MISSISSIPPI DEPARTMENT OF EDUCATION

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MISSISSIPPI
EXEMPLAR
Units & Lessons
MATHEMATICS

Grade 5

Lesson 8: Performance Task

Focus Standard(s): 5.NF.1, 5.NF.2

Standards for Mathematical Practice: SMP.1, SMP.2, SMP.5, SMP.6, SMP.8

Estimated Time: 60 minutes

Resources and Materials:
- Handout 8.1: Letter from the Principal
- Handout 8.2: Performance Task
- Handout 8.3: Performance Task Rubric

Lesson Target(s):
- Students will find equivalent fractions for adding and subtracting fractions and mixed numbers with unlike denominators.
- Students will use skills learned in this unit to solve a problem using a rubric to evaluate their work.

Guiding Question(s):
- How can adding and subtracting fractions with unlike denominators help solve a problem?

Vocabulary

Academic Vocabulary:
- benchmark fractions
- denominator
- equivalent fractions
- fraction
- mixed number
- model
- numerator

Instructional Strategies for Academic Vocabulary:
- ☐ Introduce words with student-friendly definition and pictures
- ☐ Model how to use the words in discussion
- ☐ Students write/discuss using the words.
- ☐ Read and discuss the meaning of word in a mathematical context

Symbol	Type of Text and Interpretation of Symbol
[button]	Instructional support and/or extension suggestions for students who are EL, have disabilities, or perform well below grade level and/or for students who perform well above grade level
✓	Assessment (Pre-assessment, Formative, Self, or Summative)

Instructional Plan

Understanding Lesson Purpose and Student Outcomes:
Students will complete a performance task containing fractions and mixed numbers with unlike denominators. They will use number lines, decomposing fractions and finding equivalent fractions. They will use a rubric to score their work and critique the work of others. This performance-based assessment will give evidence of students' perseverance, abstract reasoning, modeling, attending to precision, and finding structure and making use of it. Students' work should exhibit evidence of repeated mathematical reasoning and use of structure (SMP.8).

Anticipatory Set/Introduction to the Lesson: Letter from the Principal
Read **Handout 8.1: Letter from the Principal** and discuss the request with students asking if they think they can help.

Activity 1: Performance Task
The principal, Mrs. Hamilton, has asked for your help. You are to propose a daily schedule for the 7 hours of the school day. Distribute **Handout 8.2: Performance Task** and **Handout 8.3: Performance Task Rubric**. Review the task by going over the specifics. Explain to students that they will analyze the information to determine the best way to allocate time (SMP.1, SMP.2, SMP.6). Make tools and manipulatives available for students to use as they complete the task (SMP.5). Tell students to remember to include the following:

Subject/Activity	Time Required
Morning Meeting	$\frac{3}{4}$ hour
Lunch	$\frac{1}{2}$ hour
Recess	$\frac{1}{4}$ hour
Math	$1\frac{1}{2}$ hours

ELA	$\frac{9}{6}$ hours

Each school day has 7 hours. Using the time requirements above, create a schedule that also incorporates three more time periods for science, social studies, and specials (1 per day: Art/Library/Music/STEM Lab/PE).

1. Prepare a detailed schedule identifying the fraction of the school day that is spent on each subject.

2. Write a paragraph to persuade your principal explaining why he/she should choose your schedule. Be sure to justify your schedule.

3. Create a visual model that shows the fractional part of each day that is used for each subject/activity.

4. Show your calculations so that each fractional piece added together would equal the 7 hours of the school day. (Remember to use equivalent fractions and other strategies to help you add fractions with unlike denominators).

Reflection and Closing
✓Review the lesson by discussing skills and asking questions.

Prompting questions:
- How do we determine what denominator we need to use to add or subtract fractions?
- When do we change both denominators, and when do we just change one denominator?

Homework

No Homework

Handout 8.1: Letter from the Principal

Dear Fifth Grade Students,

I have a dilemma that I need your help with. There is a big problem with the class schedules. We only have 7 hours of school each day and I cannot figure out how to include all the classes. If you look at the schedule below, you can see that I have used most of the 7 hours for morning meeting, lunch, recess, math and ELA. I still need to incorporates three more time periods for science, social studies, and one special class each day. Each of the three additional time periods will last the same time amount of time.

<u>Subject/Activity</u>	<u>Time Required</u>
Morning Meeting	$\frac{3}{4}$ hour
Lunch	$\frac{1}{2}$ hour
Recess	$\frac{1}{4}$ hour
Math	$1\frac{1}{2}$ hours
ELA	$\frac{9}{6}$ hours

I have noticed from your test scores, that you are very intelligent and clever. I am hoping that you will be able to help me work out this puzzle.

Thank you for your help.

Sincerely,

Mrs. Hamilton

Mrs. Hamilton, Principal
(Put your school name here)

Handout 8.2: Performance Task

Name_____ Date_____

The principal has asked for your help. You are to propose a daily schedule for the 7 hours of the school day. Remember to include the following:

Subject/Activity	Time Required
Morning Meeting	$\frac{3}{4}$ hour
Lunch	$\frac{1}{2}$ hour
Recess	$\frac{1}{4}$ hour
Math	$1\frac{1}{2}$ hours
ELA	$\frac{9}{6}$ hours

Using the time requirements above, create a schedule that also incorporates three more time periods for science, social studies, and specials (1 per day: Art/Library/Music/STEM Lab/PE).

1. Prepare a detailed schedule identifying the fraction of the school day that is spent on each subject.

2. Write a paragraph to persuade your principal explaining why he/she should choose your schedule. Be sure to justify your schedule.

3. Create a visual model that shows the fractional part of each day that is used for each subject/activity.

4. Show your calculations so that each fractional piece added together would equal the 7 hours of the school day. (Remember to use equivalent fractions and other strategies to help you add fractions with unlike denominators).

Handout 8.3: Performance Task Rubric

Rating ➡ Evaluative Criteria ⬇	4	3	2	1	0
Calculations (Add/Subtract Unlike Fractions and Mixed Numbers/Improper Fractions) 5.NF.1	Calculations were correct and had a schedule of 7 hours in the day.	Calculations were mostly correct, but schedule still had 7 hours in the day.	Calculations were mostly incorrect and the schedule was not 7 hours.	Calculations were attempted but not accurate, and the schedule did not have 7 hours.	No calculations and no schedule of 7 hours.
Visual Representation (Fractional Model & Labels of Time Spent in Each Area)	Visual representations correctly match the calculations and are labeled correctly.	Visual representations mostly matched the calculations, but were labeled correctly.	Visual representations were mostly incorrect and did not match the calculations. Some incorrect labeling.	Visual representations were attempted, but incorrect and did not match the calculations. Labeling was missing or incorrect.	No visual representations or labels.
Explanation (Letter to Persuade Principal)	Student takes a clear position and supports it with well-chosen reasons and/or examples.	Student takes a clear position and supports it with some relevant reasons and/or examples.	Student takes a position and provides uneven support.	Student attempts to take a position (addresses topic), but position is very unclear OR takes a position, but provides minimal or no support.	Student does not take a position to persuade the principal.
Work Presentation	Project shows strong evidence that a lot of effort and time were put forth.	Project shows that some effort and time were put forth.	Project shows that little effort and time was put forth.	Project shows that hardly any effort and time was put forth.	Project was not complete.

For training or questions regarding this unit,
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