

Name: Cole Chandler	Grade/Subject: 6, 7, or 8 Math	Date: May 2024
<p><b>1. Texas Essential Knowledge and Skills (TEKS): (C2)</b>  <b>111.27.b(5) – Proportionality.</b> The student applies mathematical process standards to use geometry to describe or solve problems involving proportional relationships.  The student is expected to:</p> <p>(A) generalize the critical attributes of similarity, including ratios within and between similar shapes;  (B) describe <math>\pi</math> as the ratio of the circumference of a circle to its diameter; and  (C) solve mathematical and real-world problems involving similar shape and scale drawings</p>		
<p><b>2. Deconstructing/Unpacking the TEKS: (C2)</b> <i>What students will know and be able to do</i></p> <p>Describe <math>\pi</math> as the ratio of the circumference of a circle to its diameter</p>		
<p><b>3. SMART Objective(s): (C3)</b></p> <p><b>Essential Question:</b></p>	<p>Given a ruler, string, tape, and circular objects, students in small groups will use their tools to measure the circumferences and diameters of cylindrical objects and identify the ratios between the object's respective circumferences and diameters. By the end of the activity, students will write down their observations after comparing the ratios of the objects.</p> <p>EQ: What can you notice about the ratios of the different sized cylindrical objects?</p>	
<p><b>4. Central Focus (C4)</b>  <i>How will this lesson link with other lessons in the unit?</i></p> <p><b>Learning Targets</b>  <i>I CAN statements that Clearly show alignment with TEKS</i></p>	<p>The purpose is for students to discover pi. They will learn that the ratio between circumference and diameter for <u>any</u> circle is always 3.14. Students experience applying a constant(pi) to solve for real numbers (circumference, diameter, radius). Students learn what a ratio is and how to create one as well as using a given number to solve for an unknown value.</p> <p>I CAN describe the ratio b/w circumference and diameter for ANY circle.  I CAN use pi to find the circumference of a circle given the diameter and visa versa.</p>	
<p><b>5. Academic Language (C5)</b>  <b>The “what”</b>  Academic language represents the language of the discipline that students need to learn and use to engage in the content area in meaningful ways.</p> <p>There are 4 <u>language demands</u> to consider as you require students to read, write, speak, listen, demonstrate and perform.</p>	<p><b>Language Function</b> <i>(an active verb that students will use to demonstrate their learning in the assessments; some examples are- explain, describe, predict, summarize, compare, evaluate, interpret, justify):</i> <b>DESCRIBE.</b></p> <p><b>Students must know how to measure with a ruler, use tape, how to read decimals, how to divide, multiply, and rearrange equations. What a ratio is (*provide real world examples, like humans to insects, or energy costs to output(efficiency)).</b></p> <p><b>Vocabulary</b> <i>(words, phrases, and/or symbols that are used within disciplines):</i></p> <p>Pi, <math>\pi</math>, ratio, circumference, radius, diameter, measure, cylindrical, similarity.</p> <p><b>Discourse</b> <i>(Structures of written and oral language, how will they talk, write, and participate in knowledge construction: discussions, reports, essays, multi-media presentations, performance):</i></p> <p>Open discussion</p>	

	<p><b>Syntax</b> <i>(The set of conventions for organizing symbols, words, and phrases together into structures, e.g., graphic organizers, formulas, charts, language rules, outlines, graphs, tables):</i></p> <p>Sentence definitions and pictures.</p>
<p><b>6. Targeted Language Supports (C5)</b>  <b>The “How”</b>  The resources, representations, and strategies you will provide to help students understand, use, and practice the concepts and language they need to learn within the discipline</p> <p>Site the researcher’s name as you refer to the strategy.</p>	<p><b>Language Function</b> <i>(How will you help them demonstrate the DO verb?)</i></p> <p>After an open discussion, students are put into small collaborative groups and will elaborate and organize the academic language they learned into a table on a big sheet of paper using pictures, examples, and sentences.</p> <p><b>Vocabulary Strategies - (GO TO Page)</b></p> <ol style="list-style-type: none"> <li>1. Frayer Models or something of the sort.</li> <li>2. Word association (<math>\pi</math> vs pie)</li> </ol> <p><b>Discourse strategies - (GO TO Page)</b></p> <ul style="list-style-type: none"> <li>-Write: note taking and Simple summary</li> <li>-Talk: think pair share, or partner discussions.</li> </ul> <p><b>Syntax - (GO TO Page)</b></p> <ol style="list-style-type: none"> <li>1. summarization, paper provides, markers, and an example or the chart format (Frayer Model), in which to organize each AL term defined.</li> <li>2. using notes and sharing notes while collaborating, each student contributes to at least one part (picture, non-example, example, definition, facts) for each term defined.</li> </ol> <p><b>Making Content Comprehensible (R9)</b></p> <p>Hattie’s Strategies Used: Summarizing - .79, Notetaking - .50, Outlining and transforming - .66, Summarization - .79,</p>
<p><b>7. Assessment/Evaluation (C6)</b>  Assessment(s) must be aligned to the TEKS, and objectives.</p>	<p><b>Assessment of your TEK</b>  [<b>- What evidence will you collect to demonstrate mastery of the TEK? What should students have been able to do at the end of your lesson?</b>  <b>- What evidence will you collect to demonstrate the language demands?]</b></p> <p><b>Formative:</b>  Be able to recite orally as a class, pi to the hundredth place, how to calculate pi, and written in their math notebooks the circumference, radius, and diameter equations.</p> <p><b>Summative:</b>  On a fill in the blank work sheet  Based on given ratios, use division to calculate pi to the hundredth place. And given their calculation of pi and one other given variable (circumference or diameter or radius) be able to calculate the missing variable.</p>

