

*Before beginning this task, read the complete directions provided in the CalTPA Candidate Handbook.*

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## Case Study 1: Subject-Specific and Developmentally-Appropriate Pedagogy

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### A. Contextual Information for Case Study 1

#### 1. Elements of a Learning Experience in a Unit

Grade:	High School
Content Area:	Mathematics
Subject Matter:	Geometry
Time Period for the Learning Experience:	Two 45-minute sessions in two consecutive days

#### State-adopted Academic Content Standards for Students

Geometry

22.0 Students know the effect of rigid motions on figures in the coordinate plane and space, including rotations, translations, and reflections.

#### Learning Goals for the Learning Experience

Students will be able to do the following with a focus transformations of two and three-dimensional figures:

- Translate, reflect, and rotate plane and solid figures
- Determine the effect of more than one transformation on plane and solid figures

#### Instructional Resources Available

Geometry textbook, standard construction tools – straightedge, compass, protractor, plastic models of 2 and 3-dimensional figures, and computers with transformational geometry software and Internet access

#### 2. Class Description

Students are in a high school Geometry class. They particularly need to have opportunities to learn content in different ways and to revisit content. Many of the students enjoy the school environment and like to socialize with each other. Most of the students are active in after-school activities, including sports, clubs, tutoring, and jobs, which leaves little time for homework. The majority of the class plans to attend the local community college or technical computer school. There are some students who are unsure about what careers they want to pursue. About two-thirds of the students in this class have at least one other class with their classmates.

#### 3. Developmental Needs of the Students in Grades 9 –12

- understand connections between the lesson content and life outside of school
- develop advanced thinking and problem-solving skills

- develop socially and handle the intense social peer pressure to conform while maintaining individuality

**B. Questions for Case Study 1**

1. Given the contextual information for Case Study 1, think about a lesson you might use with these students that addresses the subject matter learning goals and the developmental needs of the students described. In the columns below describe:

- Instructional strategies
- Student activities
- Instructional resources

*Note: Instructional strategies are what the teacher does during instruction and student activities are what the students do during the lesson.*

Instructional Strategies	Student Activities

2. Based on your knowledge of the content and of student development, explain why the instructional strategies, student activities, and resources you listed in question 1:

<ul style="list-style-type: none"> <li>• are appropriate for this class</li> </ul>	
<ul style="list-style-type: none"> <li>• address the developmental needs of these student</li> </ul>	
<ul style="list-style-type: none"> <li>• help these students make progress toward achieving the state-adopted academic content standards for students in this content area</li> </ul>	

— END OF CASE STUDY 1 —

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## Case Study 2: Assessment Practices

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### A. Contextual Information for Case Study 2

#### 1. Elements of a Learning Experience in a Unit

Grade:	High School
Content Area:	Mathematics
Subject Matter:	Algebra
Time Period for Whole Unit:	3 weeks

#### State-adopted Academic Content Standards for Students

##### Algebra 2

7.0 Students add, subtract, multiply, divide, reduce, and evaluate rational expressions with monomial and polynomial denominators and simplify complicated rational expressions, including those with negative exponents in the denominator.

#### Learning Goals for Whole Unit

Students will be able to do the following:

- Reduce rational expressions
- Add and subtract rational expressions
- Multiply and divide rational expressions
- Simplify complicated rational expressions
- Evaluate rational expressions
- Give equivalent forms of rational expressions

#### 2. Teacher Reflection on Student Assessment for this Unit

“I am not satisfied with the assessment plan I used for the last unit of study. I gave the students a diagnostic test at the beginning of the unit, two quizzes during the unit, and a final test from the teacher’s guide. I feel, though, that I need additional information on what students really know and understand, their misconceptions, what they learned during instruction, and their progress toward achieving the learning goals. I am looking for ways to improve my assessment plan, so I can have a more complete understanding of how well these students learned the subject matter.”

