>Though not formally discussed yet, this is a foundation to understanding of distributive property. Students visually see multiplying the sum of two or more addends by a number will give the same result as multiplying each addend individually by the number and then adding the products together.</small></p>	Lesson Agenda	Time	I. Do Now (source: fluency #1)	5 min	II. Fluency*	8 min	III. Concept Development	25 min	IV. Student Practice	15 min	V. Student Debrief	7 min	VI. Exit Ticket*	5 min	<p>Lesson Look Fors</p> <p>Look for teachers to...</p> <ul style="list-style-type: none"> <input type="checkbox"/> Have established a signaling routine for choral response or work show during the respective fluency activities <input type="checkbox"/> Use a think aloud to describe why they shade what portions of the array, or use a different symbol in the array <input type="checkbox"/> Make the focus of the lesson understanding the visual representations <p>Look for students to...</p> <ul style="list-style-type: none"> <input type="checkbox"/> Explain what they see in the array and how it relates to a given number sentence. <p>Student Criteria for Success</p> <ul style="list-style-type: none"> Shading, brackets, and/or dotted lines on an array will have mathematical significance -brackets can identify parts or wholes -dotted lines and shading represent decompositions We count units; in an array, counting rows is the same as counting units. Addition/subtraction and multiplication math facts (up to 4) Interpret an array -identify decompositions within an array -Relate an annotated or labeled array to one or more number sentences Addition/subtraction (+/- up to 4) Multiplication (2, 3, and 4)
Lesson Agenda	Time															
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UNIT SYNOPSIS

This unit begins with an introduction to arithmetic sequences. Students learn how to identify the common difference and use it to find the next term in the sequence before learning about the explicit formula, which will allow them to find any term without having to find all the other terms in between.

Students then use their own data to generate a scatterplot and learn how to use technology to generate a line of best fit. They learn how to interpret the slope and y -intercept of the line, and they learn about the difference between y and \hat{y} . They also learn how to interpret correlation coefficients.

The unit ends with a brief introduction to association and causation. This lesson is relatively new and was created to give students the opportunity to master TEKS A.4(B) should they encounter in on the STAAR EOC. However, it is important to note that the way the STAAR EOC asks about association and causation is different from what students will see in AP Statistics or in college courses.

CONTENT STANDARDS

Below are the standards addressed in this unit.

Readiness Standards	Supporting Standards
There are no Readiness Standards in Unit 5.	<p>A.4(A) calculate, using technology, the correlation coefficient between two quantitative variables and interpret this quantity as a measure of the strength of the linear association</p> <p>A.4(B) compare and contrast association and causation in real-world problems</p> <p>A.4(C) write, with and without technology, linear functions that provide a reasonable fit to data to estimate solutions and make predictions for real-world problems</p> <p>A.12(C) identify terms of arithmetic and geometric sequences when the sequences are given in function form using recursive processes</p> <p>A.12(D) write a formula for the nth term of arithmetic and geometric sequences, given the value of several of their terms.</p>

<p>Focus on Disciplinary Literacy</p> 	<p>Mathematical Process Standard (F) – analyze mathematical relationships to connect and communicate mathematical ideas</p>
	<p>Mathematical Process Standard (G) – display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication</p>

