Welcome!

Please make sure that your phone or computer is muted and that you have turned off your computer's camera.

To do this, hover over the bottom left-hand side of your screen and click "Mute" and "Stop Video". Once both have been turned off, you should see this visual.
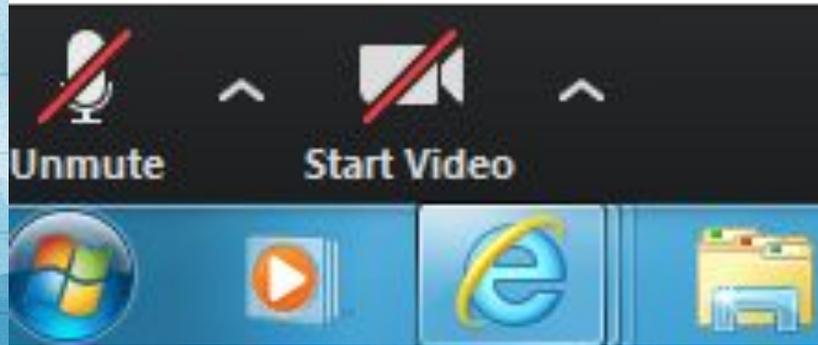
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## LEAP 2025 Mathematics Constructed Response Tasks

November 2018

The webinar is being recorded and will be linked in the Assessment Guidance Library later in the month.

DEPARTMENT of EDUCATION

Louisiana's Approach

Louisiana believes access to the highest quality education allows all students, no matter their zip code, the opportunity for success.

The assessments school systems and teachers use must be connected to standards-aligned curriculum and professional development.

Objectives

1. Review Constructed Response (CR) design and format by Task Type and review the supporting Assessment Resources.

2. Highlight statewide patterns in student responses and student explanations in writing that adversely affect Constructed Response scores.

3. Provide recommendations for instructional practices to address adverse patterns in student responses and student explanations.
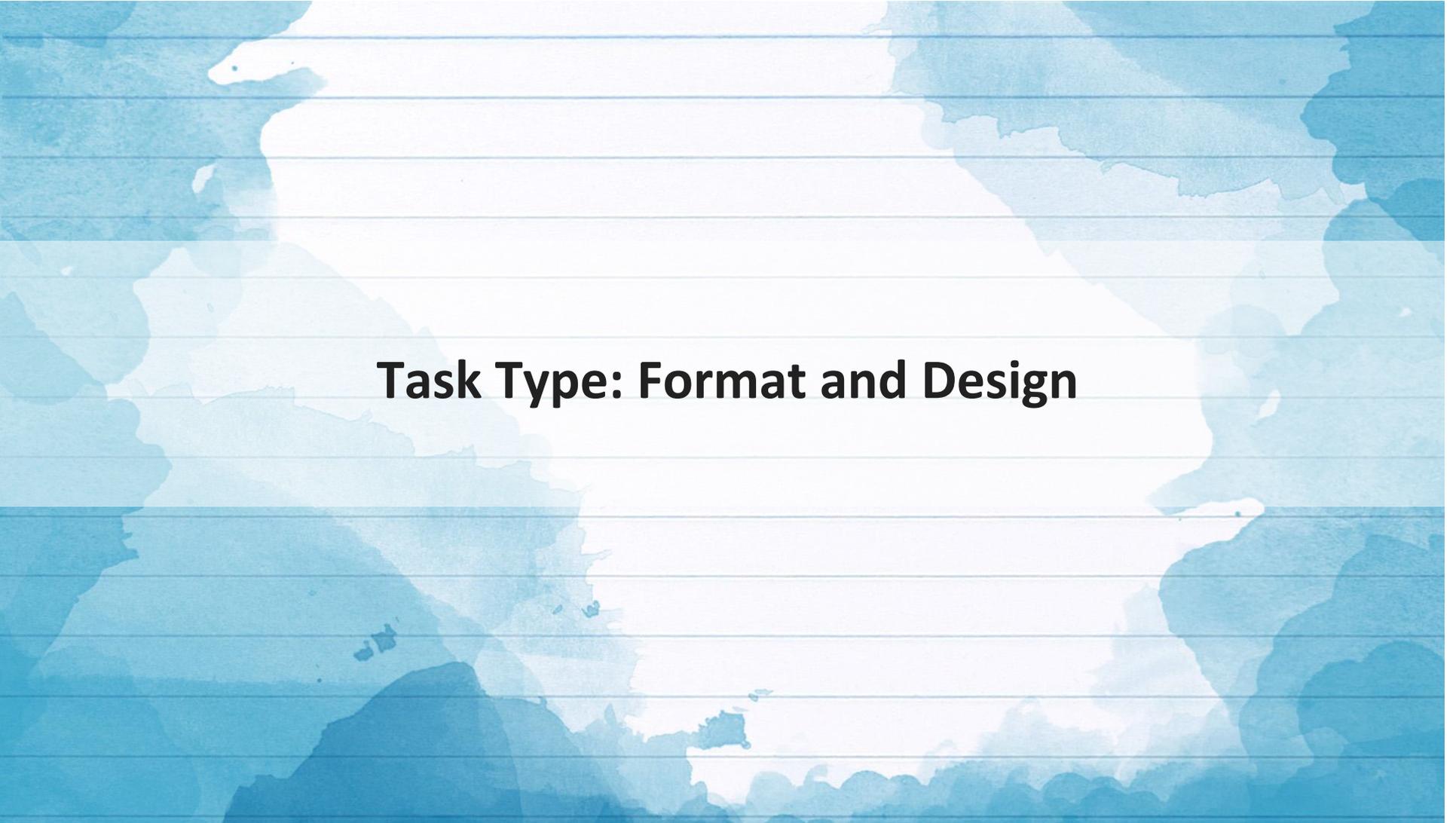
Task Type: Format and Design