3. Assessment Plan

	Day 1	Day 6	Day 11	Day 15
<b>Goals Assessed</b>	<i>Perform arithmetic operations on simple rational numbers, and factor polynomials</i>	<i>Multiply and divide rational expressions</i>	<i>Add and subtract rational expressions</i>	<i>Reduce, add, subtract, multiply, divide, simplify, evaluate, and give equivalent forms of rational expressions</i>
<b>Type</b>	Formal, diagnostic test from curriculum guide; multiple choice; formative	Formal quiz from the textbook; multiple choice; formative	Formal quiz from the textbook; multiple choice; formative	Formal, final chapter/unit exam from textbook; multiple choice and fill in the blank; summative
<b>Purpose</b>	Assess previous knowledge and skills	Assess acquired concepts and skills	Assess acquired skills and concepts	Assess acquired knowledge and skills from instructional unit
<b>Implementation</b>	Individual assessment; paper and pencil; teacher corrects with an answer key	Individual assessment; paper and pencil; teacher corrects with an answer key	Individual assessment; paper and pencil; teacher corrects with an answer key	Individual assessment; paper and pencil; teacher corrects with an answer key
<b>Feedback Strategies</b>	Tell students of scores and inform student of correct and incorrect items	Inform students of correct and incorrect items	Inform students of correct and incorrect items	Inform students of correct and incorrect items
<b>Informing Instruction</b>	To determine what needs to be reviewed and where to begin teaching	To determine who has learned the material presented	To determine who has learned the material presented	To determine the achievement level of each student towards the goals

**B. Questions for Case Study 2**

1.a.	Identify one strength in the assessment plan and explain why it is a strength in relation to the learning goals of this unit.	
1.b.	Identify one weakness in the assessment plan and explain why it is a weakness in relation to the learning goals of this unit.	

2. Suppose you found the additional assessment in a supplementary resource. Think about how the additional assessment could improve the teacher’s assessment plan.

**Additional Assessment**

Suppose you have been hired by a publisher to provide information for a detailed solution guide for the problem set below. The publisher wants to illustrate more than one way to simplify expressions. Present the publisher with two different methods to simplify each expression and provide a mathematical justification for each method, so the readers of the solution guide will understand how to use each method and why each is mathematically correct.

1.  $(5x^2 + 21x + 4)/(25x + 100)$
2.  $(6x^2/8x) \cdot -4x^3/(2x^2)$
3.  $(3x^2 + 6x)/(4x) \div 15/(8/x^2)$
4.  $(x + 3)/(x^3 - x^2 - 6x) \div (x^2 - 9)/(x^2 + x - 12)$
5.  $(x^3 + x^2)/(x^2 - 16) \cdot (x + 4)/(3x^4 + x^3 - 2x^2)$

Explain to the teacher how it might be used to improve the plan by answering the following questions:

2.a.	When in the plan would you use this assessment?	
2.b.	What goals would be assessed by this assessment?	
2.c.	What type of assessment would it be?	

2.d.	What would be the purpose of the assessment?	
2.e.	How would you implement the assessment?	
2.f.	What feedback strategies would you use?	
2.g.	How would the results of the assessment inform instruction?	

3. Explain how using the additional assessment as you described in question 2 improves the teacher’s assessment plan and what specific information would be gained about what the students really know and understand about the content area, their misconceptions, and their progress toward achieving the learning goals.

— END OF CASE STUDY 2 —

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## Case Study 3: Adaptation of Subject specific Pedagogy for English Learners

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### A. Contextual Information for Case Study 3

#### 1. Elements of a Learning Experience for 2 Days in a Unit

Grade:	High School
Content Area:	Mathematics
Subject Matter:	Mathematical Analysis
Time Period for Whole Unit:	3 weeks

#### State-adopted Academic Content Standards for Students

Limits-Mathematical Analysis

8.0 Students are familiar with the notion of the limit of a function as the independent variable approaches a number or infinity

#### Learning Goals for Whole Unit

Students will be able to do the following with a focus on limits:

- Find a limit
- Mathematically justify that limit
- Generate stages of various iterative processes

#### Relationship to Preceding and Subsequent Learning Experiences

Prior to this lesson, students studied finite and infinite series. They were introduced to the concept of convergent and divergent series. They also have encountered the concept of limit on an intuitive basis. They will use what they learned in this lesson in future work in determining and justifying limits.

#### 2. Outline of Plans for Days 3 and 4

**The following outline addresses some of the academic content standards and unit goals, but it is not expected that the students will achieve them during the two days.**

#### Instructional Strategies

- On Day 3, lead a quick review of finite and infinite sequences. Have students complete review sheet. Lead whole class discussion on their responses to the review sheet questions highlighting common misconceptions. Have students provide counter-examples at the board. Show students the first three iterations of the Sierpinski Triangle. Have them record their answers to questions concerning the number of triangles in each iteration and have them predict the number of triangles in subsequent iterations. Have students work in pairs to construct the next two iterations to check their predictions, shade the downward pointing triangles in each iteration, and record their predictions concerning the combined shaded areas of subsequent iterations. Students will be asked to individually record their prediction of the limit of the shaded area as the number of iterations becomes infinite. Each will discuss his/her prediction with a partner and

decide on a possible mathematical justification. Students will then split up to edit their limit prediction, if they wish, and to record their justification.