LEARNING SUPPORTS BY LESSON

There is a checkmark for the math support if the lesson	Lessons →	L1	L2	L3	L4	L5	L6
	Math Supports						
makes a connection to prior content or from a previous unit or academic year	Access Prior Knowledge	✓	✓	✓	✓	✓	✓
uses familiar contexts or experiences to make the learning relevant to students	Real-World Connections	✓	✓	✓	✓	✓	✓
makes use of graphic organizers	Graphic Organizers						✓
includes tools like rulers, protractors, patty paper, algebra tiles, etc.	Tools or Manipulatives					✓	
incorporates tables, reference charts, displays, pictures, models, or color-coding	Visual Aids	✓	✓	✓	✓	✓	
includes definitions, examples vs. nonexamples, cognates, etc.	Vocabulary Supports		✓	✓	✓		✓
includes strategies that support language development	Language Supports						
asks students to discuss with their partner to prepare for whole class discussion	- Turn and Talk	✓	✓	✓	✓	✓	✓
teacher facilitates a whole class discussion to debrief key learnings	- Guided Discussion	✓	✓	✓	✓		✓
asks students to think independently, test their idea with a partner, and share whole group	- Think, Pair, Share						
includes sentence stems to support students with explanations	- Sentence Stems				✓		
provides opportunities for students to work with a partner or a group	- Peer Collaboration	✓	✓	✓	✓	✓	✓
uses mnemonics such as SohCahToa	- Mnemonics						
includes websites or equipment that enhances the lesson	Technological Support			✓	✓	✓	
content can be presented in different forms	Different Modalities						
uses hands-on tools or manipulatives to represent the math	- Concrete			✓			
uses drawings to represent the math	- Pictorial	✓	✓	✓	✓	✓	
uses numbers and number sentences to represent the math	- Abstract	✓	✓	✓	✓	✓	✓

The EFFL Model

Experience First, Formalize Later (EFFL) Model

Opening

For every new lesson, the teacher begins by making the goals of the lesson crystal clear. The teacher does more than simply read the objective to the class. They make connections to previous learning, share how this learning fits into a bigger picture, or explain why this learning is important for future learning.

Activity / Interaction With New Material (INM)

For this part of the lesson, students work in pairs or groups of four to experience new content through an activity. Students might be discussing a proposed scenario, working with other groups, or doing a simulation. The student activity is designed for students to be able to do without the help of the teacher. Of course, the teacher is watching and listening in to conversations in order to formatively assess student understanding. The teacher provides questions, cues, and prompts (not answers!) to help push groups forward when they are stuck or have made a mistake. As students begin to finish the activity, the teacher identifies students to write their work on the board. Most often, the teacher selects student work that will easily allow them to connect the experience to formal learning. Students write their work on the whiteboard in a single-color marker.

Debrief Activity

Once students have recorded their responses in their workbook (see blue writing to the right), the teacher calls the whole group back together for a debrief. It is in this discussion that the teacher will help students formalize the learning. The teacher connects the student activity experience to new vocabulary, definitions, formulas, and algorithms. The formal learning is attached specifically to the experiences of the activity so that students can enhance their constructed understanding of the new content. The teacher writes all of the formal learning in a different color in the margins of the activity (see red writing to the right). The students add these ideas in the margins on their activity page and often think of this as the formal “notes” of the lesson. In all of the answer keys we provide on Math Medic, the teacher formal learning points are provided in the margins in a different color.

Got Solutions?
In math class we solve lots of problems. But are there some problems that just don't HAVE a solution?

② Consider the line $y = 2x - 5$.
④ Give the ordered pairs of at least 4 points that are on this line.
Every pt. on the line is a solution to the equation.
(0, -5) (1, -3) (2, -1) (4, 3)

⑤ Graph the line.

⑥ Is the point $(-17, -39)$ on this line? How do you know?
-39 = 2(-17) - 5 Yes! x = -17
-39 = -34 - 5 and y = -39
Satisfies the equation $y = 2x - 5$ -39 = -39 ✓ make the equation true.

QuickNotes

In this part of the lesson, the teacher uses the whole experience of the activity and the formalization in the debrief to summarize the learning from the lesson. Notice that we use the box to constrain the amount of formal “notes” that the teacher can provide.

QuickNotes: Interpreting Solutions to Linear Systems Graphically

A solution (x,y) to a linear system satisfies BOTH equations in the system and is on the graph of BOTH equations (intersection pt).
A linear system can have 0, 1, or ∞ many solutions

parallel lines
0 solutions
same m, diff. b

intersecting lines
1 solution
diff. m

coinciding lines
 ∞ many solutions
same m, same b

Student Practice

Now that students have arrived at some new learning, they need to be able to apply it in new contexts. Most often we have students complete these questions in pairs and occasionally we select one question to use as an exit ticket. If we have time, we have students write solutions on the whiteboard.

