Scaffolding Instruction for All Students:

A Resource Guide for Mathematics

Grade 5

The University of the State of New York
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and Office of Special Education
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Table of Contents

Introduction

The Next Generation English Language Arts (ELA) and Mathematics Learning Standards intend to foster the 21st century skills needed for college and career readiness and to prepare students to become lifelong learners and thinkers. Learning standards provide the "destination" or expectation of what students should know and be able to do while teachers provide the "map" for getting there through high-quality instruction. **Lessons need to be designed to ensure accessibility to a general education curriculum designed around rigorous learning standards for all students, including students who learn differently (e.g., students with disabilities, English Language Learners (ELLs)/Multilingual Learners(MLLs), and other students who are struggling with the content).** It is vital that teachers utilize a variety of research-based instructional and learning strategies while structuring a student-centered learning environment that addresses individual learning styles, interests, and abilities present among the students in the class. Classrooms should be supportive and nurturing, and factors such as the age, academic development, English and home language proficiency, culture and background knowledge, and disability, should be considered when designing instruction. The principles of Universal Design for Learning should be incorporated into curricula to provide students with learning experiences that allow for multiple means of representation, multiple means of expression, and multiple means of engagement. These learning experiences will reduce learning barriers and foster equal learning opportunities for all students.

The purpose of this guide is to provide teachers with examples of scaffolds and strategies to supplement their instruction of ELA and mathematics curricula. Scaffolds are instructional supports teachers intentionally build into their lesson planning to provide students support that is "just right" and "just in time." Scaffolds do not differentiate lessons in such a way that students are working on or with different ELA texts or mathematical problems. Instead, scaffolds are put in place to allow all students access to grade-level content within a lesson. Scaffolds allow students to develop the knowledge, skills, and language needed to support their own performance in the future and are intended to be gradually removed as students independently master skills.

The scaffolds contained in this guide are grounded in the elements of explicit instruction as outlined by Archer and Hughes (2011). Explicit instruction is a structured, systematic approach to teaching which guides students through the learning process and toward independent mastery through the inclusion of clear statements regarding the purpose and rationale for learning the new skill/content; explanations and demonstrations of the instructional target; and supported practice with embedded, specific feedback.

The scaffolds in this guide can be adapted for use in any curricula and across content areas. While the exemplars were all drawn from the ELA and mathematics EngageNY modules, teachers are encouraged to customize the scaffolds in any lesson they deem appropriate. **All teachers (e.g., general, special education, English as a New Language, and Bilingual Education teachers) can use these scaffolds in any classroom setting to support student learning and to make the general education curriculum more accessible to all students without interfering with the rigor of the grade-level content.**

How to Use This Guide

The provision of scaffolds should be thoughtfully planned as to not isolate or identify any student or group of students as being “different” or requiring additional support. Therefore, in the spirit of inclusive and culturally responsive classrooms, the following is suggested:

- Make scaffolded worksheets or activities available to all students.
- Heterogeneously group students for group activities when appropriate.
- Provide ELLs/MLLs with opportunities to utilize their home language knowledge and skills in the context of the learning environment.
- Make individualized supports or adapted materials available without emphasizing the difference.
- Consistently and thoughtfully use technology to make materials more accessible to all students.

In the ELA guides, the *Table of Contents* is organized to allow teachers to access strategies based on the instructional focus (reading, writing, speaking and listening, and language) and includes a list of scaffolds that can be used to address those needs. In the mathematics guides, the *Table of Contents* is organized around the scaffolds themselves.

Each scaffold includes a description of what the scaffold is, who may benefit, and how it can be implemented in a lesson-specific model (see graphic below). **The *scripts* provided are only for demonstrating what a scaffold *might* look like in action.** Teachers are encouraged to make changes to presentation and language to best support the learning needs of their students. While lessons from the EngageNY modules are used to illustrate how each scaffold can be applied, the main purpose of the exemplars is to show how teachers can incorporate these scaffolds into their lessons as appropriate.

