

# What Comes Next?

## Overview

In this activity students will create a sequence for a mathematical algorithm.

## Time Needed

1-2 class periods

## Materials

Timeliner XE

Math Sequence Worksheet (double-sided if needed)

## Grade Range

Grades 3 - 7

## Learning Objectives

- Identify the steps in a mathematical algorithm
- Record steps in Timeliner XE sequence
- Create a sequence using Timeliner XE

## Directions

1. Ask students to name the mathematical algorithms that they know, such as addition with regrouping, subtraction with regrouping, multiplication of two-digit numbers, long division, multiplication of fractions, and division of fractions.
2. Choose one of the algorithms to demonstrate for the class.
3. Project the math sequence worksheet and work through the steps of the algorithm.
  - For an example you can model addition of two-digit numbers
    - i. first you add the numbers in the ones place
    - ii. if there are more than 9 ones, regroup 10 ones as 1 ten
    - iii. next add the numbers in the tens place
    - iv. if there are more than 9 tens, regroup 10 tens as 1 hundred
    - v. write the sum

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4. Open Timeliner XE, click on **Create a New Project**, choose **Blank Sequence** , click **OK**.

5. Title the Sequence "Addition of Two-Digit Numbers" and click **OK**.



6. Click the **Add Event button** to add an event. Describe the first step for adding two-digit numbers, continue to click on the **Add Event button** to add each subsequent step in the sequence.

7. Have students choose an algorithm and use the Math Sequence worksheet to write out the steps for their chosen algorithm, giving an example for each step.

8. Once students have written out the steps, have them open Timeliner XE and repeat steps 4 – 6 to create a sequence for their chosen algorithm.

9. When students have finished their sequence have them go to the **File** menu and choose **Print**.

10. When students have printed their sequences they can exchange with a friend and follow each other's sequence. Have students give each other feedback and allow them to improve upon their sequences.

11. Make copies of the final sequences and allow students to use them as a reference.

## Extensions

- You may want to encourage more advanced students to choose more challenging algorithms and less advanced students to choose less complex algorithms.
- You might have students mix up the steps and create a **Finish Me** activity to put the steps in the correct order.

## Assessment

- Give students a number of math problems which use the algorithms, have students use their sequences to solve the problems.
  - Have students create Finish Me activities and exchange them with classmates. Check that students can put the steps in the correct order.
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# Math Sequence Worksheet (page 1)

Chosen Algorithm \_\_\_\_\_

**Steps**

**Example**

1

1

2

2

3

3

4

4

5

5

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# Math Sequence Worksheet (page 2)

Chosen Algorithm \_\_\_\_\_

**Steps**

6

7

8

9

10

**Example**

6

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# Math Sequence Possible Answers

Chosen Algorithm \_\_\_\_\_ Addition of Two Digit Numbers with Regrouping \_\_\_\_\_

## Steps

## Example

**1** Arrange the addends one above the other in the columns of ones and tens.

**1**

$$\begin{array}{r} 45 \\ + \underline{67} \end{array}$$

**2** Add the ones digits.

**2**

$$5 + 7 = 12$$

**3** Regroup the ones into tens and ones.

**3**

$$12 = 2 \text{ ones} \\ \text{and } 1 \text{ ten}$$

**4** Place the new tens digit above the tens column.

**4**

$$\begin{array}{r} 1 \\ 45 \\ + \underline{67} \end{array}$$

**5** Place the ones digit below the line in the ones column.

**5**

$$\begin{array}{r} 1 \\ 45 \\ + \underline{67} \\ 2 \end{array}$$

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# Math Sequence Worksheet (page 2)

Chosen Algorithm \_\_\_\_\_

## Steps

6 Add the digits in the tens column.

7 Place the answer below the line and to the left of the ones' place sum.

8

9

10

## Example

6  $1 + 4 + 6 = 11$

7 
$$\begin{array}{r} 45 \\ + 67 \\ \hline 112 \end{array}$$

8

9

10

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