Type II Tasks: Expressing Mathematical Reasoning

Type of Reasoning	● Base explanation/reasoning on specific concept/referent ● Present logical argumentation, solution steps, and chains of reasoning ● Justify or refute propositions or conjectures ● Application of reasoning to specific concept
Applicable Content	● Only assess LSSM assigned to the evidence statement ● Adhere to all guidelines presented in the evidence statement
Task Components	● Worth 3 or 4 points ● May have reasoning and computation components ● At least 2 points must be assigned to reasoning components ● May be multi-part of a variety of item types, at least one part is CR ● Include sample response in rubric

Type III Tasks: Modeling and Application

Type of Reasoning	● Solve multi-step contextual word problems ● Reasoned estimates* ● Micro-models*
Applicable Content	● Only assess LSSM assigned to the evidence statement ● Adhere to all guidelines presented in the evidence statement
Task Components	● Worth 3 or 6 points ● May have modeling and computation components ● At least 2 of 3 or 3 of 6 points must be assigned to modeling components ● May be multi-part of a variety of item types, at least one part is CR ● Include sample response in rubric
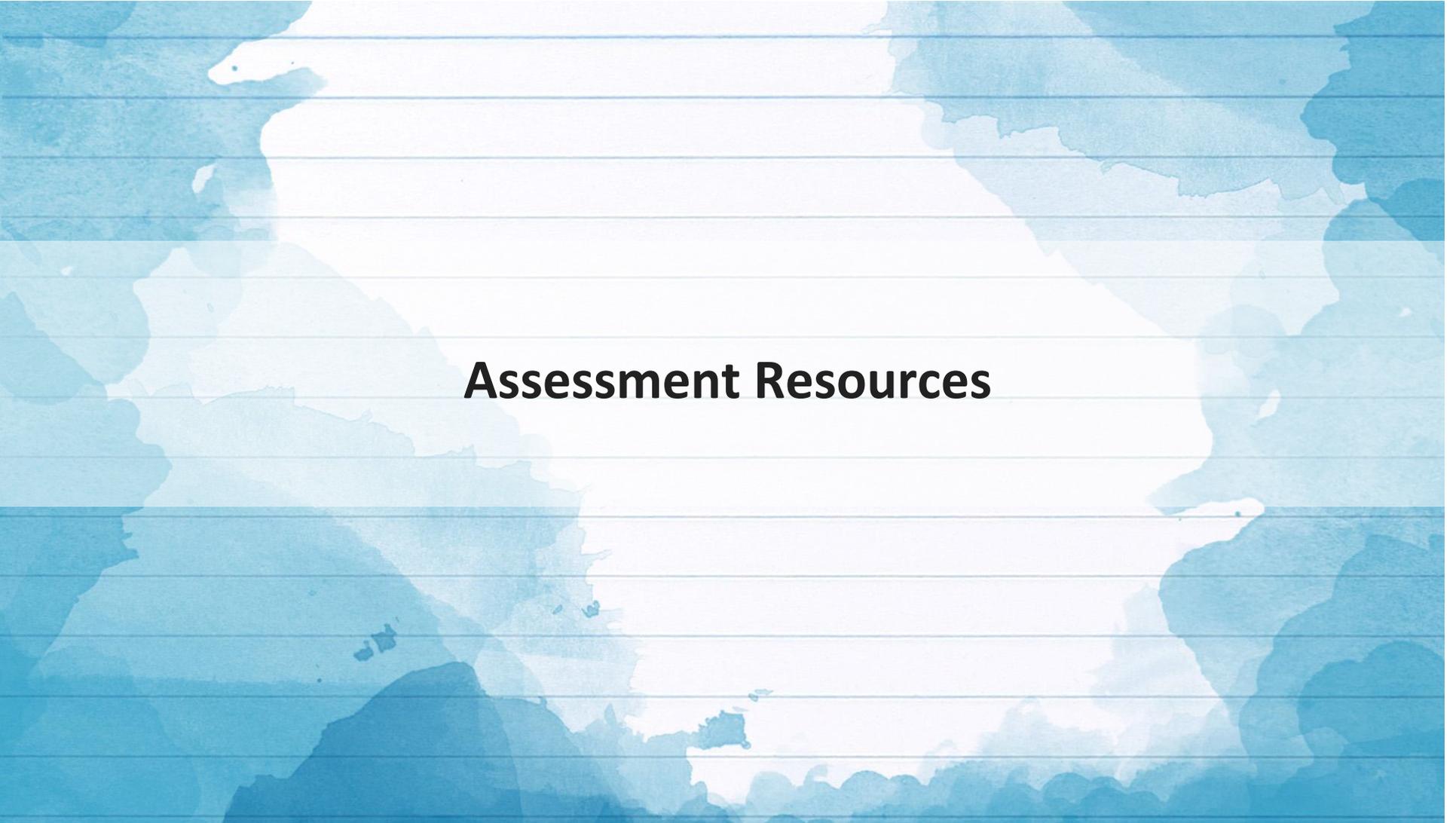
Assessment Resources

Assessment Resources

Assessment Guides

TEST DESIGN - Located in the "Assessment Design" Section; Provides a breakdown of the grade-specific assessment by item type

ASSESSABLE CONTENT and EVIDENCE STATEMENTS - Located in Appendix A; Specifically gives the standards and evidence statements for each Reporting Category and Item Type

SAMPLE ITEMS - Self-Titled Section can click on menu link to jump in the document to these items; Answer Key and Rubrics located in Appendix B

Achievement Level Descriptors

PURPOSE - Describes what abilities/degrees of comprehension are present at each achievement level

INSTRUCTIONAL BENEFIT - Groups related standards and skills together, which can be used to effectively plan and deliver instruction and create smaller formative assessments

CR BENEFIT - Condenses and summarizes skills required by each evidence statement more clearly and directly

Practical Resources

PRACTICE TESTS - During instructional units, constructed response tasks from practice tests can be used to assess unit-specific skills and concepts and/or to practice responding to the specific type of CR task.

EAGLE- C&I and Teacher Leader Teams have been focused on creating CR Tasks at each grade level; The item bank has now been updated with 6-10 tasks for each grade level

