

## Numbers

Work with a classmate. This does not need to be turned in.

**Part 1:** For each of the following sets of numbers, give a definition (as best as you can), give an example of a number in that set, and give an example of a number that is not in that set.

1.  $\mathbb{Z}$ , the integers
2.  $\mathbb{Q}$ , rational numbers
3. Irrational numbers

**Part 2:** After our class discussion, fill in the following statements:

1. The set  $\mathbb{Z}$  of integers is closed under \_\_\_\_\_ and \_\_\_\_\_, but not \_\_\_\_\_.
2. The set  $\mathbb{Q}$  of all rational numbers is the set of all numbers which can be expressed as \_\_\_\_\_.
3. For example, the number 0.25 is rational because it can be expressed as \_\_\_\_\_.
4. Rational numbers are closed under \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.
5. Real numbers ( $\mathbb{R}$ ) are the set of all \_\_\_\_\_ and \_\_\_\_\_ numbers.
6. Real numbers are closed under \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.  
(same as the rational numbers)

**Part 3:** Discuss the following with a classmate:

Rational numbers can be formed from integers by closing under \_\_\_\_\_. How do we form real numbers from rational numbers? What are we closing under?