

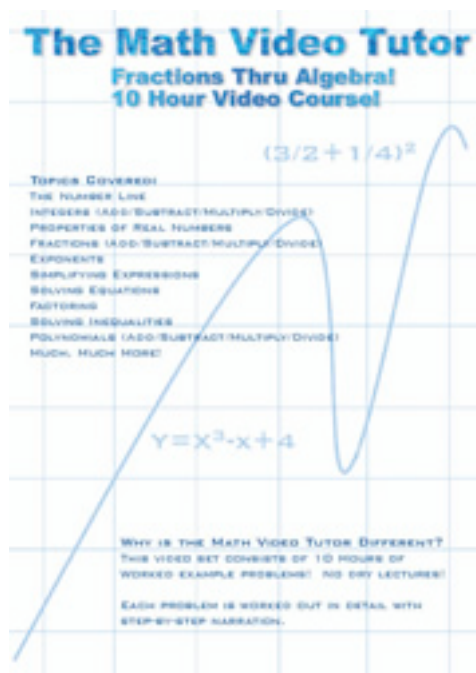
## Supplemental Worksheet Problems To Accompany:

### Math Video Tutor DVD – Fractions Thru Algebra Section 1 – Real Numbers And Their Graphs

Please watch Section 1 of this DVD before working these problems.

**The DVD is located at:**

<http://www.mathtutordvd.com/products/item8.cfm>



Sample Videos For this DVD Are Located Here:

<http://www.mathtutordvd.com/public/department49.cfm>

1) Circle all of the **natural numbers** in the following list.

-1.7, 1.2,  $\frac{3}{4}$ , 3, 5,  $\sqrt{5}$ , 199

2) Circle all of the **natural numbers** in the following list.

101, -41, 0, -0.0505,  $\frac{2}{9}$ ,  $-\frac{41}{37}$ , 7, -8,  $3\frac{3}{4}$ , 19

3) Circle all of the **whole numbers** in the list.

-5,  $\frac{1}{2}$ , -0.5, 2, 47,  $\sqrt{15}$ , 0.35, 9

4) Circle all of the **whole numbers** in the list.

19.9, 34, 0, 0.25, 17,  $\sqrt{21}$ ,  $\frac{18}{19}$ , 1

5) Circle all of the **integers** in the list.

-5, 1, 0.5,  $\frac{7}{8}$ , 13, -4,  $-\frac{9}{10}$

6) Circle all of the **integers** in the list.

$\sqrt{5}$ , 0, -3.5,  $\frac{2}{3}$ , 7, -13, 1.0001

7) Circle all of the **rational numbers** in the list.

$$\frac{3}{4}, \quad -\frac{2}{3}, \quad 1.5, \quad \frac{17}{19}, \quad \sqrt{5}, \quad \pi, \quad -13$$

8) Circle all of the **rational numbers** in the list.

$$-4, \quad 0.5, \quad -0.66666\dots, \quad \frac{9}{10}, \quad \sqrt{4}, \quad 0.75, \quad \sqrt{2}$$

9) Circle all of the **irrational numbers** in the list.

$$\sqrt{2}, \quad -3, \quad \frac{3}{4}, \quad 0.25, \quad 4, \quad -0.75$$

10) Circle all of the **real numbers** in the list.

$$-1, \quad 2, \quad 3.5, \quad \frac{1}{2}, \quad -\frac{21}{22}, \quad -0.666666\dots$$

11) Circle all of the **real numbers** in the list.

$$\sqrt{2}, \quad \pi, \quad -1.23542569875\dots, \quad \frac{101}{2}, \quad -\frac{3}{2}, \quad \sqrt{\pi}$$

12) Circle all of the **prime numbers** in the list.

$$1, \quad \pi, \quad 5, \quad 9, \quad -5, \quad 7$$

13) Circle all of the **prime numbers** in the list.

18, 11, 12, -17, 21, 23

14) Indicate which numbers in the list is an **even integer** or an **odd integer**.

2, 3, 4, 6, -5, -4, -1

15) Indicate which numbers in the list is an **even integer** or an **odd integer**.