LEAP 360 - After giving Diagnostics and Interims, assessment items can be used for instructional purposes (review, RTI, redelivery, etc.)
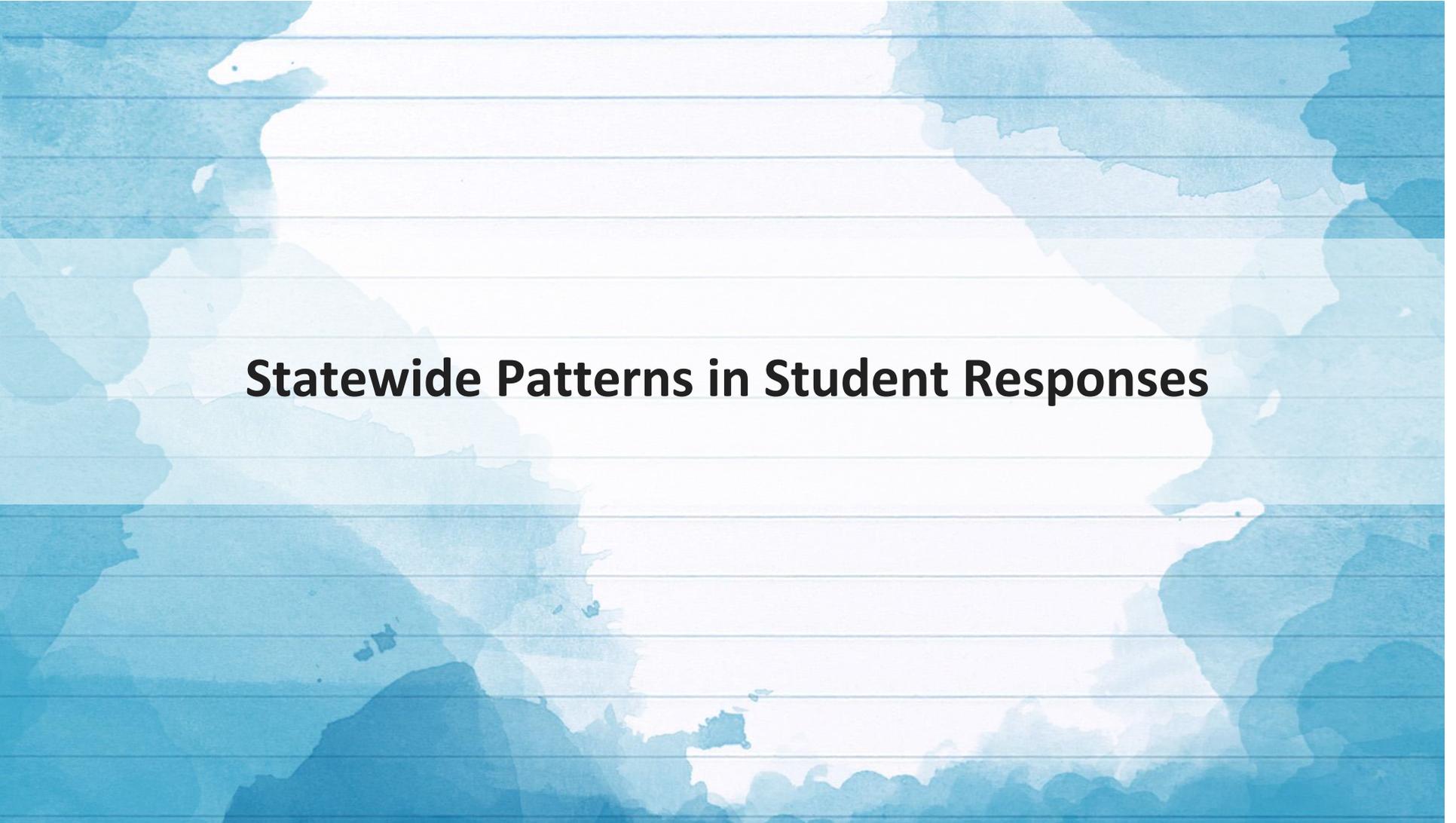
Statewide Patterns in Student Responses

Statewide Patterns

- Partially responds, leaving out key components of a full response

- Missing the connection between content and conceptual understanding

*Prevents students from <u>earning</u> points

What patterns are evident in student responses?

Partially responds, leaving out key components for a full response

Box Size	Number of Sticks of Clay in Each Box
small	7
large	10

Part B

The art teacher buys the rest of the clay he needs in large boxes. The cost of 1 large box of clay is $14. What is the total cost for these boxes of clay? Show or explain your work.

The answer is $112.00

Grades 3-5

What patterns are evident in student responses?

Partially responds, leaving out key components for a full response

A scientist removed a sample of 39.1 grams of a chemical from a container. The sample was $5\frac{3}{4}$ grams less than $\frac{3}{10}$ of the total mass of the chemical in the container.