- On Day 4, have sets of partners present their work from Day 2 to the class. Class will pose questions about their work and partners will justify their thinking.

### Student Activities

- On Day 3, complete the review sheet and provide misconceptions of reviewed concepts and provide counter-examples on the board. Answer questions about the first three iterations of Sierpinski's Triangle, and make predictions about further iterations. Work with partner to construct the next two iterations in order to check predictions. Do the shading as directed and make predictions concerning the combined shaded areas of subsequent iterations. Record prediction of the limit, discuss with partner, and decide on a justification. Split up to edit and record predictions.
- On Day 4, present work with partner to the whole class and respond to questions asked by the class. When other partners are presenting, students will ask questions of that set of partners.

### Progress Monitoring

- Teacher will use class discussions, group and individual responses to questions, and expressed rationales to determine level of learning.
- Students will receive written and oral comments about individual work, and feedback about their work with a partner.

### 3. Student Description

Elena is a 15 year-old 10<sup>th</sup> grader and an English learner. She is from Mexico and both of her parents are professionals. Her extended family includes aunts, uncles, and cousins. Her grandparents live in Mexico and she and her family visit them in the summer. She has been in the United States for one and a half years. She is literate in Spanish and often reads Spanish literature. Her report cards from her school in Mexico indicate above average grades. Elena is somewhat shy socially but is well liked and works well in small groups. She is seldom absent from school. The CELDT results indicate overall score in the Early Intermediate range, and she has been identified as an English learner.

### Written Response to: "What is your favorite family day?"

#### *A Special Family Celebration*

*As special family time is when my family celebrate the anniversary of my grandmother and grandfather. They are my abuelita and abuelito. Why is it especial? I like this because all my family come to my grandparent house for make especial food of my country. The fiesta is very especial. My grandparent have marry 45 year. They live in Mexico my tia, tío and primos all go to Mexico for all family celebrate together. We like have all family together. My primos and me see friends in our city. We give grandparent big picture of all family. Grandparent like fiesta and gift. They are much happy.*

**Transcript of Oral Response to: “Tell my about your dance class.”**

*I like my dance class at community center. I need class for forget my problems. Is like help. I forgot my problems. When I dance, I like my dress because everybody look me and say, “Oh, that look pretty.” Everybody take my picture. I was in newspaper. When I dancing, I feel very good. I like that because I represent my country.*

**B. Questions for Case Study 3**

1.	<b>Identify two specific learning needs the student has as an English learner, based on the student description and the responses.</b>	
2.a.	<b>Identify one instructional strategy or student activity from the outline of plans that could be challenging for the student.</b>	
2.b.	<b>Explain why the strategy or activity you chose could be challenging to the student. Use your knowledge of English learners and your analysis of the student’s learning needs in your explanation.</b>	
3.a.	<b>Describe how you would adapt the strategy or activity you identified above to meet the learning needs of the student. Consider specific subject matter pedagogy when writing your description.</b>	
3.b.	<b>Explain how your adaptation would be effective for the student in making progress toward the learning goals of the lesson.</b>	

	<i>(In your explanation of the adaptation, refer to specific aspects of the student description and to the samples of proficiency in English.)</i>	
<b>3.c.</b>	<b>Explain how your adaptation would be effective for the student in making progress toward English language development.</b> <i>(In your explanation of the adaptation, refer to specific aspects of the student description and to the samples of proficiency in English.)</i>	
<b>4.a.</b>	<b>Which progress monitoring assessment from the outline of plans would you choose to monitor this student’s progress toward achieving the learning goal(s)?</b>	
<b>4.b.</b>	<b>Give a rationale for your choice of progress monitoring assessment. Use your knowledge of content in this unit, and this student’s English language abilities in your rationale.</b>	
<b>5.</b>	<b>Based on what you learned about this student’s English proficiency, what would be your next steps in planning to facilitate her English language development? Consider specific information from the student description and her written and oral language samples when responding.</b>	

— END OF CASE STUDY 3 —

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## Case Study 4: Adaptation of Subject-Specific Pedagogy for Students with Special Needs

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### A. Contextual Information for Case Study 4

#### 1. Elements of a Learning Experience for 3 Days in a Unit

Grade:	High School
Content Area:	Mathematics
Subject Matter:	Probability
Time Period for Whole Unit:	3 weeks

#### State-Adopted Academic Content Standards for Students

##### Probability and Statistics

- 6.0 Students know the definitions of the mean, median, and mode of a distribution of data and can compute each in particular situations.
- 8.0 Students organize and describe distributions of data by using a number of different methods.