Title of Scaffold **Module: Unit: Lesson:**
Explanation of scaffold: This section provides a deeper explanation of the scaffold itself, including what it is and how it can and should be used. This section is helpful when implementing the scaffold in other lessons.
Teacher actions/instructions: This section provides specific instructions for the teacher regarding successful implementation of the scaffold.
Student actions: This section describes what the students are doing during the scaffolded portion of the lesson.
Student handouts/materials: This section indicates any student-facing materials that must be created to successfully use this scaffold.

Graphic Organizer *(RDW (Read, Draw, Write) Template)*

Exemplar from:
Module 3: Topic B: Lesson 3: Homework Problem #4

Explanation of scaffold:
The *RDW Template* is a graphic organizer that can be used to support students who have difficulty organizing information and recalling multistep, problem-solving strategies. This template is intended to help students keep track of the steps involved in the RDW process that can be used to solve real world/application word problems. Some students may need additional scaffolding and explicit instruction to use this tool to structure their work to solve a mathematical problem. The following example shows one way to instruct students who need modeling and guided practice to use this tool and learn this new problem-solving strategy. Although the homework problem in this lesson is used as an exemplar, graphic organizers such as the *RDW Template* can be used in any lesson to support students while learning a multistep problem-solving strategy without changing the rigor of the content.

Teacher actions/instructions:
Instruct students in the use of the RDW process and completion of the RDW template to solve a mathematical problem as follows:

1. Read the problem.
2. Draw and label. Use a tape diagram, area model, number bond, or array to make your drawing. Ask yourself, "What do I know? What do I need to find? How can I draw what I'm looking for?" Label your drawing.
3. Read the problem again.
4. Write an equation. Look at the evidence in your drawing, write an equation, and solve the problem.
5. Write a word sentence.

For students who require explicit instruction on how to use the RDW process to solve a mathematical problem and complete the *RDW Template*, the following sample *script* is provided to demonstrate one way instruction *might* look:

Step 1: Read the problem.
T (teacher): *We are going to use the Read, Draw, Write, or RDW, strategy to help us solve problems. Many of you probably remember using this strategy last year in fourth grade, but we will review it, so we all know what to do. The RDW Template will help us gather and organize the evidence, or important parts, from the word problem that we need to answer the question and solve the problem.*

Display a large version of the *RDW Template* on chart paper or use a document camera to project your work. Hand out student copies, and direct students to complete their *RDW Templates* to solve the problem as demonstrated.

Display the word problem:
Sam reads $\frac{2}{5}$ of her book over the weekend and $\frac{1}{6}$ of it on Monday. What fraction of the book has she read? What fraction of the book is left?

T: *The first step is* ***read****. That means I have to read the problem. What is step 1?*

S (student): *Read.*

T: *The problem says, "*Sam *reads $\frac{2}{5}$ of her book over the weekend and $\frac{1}{6}$ of it on Monday. What fraction of the book has she read? What fraction of the book is left? " I read the problem, so I can put a check in the box on my RDW template.*

Step 2: Draw and label.
T: *Step 2 is* ***draw and label****. What is step 2?*

S: *Draw and label.*

T: *I need to draw a picture to help me solve the problem. I need to ask myself, "What do I know?" I know from my reading that Sam read $\frac{2}{5}$ of her book over the weekend. Let's draw a rectangular fraction model that represents the amount of the book that Sam read over the weekend. When we draw our rectangle, we will partition the rectangle* ***vertically*** *into fifths so that we can show two-fifths. How many units will we have in our rectangle in all?*

S: *5.*

T: *That is correct. How many of those units will we be shading to represent the amount that Sam read over the weekend?*

S: *2.*

T: *Good. Go ahead and draw and label your rectangle in the space provided on your RDW template. Make sure to shade in two-fifths of the rectangle.* [Provide support in constructing the rectangular fraction model as needed.] *Did Sam read her book only over the weekend?*

S: *No. She also read some of her book on Monday.*

T: *That is correct. How much of her book did she read on Monday?*

S: *She read one-sixth.*

T: *Let's draw another rectangular fraction model that represents the amount Sam read of her book on Monday. We first need to draw a rectangle that is the same size as our first rectangle. The whole (length of book) has not changed. When we draw this new rectangle, we will partition the rectangle* ***horizontally*** *into sixths so that we can show one-sixth. How many total units will this new rectangle have?*

S: *6.*

T: *How many of those units will we be shading to represent the amount that Sam read on Monday?*

S: *1.*

T: *Good. Go ahead and draw and label your rectangle in the space provided on your RDW template. Make sure to shade in one-sixth of the rectangle.* [Provide support in constructing the rectangular fraction model as needed.]

