**Lesson 7 Notes: Addition of Whole Numbers**

**ANSWER KEY**

*Math is the only place where people can buy 64 watermelons, and no one wonders why.*

**Counting Numbers (Natural)**

the numbers we use for counting 1, 2, 3, 4, 5… (N)

**Whole Numbers**

zero plus the counting numbers 0, 1, 2, 3, 4… (W)

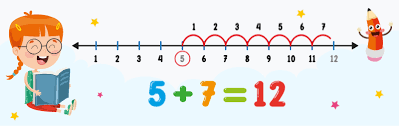
**Integers positive and negative whole numbers**

…-3, -2, -1, 0, 1, 2, 3… (Z)

***Addition Using a Number Line***

* Helps students visualize addition with small numbers
* Simple as counting positive numbers by moving towards the right-hand side of a number line if the number is positive and moving to the left-hand side of the number line if the number is negative.
* [Video 1](https://www.youtube.com/watch?v=ZxlImZXu1M4)1, [Video 2](https://www.youtube.com/watch?v=204uFu0DRWE)2

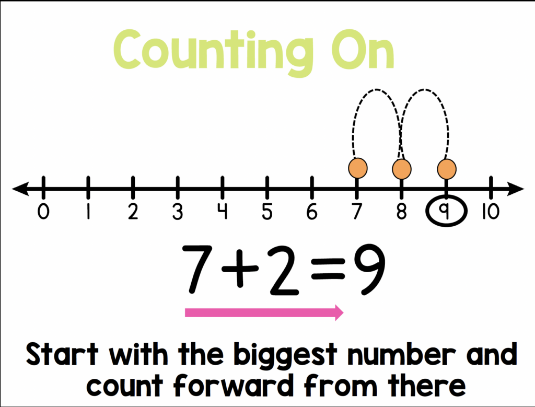
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***Addition Using Doubles***

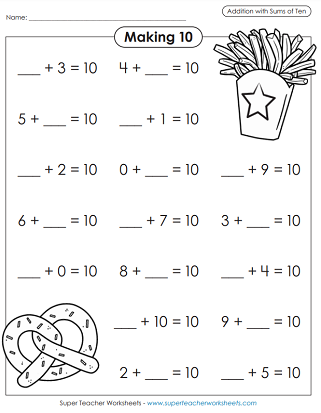
* Mental math strategy to quickly add numbers
* Take two numbers that are the same and add together
* Doubles account for a majority of addition facts up to 20
* Teaches place value and excites kids because they can add “big” numbers
* [Doubles is No Trouble Video](https://youtu.be/NDqbCfplYrg)4

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***Addition Using “Counting On”***

* Another mental math strategy
* Used to build number fact fluency
* Counting On involves adding 1, 2, or 3 to a number

***Addition by Making 10***

* Mental math strategy in which you turn one of the numbers you are adding to make 10
* Helps students understand place-value and the relationship between numbers
* Sample Worksheet

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**Properties of Addition**

Commutative – numbers can be added in any order without changing the sum

2 + 3 = 5 and 3 + 2 = 5

Associative – with the addition of three or more numbers, rearranging the parenthesis does not change its value. (Notice the order of the numbers does not change, we simply shift parenthesis.)

(2 + 3) + 4 = 9 and 2 + (3 + 4) = 9

Identity – adding zero to any number results in the number itself

7 + 0 = 7 (The number retains its identity.)