22, 13, -41, 0.505,  $\frac{12}{13}$ , -18, 52.2

16) Place one of the symbols =, <, or > in the blank to make a true statement.

5 \_\_\_ 7

17) Place one of the symbols =, <, or > in the blank to make a true statement.

8 \_\_\_ 1

18) Place one of the symbols =, <, or > in the blank to make a true statement.

-3 \_\_\_ -3

19) Place one of the symbols =, <, or > in the blank to make a true statement.

-5 \_\_\_ 2

20) Place one of the symbols =, <, or > in the blank to make a true statement.

$$3.4 \text{ \_\_\_ } -7$$

21) Place one of the symbols =, <, or > in the blank to make a true statement.

$$-2.4 \text{ \_\_\_ } -2.6$$

22) Place one of the symbols =, <, or > in the blank to make a true statement.

$$\frac{1}{2} \text{ \_\_\_ } \frac{1}{4}$$

23) Place one of the symbols =, <, or > in the blank to make a true statement.

$$-\frac{2}{9} \text{ \_\_\_ } \frac{4}{9}$$

24) Place one of the symbols =, <, or > in the blank to make a true statement.

$$3+3 \text{ \_\_\_ } 1+5$$

25) Place one of the symbols =, <, or > in the blank to make a true statement.

$$5-1 \text{ \_\_\_ } 10-2$$

26) Place one of the symbols =, <, or > in the blank to make a true statement.

$$2+3+4 \text{ \_\_\_ } 1+4+5$$

27) Graph the following on a number line: The points -2 and 4.

28) Graph the following on a number line: The points -1 and -4.

29) Graph the following on a number line: The points 2.5 and -1.5.

30) Graph the following on a number line: The points  $\frac{3}{2}$  and  $-2\frac{1}{2}$ .

31) Graph the following on a number line: The set of points represented by:  $x \geq 1$

32) Graph the following on a number line: The set of points represented by:  $x \leq 3$

33) Graph the following on a number line: The set of points represented by:  $x < -1$

34) Graph the following on a number line: The set of points represented by:  $x > 3$

35) Graph the following on a number line: The set of points represented by:  
 $x > 0$  and  $x \leq -1$

36) Graph the following on a number line: The set of points represented by:  
 $0 \leq x \leq 3$

37) Graph the following on a number line: The set of points represented by:  
 $-2 < x \leq 2$

38) What is  $|3|$  equal to?

39) What is  $|-7|$  equal to?

40) What is  $|-0.5|$  equal to?

41) What is  $|1.67|$  equal to?

42) What is  $\left|-\frac{3}{4}\right|$  equal to?

43) What is  $\left|2\frac{4}{9}\right|$  equal to?



Question	Answer
<p>1) Circle all of the <b>natural numbers</b> in the following list.</p> <p style="text-align: center;"><math>-1.7, 1.2, \frac{3}{4}, 3, 5, \sqrt{5}, 199</math></p>	<p style="text-align: center;"><b>Ans: 3, 5, 199.</b></p> <p>Natural numbers are all integers greater than or equal to 1...such as:</p> <p>1, 2, 3, 4, 5, 6, 7, 8, 9, 10,.....</p>
<p>2) Circle all of the <b>natural numbers</b> in the following list.</p> <p>101, -41, 0, -.0505, <math>\frac{2}{9}</math>, <math>-\frac{41}{37}</math>,</p> <p>7, -8, <math>3\frac{3}{4}</math>, 19</p>	<p style="text-align: center;"><b>Ans: 101, 7, 19.</b></p> <p>Natural numbers are all integers greater than or equal to 1...such as:</p> <p>1, 2, 3, 4, 5, 6, 7, 8, 9, 10,.....</p> <p>Zero is not a natural number since it is less than one.</p>
<p>3) Circle all of the <b>whole numbers</b> in the list.</p> <p><math>-5, \frac{1}{2}, -0.5, 2, 47, \sqrt{15}, 0.35, 9</math></p>	<p style="text-align: center;"><b>Ans: 2, 47, 9</b></p> <p>Whole numbers are all integers greater than or equal to 0...such as:</p> <p>0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10,.....</p>
<p>4) Circle all of the <b>whole numbers</b> in the list.</p> <p>19.9, 34, 0, 0.25, 17, <math>\sqrt{21}</math>, <math>\frac{18}{19}</math>, 1</p>	<p style="text-align: center;"><b>Ans: 34, 0, 17, 1</b></p> <p>Whole numbers are all integers greater than or equal to 0...such as:</p> <p>0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10,.....</p>
<p>5) Circle all of the <b>integers</b> in the list.</p> <p><math>-5, 1, 0.5, \frac{7}{8}, 13, -4, -\frac{9}{10}</math></p>	<p style="text-align: center;"><b>Ans: -5, 1, 13, -4</b></p> <p>Integers are the numbers such as:</p> <p>.....-5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, .....</p>
<p>6) Circle all of the <b>integers</b> in the list.</p> <p><math>\sqrt{5}, 0, -3.5, \frac{2}{3}, 7, -13, 1.0001</math></p>	<p style="text-align: center;"><b>Ans: 0, 7, -13</b></p> <p>Integers are the numbers such as:</p> <p>.....-5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, .....</p>