What was the total mass, in grams, of the chemical in the container before the scientist removed the sample of 39.1 grams? Show your work or explain how you know.

Enter your answer and your work or explanation in the space provided.

the total mass was 149.5
$0.3x - 5.75 = 39.1$

Grades 6 - 8

What patterns are evident in student responses?

Partially responds, leaving out key components for a full response

Tonya has a rectangular rug with an area of 21 square feet. The rug is 4 feet longer than it is wide.

Part A

Create an equation that can be used to determine the length and the width of the rug. Justify your answer.

Enter your equation and your justification in the space provided.

$$(x + 4)x = 21$$

High School

What patterns are evident in student responses?

Missing the connections between content and conceptual understanding

When 713 is divided by 7, the remainder is 6. Use multiplication to explain why this is true.

Enter your explanation in the space provided.

This is true because quotient multiplyed by the divisor plus the remainder equals the dividend

Grades 3-5

What patterns are evident in student responses?

Missing the connections between content and conceptual understanding

A scientist removed a sample of 39.1 grams of a chemical from a container. The sample was $5\frac{3}{4}$ grams less than $\frac{3}{10}$ of the total mass of the chemical in the container.

What was the total mass, in grams, of the chemical in the container before the scientist removed the sample of 39.1 grams? Show your work or explain how you know.

Enter your answer and your work or explanation in the space provided.

$39.1 + 5.75 = 44.85$

$44.85 \div 3 = 39.3$
$39.3 = \frac{1}{10}$
$39.3 \times 10 = 393$
393 grams in total.

Grades 6 - 8

What patterns are evident in student responses?

Missing the connections between content and conceptual understanding

In the figure shown, the lengths of segments AC, BC, CD, and CE are given in terms of the variable x.

not to scale
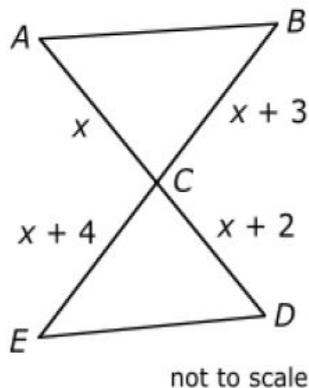
Yes. $\triangle ABC \approx \triangle DEC$ by AA Postulate. Therefore, the sides must be similar which they are as each side of $\triangle DEC$ is one more than the corresponding side of $\triangle ABC$.

If $\overline{AB} \parallel \overline{DE}$, are the dimensions reasonable? Justify your answer.

Enter your answer and your justification in the space provided.