Step 3: Read Again.

T: *Let's remember what it is that we are trying to find out? What is it that we are solving for? We need to read the problem again. What is step 3?*

S: ***Read again****.*

T: *Let's read the problem together.* [Chorally read the problem with the students.] "Sam *reads* $\frac{2}{5}$ *of her book over the weekend and* $\frac{1}{6}$ *of it on Monday. What fraction of the book has she read? What fraction of the book is left?" We read the problem again, so we can put a check in the box. What are we solving for?*

S: *The total amount of the book that Sam has read, and how much is left.*

T: *Yes, we made two rectangular fraction models (drawings) to help us answer these two questions. The first rectangle shows the fraction* $\frac{2}{5}$ *and the second rectangle shows* $\frac{1}{6}$*. What do we need to do first with these two fractions* $\frac{2}{5}$ *and* $\frac{1}{6}$ *in order to find out the total amount of the book that Sam has read?*

S: *We need to add the two fractions.*

T: *Addition is easy when the units are the same. Right now, our units are not the same. One-fifth is different from one-sixth. We can use our rectangular fraction models (drawings) to help us find the like unit so that we can add the fractions* $\frac{2}{5}$ *and* $\frac{1}{6}$*. If we take our rectangles and over-lap them, the vertical and horizontal units form the like unit. What is the fractional value of this like unit?*

S: *One-thirtieth.*

T: *How many thirtieths are equal to two-fifths?*

S: *Twelve-thirtieths.*

T: *That is correct. Let's show $\frac{2}{5}$ being equivalent to $\frac{12}{30}$ on our first rectangle (drawing).* [Provide support in adjusting the rectangular fraction model as needed to show $\frac{2}{5}$ being equivalent to $\frac{12}{30}$.] *How many thirtieths are equal to one-sixth?*

S: *Five-thirtieths.*

T: *That is also correct. Let's show $\frac{1}{6}$ being equivalent to $\frac{5}{30}$ on our second rectangle (drawing).* [Provide support in adjusting the rectangular fraction model as needed to show $\frac{1}{6}$ being equivalent to $\frac{5}{30}$.]

Step 4: Write an equation.

T: *What is step 4?*

S: ***Write an equation.***

T: *Using our rectangular fraction models (drawings), say the number addition sentence using thirtieths as our like unit or denominator that will determine the total amount of the book that Sam has read.*

S: *Twelve-thirtieths plus five-thirtieths equals seventeen-thirtieths.*

T: *Let's write this number sentence as an equation in the space provided on your RDW template.* [$\frac{12}{30}+\frac{5}{30}=\frac{17}{30}$] *If Sam has read $\frac{17}{30}$ of the book so far, how do we determine how much of the book is left?*

S: *We need to subtract what she has read so far from the whole book.*

T: *How many of our like units represents the whole book?*

S: *Thirty.*

T: *That's right, the whole book is the same as thirty-thirtieths. What do we have to do to determine how much of the book is left to be read?*

S: *Subtract seventeen-thirtieths from thirty-thirtieths.*

T: *Say the number subtraction sentence using thirtieths as our like unit or denominator that will determine the total amount of the book that Sam has left to read.*

S: *Thirty-thirtieths minus seventeen-thirtieths equals thirteen-thirtieths.*

T: *That's correct. Let's write this number sentence as an equation in the space provided on your RDW template.* [$\frac{30}{30} - \frac{17}{30} = \frac{13}{30}$]

Step 5: Write a word sentence.