Question	Answer
<p>7) Circle all of the <b>rational numbers</b> in the list.</p> <p><math>\frac{3}{4}</math>, <math>-\frac{2}{3}</math>, 1.5, <math>\frac{17}{19}</math>, <math>\sqrt{5}</math>, <math>\pi</math>, -13,</p>	<p><b>Ans:</b> <math>\frac{3}{4}</math>, <math>-\frac{2}{3}</math>, 1.5, <math>\frac{17}{19}</math>, -13</p> <p>A Rational number is any number, negative or positive, that can be written as a fraction.</p> <p><math>\frac{3}{4}</math>, <math>-\frac{2}{3}</math>, and <math>\frac{17}{19}</math> are all rational because they are fractions. 1.5 is rational because it can be written as 3 divided by 2, which is the fraction <math>\frac{3}{2}</math>. -13 is rational because it can be written as -13 divided by 1 which is the fraction <math>-\frac{13}{1}</math>. <math>\sqrt{5} = 2.2360679774997\dots</math> is non repeating decimal and so cannot be written as a fraction. <math>\pi = 3.141592654\dots</math> is a non repeating decimal and so cannot be written as a fraction.</p>
<p>8) Circle all of the <b>rational numbers</b> in the list.</p> <p>-4, 0.5, -0.66666..., <math>\frac{9}{10}</math>, <math>\sqrt{4}</math>, 0.75, <math>\sqrt{2}</math></p>	<p><b>Ans:</b> -4, 0.5, -0.66666..., <math>\frac{9}{10}</math>, <math>\sqrt{4}</math>, 0.75</p> <p>A Rational number is any number, negative or positive, that can be written as a fraction.</p> <p><math>\frac{9}{10}</math> is rational because it is a fraction.</p> <p>-4 is rational because it can be written as the fraction <math>-\frac{4}{1}</math>.</p> <p>0.5 is rational because it can be written as the fraction <math>\frac{1}{2}</math>.</p> <p>-0.66666... is rational because it can be written as -2 divided by 3 which is the</p>