High School
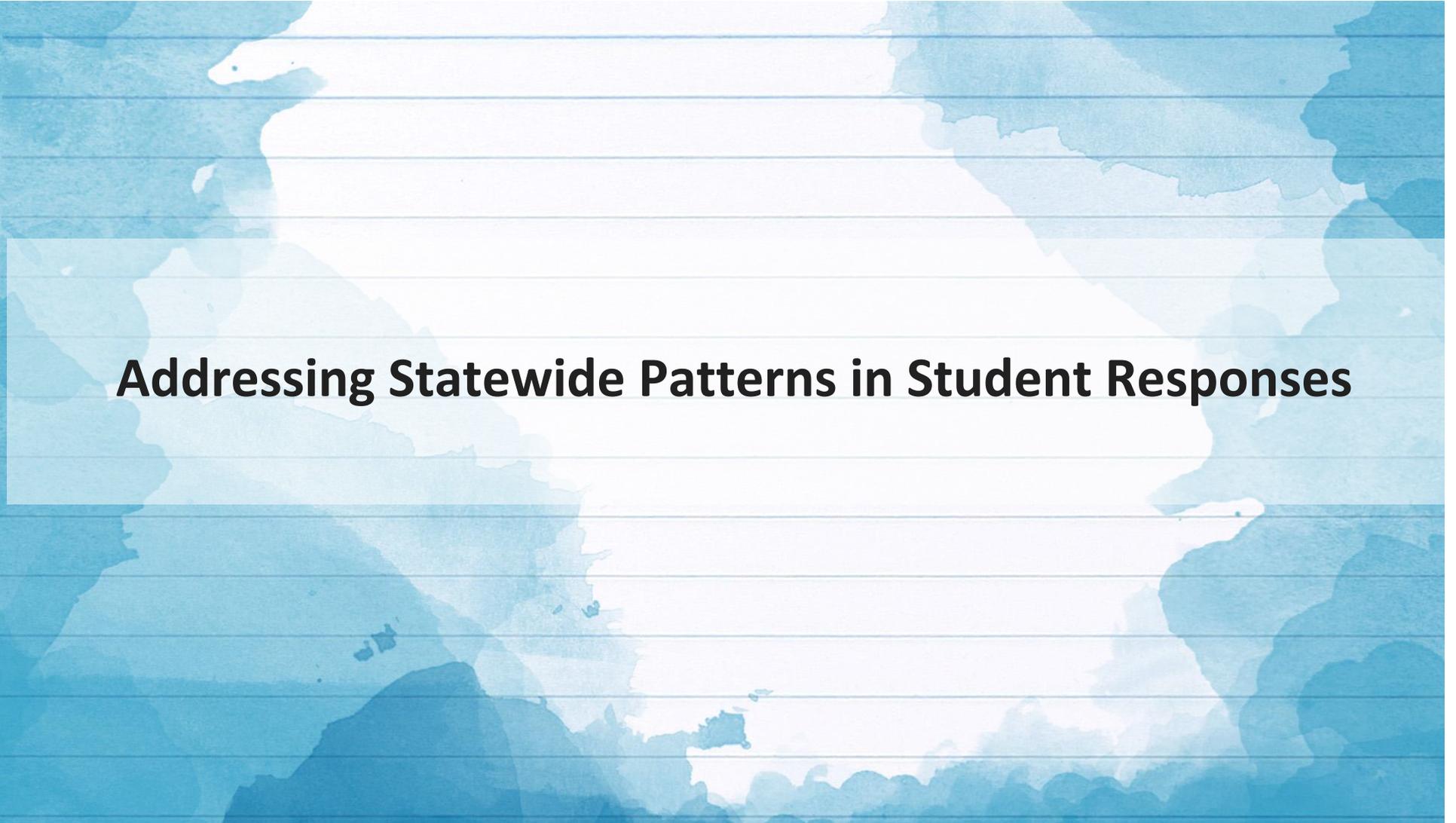
Addressing Statewide Patterns in Student Responses

Addressing the Statewide Patterns

- **Partially responds, leaving out key components of a full response**

Mr. Haley bought a total of 36 pictures. The pictures are only sold in packages. Each package came with 4 small pictures, 3 medium pictures, and 2 large pictures.

How many pictures were in each package? Show your work.

How many packages did he buy? Show your work.

Enter your answers and your work in the box provided.

Andre visits the library. It takes Andre 26 minutes to walk from his house to the library. He stays at the library 45 minutes. His mother drives him home, which takes 15 minutes. How many more minutes does Andre spend at the library than traveling to and from the library?

Show all the steps for solving the problem. Explain each step and give the final answer.

Enter your answer, your work, and your explanation in the box provided.

Use highlighting tools for CBT and PBT to help students remember to provide a **complete** response for each CR task.

Addressing the Statewide Patterns

- **Missing the connection between content and conceptual understanding:**

  a. Provide students frequent opportunities to express their mathematical reasoning and modeling techniques in **writing**.

  b. Provide students frequent opportunities to **collaborate** and **discuss** their mathematical reasoning and modeling techniques.

  c. Provide students opportunities to **examine, score, and critique** peer responses.

Addressing the Statewide Patterns

Scaffolding provides **support** for **student understanding.**

- Prepare to make **modifications** to tasks to help students **understand the individual components** of the task.

- Prepare to make **modifications to the values/number types** within a task to allow the student to **focus on the contextual and/or conceptual aspects** of the task.

- Present **multiple versions** of tasks to **build fluency with the task type** (i.e. supporting the evidence statement through all of the correlating standards).