T: *What is step 5?*

S: ***Write a word sentence.***

T: *Finally, we must write two sentences that answer each question. We have to remember to include all the information to tell the whole story. To tell how much of the book Sam has read so far, we will write, "Sam has read _____ of the whole _____."*

S: *Sam has read* $\mathbf{\frac{17}{30}}$ *of the whole book.*

T: *Correct. Let's write this sentence on your RDW template. Now, tell me what the sentence needed to answer the second question should say, and write it on your RDW Template.*

S: *"There is* $\frac{13}{30}$ *of the book left that needs to be read."*

T: *Great job! Remember, we are going to use RDW when we have to solve word problems.*

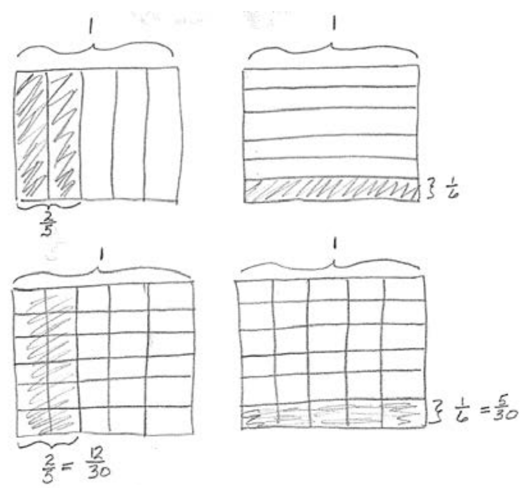
As students become more familiar with the process, fade the use of modeling and guided practice, and provide opportunities for students to work in pairs or small groups. Once students demonstrate the ability to use the RDW process with limited prompting, provide multiple, independent practice opportunities to ensure success.

Student actions:
Students chorally respond and complete the *RDW Template*. Students may work in pairs or small groups to complete additional homework/practice problems if needed.

Student handouts/materials:
RDW Template (found on page 7)

NAME: ______________________________________

RDW Template (example)

Read	Make a ✔ after you read the problem. ☑
Draw and label	Draw a picture and label it. 
Read again	Make a ✔ after you read the problem again. ☑
Write	Write an equation. $\frac{2}{5} + \frac{1}{6} =$ $\frac{12}{30} + \frac{5}{30} = \frac{17}{30}$ $\frac{30}{30} - \frac{17}{30} = \frac{13}{30}$
Write	Write a sentence. Sam has read $\frac{17}{30}$ of the whole book. There is $\frac{13}{30}$ of the book left that needs to be read.

NAME: ______________________________________

RDW Template

Read	Make a ✔ after you read the problem. ☐
Draw and label	Draw a picture and label it.
Read again	Make a ✔ after you read the problem again. ☐
Write	Write an equation.
Write	Write a sentence.

Frayer Model

Exemplar from:
Module 1: Topic A: Lesson 3: Concept Development

Explanation of scaffold:
The Frayer model is a four-square graphic organizer that includes a student-friendly definition, a description of important characteristics, examples, and nonexamples. It provides a format to organize information and visual representations of the mathematical term being defined. Developing vocabulary skills is essential for students as they learn to *speak mathematically* and develop their abstract reasoning and problem-solving skills. The following example demonstrates how to provide explicit instruction for those students who need information broken down into smaller, more manageable chunks as well as modeling and guided practice to effectively use this tool to learn new vocabulary words. The term *exponent* is used as an exemplar. However, the Frayer model can be use in any lesson to help students strengthen their conceptual knowledge and develop their understanding of unfamiliar vocabulary.

Teacher actions/instructions:
Select key mathematical terms. These terms should be limited in number and essential to developing a deeper understanding of the mathematical concepts or skills in the lesson.

Instruct students to complete Frayer models as follows:

1. Write the mathematical term in the middle circle.
2. Define the term, using student-friendly language, in the **Definition** box. Use your own words.
3. Write words to describe the term in the **Characteristics** box. Again, use your own words.
4. List examples of the definition in the **Examples** box. Draw a picture and/or write an equation to help you understand the term if needed.
5. List nonexamples of the definition in the **Nonexamples** box. Again, draw a picture and/or write an equation if needed.
6. Test yourself.