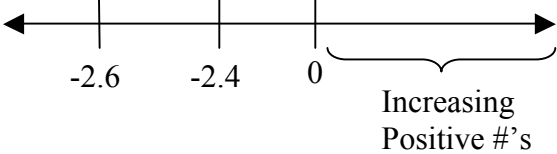
	<p>fraction <math>-\frac{2}{3}</math>.</p> <p><math>\sqrt{4}</math> is rational because <math>\sqrt{4} = 2</math> which can in turn be written as the fraction <math>\frac{2}{1}</math>.</p> <p>0.75 is rational because it can be written as 3 divided by 4 which is the fraction <math>\frac{3}{4}</math>.</p> <p><math>\sqrt{2} = 1.41421235623.....</math> which is a non repeating endless decimal and so it can't be written as a fraction, so it is not a rational number.</p>
<p>9) Circle all of the <b>irrational numbers</b> in the list.</p> <p><math>\sqrt{2}</math>, -3, <math>\frac{3}{4}</math>, 0.25, 4, -0.75</p>	<p><b>Ans:</b> <math>\sqrt{2}</math></p> <p>Irrational numbers are numbers that cannot be written as a fraction. Since <math>\sqrt{2} = 1.41421235623.....</math> is a non repeating endless decimal it cannot be written as a fraction. In contrast, all of the other numbers are not irrational numbers. They are in fact rational numbers since they <u>can</u> be written as fractions:</p> <p><math>-3 = -\frac{3}{1}</math>.</p> <p><math>\frac{3}{4}</math> is already a fraction.</p> <p>0.25 = 1 divided by 4, or <math>\frac{1}{4}</math>.</p> <p><math>4 = \frac{4}{1}</math>.</p> <p><math>-0.75 = -3</math> divided by 4 = <math>-\frac{3}{4}</math></p>
<p>10) Circle all of the <b>real numbers</b> in the list.</p> <p>-1, 2, 3.5, <math>\frac{1}{2}</math>, <math>-\frac{21}{22}</math>, -0.6666666...</p>	<p><b>Ans:</b> -1, 2, 3.5, <math>\frac{1}{2}</math>, <math>-\frac{21}{22}</math>, -0.6666666...</p> <p>Real numbers are all numbers that are either rational or irrational. This means that real numbers can be repeating decimals, fractions, negative or positive. Any number</p>

	<p>you see will be a real number unless it is “imaginary” in which case it will have an “i” in it.</p>
<p>11) Circle all of the <b>real numbers</b> in the list.</p> <p><math>\sqrt{2}</math>, <math>\pi</math>, <math>-1.23542569875\dots</math>, <math>\frac{101}{2}</math>,</p> <p><math>-\frac{3}{2}</math>, <math>\sqrt{\pi}</math></p>	<p><b>Ans:</b> <math>\sqrt{2}</math>, <math>\pi</math>, <math>-1.23542569875\dots</math>, <math>\frac{101}{2}</math>,</p> <p><math>-\frac{3}{2}</math>, <math>\sqrt{\pi}</math></p> <p>Real numbers are all numbers that are either rational or irrational. This means that real numbers can be repeating decimals, fractions, negative or positive.</p> <p>Any number you see will be a real number unless it is “imaginary” in which case it would have an “i” in it. All of these numbers fit into the “real” category because they can either be written as a fraction (in which case they are rational) or they can’t be written as a fraction (they are irrational). Real numbers are just the set of numbers consisting of both rational and irrational numbers.</p>
<p>12) Circle all of the <b>prime numbers</b> in the list.</p> <p>1, <math>\pi</math>, 5, 9, -5, 7</p>	<p><b>Ans: 5, 7</b></p> <p>Prime numbers are natural numbers greater than 1 that can only be divided evenly by itself and the number 1.</p> <p>1 is not prime because all prime numbers <u>are defined</u> to be greater than 1.</p> <p><math>\pi</math> can only be divided by itself (<math>\pi</math>) and 1...however <math>\pi</math> is not a natural number as stated above...so <math>\pi</math> is not prime.</p> <p>5 is prime because it can only be divided evenly by itself (5) and 1.</p> <p>9 is not prime because it can be divided evenly by itself (9), 1, and 3 because 9 divided by 3 yields 3.</p>