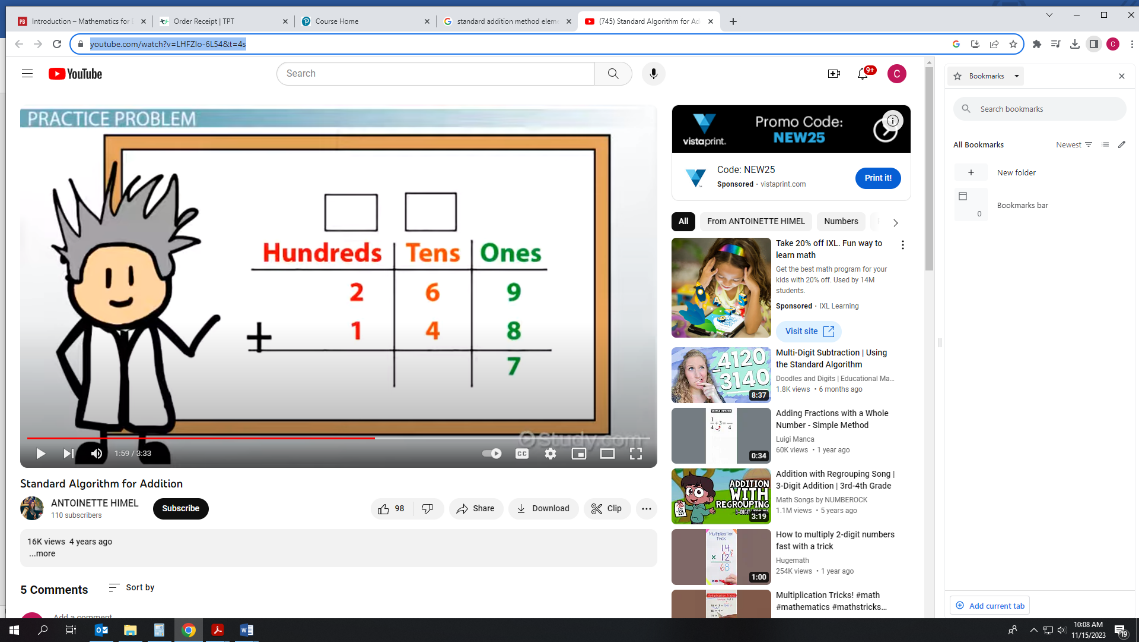
***Methods Used to Teach Addition to Elementary Students***

***Standard Addition***

* Rule 1: Line up the numbers vertically by matching the place values - and start with the ones place.
* Rule 2: Add together the numbers that share the same place value - again, start with the ones place.
* Rule 3: Regroup, if necessary.

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* [Standard Addition Algorithm Video](https://www.youtube.com/watch?v=LHFZIo-6L54&t=4s)



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**Example 1:**

Add Using the Standard Addition Algorithm. Show your work.

310

227 + 83 = \_\_\_\_\_\_\_\_\_\_\_\_\_

*It’s important that students learn how to add using the standard addition algorithm without the use of calculators. Students must build a solid mathematical foundation without relying on technology. Knowledge is power!*

***Left-to-Right Addition***

Front-end addition

Partial Sums

* Also known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Involves adding the largest place value first
* Understanding of place value is key

**Example 2:**

Use Left-to-Right Addition to add the following.

1. 26 + 13 = Add tens 20 + 10 = 30, Add ones 6 + 3 = 9, Add together 39
2. 16 + 15 = Add tens 10 + 10 = 20, Add ones 6 + 5 = 11, Add together 31

Add hundreds (800 + 600) = 1400

Add tens (50 + 30) = 80

Add ones = 8 + 4 = 12

Add 1400 + 80 + 12= 1492

Add tens (80 + 50) = 130

Add ones (4 + 7) = 11

130 + 11 = 141

1. 84 4. 858

+ 57 +634

***Lattice Method***

* Allows you to add large numbers without worrying about “carrying 10” all the time
* You write the results in a lattice structure and add diagonally [(Video)](https://www.youtube.com/watch?v=tYmF2GW0wwQ)9