Extra Practice

We typically give students around 3-5 “Extra Practice” problems for each lesson. We choose problems that are closely aligned with the Learning Objectives of the lesson. It is our belief that “less is more” here. We would rather students spend their Extra Practice time thinking deeply about just a few problems, rather than surface level thinking on many problems. When possible, we provide the answers at the bottom of the page, so they can immediately assess their understanding.

Slightly modified version of: <https://www.calc-medic.com/post/experience-first-formalize-later#:~:text=%E2%80%9CExperience%20First%2C%20Formalize%20Later%E2%80%9D,at%20formal%20definitions%20and%20formulas.>

Before You EFFL!

Here are helpful resources that you guide you in the right direction before your first EFFL lesson!

Why Should We EFFL?

The article advocates for the Experience First, Formalize Later (EFFL) teaching model, emphasizing its effectiveness in fostering deep understanding and flexible thinking in students. The author compares traditional teaching to a game of "Simon Says," where students merely mimic instructions without grasping underlying concepts. In contrast, EFFL encourages students to engage actively with problems, enhancing their ability to understand and apply calculus concepts creatively.

Tips for Lesson Planning

The article offers practical advice for effective lesson planning beyond the exhaustive and overly detailed approaches often emphasized during teacher training. It underscores the importance of thoughtful preparation but rejects the notion that teachers need to script every minute or detail of a class session.

Making the Most of Your EFFL Lesson Debrief

The article discusses the significance of the debriefing phase in the Experience First, Formalize Later (EFFL) lesson model, emphasizing its role in reinforcing learning and highlighting student contributions. The debrief session is seen as crucial for integrating academic vocabulary, emphasizing key lesson understandings, and valuing students' mathematical insights.

While You EFFL!

While each lesson may be unique in context and skills, all lessons benefit from the following practices:

Teacher Look Fors:

- Utilizing the Do Now to spark students' interest in the Activity.
- Use questioning to promote small group discussion and exploration, guided by monitoring questions.
- Connects Experience First to formal concepts using a **colored pencil/pen** to take notes along the margin during the Debrief.
- Facilitates whole-class discussions for students to reflect, share insights, and provides feedback that reinforces key concepts.
- Tracks time to adapt lesson pacing and support based on student response and engagement.

Students Look Fors:

- In the Activity, students engage in group work and discourse.
- Exploring the activity, testing hypotheses and approaches (trial & error).
- Take notes on key ideas and concepts using different **colored pencil/pen** to take notes along the margin.
- Share thoughts and ideas that demonstrate their approach to their work.

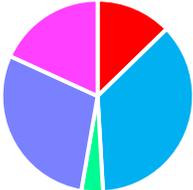
Other considerations

- During the **Experience First** phase, if most of your students seem stuck or disengaged, take a moment to pause, reset, and provide clear instructions. Some problems of the Activity are more suitable to do a whole-class discussion as a means to save some instructional time for Student Practice or the Exit Ticket. You are encouraged to adapt the EFFL (Experience First, Formalize Later) process to meet your students' needs while maintaining a focus on student-centered instruction.

ROADMAP

AT A GLANCE: Unit 5 – Describing Data Using Linear Equations			
Day	Date	Lesson	Lesson Title
There are 2 flexible Success Days that you can use anywhere in the unit. <ul style="list-style-type: none"> • Consider using 1 day between Lessons 2 and 3 to administer optional Topic Quiz 5. • Consider using 1 day to review before the Unit 5 Exam. • If you don't need to use both success days, you can/should save unused days for later. 			
1		1	Arithmetic Sequences (Day 1)
2		2	Arithmetic Sequences (Day 2)
3			Unit 5 Topic Quiz Success Day
4		3	Scatterplots
5		4	Correlation Coefficients
6		5	Linear Regression
7		6	Association and Causation
8			Success Day
9			Unit 5 Exam