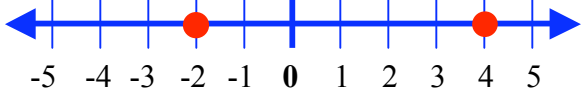
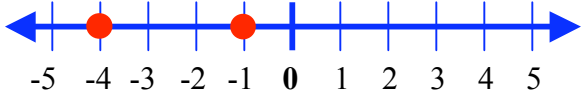
	<p>-5 is not prime because it is not a natural number (it is negative – all natural numbers are positive).</p> <p>7 is prime because it can only be divided by itself (7) and 1.</p> <p>The prime numbers begin as follows: 2, 3, 5, 7, 11, 13,.....</p>
<p>13) Circle all of the <b>prime numbers</b> in the list.</p> <p>18, 11, 12, -17, 21, 23</p>	<p><b>Ans: 11, 23</b></p> <p>Prime numbers are natural numbers greater than 1 that can only be divided evenly by itself and the number 1.</p> <p>18 is not prime because it can be divided by itself (18), 1, and also by 3, 9, and 6.</p> <p>11 is prime because it can only be divided evenly by itself (11) and 1.</p> <p>12 is not prime because it can be divided by itself (12), 1, and also by 3, 4, 2, and 6.</p> <p>-17 is not prime. Although 17 can only be divided by itself and 1, this number is negative. All primes are positive because they are a subset of natural numbers which are all positive.</p> <p>21 is not prime because it can be divided evenly by itself (21), 1, and also by 3 and 7.</p> <p>23 is prime because it can only be divided evenly by itself and 1.</p>
<p>14) Indicate which numbers in the list is an <b>even integer</b> or an <b>odd integer</b>.</p> <p>2, 3, 4, 6, -5, -4, -1</p>	<p><b>Ans: 2, 4, 6, -4 are even</b> <b>3, -5, -1 are odd</b></p> <p>Even integers are integers that can be divided evenly by the number 2.</p> <p>Odd integers are integers that cannot be evenly divided by 2.</p>

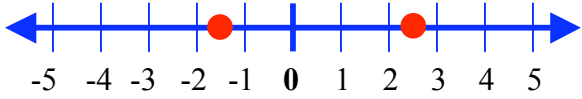
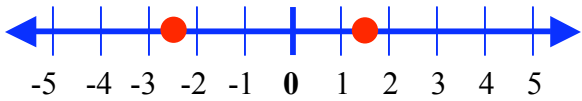
	<p>Recall that integers themselves can be positive or negative, which in turn means that even and odd numbers can be positive or negative.</p> <p>2, 4, 6, and -4 are even because they can be divided by 2 evenly.</p> <p>3, -5, and -1 are odd because they cannot be divided by 2 evenly.</p>
<p>15) Indicate which numbers in the list is an <b>even integer</b> or an <b>odd integer</b>.</p> <p>22, 13, -41, 0.505, <math>\frac{12}{13}</math>, -18, 52.2</p>	<p><b>Ans: 22, -18 are even integers</b> <b>13, -41 are odd integers</b></p> <p>0.505, <math>\frac{12}{13}</math>, 52.2 are neither.</p> <p>Even integers are integers that can be divided evenly by the number 2.</p> <p>Odd integers are integers that cannot be evenly divided by 2.</p> <p>22 and -18 are even integers because they can be divided by 2 evenly.</p> <p>13 and -14 are odd integers because they cannot be divided by 2 evenly.</p> <p>0.505, <math>\frac{12}{13}</math>, and 52.2 are not integers at all so they can't be even or odd...they are neither.</p>
<p>16) Place one of the symbols =, &lt;, or &gt; in the blank to make a true statement.</p> <p>5 ___ 7</p>	<p><b>Ans: 5 &lt; 7</b></p> <p>"=" means that the left and right side are exactly equal to one another.</p> <p>The "&lt;" and "&gt;" symbols are used to show which side is larger and which is smaller. The arrow <u>always</u> points to the smaller quantity.</p> <p>In this case the arrow points to the 5 because it is smaller than 7. You would read this as "five is less than seven".</p>