Addressing the Statewide Patterns

- Start with versions of tasks that have more **manageable** math skills

- Alter tasks to include grade or course level skills that **address needs of different learners** (below, at, and above grade level)

- Create opportunities for students to **work collaboratively** on tasks

- **Breakdown tasks** that require a lot of interpretation or work
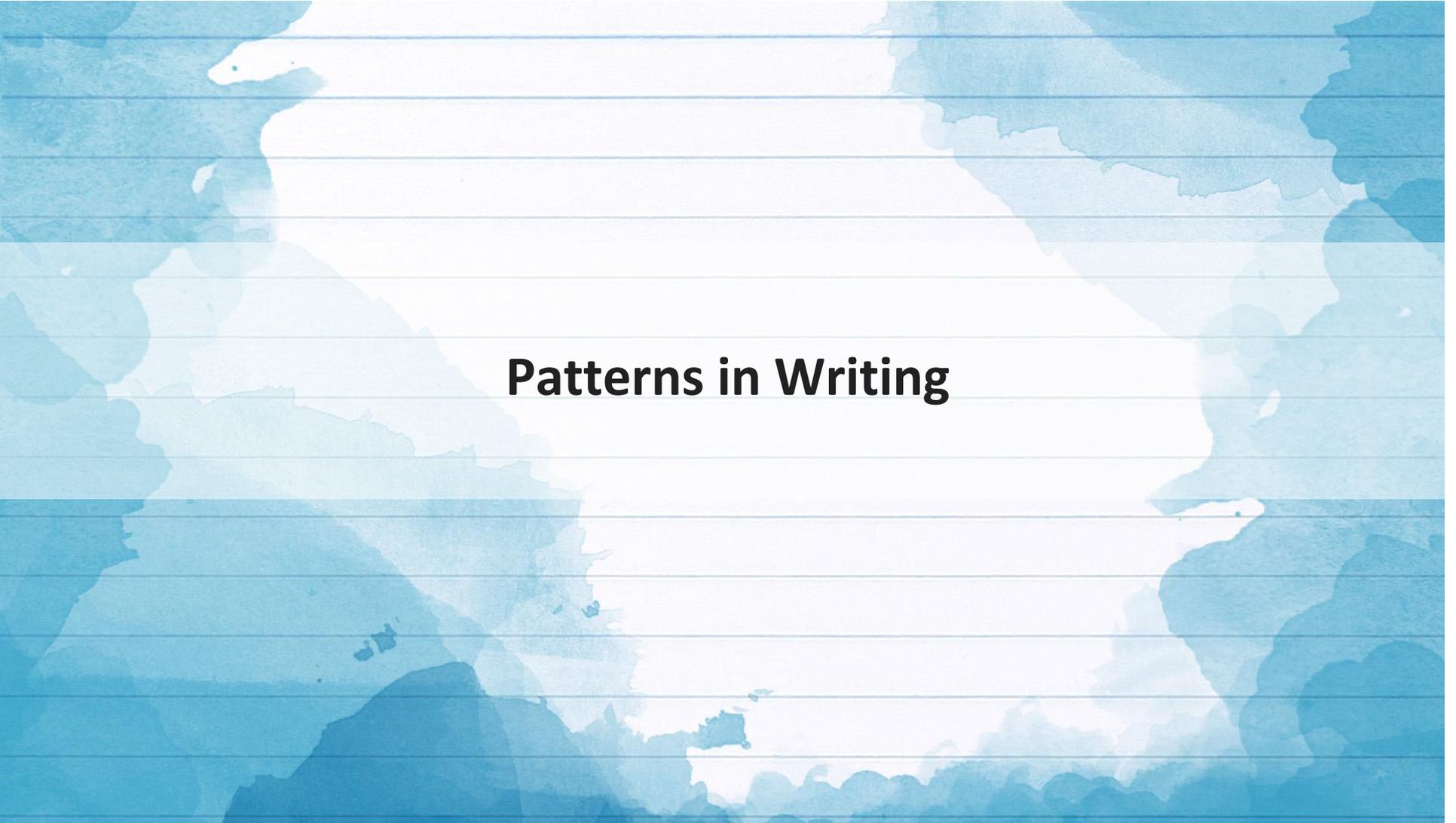
Patterns in Writing

Patterns in Writing

- Explanations that do not translate into correct mathematical processes or equations.

- Incomplete mathematical explanations that lacks detail to illustrate complete understanding.

- Responses that "over-explain."

*Prevents students from <u>keeping</u> points they have earned

Explanations that do not translate into correct mathematical processes or equations.

Complete the following:

a. Find the quotient and remainder for $1,218 \div 4$. Show your work on paper. Type your answer in the box below.