Lesson 3: Scatterplots		Date: _____										
Standard(s)	Notes for Intellectual Preparation & Lesson Planning	Lesson Look Fors										
<p>◆ A.4(C) write, with and without technology, linear functions that provide a reasonable fit to data to estimate solutions and make predictions for real-world problems</p>	<p>Necessary Materials and Pre-Lesson Prep</p> <ul style="list-style-type: none"> ▪ Unit 5 Student Workbook ▪ Class set of red pens & rulers ▪ Large bowl of Starburst <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Lesson Structure:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">■</td> <td>Do Now (7 min)</td> </tr> <tr> <td style="text-align: center;">■</td> <td>INM (20 min)</td> </tr> <tr> <td style="text-align: center;">■</td> <td>Debrief (5 min)</td> </tr> <tr> <td style="text-align: center;">■</td> <td>Student Practice (13 min)</td> </tr> <tr> <td style="text-align: center;">■</td> <td>Exit Ticket (10 min)</td> </tr> </table>  </div> <p>Mathematical Goal of this Lesson By the end of this lesson, students should be able to describe the relationship for bivariate data by creating a scatter plot and interpreting the slope and y-intercept of its line of best fit.</p> <p>Opportunities to CFU</p> <ul style="list-style-type: none"> ✓ INM: 4d, 4e ✓ Student Practice: 1, 2, 3 <p>Other Notes to Inform Your Planning</p>	■	Do Now (7 min)	■	INM (20 min)	■	Debrief (5 min)	■	Student Practice (13 min)	■	Exit Ticket (10 min)	<p><u>Look for teachers to...</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> discuss the use of \hat{y} to remind students that the primary reason for modeling a set of data with a line is to be able to make predictions. <input type="checkbox"/> use the sentence starter in purple on TE p24 to help students write sentences that interpret slope. <p><u>Look for students to...</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> use tables and graphs to make predictions <input type="checkbox"/> be able to explain the difference between y and \hat{y}.
	■	Do Now (7 min)										
■	INM (20 min)											
■	Debrief (5 min)											
■	Student Practice (13 min)											
■	Exit Ticket (10 min)											
<p>Important Vocabulary</p> <ul style="list-style-type: none"> ▪ explanatory variable ▪ line of best fit ▪ response variable ▪ scatter plot ▪ \hat{y} 	<p>For Do Now: This Do Now spirals in previous content, but it can be skipped or replaced. If you worry about running out of time, consider using Do Now time to let students get ahead on #s 2 and 3.</p> <p>For INM: Decide ahead of time if you want students to do this activity on their individual laptops or if you want to do it on one laptop and project your screen. Since everyone is using the same data for the INM, either option will work.</p> <p>On Disciplinary Literacy: Know that \hat{y} (y-hat) is entirely new to students! Students should use y-hat to communicate that they are making predictions (as opposed to calculating an exact output).</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0; text-align: center;"> <p>Focus on Disciplinary Literacy</p>  <p>Debrief #4</p> </div>	<p>Student Know/Do Chart</p> <p> Students can interpret the slope and y-intercept of a line of best fit.</p> <p> Sometimes, the y-intercept in a line of best fit does not make sense because the line of best fit is just a model.</p> <p> The line of best fit cannot give exact outputs, but it CAN offer predictions.</p>										

