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)

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|  | NOTES ON LESSONS 21─25: |

Lesson Sequence for M6–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 G5–M6–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.

Materials: (S) Personal white boards

Note: This drill reviews G5–Module 3 content.

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

S: (Subtract.)

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 boards

Note: This fluency prepares students for today’s lesson.

T: (Write 12 ÷ 3 + 1.) On your boards, write the complete number sentence.

S: (Write 12 ÷ 3 + 1 = 5.)

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

S: (Write 12 ÷ (3 + 1).)

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

S: (Beneath 12 ÷ (3 + 1) = \_\_\_\_, write 12 ÷ 4 = 3.)

Continue this process with the following possible sequence: 20 – 6 ÷ 2, (20 – 6) ÷ 2, 7 × 4 + 3, and 7 × (4 + 3).

Multiply by Multiples of 10 (3 minutes)

Note: This review fluency drill will help preserve skills students learned and mastered in G5–Module 1 and lay the groundwork for future concepts.

Materials: (S) Personal white boards

T: (Write 41 × 10.) Say the complete multiplication sentence.

S: 41 × 10 = 410.

T: (Write 410 × 2 beside 41 × 10 = 410.) Say the complete multiplication sentence.

S: 410 × 2 = 820.

T: (Write 410 × 20 below 410 × 2 = 820.) Write 410 × 20 as a three-factor multiplication sentence, using a number bond to factor out 10 from 20.

S: 410 × 10 × 2 = 8,200.

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|  | 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 can be very empowering to represent a problem.

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

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 G5–M6–Lesson 21.

1. Re-establish the intention of G5–M6–Lessons 21–25 to give students time and support to solve some great problems. Remind them that tomorrow will again be devoted to sharing and critiquing each other’s’ work as they did in G5–M6–Lesson 23.

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|  | 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, 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.”

1. Remind students of the *think, pair, share, and complete* process. Invite students to share ways to make their workspace more effective and joyful.
2. Remind students that it is not the number of the problems completed but rather quality of the work that is of most importance.
3. Remind students that solutions will be collected, organized, and analyzed.

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

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.

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.

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.