"The answer is 304 r 2. I got my answer by ==dividing 12 into 4 which is 3==. that left zero and brought down my 1, but 4 can't go into 1 so I put a zero at the top and had to bring down the 8. 18 can divide into 4 4 times. 18 - 16 give me 2 left over."

Earns 1 point instead of 2 points. Student clearly understands the process, but mathematically speaking the highlighted section is incorrect.

Explanations that do not translate into correct mathematical processes or equations.

Complete the following:

a. Find the quotient and remainder for $1,218 \div 4$. Show your work on paper. Type your answer in the box below.

Answer: 304 remainder 2

4 ✕ 3 = 12

12 -12 = 018 ÷ 4 = 4

18 - 16 = 2

Student earns 1 point instead of 2 points. Clearly knows the process, but nonsensical mathematical statement is incorrect

Incomplete mathematical explanations

b. There is $\frac{3}{12}$ of the lasagna left. Use division to rename the fraction.   Show or explain your work

"3/12 = 1/4 **because I can divide by 3.**"

Divide what by 3? Lack of detail and proper vocabulary can lead to an incorrect interpretation of student's process. Earns 1 point instead of 2 points. Again, student understands this process.

What patterns are evident in student responses?

Responses that "over-explain"

Vishal and Maria measure a rectangle and find that it has side lengths of **4** centimeters and **5** centimeters.
Vishal says the area of the rectangle is **20** square centimeters.
Maria says the area of the rectangle is **9** square centimeters.
Who do you agree with? Explain your answer in the box.

"Vishal is correct. I know this because to do area we have to multiply and when you do perimeter we add. Vishal multiplied and Maria added. I checked the work the perimeter of the rectangle, which is 4 x 5 and it equals 20. And I added 4 + 5 and it does equal 9, but it is the perimeter. That's how I know Vishal has the right area."

Clear understanding, but student has talked his/her way out of points. Earns 1 point instead of 2 points

Addressing Patterns in Writing

Addressing the Patterns in Writing

- **Allow multiple opportunities to write** out responses to mathematical problems and do not limit explanations only to CR tasks. (i.e. Math Logs, Writing to Audience, Homework)

- Allow students the opportunity to **correct it, before you count it.**

- **Focus on being impartial**; The handscorers score what is written, not what is intended or implied. (You should do the same)

- Provide students opportunities to **read** and **critique** peer responses.

Addressing the Patterns in Writing

- Mathematical responses **does not** have to be in paragraph form.

- The **character count maximum has increased** to 10,000

- Grammar and spelling are **not** penalized in Math.

- Explanations can be a **mixture of words and mathematical expressions or equations**.

Addressing the Patterns in Writing

- Student writing should be able to accurately translate into detailed process and/or accurate mathematical work using precise **mathematical language**.

- Explanations should include **grade-specific academic vocabulary**. Minimally students should be:
    - **aware** or familiar with the term and its meaning;
    - **understand** the term's meaning well-enough to apply it within Type I items; and/or
    - **use** the term properly in written explanations within Type II and III items.

Wrap Up

Next Steps

Action	
Analyze	● Type II and III Evidence Statements and corresponding standards ● Achievement Level Descriptors
Exposure	● To different Constructed Response Tasks (type, form of reasoning, required modeling)
Practice	● Responding to ALL questions within a CR task ● Writing responses (and processes) to ANY item question type ● Giving written responses within the responses boxes for PBT and CBT (OTT, LEAP 360)

Email danielle.ricks@la.gov or assessment@la.gov with any questions.

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Resources

- **LEAP 2025 Assessment Guidance** - This library contains documents designed to assist Louisiana educators in understanding the LEAP 2025 assessments for each grade level and each subject

- **LEAP 2025 Practice Test Library** - This library contains documents designed to assist

- **Achievement Level Descriptors** - Set of documents within the Assessment Library that describe skills students will possess at each achievement level based on standard, evidence statement (for CR tasks), and concept. Documents organized by grade level and subject.

- **EAGLE**- part of the LEAP 360 system which allows teachers to integrate high-quality questions into daily lessons through teachercreated tests, premade assessments, and items for small group instruction

- **LEAP 360** - non-summative assessment system; includes diagnostic and interim assessments for all grade levels

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