Lesson 5: Linear Regression		Date: _____										
Standard(s)	Notes for Intellectual Preparation & Lesson Planning	Lesson Look Fors										
<p>◆ A.4(A) calculate, using technology, the correlation coefficient between two quantitative variables and interpret this quantity as a measure of the strength of the linear association</p> <p>◆ A.4(C) write, with and without technology, linear functions that provide a reasonable fit to data to estimate solutions and make predictions for real-world problems</p>	<p>Necessary Materials and Pre-Lesson Prep</p> <ul style="list-style-type: none"> Unit 5 Student Workbook Class set of red pens <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Lesson Structure:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">■</td> <td>Do Now (7 min)</td> </tr> <tr> <td style="text-align: center;">■</td> <td>INM (20 min)</td> </tr> <tr> <td style="text-align: center;">■</td> <td>Debrief (2 min)</td> </tr> <tr> <td style="text-align: center;">■</td> <td>Student Practice (16 min)</td> </tr> <tr> <td style="text-align: center;">■</td> <td>Exit Ticket (10 min)</td> </tr> </table>  </div> <p>Mathematical Goal of this Lesson By the end of this lesson, students should be able to use their TI Nspire to generate a line of best fit given a set of data. Students will follow very similar steps when they study quadratic regression in Unit 9 and exponential regression in Unit 10.</p> <p>Opportunities to CFU</p> <ul style="list-style-type: none"> ✓ INM: 4, 5f ✓ Student Practice: 1 <p>Other Notes to Inform Your Planning</p> <p>For Do Now: This Do Now builds a need for the INM and should not be skipped. Ideally, students will see that when left to the “eyeball,” everyone gets a slightly different line, but when we get to use the calculator, we can get a more accurate line.</p> <p>On Disciplinary Literacy: Learning how to use the calculator allows students to display and justify responses.</p> <div style="text-align: center; margin-top: 20px;"> <div style="background-color: #FFD700; padding: 5px; display: inline-block;">Focus on Disciplinary Literacy</div> <div style="border: 1px solid black; padding: 10px; margin-top: 5px; display: inline-block;">  INM </div> </div>	■	Do Now (7 min)	■	INM (20 min)	■	Debrief (2 min)	■	Student Practice (16 min)	■	Exit Ticket (10 min)	<p>Look for teachers to...</p> <ul style="list-style-type: none"> <input type="checkbox"/> model how to use the calculator to find the line of best fit, step by step. <input type="checkbox"/> maintain the expectation that students coach their partners when they’re stuck (as opposed to pressing the buttons for them). <p>Look for students to...</p> <ul style="list-style-type: none"> <input type="checkbox"/> follow along in their workbook (SW pp 196-198) as their teacher models the steps. <input type="checkbox"/> take advantage of the three problems in the SP to further internalize these steps, which they’ll need for STAAR.
	■	Do Now (7 min)										
■	INM (20 min)											
■	Debrief (2 min)											
■	Student Practice (16 min)											
■	Exit Ticket (10 min)											
<p>Important Vocabulary</p> <ul style="list-style-type: none"> correlation correlation coefficient line of best fit 	<p>Student Know/Do Chart</p> <ul style="list-style-type: none">  Students can use their graphing calculator to generate a line of best fit given a data set.  Students can use their line of best fit to make a prediction.  Students know the steps to generating a line of best fit on their calculator (see TE pp 57-58). 											

Lesson 6: Association and Causation		Date: _____										
Standard(s)	Notes for Intellectual Preparation & Lesson Planning	Lesson Look Fors										
<p>◆ A.4(B) compare and contrast association and causation in real-world problems</p>	<p>Necessary Materials and Pre-Lesson Prep</p> <ul style="list-style-type: none"> Unit 5 Student Workbook Class set of red pens <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Lesson Structure:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20px; background-color: red; border: 1px solid black;"></td> <td>Do Now (7 min)</td> </tr> <tr> <td style="width: 20px; background-color: cyan; border: 1px solid black;"></td> <td>INM (20 min)</td> </tr> <tr> <td style="width: 20px; background-color: limegreen; border: 1px solid black;"></td> <td>Debrief (3 min)</td> </tr> <tr> <td style="width: 20px; background-color: purple; border: 1px solid black;"></td> <td>Student Practice (15 min)</td> </tr> <tr> <td style="width: 20px; background-color: pink; border: 1px solid black;"></td> <td>Exit Ticket (10 min)</td> </tr> </table>  </div> <p>Mathematical Goal of this Lesson By the end of this lesson, students should be able to compare and contrast association and causation in real-world problems. Note that in the field of Statistics and in the sciences, it is incredibly difficult to establish causation – only a robust scientific study can actually establish causation. However, on the STAAR EOC, “causation” is simple and no scientific methods are mentioned. Carefully read the pink box on TE p47 to learn more.</p>		Do Now (7 min)		INM (20 min)		Debrief (3 min)		Student Practice (15 min)		Exit Ticket (10 min)	<p>Lesson Look Fors</p> <p><u>Look for teachers to...</u></p> <ul style="list-style-type: none"> stamp that all causation is association, but not all association is causation. explain that scientifically speaking, it’s hard to establish “causation,” but on the STAAR, a scenario can still be considered “causation” without mentioning a scientific study. <p><u>Look for students to...</u></p> <ul style="list-style-type: none"> arrive at the understanding that correlation does not imply causation. get creative and come up with reasons why building 3 more coffee shops will not necessarily CAUSE an increase in crime (INM 3b)
		Do Now (7 min)										
	INM (20 min)											
	Debrief (3 min)											
	Student Practice (15 min)											
	Exit Ticket (10 min)											
<p>Important Vocabulary</p> <ul style="list-style-type: none"> association causation correlation 	<p>Opportunities to CFU</p> <ul style="list-style-type: none"> ✓ INM: 2, 4 ✓ Student Practice: 1, 6 <p>Other Notes to Inform Your Planning</p> <p>For Do Now: This Do Now cannot be replaced; it sets up the INM.</p> <p>For INM + SP: Students should be having conversations with each other about these questions. They might disagree, and if so, that is fantastic! Doing so allows them to challenge each others’ ideas and further justify their thoughts in response. Make sure that before class ends, you give students the chance to check their thoughts against an exemplar.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0; text-align: center;"> <p>Focus on Disciplinary Literacy</p>  <p>Debrief 3b - 4</p> </div>	<p>Student Know/Do Chart</p> <p> Students can determine whether a statement is an example of association and/or causation.</p> <p> Causation is a relationship in which one event CAUSES another to occur.</p> <p> An association is a relationship between two variables. While all causation is also association, not all association is causation.</p>										