<p>17) Place one of the symbols =, &lt;, or &gt; in the blank to make a true statement.</p> $8 \quad \underline{\quad} \quad 1$	<p><b>Ans:</b> <math>8 &gt; 1</math></p> <p>8 is greater than one and the arrow always points to the smaller number so in this case the arrow points to the '1'. You would read this as "eight is greater than one".</p>
<p>18) Place one of the symbols =, &lt;, or &gt; in the blank to make a true statement.</p> $-3 \quad \underline{\quad} \quad -3$	<p><b>Ans:</b> <math>-3 = -3</math></p> <p>Since the same number is on both sides, the only true statement is that they are equal. You would read this as "negative three is equal to negative three".</p>
<p>19) Place one of the symbols =, &lt;, or &gt; in the blank to make a true statement.</p> $-5 \quad \underline{\quad} \quad 2$	<p><b>Ans:</b> <math>-5 &lt; 2</math></p> <p>The arrow always points to the smaller number. Since -5 is less than zero and 2 is greater than zero, -5 is smaller than 2, so the arrow points to the -5. You would read this as "negative five is less than two".</p>
<p>20) Place one of the symbols =, &lt;, or &gt; in the blank to make a true statement.</p> $3.4 \quad \underline{\quad} \quad -7$	<p><b>Ans:</b> <math>3.4 &gt; -7</math></p> <p>The arrow always points to the smaller number. Since 3.4 is positive, it is greater than zero. Since -7 is negative, it is less than zero, so -7 is smaller than 3.4. This is why the inequality points to the -7. You would read this as "3.4 is greater than -7".</p>
<p>21) Place one of the symbols =, &lt;, or &gt; in the blank to make a true statement.</p> $-2.4 \quad \underline{\quad} \quad -2.6$	<p><b>Ans:</b> <math>-2.4 &gt; -2.6</math></p> <p>The arrow always points to the smaller number. -2.4 is less than zero and -2.6 is less than zero. -2.6 is "more" negative than -2.4, so it is the smaller number, so the arrow points to -2.6. You would read this as "-2.4 is greater than -2.6". A picture of the number line may help you visualize why -2.6 is less than -2.4 (see below).</p>

	
<p>22) Place one of the symbols =, &lt;, or &gt; in the blank to make a true statement.</p> $\frac{1}{2} \text{ — } \frac{1}{4}$	<p><b>Ans:</b> <math>\frac{1}{2} \text{ — } \underline{&gt;} \frac{1}{4}</math></p> <p>The arrow always points to the smaller number. Since <math>\frac{1}{2}</math> of a pie is greater than <math>\frac{1}{4}</math> of a pie, <math>\frac{1}{4}</math> is the smaller number, and the arrow points to <math>\frac{1}{4}</math>. You would read this as “one half is greater than one fourth”.</p>
<p>23) Place one of the symbols =, &lt;, or &gt; in the blank to make a true statement.</p> $-\frac{2}{9} \text{ — } \frac{4}{9}$	<p><b>Ans:</b> <math>-\frac{2}{9} \text{ — } \underline{&lt;} \frac{4}{9}</math></p> <p>Since <math>-\frac{2}{9}</math> is negative it is less than zero. <math>\frac{4}{9}</math> is positive so it is greater than zero. This means that <math>-\frac{2}{9}</math> is smaller than <math>\frac{4}{9}</math>, and so the inequality points to <math>-\frac{2}{9}</math>. You would read this as “<math>-\frac{2}{9}</math> is less than <math>\frac{4}{9}</math>”.</p>
<p>24) Place one of the symbols =, &lt;, or &gt; in the blank to make a true statement.</p> $3+3 \text{ — } 1+5$	<p><b>Ans:</b> <math>3+3 \text{ — } \underline{=} 1+5</math></p> <p>Since <math>3+3=6</math> and <math>1+5=6</math>, both sides are actually equal to the same number, 6. This means that both sides are equal to one another, so the only true statement is that the left side is equal to the right side.</p>

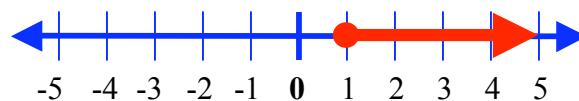


<p>25) Place one of the symbols =, &lt;, or &gt; in the blank to make a true statement.</p> <p style="text-align: center;"><math>5-1 \quad \underline{\quad} \quad 10-2</math></p>	<p style="text-align: center;"><b>Ans:</b> <math>5-1 \quad &lt; \quad 10-2</math></p> <p>The arrow always points to the side that evaluates to the lower number. Since <math>5-1=4</math> and <math>10-2=8</math>, the left side evaluates to the lower number. Because of this, the arrow points to the left. “five minus one is less than ten minus two”.</p>
<p>26) Place one of the symbols =, &lt;, or &gt; in the blank to make a true statement.</p> <p style="text-align: center;"><math>2+3+4 \quad \underline{\quad} \quad 1+4+5</math></p>	<p style="text-align: center;"><b>Ans:</b> <math>2+3+4 \quad &lt; \quad 1+4+5</math></p> <p>The left side evaluates to <math>2+3+4=9</math>. The right side evaluates to <math>1+4+5=10</math>. Thus, the left side is smaller and the inequality points to the left hand side.</p>
<p>27) Graph the following on a number line: The points -2 and 4.</p>	<p style="text-align: center;"><b>Ans:</b></p> <div style="text-align: center;">  </div> <p>The number line is centered at zero. To the left are the negative numbers going increasing negative the farther you go from zero. To the right are the positive numbers increasing as you go away from zero. When plotting points on a number line, just put a dot on the corresponding number.</p>
<p>28) Graph the following on a number line: The points -1 and -4.</p>	<p style="text-align: center;"><b>Ans:</b></p> <div style="text-align: center;">  </div> <p>The number line is centered at zero. To the left are the negative numbers going increasing negative the farther you go from zero. To the right are the positive numbers</p>

