Lecture Notes

Notes

- Start adding from the **ones** column (the right-hand digits) and continue to add each column as you move to the left.
- The answer to an addition problem is called a **sum**.
- For addition, we can have the smaller number go on top (but not for subtraction).
    - This is due to the Commutative Property of Addition.
    - For addition, let's agree to simply put the left number on top regardless of whether it is the smaller or bigger number.
- Make sure to keep each column vertically aligned as you work out the problem on paper.
- Use plenty of space between each digit to avoid crowding the digits. It will also make it easier to vertically align your digits.
- Using commas are optional. However, if you do use them, they must be placed correctly, or the answer will be considered incorrect.

$$\begin{array}{r} 33 \\ + 62 \\ \hline 95 \end{array}$$

- Add from right to left.

Add.

$$41 + 53$$

The sum is 94.

- Change **horizontal** format to **vertical** format.

$$\begin{array}{r} 167 \\ + 222 \\ \hline 389 \end{array}$$

- Add from right to left.

```
  328
  151
+ 200
─────
  679
```

- Add from right to left, regardless of how many rows of numbers to add.

Find the sum.

641 + 234

641 + 234 = 875

- Change horizontal format to vertical format.

```
  26
+ 96
────
 122
```

- We must do a **carry** since the sum of the ones column is two digits long: $6 + 6 = $ **12**. Each column can only hold one digit.
  - The right-hand digit of the sum (1**2**) is **2**. The 2 goes under the ones column.
  - The left-hand digit of the sum (**1**2) is **1**. The 1 goes at the top of the next column to the left to be added with those digits.

Find the sum.

62 + 39

The sum is 101.

- Change horizontal format to vertical format.
- Carry as needed.

Add the numbers.

277
+ 155

The sum is 432 .

Find the sum.

349 + 115

The sum is 464 .

- Change horizontal format to vertical format.

Add.

66 + 293 + 66 + 79

The sum is 504 .

- Change horizontal format to vertical format.
- Notice that 293 is three digits long whereas the other three numbers are two digits long.
  - You must **right-align** the numbers as you change them to vertical format.
  - That way, all four numbers will have their rightmost digit in the ones column.
  - Doing this forces the four numbers to vertically align their tens digits, hundreds digits, etc.