Recommended Success Day Materials and Resources

A.12(C) & A.12(D): arithmetic sequences

- Bluebonnet Resources: Skills Practice | Lesson SW | Lesson TE
- Virtual Nerd: How do you find the n th term in an arithmetic sequence?
- Illustrative Math: Susita's Account

A.4(B): association and causation

- Bluebonnet Resources: Skills Practice | Lesson SW | Lesson TE
- Sirius: A.4(B) Practice Sheet

A.4(A): correlation coefficients

- Bluebonnet Resources: Skills Practice | Lesson SW | Lesson TE
- Sirius: A.4(A) Practice Sheet
- GeoGebra: Guess the Correlation Coefficient Game
- Kahoot: Examining Correlation
- Texas Instruments: Does a Correlation Exist?

A.4(C): linear regression

- Bluebonnet Resources: Skills 1 | Skills 2 | Lesson SW | Lesson TE
- Imagine Math: Use a Line of Best Fit (TE / SW)
- Sirius: A.4(C) Practice Sheet
- Illustrative Mathematics: US Households
- Illustrative Mathematics: US Population
- Kahoot: Scatter Plots and Function Models

Unit 5 Tech Enhanced Question Practice

This problem set is a spiraled review of different question types students have seen on EdCite. It is not mandatory, and it can be retaken as many times as the student wishes to take it. You'll need to click "copy assignment" to be able to assign it to your students.

If student data indicates a pause point is not necessary, you can opt to move forward and reserve a Success Day to use at a later date.

Standard(s)	Notes for Intellectual Preparation & Lesson Planning
<ul style="list-style-type: none"> ◆ A.4(A) calculate, using technology, the correlation coefficient between two quantitative variables and interpret this quantity as a measure of the strength of the linear association ◆ A.4(B) compare and contrast association and causation in real-world problems ◆ A.4(C) write, with and without technology, linear functions that provide a reasonable fit to data to estimate solutions and make predictions for real-world problems ◆ A.12(C) identify terms of arithmetic and geometric sequences when the sequences are given in function form using recursive processes ◆ A.12(D) write a formula for the nth term of arithmetic and geometric sequences, given the value of several of their terms. 	<p>Necessary Materials and Pre-Lesson Prep</p> <ul style="list-style-type: none"> ▪ Ensure you can access UE5 on EdCite. <p>Notes to Inform Your Planning</p> <p>Review the Unit 5 Exam on Curriculum Corner. Internalize and create an exemplar for the assessment prior to teaching the unit as part of unpacking the unit. Use your exemplar to spar with the solutions provided in the Assessment Companion on Curriculum Corner.</p> <p>The scanning deadline for the Unit 5 Exam is November 13, 2025.</p> <p>For any test items that are not multiple choice, verify that student responses marked incorrect by Edcite truly are incorrect. (Edcite occasionally does not recognize all possible equivalent correct responses.)</p>

UNPACKED STANDARDS

Focus standards for this unit.