For students who require explicit instruction on how to use the Frayer model, the following sample *script* is provided to demonstrate one way instruction *might* look:

Step 1: Write the mathematical term.
T (teacher): *We are going to use a graphic organizer called a Frayer model to help us understand what certain math terms, or vocabulary words, mean. It is very important that we understand what a term means so that we understand what a math problem is asking us to find and so that we can talk about math with others. Understanding vocabulary will make us better mathematicians!*

Display a large version of the Frayer model on chart paper, or use a document camera to project your work. Hand out student copies, and direct students to complete their Frayer models as demonstrated.

T: *We are going to learn about the term **exponent.** What term?*

S (student): *Exponent.*

T: *When we use the Frayer model, the first thing we do is write the vocabulary word in the middle circle. Let's write **exponent** in the circle.*

Step 2: Define the term.

T: *You can see there are also 4 boxes. The first box is labeled **Definition**. A definition tells us the meaning of the term. An **exponent** is a number that tells how many times a number called the base gets multiplied by itself. Let's say that together.* [Chorally say the definition with students.] *Now, let's write that in the **Definition** box.*

Step 3: Describe the word in terms of its characteristics.

T: *The next box is **Characteristics**. This means we want to think of words and pictures and equations that describe **exponent** or that are important to help us understand what it means.* [Write the equation 10^2 = 10 x 10.] *This numerical expression* [point to 10^2] *tells us to multiply the number 10 by itself two times. We say, "Ten to the second power." The 2* [point to the exponent] *is the **exponent,** or power, and tells us how many times to use 10 as a factor. The 10* [point to the base] *is the base, or the number to be multiplied. So, ten to the second power is the same as ten times ten.*

Step 4: List examples.

T: *The third box is **Examples**. When I write down an equation, I want you to solve it with a numerical expression that uses an **exponent**. Let's try one together.* [Write 10 x 10 x 10 x 10.] *10 x 10 x 10 x 10 = ______. Share your answer with your partner. Ten times ten times ten times ten equals ten to the __________ __________.*

S: *Fourth power.*

T: *The number 10 is the base, and the number 4 is the ___________.*

S: ***Exponent.***

T: *You got it! 10 x 10 x 10 x 10 = 10^4. Using our knowledge of place value and multiplying by ten, we know that 10 x 10 x 10 x 10 = 10,000, so 10,000 = 10^4. Let's try some more.*

Step 5: List nonexamples.

T: *The last box is **Nonexamples**. This is an important box because it shows we really understand what the word means and what it doesn't mean. We've already talked about what an **exponent** is and given*

some examples. Now, let's think of some nonexamples. [Write 10 x 4 = 10^4.] *Does 10 x 4 =* 10^4*? Why, or why not?*
<u>Student actions</u>: Students work either individually or in pairs to make and study Frayer models.
<u>Student handouts/materials</u>: *Frayer Model* template (found on page 12) Sticky notes

NAME: ____

Frayer Model (example)

Exponent

Definition

An exponent is a number that tells how many times a number called the base gets multiplied by itself.

Characteristics

exponent

$10^2 = 10 \times 10$

base

Ten to the second power
The **exponent**, 2, tells us how many times to use 10 as a factor.

Examples

$10 \times 10 \times 10 \times 10 = \mathbf{10^4}$ (ten to the fourth power)
The number 10 is the base. The number 4 is the **exponent.**

$10 \times 10 \times 10 \times 10 \times 10 = \mathbf{10^5}$ (ten to the fifth power)
The number 10 is the base. The number 5 is the **exponent.**

$10 \times 10 \times 10 = \mathbf{10^3}$ (ten to the third power)
The number 10 is the base. The number 3 is the **exponent.**

Nonexamples

$10 \times 4 \neq 10^4$ because 40 is not equal to $10 \times 10 \times 10 \times 10$

