

Project Lesson Plan: Reading in Math/ Adding Fractions with Unlike Denominators

Student Destination:

Students will be able to add fractions with unlike denominators, for fractions with denominators that are less than 13.

Vehicle:

Students will participate in verbal, visual, performance, and hands-on activities that reflect their knowledge of this mathematical concept. The Music- Rhythmic intelligence will also be stimulated during this unit.

Assessment:

Students will be observed performing many kinds of real-world problems that require them to add fractions. Students will also perform with greater than 70 percent accuracy on weekly quizzes, and on TAKS-formatted worksheets.

Goals

Purpose, aim and rationale:

The ability to add fractions is an important skill that students will need to use through their entire lives.

Students will be able to take any fraction that has a denominator that is less than 13 and add that fraction to another fraction that also has a denominator that is less to 13, and arrive at the correct answer.

What do you expect students to be able to do by the end of this unit?

- Students will explore real-world examples about the use of the addition of fractions.
- Students will demonstrate competency in the computation of fraction word problems
- Students will write TAKS-formatted questions that require the addition of fractions
- Students write stories about fractions while using this concept

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Texas Essential Knowledge and Skills

117.b.(5.2)(A)	Generate equivalent fractions
117.b.(5.2)(B)	Compare two fractional quantities in problem-solving situations using a variety of methods, including common denominators;
117.b.(5.5)(B)	Use lists, tables, charts, and diagrams to find patterns and make generalizations such as a procedure for determining equivalent fractions
117.b.(5.6)	The student is expected to select from and use diagrams and number sentences to represent real-life situations.
117.b.(5.14)(A)	Identify the mathematics in everyday situations
117.b.(5.14)(D)	Use tools such as real objects, manipulatives, and technology to solve problems.
117.b.(5.15)(A)	Explain and record observations using objects, words, pictures, numbers, and technology
117.b.(5.15)(B)	Relate informal language to mathematical language and symbols
117.b.(5.16)(B)	Justify why an answer is reasonable and explain the solution process

Objectives

Students will be able to:

- Change fractions from one denominator to another equivalent fraction with a different denominator
- Adjust one or more fractions with denominators that are less than 13 so that they have the same denominator
- Correctly add fractions with the same denominator
- Reduce the fraction to lowest terms after completing the addition

Environment:

- Students will work individual, in small groups, and as a whole class to solve problems requiring the addition of fractions.

Performance Standard:

- The students of the able to a score of 70% or higher on the quizzes, given weekly during this lesson.

Students will demonstrate that they have learned and understood the objectives by:

- Scoring greater than 70% on weekly quizzes
- Explaining the process to other students during group activities
- Writing TAKS-formatted word problems
- Writing a story that uses the addition of fractions in the plot

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Prerequisites

Students must have the ability to add and subtract real numbers, and they must have the ability to multiply numbers set up to 12.

Concepts students have to master are:

- A whole and its parts
- The equivalents of different fractions
- The least common denominator
- The summation of fractions

Preparation Time and Materials Needed

Time, Resources, and Management:

Preparation Time: Three hours to write the lesson plan
Four hours to gather the materials
Two hours to confer with team teacher (Music Teacher/ Tutor)

Resources Required: Text books
Classroom library
Music Teacher
Internet Access

Management: Grading spreadsheet will track students progress
Portfolio Conferences to track quiz scores and rubric data

Books, Materials, Equipment, and Resources:

Books: Math Textbooks
Library Books
Classroom Library Books

Materials: Portfolio Conference Tracking Forms
Fraction Cards
Construction Paper
Squares and Rectangles such as Cuisenaire Rods

Equipment: Computer Lab Once Per Week

Worksheets:

Computer Software: Internet access and search engine such as Google.com

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Special Considerations/ Advance Preparations:

Lesson Description

What is unique about this lesson?

This lesson blends ordinary reading methods with math lessons to produce greater student interaction with the mathematical concepts. The lesson focuses upon four of the multiple intelligences instead of only abstract-verbal intelligence that is ordinarily practiced during math instruction.

