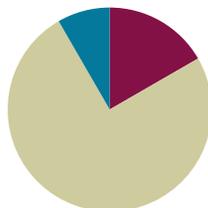


Lesson 24

Objective: Make sense of complex, multi-step problems, and persevere in solving them. Share and critique peer solutions.

Suggested Lesson Structure

■ Fluency Practice	(10 minutes)
■ Concept Development	(45 minutes)
■ Student Debrief	(5 minutes)
Total Time	(60 minutes)



Fluency Practice (10 minutes)

- Subtract Unlike Denominators **5.NF.1** (4 minutes)
- Order of Operations **5.OA.1** (3 minutes)
- Multiply by Multiples of 10 **5.NBT.2** (3 minutes)

Subtract Unlike Denominators (4 minutes)

Materials: (S) Personal white board

Note: This fluency activity reviews Module 3 content.

T: (Write $\frac{1}{2} - \frac{1}{3}$.) Subtract the fractions. Simplify the difference if possible.

S: ($\frac{3}{6} - \frac{2}{6} = \frac{1}{6}$.)

Repeat the process for $\frac{1}{5} - \frac{1}{10}$, $\frac{1}{3} - \frac{1}{4}$, and $\frac{1}{4} - \frac{1}{5}$.

Order of Operations (3 minutes)

Materials: (S) Personal white board

Note: This fluency activity prepares students for today's lesson.

T: (Write $12 \div 3 + 1 = \underline{\quad}$.) On your personal white boards, write the complete number sentence.

S: (Write $12 \div 3 + 1 = 5$.)

T: (Write $12 \div (3 + 1)$.) On your boards, copy the expression.

S: (Write $12 \div (3 + 1)$.)



NOTES ON LESSONS 21–25:

Lesson Sequence for Topic E:

- Lessons 21–22 use a protocol to solve problems within teams of four. The number of problems solved will vary between teams.
- Lesson 23 uses a protocol to share and critique student solutions from Lessons 21–22.
- Lesson 24 resumes the problem solving begun in Lessons 21–22.
- Lesson 25 uses the protocol from Lesson 23 to again share and critique student solutions.

T: Write the complete number sentence, performing the operation inside the parentheses.

S: (Beneath $12 \div (3 + 1) = \underline{\quad}$, write $12 \div 4 = 3$.)

Continue this process with the following possible sequence: $20 - 6 \div 2$, $(20 - 6) \div 2$, $7 \times 4 + 3$, and $7 \times (4 + 3)$.

Multiply by Multiples of 10 (3 minutes)

Note: This fluency review helps preserve skills students learned and mastered in Module 1 and lays the groundwork for future concepts.

Materials: (S) Personal white board

T: (Write $41 \times 10 = \underline{\quad}$.) Say the complete multiplication sentence.

S: $41 \times 10 = 410$.

T: (Write $410 \times 2 = \underline{\quad}$ beside $41 \times 10 = 410$.) Say the complete multiplication sentence.

S: $410 \times 2 = 820$.

T: (Write $41 \times 20 = \underline{\quad}$ below $410 \times 2 = 820$.) Write 41×20 as a three-factor multiplication sentence, using a number bond to factor 20 as 10×2 .

S: $41 \times 10 \times 2 = 820$.

T: Show your personal white board. (Check for accuracy.)

$$41 \times 10 = 410 \quad 410 \times 2 = 820$$

$$41 \times 20 = 820$$

Direct students to solve using the same method for 32×30 and 43×30 .

Concept Development (45 minutes)

Students continue work progressing through the set of nine problems presented in Lesson 21.

1. Reestablish the intention of Lessons 21–25 to give students time and support to solve some great problems. Remind them that Lesson 25 will again be devoted to sharing and critiquing each other’s work as they did in Lesson 23.
2. Remind students of the *think, pair, share, and complete* process. Invite students to share ways to make their work space more effective and joyful.
3. Remind students that it is not the number of the problems completed but rather the quality of the work that is most important.
4. Remind students that solutions will be collected, organized, and analyzed.



NOTES ON MULTIPLE MEANS OF REPRESENTATION:

If drawing or modeling is not working for a team when solving a given problem, suggest acting it out or modeling it with concrete materials. Using small balls of clay to represent a problem can be very empowering.



NOTES ON MULTIPLE MEANS OF EXPRESSION:

As students reflect on their growth as problem solvers, initiate the conversation using a personal example: “At first, when solving the Hewitt’s Carpet problem, I felt overwhelmed by all the information. But once I made a table, I relaxed and was able to solve it. I learned that making a table gave me the support I needed to persevere.”

Student Debrief (5 minutes)

Lesson Objective: Make sense of complex, multi-step problems, and persevere in solving them. Share and critique peer solutions.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

- Did you apply what you learned yesterday to today's problems? How?
- What did you learn about yourself today as a problem solver that will help you to be a better problem solver tomorrow?

Note: There is no Exit Ticket for this lesson.

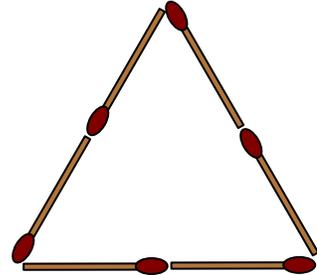
Name _____

Date _____

1. Pat's Potato Farm grew 490 pounds of potatoes. Pat delivered $\frac{3}{7}$ of the potatoes to a vegetable stand. The owner of the vegetable stand delivered $\frac{2}{3}$ of the potatoes he bought to a local grocery store, which packaged half of the potatoes that were delivered into 5-pound bags. How many 5-pound bags did the grocery store package?

The following problems are for your enjoyment. They are intended to encourage working together and family problem-solving fun. They are not a required element of this homework assignment.

2. Six matchsticks are arranged into an equilateral triangle. How can you arrange them into 4 equilateral triangles without breaking or overlapping any of them? Draw the new shape.



3. Kenny's dog, Charlie, is really smart! Last week, Charlie buried 7 bones in all. He buried them in 5 straight lines and put 3 bones in each line. How is this possible? Sketch how Charlie buried the bones.