Standard Breakdown

Standard	Specificity	STAAR Alignment														
<p>A.4(A) <u>calculate</u>, using technology, the <u>correlation coefficient</u> between two quantitative variables and interpret this quantity as a measure of the <u>strength</u> of the <u>linear association</u></p>	<p>Concepts (Know) -correlation coefficient -linear association</p> <p>Skills (Do) - calculate</p>	<p>2025</p> <p>A student used a checking account to pay for living expenses during the first two years of college. The table shows the amount the student had in the account after different numbers of months had passed.</p> <table border="1" data-bbox="1171 397 1516 636"> <thead> <tr> <th colspan="2">Checking Account Balance</th> </tr> <tr> <th>Number of Months</th> <th>Remaining Balance (dollars)</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>7,592</td> </tr> <tr> <td>8</td> <td>5,931</td> </tr> <tr> <td>12</td> <td>5,683</td> </tr> <tr> <td>17</td> <td>4,428</td> </tr> <tr> <td>23</td> <td>2,854</td> </tr> </tbody> </table> <p>Based on the correlation coefficient for the data, what type of linear association exists between the number of months that had passed and the balance remaining in the account?</p> <div data-bbox="1755 475 1995 779"> <p><input type="radio"/> (A) Strong positive</p> <p><input type="radio"/> (B) Weak positive</p> <p><input type="radio"/> (C) Strong negative</p> <p><input type="radio"/> (D) Weak negative</p> </div>	Checking Account Balance		Number of Months	Remaining Balance (dollars)	2	7,592	8	5,931	12	5,683	17	4,428	23	2,854
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<p>A.4(B) <u>compare</u> and <u>contrast</u> <u>association</u> and <u>causation</u> in real-world problems</p>	<p>Concepts (Know) -association -causation</p> <p>Skills (Do) - compare -contrast</p>	<p>2024</p> <p>Which situation best represents association but NOT causation?</p> <div data-bbox="970 977 1667 1490"> <p><input type="radio"/> (A) When the number of spectators at a football game increases, the number of wins for the home team increases.</p> <p><input type="radio"/> (B) When more gallons of water are put into an aquarium, the weight of the aquarium increases.</p> <p><input type="radio"/> (C) When the amount of time an athlete runs increases, the distance she runs increases.</p> <p><input type="radio"/> (D) When the charge of a cell phone battery increases, the number of minutes the phone can be used increases.</p> </div>														

A.4(C) write, with and without technology, linear functions that provide a reasonable fit to data to estimate solutions and make predictions for real-world problems

Concepts (Know)
 - Linear functions
 - Reasonable fit

Skills (Do)
 - write

2025

A restaurant owner experimented with different prices for the lunch special. The table shows the linear relationship between the price of the lunch special in dollars and the number of lunch specials sold on six different days.

Lunch Special	
Price (dollars)	Number Sold
6.50	107
9.50	78
7.25	99
11.00	65
8.75	87
9.35	80

Based on the line of best fit, which predictions are true?

Select **TWO** correct answers.

- Approximately 82 lunch specials would be sold if the price were \$5.00.
- Approximately 111 lunch specials would be sold if the price were \$6.00.
- Approximately 102 lunch specials would be sold if the price were \$7.50.
- Approximately 74 lunch specials would be sold if the price were \$12.50.
- Approximately 28 lunch specials would be sold if the price were \$15.00.

2023

The table shows the number of customers each hour for an online sale.

Online Sale	
Hours after the Sale Began, x	Number of Customers, $f(x)$
1	296
2	256
3	215
4	170
5	133
6	89
7	51

Which function best models the data in the table?