NAME: ____

Frayer Model

Definition	Characteristics
Examples	Nonexamples

Checklist *(RDW (Read, Draw, Write) Checklist)*

<u>Explanation of scaffold</u>:
A checklist supports students who have difficulty recalling multistep, problem-solving strategies by providing a way for them to monitor their use of the steps involved. This allows students to experience increased independence when using mathematical processes to solve real world/application word problems. This scaffold is intended to support students who can organize information and complete each step of the RDW process without assistance from the teacher but need a visual reminder to complete <u>all</u> the steps that make up this problem-solving strategy. The *RDW Checklist* can be used to fade support for students who have been using the *RDW Template*. Checklists can be used in any lesson to support students who have not yet internalized the steps of a multistep problem-solving strategy without changing the rigor of the content.

<u>Teacher actions/instructions</u>:
Provide the *RDW Checklist* to students. Checklists can be placed in plastic sleeves, so students can use them repeatedly. Explain to students that this checklist will help them remember and keep track of the steps of the RDW process while solving real world math problems. Instruct students to put a check in the box next to each step after it is completed so that no step gets forgotten.

<u>Student actions</u>:
Students work independently to complete problems using the *RDW Checklist*.

<u>Student handouts/materials</u>:
RDW Checklist (found on the next page)

RDW Checklist

When I use RDW, I remember to:	
☐	Read the problem.
☐	Draw a picture and label it.
☐	Read again.
☐	Write an equation.
☐	Write a sentence.

Worked Problems

Exemplar from:
Module 2: Topic B: Lesson 7: Homework

Explanation of scaffold:
Worked problems provide support as students go through the learning stages of acquisition to proficiency to fluency to generalization and can be used to build learners' momentum and self-efficacy. Students are provided models of completed and/or partially completed problems while they work on developing and applying a newly learned skill without corrective feedback from the teacher.

The use of worked problems is based on the *Interleave Worked Solution Strategy* (*IWSS*) and involves alternating between fully worked and/or partially completed examples that students can use as a reference and practice problems for students to complete independently. A high level of scaffolding can be provided by giving worked examples and practice problems that are very similar in structure and by providing annotations or problem-solving steps alongside worked examples. Support can be faded by providing fewer worked examples or providing practice problems that are less similar to worked examples. Although the homework problems in this lesson are used as an exemplar, worked problems can be used in any lesson to support students who understand the mathematical concept involved but need examples as they practice what they have learned during the day's lesson to complete homework assignments.

Teacher actions/instructions:
Add worked problems to homework sheets. Provide the adapted sheets as needed to students, and direct them to complete the assigned problems. Tell students that completed problems have been provided as a reference, partially completed problems will help get them started, and uncompleted problems are expected to be done on their own. You may consider additional scaffolding by assigning specific problems on a homework sheet for those students who are likely to benefit from a shorter period of practice in which they are able to complete the task, rather than a longer period of practice in which they are unsuccessful.

Student actions:
Students complete problems on the adapted sheets as assigned.

Student handouts/materials:
Lesson 7 Homework sheets (found on the following pages)
*****Note: Information in red was added to the module lesson homework sheets.**

Lesson 7 Homework

Name ______________________________ Date ________________

1. Draw an area model. Then, solve using the standard algorithm. Use arrows to match the partial products from your area model to the partial products in your algorithm.

   a. 273 × 346

	200	70	3	
6	**1,200**	**420**	**18**	**1,638**
40	**8,000**	**2,800**	**120**	**10,920**
300	**60,000**	**21,000**	**900**	**81,900**

$$
\begin{array}{r}
273 \\
\underline{\times\ 346} \\
\cancel{4}\ \cancel{1} \quad \\
1{,}638 \\
\cancel{2}\ \cancel{1} \quad \\
10{,}920 \\
\cancel{2} \quad\quad \\
\underline{+\ 81{,}900} \\
94{,}458
\end{array}
$$

   b. 273 x 306

	200	70	3
6			
300			

$$
\begin{array}{r}
273 \\
\underline{\times\ 306}
\end{array}
$$

   c. Both Parts (a) and (b) have three-digit multipliers. Why are there three partial products in Part (a) and only two partial products in Part (b)?