	<p><b>Assessment of your language demands:</b></p> <p><b>Formative:</b> Students partner up and compare the notes they took over the AL to share thoughts and make revisions. Partners together develop a Frayer model for a chosen vocab.</p> <p><b>Summative:</b> Partners link into a small group and assess each other's Frayer models on the vocab they chose as partners, providing feedback and allowing revisions. Together the group collaborates to complete Frayer models for the rest of the vocabulary. This is completed on a large sheet of paper that will house all seven vocab terms. Each member is designated(owns) one part of the Frayer model and will own a different part per vocabulary word so that each member of the group gets experience completing every part of a Frayer model by the end of the project.</p> <p>The teacher will review the completed work, mark any revisions needed, and provide feedback to the students the following day.</p> <p>Together these formative &amp; summative assessments provide <u>peer-assessment, peer-feedback, instant feedback, &amp; student ownership.</u></p>
<p><b>8. Hook (C7)</b></p> <p><b>Closure (C7)</b></p> <p><b>Student Assets (C7)</b></p>	<p>Hook activity (<i>make connections to prior learning</i>)</p> <p>Drawing – Students draw a diagram representing the idea to be taught (For a portion unit in math or nutrition, have students draw a plate of food or a whole pizza to be divided into various portions).</p> <p>Students will draw whatever they'd like TWICE. The two identical items must be different sizes (mini &amp; giant) to depict ratios visually and write numerically how much bigger/smaller the drawings are. (example: drawing of a mouse small and 4 times bigger)</p> <p>Closure Activity: (<i>make connections to prior learning</i>)</p> <p>Choose from the Daily Questions or Quick Doodle: Students choose two questions from a generic list to respond to about the day's lesson.</p> <p>One Canvas or the LMS that students use they will choose a question to answer, or perhaps answer "What happened in math today?"</p> <p>This is a good non-math way to have students demonstrate what they learned. It can be completed after class or at home if need be, but ideally before class ends. It helps students retrieve information and builds journaling skills.</p> <p>*A teacher may draw on any of the student assets in their class to support learning.</p> <p>Personal assets: what each specific student brings to the class, like their interests, background, knowledge, and experiences.</p> <p>Cultural assets: practices and cultures students bring, like language, worldviews, art, literature.</p> <p>Community assets: Common backgrounds and experiences, like resources, landmarks, events.</p>
<p><b>9. Body of Lesson/ Teaching Strategies and Learning Task(s) (C9)</b></p> <p><b>Be sure to include:</b> How will students learn and use <i>academic language</i>?</p>	<p>Students will first watch a demonstration by the instructor, but not be given the answers to the question, and then will perform the task themselves.</p> <p>After students have completed their Frayer charts as a group, and performed the given tasks of finding pi. They will describe their discoveries using the AL learned.</p> <p>Students are given the independence they desire according their age, as the planning of the lesson so dictates (choices.) Flex-grouping is used throughout the lesson.</p> <p>Describe "I Do" "We Do," and "You Do" tasks</p>

Three higher order thinking questions.

Marzano Strategy

**I DO – Showing students how to use string and tape and measuring of cylindrical objects.**

Providing resources necessary for the tasks, and explaining the AL, and math required for creating ratios.

**WE DO –**

**Together we discover pi, the ratio of circumference to diameter.**

**YOU DO –**

Reflecting on what was learned, and explaining how to find ratios.

Include at least two of Tomlinson's differentiation strategies. (Refer to your GO TO Page)

**Differentiation-(GO TO page)** *(Tailoring instruction to meet individual needs; differentiating the content, process, product, and/or learning environment):*

Flex grouping during the lesson and anchoring activities for those who complete the lesson early.

- Second Language learners / Cultural Diversity:
- Gifted / advanced learners:

**Technology: -(GO TO page)**

Students can use popplet to create their AL definitions, and after the lesson is complete, show students how to enter formula into google sheets to find circumference and diameter for any circle.