Ⓐ $f(x) = 296 - 41x$

Ⓑ $f(x) = 337 - 41x$

Ⓒ $f(x) = 317 - 38x$

Ⓓ $f(x) = 296 - 38x$

<p>A.12(C) identify terms of arithmetic and geometric sequences when the sequences are given in function form using recursive processes</p>	<p>Concepts (Know) -arithmetic sequences -geometric sequences -recursive processes</p> <p>Skills (Do) - identify</p>	<p>2025</p> <p>A sequence can be generated by using the equation shown, where $a_1 = 100$ and n is a whole number greater than 1.</p> $a_n = 1.1a_{(n-1)}$ <p>What are the first four terms in the sequence?</p> <p>(A) 100 210 441 926.1</p> <p>(B) 100 109 118.9 129.79</p> <p>(C) 100 101.1 102.2 103.3</p> <p>(D) 100 110 121 133.1</p> <p>2023</p> <p>A sequence is defined by $f(1) = 27$ and $f(n) = \frac{1}{3}f(n-1)$ for each whole number n, where $n > 1$. What are the first four terms of the sequence?</p> <p>(A) 27, 9, 3, 1</p> <p>(B) 27, 81, 243, 729</p> <p>(C) $\frac{1}{3}, \frac{28}{3}, \frac{55}{3}, \frac{82}{3}$</p> <p>(D) $\frac{1}{3}, \frac{1}{81}, \frac{1}{2,187}, \frac{1}{59,049}$</p> <p>2024</p> <p>The first five terms of a sequence are $a_1 = 47$, $a_2 = 33$, $a_3 = 19$, $a_4 = 5$, and $a_5 = -9$.</p> <p>Based on this information, create an equation that can be used to find the nth term of the sequence, a_n. Move the correct answer to each box. Each answer may be used more than once. Not all answers will be used.</p> <p style="text-align: center;"> <input type="text" value="-61"/> <input type="text" value="-47"/> <input type="text" value="-14"/> <input type="text" value="14"/> <input type="text" value="47"/> <input type="text" value="61"/> </p> <p>$a_n =$ <input type="text"/> $n +$ <input type="text"/></p>
<p>A.12(D) write a formula for the n^{th} term of arithmetic and geometric sequences, given the value of several of their terms</p>	<p>Concepts (Know) -arithmetic sequences -geometric sequences -terms -n^{th} term</p> <p>Skills (Do) - write</p>	

VERTICAL STANDARDS

This section details the **progression** of key student expectations/standards** in the courses **before** and **after** this course. This will help you understand what **prior knowledge skills to build upon** and guide you in knowing what **skills you are preparing your students** for in the subsequent course.

6 th / 7 th Grade	Algebra I	Algebra II
<p>6.2(E) extend representations for division to include fraction notation such as $\frac{a}{b}$ represents the same number as $a \div b$ where $b \neq 0$</p> <p>6.3(A) recognize that dividing by a rational number and multiplying by its reciprocal result in equivalent values</p> <p>6.6B write an equation that represents the relationship between independent and dependent quantities from a table</p> <p>6.3(D) add, subtract, multiply, and divide integers fluently</p> <p>6.3(E) multiply and divide positive rational numbers fluently</p>	<p>A.4(A) calculate, using technology, the correlation coefficient between two quantitative variables and interpret this quantity as a measure of the strength of the linear association</p> <p>A.4(B) compare and contrast association and causation in real-world problems</p> <p>A.4(C) write, with and without technology, linear functions that provide a reasonable fit to data to estimate solutions and make predictions for real-world problems</p> <p>A.12(C) identify terms of arithmetic and geometric sequences when the sequences are given in function form using recursive processes</p> <p>A.12(D) write a formula for the n^{th} term of arithmetic and geometric sequences, given the value of several of their terms</p>	<p>A2.5(B) formulate exponential and logarithmic equations that model real-world situations, including exponential relationships written in recursive notation.</p> <p>A2.6(D) formulate absolute value linear equations</p> <p>A2.6(H) formulate rational equations that model real-world situations</p> <p>A2.8A analyze data to select the appropriate model from among linear, quadratic, and exponential models.</p> <p>A2.8C predict and make decisions and critical judgments from a given set of data using linear, quadratic, and exponential models.</p>