

## Warm-Up Notes

## MAT 100: ELEMENTARY ALGEBRA

— Fall 2026 —

## SECTION 1.8 THE REAL NUMBERS

## Install — 10 minute lesson

**Objectives of this Section**

- Simplify expressions with square roots
- Identify whole numbers, integers, rational numbers, irrational numbers, and real numbers
- Locate fractions on the number line
- Locate decimals on the number line

**Skills****Introduced in this section:**

*No new skill introduced this section.* **Also practiced:** NUM.AS (Adding-Subtracting Integers), FRC.FD (Converting Fractions and Decimals), WRD.NM (Naming the model).

**Lesson**

Every real number has a personality hiding in its decimal form: some settle down — stopping or repeating forever — and some never do. Square roots split the same way: if the number under the radical sign is a perfect square, its root lands neatly on a whole number; if not, its decimal runs on forever with no pattern. Once you can read those signals, you can tell what kind of number you're looking at and compare two numbers with confidence. Those names nest: every whole number is an integer, every integer is a rational number, and every rational or irrational number is real. And every one of them has a home on the number line — which is where we will put fractions and decimals once we can read their size.

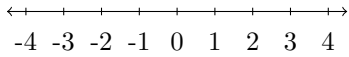
**I do**

**Watch.** Simplify.  $\sqrt{4}$

**We do**

**Together.** List the (a) rational numbers, (b) irrational numbers.  $0.\overline{13}$ ,  $0.42982\dots$ ,  $1.875$

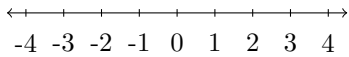
**Together.** Locate and label on the number line.  $\frac{1}{4}$ ,  $1\frac{2}{3}$ ,  $-2\frac{1}{2}$



## You do

**Your turn.** Order each pair of numbers, using  $<$  or  $>$ .  $-0.62$  \_\_\_\_\_  $-0.619$

**Your turn.** Locate and label on the number line.  $0.4$ ,  $-1.8$ ,  $2.35$



**Your turn.** Simplify.  $\sqrt{144}$

## Practice

1. Simplify.

$$\sqrt{100}$$

2. Identify whether each number is a real number or not a real number. (a)  $\sqrt{-49}$   
(b)  $-\sqrt{144}$

3. Identify whether each number is rational or irrational. (a)  $\sqrt{225}$  (b)  $\sqrt{216}$

4. Order each of the pairs of numbers, using  $<$  or  $>$ .

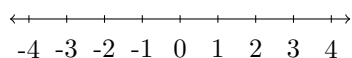
$$-2\frac{1}{2} \text{ — } -3$$

5. For each number, list every set it belongs to: whole number, integer, rational number, irrational number, real number.

(a)  $-7$  (b)  $\sqrt{9}$  (c)  $\frac{2}{3}$  (d)  $\sqrt{5}$

6. Locate and label the numbers on a number line.

$$\frac{3}{4}, -\frac{5}{2}, 2\frac{1}{3}$$



7. Locate and label the numbers on a number line.

$$-0.6, 1.25, -2.4$$