A screenshot of a math problem

Description automatically generatedA grid of numbers and a line

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,,,,,,,,,,189

+ 163

11

1

6

1

8

1

1

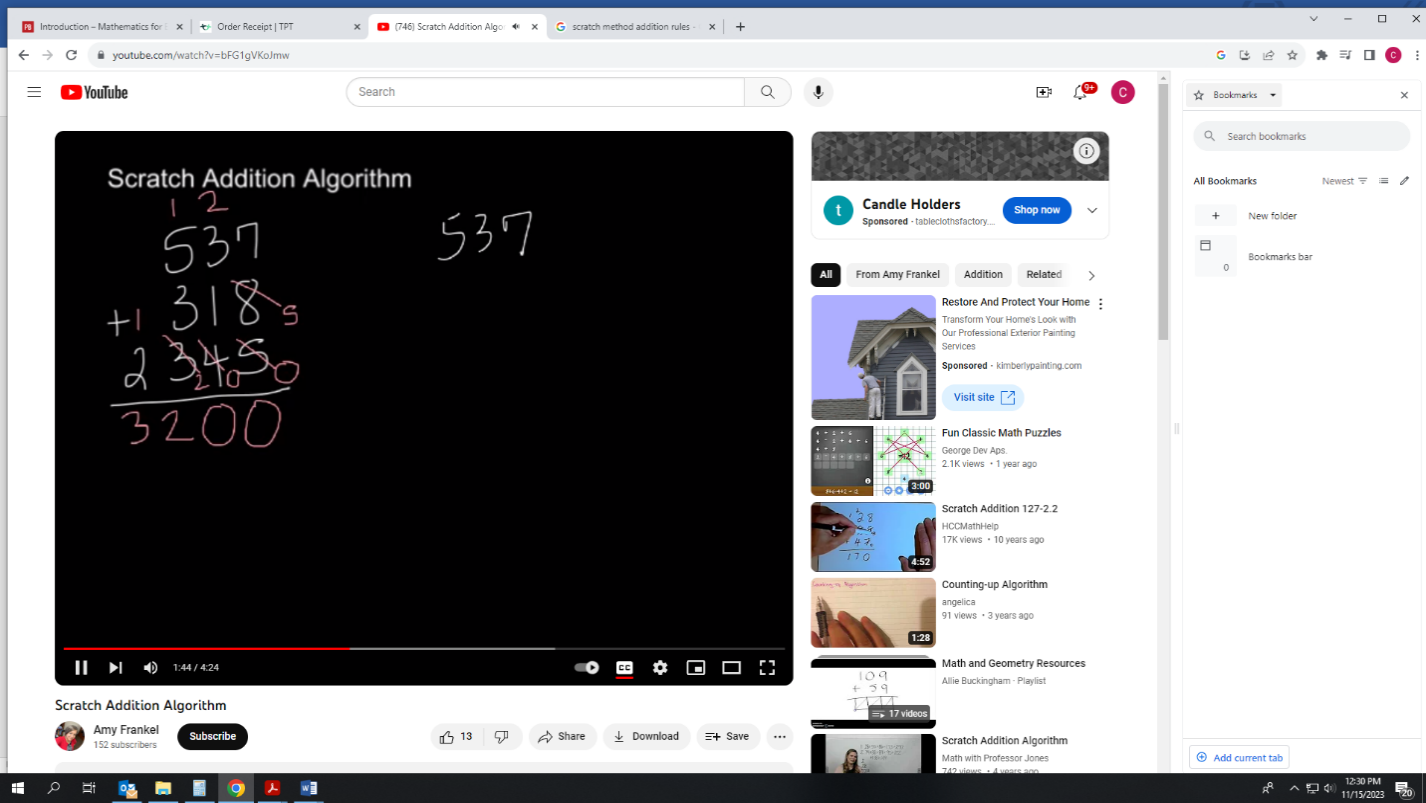
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**S*cratch Method***

* Quick and easy way to add columns of numbers
* [Watch Video](https://www.youtube.com/watch?v=bFG1gVKoJmw)10

**Try the Scratch Method!**

**537**

**318**

**+ 2345**

**Mental Computation and Estimation**

**Mental Computation –** using different strategies to do computations mentally without using physical computational aids

**Compatible Numbers –** numbers that are easy to add, subtract, multiply or divide mentally (helps us do mental math and estimations)

**Estimation –** rounding numbers to find an approximate answer

**Adding by Using Compatible Numbers**

**Example 3:**

200

40

160

260

60

29

+ 31\_

**Adding by Making Compatible Numbers**

**Example 4:**

Think of compatible numbers that are easy to add like 75 + 25. Then compensate for the 3 you removed. 75 + 25 = 100 + 3 = 103

75

+ 28

9411 9000

3849 4000

9000 + 4000 = 13,000

**Rounding (Used to approximate or estimate calculations)**

Check the number in the place value one below the one you are rounding to. If it is greater than or equal to 5, round up. If it is less than 5, round down. Then, only write the numbers until you reach the place you are rounding to.

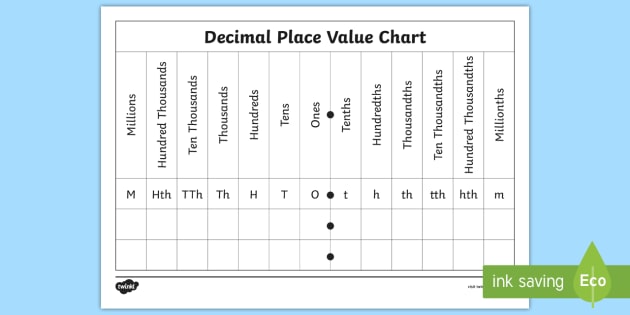
**Front-End Rounding**

Each of the numbers in a problem is rounded to one digit with the with the rest of the digits being zero. Standard rounding rules are used. The second digit in the number is used to decide whether the first digit will be rounded up or down.

**Example 5:** Estimate the sum of the numbers 9411 + 3849 =

Rounding numbers makes them easier to understand and to estimate calculations. Teaching students to round is important when they are determining if their answers are “reasonable”. [(Rounding Video)](https://www.youtube.com/watch?v=8Qwugoey0dQ) 11

**Rounding Decimals** Make sure students understand place value when rounding decimals.



**References**

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