2. Solve by drawing the area model and using the standard algorithm.

a. 7,481 × 290

$$\begin{array}{r} 7{,}481 \\ \underline{\times\ \ 290} \end{array}$$

b. 7,018 × 209

$$\begin{array}{r} 7{,}018 \\ \underline{\times\ \ 209} \end{array}$$

3. Solve using the standard algorithm.

a. 426 × 357

$$\begin{array}{r} 426 \\ \underline{\times\ 357} \\ \scriptstyle \cancel{1}\,\cancel{4} \\ 2{,}982 \\ \scriptstyle \cancel{1}\,\cancel{3} \\ 21{,}300 \\ \scriptstyle \cancel{1} \\ \underline{+\ \ 127{,}800} \\ 152{,}082 \end{array}$$

b. 1,426 × 357

c. 426 × 307

d. 1,426 × 307

4. The Hudson Valley Renegades Stadium holds a maximum of 4,505 people. During the height of their popularity, they sold out 219 consecutive games. How many tickets were sold during this time?

$$
\begin{array}{r}
4{,}505 \\
\underline{\times \quad 219} \\
\cancel{4}\ \ \cancel{4}\ \ \ \\
40{,}545 \\
45{,}050 \\
\cancel{1}\ \cancel{1}\ \ \ \ \ \ \ \\
\underline{+\ \ 901{,}000} \\
986{,}595
\end{array}
$$

986,595 tickets were sold.

5. One Saturday at the farmer's market, each of the 94 vendors made $502 in profit. How much profit did all vendors make that Saturday?

Fluency Practice Worksheet

Exemplar from:
Module 4: Topic B: Lesson 4: Fluency Practice

Explanation of scaffold:
A fluency practice worksheet supports students who have difficulty verbally responding or writing answers to math problems in an effective or timely way. This format allows students to focus on the math instead of the oral and/or written demands of the task and provides the opportunity for visual learners to look for and express regularity in repeated reasoning. It can be used in any lesson to provide support to students without changing the rigor of the content.

Teacher actions/instructions:
Provide the *Fluency Practice* worksheets as needed to students, and have students participate in the activity as directed. Explain to students using the worksheets that they can respond by writing their answers on the red lines or in the red boxes on the worksheets instead of providing answers verbally or by writing on their personal white boards.

The following sample *script* appears in the *Fluency Practice section* of the lesson and is provided to demonstrate one way instruction *might* look:

Write Fractions as Decimals

T: (Write $\frac{1}{10}$.) Say the fraction.

S: 1 tenth.

T: Say it as a decimal.

S: Zero point one.

Continue with the following possible sequence: $\frac{2}{10}$, $\frac{3}{10}$, $\frac{8}{10}$, and $\frac{5}{10}$.

T: (Write $\frac{1}{100}$.) Say the fraction.

S: 1 hundredth.

T: Say it as a decimal.

S: Zero point zero one.

Continue with the following possible sequence: $\frac{2}{100}$, $\frac{3}{100}$, $\frac{9}{100}$, and $\frac{13}{100}$.

T: (Write 0.01 = ____.) Say it as a fraction.

S: 1 hundredth.

T: (Write 0.01 = $\frac{1}{100}$.)

Continue with the following possible sequence: 0.02, 0.09, 0.11, and 0.39.

Convert to Hundredths

T: (Write $\frac{1}{4} = \frac{\quad}{100}$.) Write the equivalent fraction.

S: (Write $\frac{1}{4} = \frac{25}{100}$.)

T: (Write $\frac{1}{4} = \frac{25}{100} =$ ____.) Write 1 fourth as a decimal.

S: (Write $\frac{1}{4} = \frac{25}{100}$ = 0.25.)

Continue with the following possible sequence: $\frac{3}{4}, \frac{1}{50}, \frac{7}{50}, \frac{12}{50}, \frac{1}{20}, \frac{7}{20}, \frac{11}{20}, \frac{1}{25}, \frac{2}{25}, \frac{9}{25}$, and $\frac{11}{25}$.