Higher-order Thinking:

Comprehension:	Students will understand the concepts and be able to communicate these ideas with other students in their groups
Application:	Students will be able to solve word problems that require the addition of fractions
Analysis:	Students will be able to analyze the addition of fractions and create TAKS-formatted word problems.
Synthesis:	Students who will be able to create stories that to use of the addition of fractions.
Evaluation:	Students will judge the stories and tax formatted the word problems a graded by their peers.

Multiple Intelligences:

The intelligence that this lesson focuses upon the exercising of various intelligences:

Intelligence	Students' Focus
Mathematical- Analytical:	Students will communicate the math concepts through symbols and number sentences
Visual- Spatial:	Students will diagram and track fractions on a number line
Tactile- Kinesthetic (Hands-on):	Students will cut and stack paper models of the various fractions, and use cubes and rectangles to represent the various fractions
Verbal- Linguistic:	Students will participate in group activities as leaders, observers and recorders. Students will maintain Learning Logs.
Music- Performance:	Students will provide whole-class presentations for at least one segment of this unit

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Lesson Procedure

This lesson plan is for a thematic unit that focuses upon a life skill, adding fractions with unlike denominators. The thematic unit plan covers the following eight content areas: Art, Health, Mathematics, Music, Reading, PE, Science and Social Studies.

This is a hands-on, engaged, student-projects unit that integrates the target learning in multiple content areas.

The teacher uses the 5E model of active learning to facilitate learning and manage the various student and teacher activities?

This unit will integrate the State-adopted 5E Learning Model. The 5E Model is a hands-on, student activity model that consists of the following stages:

- Engagement
- Exploration
- Examination
- Elaboration
- Evaluation

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Introduction:

The introduction of this lesson encompasses the *Engagement* and *Exploration* phases of the model.

In the Engagement Phase, the teacher motivates the students, taps into what the students already know, and creates interest. Here the teacher provides anecdotes, relates real-world scenarios, and brings a variety of props to the classroom presentation. Some of these props include:

- Puzzles
- Current Events Issues
- Students' Real-life Issues
- Mysteries
- Movies
- CDs
- Poems
- Props

The Exploration Phase ties lesson objectives to past and future classroom activities because the teacher facilitates hands-on, engaged, cooperative learning. The teacher facilitates more than directs, observes and listens to students as they interact, and stimulates students' discussion by asking inquiry-oriented questions.

The students will be expected to pay attention and express their opinions.

Main Activity

The elaboration phase of the lesson plan allows students to explore and internalize the knowledge, concepts, abilities and skills associated with the addition of fractions.

This unit also is designed to accommodate gifted learners, learners that acquire information and skills more slowly, and special education learners that require modifications as part of their Individual Education Plan (IEP).

This unit will be presented using multiple learning modalities (Multiple Intelligences), and students will work on a number of assignments, projects, presentations and artifacts that require activation of these learning channels. The strategies used to activate these learnings will be...

- Demonstration → list in detail and sequence of the steps to be performed
- Explanation → outline the information to be explained
- Discussion → list of key questions to guide the discussion

Closure/Conclusion

The Evaluation Phase is the conclusion of the 5E Model.

The teacher will provide feedback to students to correct their misunderstandings and reinforce their learning?

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The evaluation also influences the follow up Lessons/Activities that will be presented to students who still need additional help with master of this lesson.

Folow Up:

Subject	Follow Up
Art	The students will create a collage of shapes that are comprised of different colored paper shapes that are cut out as fractional shapes
Health	The students will examine fractions of basic food groups, and the relative amount of each group that they should eat in one day
Mathematics	Students will keep a running list for homework of everywhere that they encounter the addition of fractions in their daily life
Music	Bar of music will be examined to see if the sequence of $\frac{1}{8}$, $\frac{1}{2}$. And $\frac{1}{4}$ notes add up to one
PE	Students will walk the track to see fractions of $\frac{1}{2}$. $\frac{1}{4}$ and $\frac{1}{8}$
Reading	Finding fractions in stories
Science	The students will examine the half life of various radio active elements, and determine how long it would take before a contaminated area were safe after a radioactive accident
Social Studies	Demographics and survey information will be examined, and students will be separated into the fraction of the total population for various measures

Assessment/Evaluation:

Assessment Process:

- Rubrics
- Portfolio Conferences
- Report Rubric
- Presentation Rubric
- Practice Work Samples

Evaluation Process:

- Weekly Quizzes
- Chapter Test