#### Learning Goals for Whole Unit

Students will be able to do the following

- Make connections between mathematics and its applications in the real world
- Select and use appropriate tools and technology to analyze and display data
- Communicate precisely about given quantities, relationships, and unknown values
- Reason mathematically by analyzing evidence and building arguments to support or refute hypotheses

#### Relationship to Preceding and Subsequent Learning Experiences

Prior to this unit, students have studied the measures of central tendency and how to calculate them. In the future, they will use the skill covered in this unit to solve problems.

#### 2. Outline of Plans for Days 3, 4, and 5

**The following outline addresses some of the academic content standards and unit goals, but it is not expected that the students will achieve them during the three days.**

#### Instructional Strategies

- On Day 3, read a report with text, statistics, and graphical representations about rainfall in California during the last decade (vary between independent silent and oral reading to whole class). Present additional information about the concepts and lead whole-class discussion. Have students respond in writing to teacher-generated questions about the report. Written responses are homework.
- On Day 4, read a document that addresses appropriate uses and misuses of measures of central tendency, and effective graphical representation of data for the purpose of

critiquing the report read on the previous day. Lead a class discussion about how statistics can present and support different perspectives. Give groups of students the same set of data, but different questions. Students must compute statistics and create graphical representations best suited to respond to their questions. Students write individual rationales supporting their selection of statistics and representations. As a group, they present their statistics and representations to the class and receive feedback from others.

- On Day 5, have students read an article containing an inappropriate use of statistics to support a position. Students discuss the article with a partner. Each student writes a letter to the author indicating the errors in the article and providing arguments for using other statistics to support the same position.

### **Student Activities**

- In class, either read silently or orally the copy of the report, highlighting important issues, and participate in class discussion about statistics presented. For homework, complete written responses in questions.
- Listen to arguments critiquing the statistics used in the report, take notes, and participate in class analysis and discussion. Work in a group to analyze data and make graphical representations to respond to a given question. Individual students write rationales. Present with other group members the statistics and representations chosen to whole class. Provide feedback to other groups when they present.
- Read article and discuss it with a partner. Write a letter to the author. Read a letter written by another classmate and analyze for reasonableness.

### **Progress Monitoring**

- Teacher will use class discussion, responses to questions, group presentation and letter to author to monitor student progress.
- Students will receive written and oral comments from the teacher and other students.

### **3. Student Description**

Alex is a 15-year-old boy in the 10<sup>th</sup> grade. He had difficulty with the development of his early literacy skills, including the acquisition of sound/symbol relationships and word identification, demonstrated in both his reading and writing. In the second grade, Alex was identified as a student with specific learning disabilities. Since then, Alex has received special education support primarily in a resource room for language arts, while he is included in the general education curriculum. He is able to independently read text at a 7<sup>th</sup> grade level and continues to struggle with decoding words. Alex also has asthma for which he takes daily medication and occasionally needs to use an inhaler. He is a self-isolating person who does not readily join into whole-class conversations or contribute to group learning situations. His tendency is to sit alone at lunch and to be by himself during transitional time. There is no in-class support for this student.

**B. Questions for Case Study 4**

1.a.	<b>Identify one instructional strategy or student activity from the outline of plans that could be challenging for the student, considering the description of the student’s learning disability.</b>	
1.b.	<b>Explain why the strategy or activity you chose could be challenging for the student, based on specific aspects of the student description.</b>	
1.c.	<b>Describe how you would adapt the strategy or activity you identified to meet the needs of the student.</b>	
1.d.	<b>Explain how your adaptation would be effective for the student in making progress toward achieving the learning goal(s) of this unit.</b>	
2.a.	<b>Identify one additional instructional strategy or student activity from the outline of plans that could be challenging for the student, considering the student’s other learning needs.</b>	
2.b.	<b>Explain why the strategy or activity you chose could be challenging for the student, based on specific aspects of the student description.</b>	
2.c.	<b>Describe how you would adapt the strategy or activity you identified to meet the needs of the student.</b>	

<b>2.d.</b>	<b>Explain how your adaptation would be effective for the student in making progress toward achieving the learning goal(s) of this unit.</b>	
<b>3.a.</b>	<b>What progress monitoring assessment would you choose to obtain evidence of the student's progress toward a learning goal(s)?</b>	
<b>3.b.</b>	<b>Give a rationale for your choice of assessment. Use your knowledge of academic content in this unit, and this student's learning needs in your rationale.</b>	

— END OF CASE STUDY 4 —