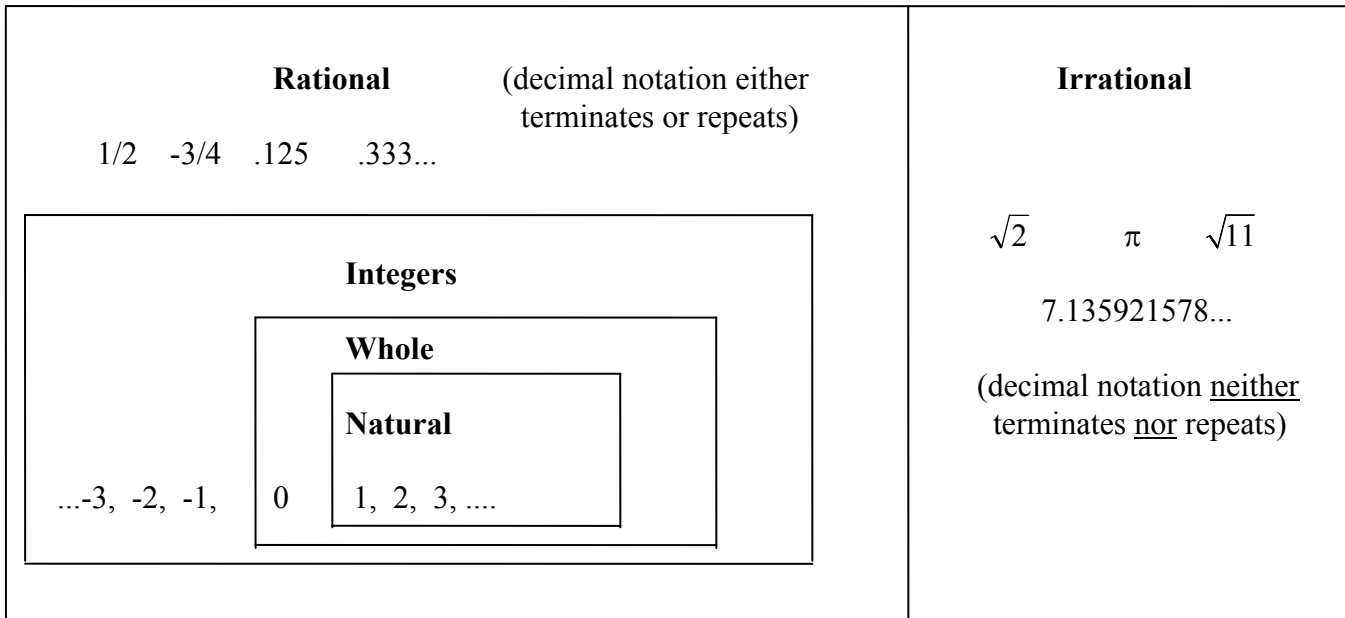


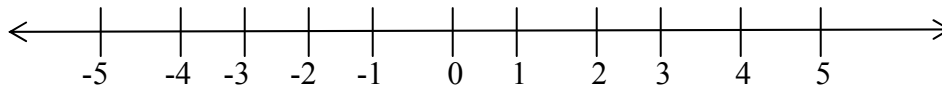
Real Numbers and the Number Line (1.4)

Real Numbers



NOTE: Every natural number is also a whole number, every whole number is also an integer, etc.
But, not every whole number is a natural number, not every integer is a whole number, etc.

In comparing two real numbers A and B, the number farther to the left on the number line is “less than” the number farther to the right. Or you can say that the number farther to the right is “greater than” the number on the left. In using the symbol $<$ or $>$ the *small* pointy end should be pointing to the *smaller* number and the *large* open end should be facing the *larger* number.



Examples of true statements $3 > 1$ $1 < 3$ $-4 < -2$ $2 \leq 5$ $2 \leq 2$ $2 \geq 2$

“3 is greater than 1” “1 is less than 3” “-4 is less than -2” “2 is less than or equal to 5” “2 is less than or equal to 2” “2 is greater than or equal to 2”

Absolute Value The absolute value of a number N (written $|N|$) is a non-negative number that represents how far away N is from zero on the number line.

Example $|2| = 2$ because 2 is 2 units away from 0 on the number line.
 $|-2| = 2$ because -2 is 2 units away from 0 on the number line.
 $|-1.4| = 1.4$ because -1.4 is 1.4 units away from 0 on the number line.
 $|0| = 0$ because 0 is 0 units away from 0 on the number line.

Problems

1. Graph these two numbers on a number line and then write an appropriate inequality describing their relationship: $-5/8$ and -2

True or False?

2. $-5 > -4$

5. $5 > 5$

8. $|-7| = 7$

3. $-1 \leq 3$

6. $1 \leq -1$

9. $|7| = 7$

4. $5 \geq 5$

7. $|7| = -7$

10. For each number below, list every category to which it belongs. Use R for real, Ra for rational, Ir for irrational, I for integer, W for whole, N for natural.

$2/3$

$\sqrt{5}$

7

$-5/2$

π

0

$.1212\dots$

-2

Translate to an inequality. (Use C as a variable for car cost.)

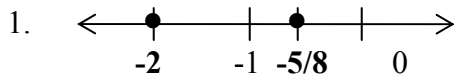
11. My car cost more than \$1000.

12. My car cost at least \$1000.

13. My car cost no more than \$1000.

14. My car cost less than \$1000.

Answers



$-2 < -5/8$ or $-2 \leq -5/8$ or $-5/8 > -2$ or $-5/8 \geq -2$ (all are correct)

2. F

5. F

8. T

3. T

6. F

9. T

4. T

7. F

10. $2/3$ is R, Ra

11. $C > 1000$

$\sqrt{5}$ is R, Ir

7 is R, Ra, I, W, N

12. $C \geq 1000$

$-5/2$ is R, Ra

13. $C \leq 1000$

π is R, Ir

0 is R, Ra, I, W

14. $C < 1000$

$.1212\dots$ is R, Ra

-2 is R, Ra, I