Fractions as Division

T: (Write 1 ÷ 2.) Solve.

S: (Write 1 ÷ 2 = $\frac{1}{2}$.)

Continue with the following possible sequence: 1 ÷ 5 and 3 ÷ 4.

T: (Write 7 ÷ 2.) Solve.

S: (Write 7 ÷ 2 = $\frac{7}{2}$ or 7 ÷ 2 =3 $\frac{1}{2}$.)

Continue with the following possible sequence: 12 ÷ 5, 11 ÷ 6, 19 ÷ 4 and 31 ÷ 8, and 49 ÷ 9.

T: (Write $\frac{5}{3}$.) Write the fraction as a whole number division expression.

S: (Write 5 ÷ 3.)

Continue with the following possible sequence: $\frac{11}{2}, \frac{15}{4}$, and $\frac{24}{5}$.

Student actions:

Students complete problems using the *Fluency Practice* worksheets.

Student handouts/materials:

Fluency Practice worksheets (found on the following pages)

Fluency Practice

Name ______________________________ **Date** ______________

Write Fractions as Decimals

$\frac{1}{10} = 0.$ ____ $\frac{2}{10} = 0.$ ____ $\frac{3}{10} = 0.$ ____ $\frac{8}{10} = 0.$ ____ $\frac{5}{10} = 0.$ ____

$\frac{1}{100} = 0.$ ____ $\frac{2}{100} = 0.$ ____ $\frac{3}{100} = 0.$ ____ $\frac{9}{100} = 0.$ ____ $\frac{13}{100} = 0.$ ____

$0.01 = \frac{\boxed{}}{100}$ $0.02 = \frac{\boxed{}}{100}$ $0.09 = \frac{\boxed{}}{100}$ $0.11 = \frac{\boxed{}}{100}$ $0.39 = \frac{\boxed{}}{100}$

Convert to Hundredths

$\frac{1}{4} = \frac{\boxed{}}{100} = 0.$ ____ $\frac{3}{4} = \frac{\boxed{}}{100} = 0.$ ____ $\frac{1}{50} = \frac{\boxed{}}{100} = 0.$ ____ $\frac{7}{50} = \frac{\boxed{}}{100} = 0.$ ____

$\frac{12}{50} = \frac{\boxed{}}{100} = 0.$ ____ $\frac{1}{20} = \frac{\boxed{}}{100}$ $0.$ ____ $\frac{7}{20} = \frac{\boxed{}}{100} = 0.$ ____ $\frac{11}{20} = \frac{\boxed{}}{100} = 0.$ ____

$\frac{1}{25} = \frac{\boxed{}}{100} = 0.$ ____ $\frac{2}{25} = \frac{\boxed{}}{100} = 0.$ ____ $\frac{9}{25} = \frac{\boxed{}}{100} = 0.$ ____ $\frac{11}{25} = \frac{\boxed{}}{100} = 0.$ ____

Fractions as Division

$1 \div 2 = \frac{\square}{\square}$

$1 \div 5 = \frac{\square}{\square}$

$3 \div 4 = \frac{\square}{\square}$

$7 \div 2 = \frac{\square}{\square}$ or ____ $\frac{\square}{\square}$

$12 \div 5 = \frac{\square}{\square}$ or ____ $\frac{\square}{\square}$

$11 \div 6 = \frac{\square}{\square}$ or ____ $\frac{\square}{\square}$

$19 \div 4 = \frac{\square}{\square}$ or ____ $\frac{\square}{\square}$

$31 \div 8 = \frac{\square}{\square}$ or ____ $\frac{\square}{\square}$

$49 \div 9 = \frac{\square}{\square}$ or ____ $\frac{\square}{\square}$

$\frac{5}{3}$ = ____ ÷ ____

$\frac{11}{2}$ = ____ ÷ ____

$\frac{15}{4}$ = ____ ÷ ____

$\frac{24}{5}$ = ____ ÷ ____

References

Archer, A. and Hughes, C. (2011). *Explicit instruction: Effective and efficient teaching.* New York, NY: The Guilford Press.