**Marzano Strategy - (GO TO page)**

Include a Marzano Strategy (Refer to your GO TO Page)

*Cooperative grouping: collaborative problem solving for math, talking about how to solving the problem before attempting.*

*Summarizing & Notetaking: A simple summary or 5 finger retelling as a closing technique.*

**Higher Order Thinking Questions (GO TO page)**

1. What can you interpret from comparing the ratios of the different shapes?
2. Relate what you discovered from your measurements and predict what you think will be the ratio, circumference, or diameter of the following shapes?
3. Estimate what the circumferences and diameters will be given the following.

**Grouping / Partnering Technique: (Hattie)**

Use Visibly random grouping for each part (Frayer chart, measuring...)

Small group learning and peer tutoring.

**Potential misconceptions and your plan to address it:**

Think about student misconceptions.

Finding a ratio or “discovering pi” requires more math than they know how to do. When it only requires simple division and multiplication.

What could confuse them as your present your lesson?

Rearranging equations from division to multiplication could confuse them. And/or the instructions of “what to do” after measuring the string.

How do you plan to address misconceptions?

Using the whiteboard to show what exactly a ratio is

<b>10. Resources and materials needed (C9)</b>  <b>(E7)</b>	<p>Resources &amp; Materials: Paper, pencil, whiteboard, marker, Chromebook, cylindrical objects, measure tapes/sticks, string/cord.</p> <p><i>(How might you differentiate materials and resources for learners with various needs?)</i></p> <p>If someone needs to type instead of write they may use their Chromebook, someone can assist physically with cutting string and taping. Finally, for the cylindrical objects, I would make sure that the measurements would be whole numbers or I could accept measurements rounded to whole numbers to help students.</p>
	<b>SUBMIT LPG and SELF EVALUATION RUBRIC – C9</b>
<b>11. Classroom Management Strategies (CBM5)</b> <i>What procedures will you employ to manage transitions, behavior, passing out materials, engagement, etc.?</i>  <i>Add 3 procedures</i>	<ol style="list-style-type: none"> <li><b>1. Participation:</b> Participation reflects a significant portion of student grades. Therefore, students must provide answers/responses when called on by the teacher. Because student responses assess participation rather than accuracy of knowledge, “I don’t know” does not qualify as a valid response. Any student, when called on, should give a reasonable response to the best of their ability. The teacher in exchange provides ample opportunity for students to earn participatory credit</li> <li><b>2. Breaks:</b> While the teacher is engaged in active instruction there shall be no breaks allowing students to leave the classroom. The time during which the teacher instructs is foundational to the purpose of the class, therefore it is required students be present in class during that time. Breaks are granted once per class during opportune times and shall not be granted immediately after or before the school bells ring. Planning time to use the restroom is the responsibility of the student, time devoted to the critical points of learning will not be allocated towards potty breaks.</li> <li><b>3. Questions:</b> Questions of an academic sort or those pertaining to the lesson are welcome and encouraged. Questions of this sort of work to enhance the student’s learning experience and will improve their participation grade. Questions that distract from the lesson at hand take time away from the teacher helping other students. Curiosity is incentivized, but foolishness takes away from student learning.</li> </ol>
<b>12. Academic Supports for Students (E6)</b> <i>What instructional strategies and planned supports will you employ to meet the needs of each student that has identified special learning needs?</i>	<p><b>Accommodation(s)-</b> <i>(A change that helps a student overcome or work around obstacles):</i></p> <ol style="list-style-type: none"> <li><b>1. The student may play a particularly fitting role in their small group; scissor operator, measurer, writer</b></li> <li><b>2. The student may fill the work sheet out on supportive media (paper, computer, verbal)</b></li> <li><b>3. The student, after completing the group work may take completed data and observations home to finish final analysis of the lesson.</b></li> </ol> <p><b>Modification(s)-</b> <i>(A change in what is being taught or what is expected from the student):</i></p> <ol style="list-style-type: none"> <li><b>1. The student may complete fewer Frayer model vocab charts to demonstrate mastery.</b></li> <li><b>2. The student may be given the completed data and observations needed for the desired analysis, instead of collected the data themselves.</b></li> <li><b>3. Rather than computing pi by measuring circumference &amp; diameter and then dividing, student may work on improving a specific skill utilized within the lesson (identifying 3d shapes, measuring/reading a tape measure, simple division problems, drawing shapes, etc.)</b></li> </ol>

(E11)

**Strategies for ELLs** (*strategies that support language acquisition*) *English Language Learners*

- 1. Make them feel welcome and valued and that they do belong and add something to your classroom. Such as learning to pronounce names correctly.**
- 2. Have AL posted in the room and integrated into the lesson.**
- 3. Give as many directions as you can in writing and orally.**
- 4. Arrange students in a way that they can interact. So they can learn from each other.**
- 5. Set realistic expectations for these students. Intensive interaction with text means they will take a long time. It's fine to encourage them to speak and give answers aloud in class but be sensitive if making corrections.**