	<p>increasing as you go away from zero. When plotting points on a number line, just put a dot on the corresponding number.</p>
<p>29) Graph the following on a number line: The points 2.5 and -1.5.</p>	<p style="text-align: center;"><b>Ans:</b></p>  <p>The number line is centered at zero. To the left are the negative numbers going increasing negative the farther you go from zero. To the right are the positive numbers increasing as you go away from zero. When plotting points on a number line, just put a dot on the corresponding number. In this case 2.5 falls between 2 and 3 on the number line so the dot goes there. -1.5 falls between -1 and -2 so the dot goes there.</p>
<p>30) Graph the following on a number line: The points <math>\frac{3}{2}</math> and <math>-2\frac{1}{2}</math>.</p>	<p style="text-align: center;"><b>Ans:</b></p>  <p>The number line is centered at zero. To the left are the negative numbers going increasing negative the farther you go from zero. To the right are the positive numbers increasing as you go away from zero. When plotting points on a number line, just put a dot on the corresponding number. In this case <math>\frac{3}{2} = 1.5</math> and so it falls between 1 and 2 on the number line so the dot goes there. <math>-2\frac{1}{2}</math> falls between -2 and -3 so the dot goes there.</p>

31) Graph the following on a number line: The set of points represented by:  
 $x \geq 1$

**Ans:**

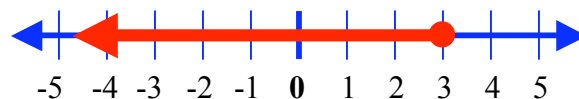


The number line is centered at zero. To the left are the negative numbers going increasing negative the farther you go from zero. To the right are the positive numbers increasing as you go away from zero.

$x \geq 1$  means that you are interested in representing the points on the line “greater than or equal to 1”. In order to do this, you put a dot on the number 1 and a solid arrow to the right. The solid dot means that the number ‘1’ is included in the set, and the arrow to the right means that ‘1’ and all numbers greater than one are included in the answer.

32) Graph the following on a number line: The set of points represented by:  
 $x \leq 3$

**Ans:**

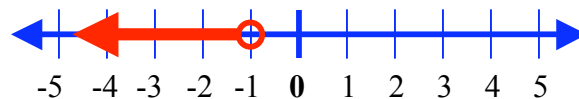


The number line is centered at zero. To the left are the negative numbers going increasing negative the farther you go from zero. To the right are the positive numbers increasing as you go away from zero.

$x \leq 3$  means that you are interested in representing the points on the line “less than or equal to 3”. In order to do this, you put a dot on the number 3 and a solid arrow to the left. The solid dot means that the number ‘3’ is included in the set, and the arrow to the left means that ‘3’ and all numbers less than three are included in the answer.

33) Graph the following on a number line: The set of points represented by:  
 $x < -1$

**Ans:**

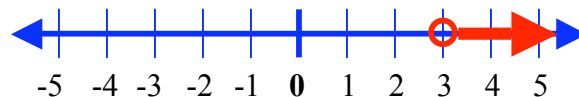


The number line is centered at zero. To the left are the negative numbers going increasing negative the farther you go from zero. To the right are the positive numbers increasing as you go away from zero.

$x < -1$  means that you are interested in representing the points on the line “less than -1”. Because it is a “less than” sign and not a “less than or equal to sign”, the number -1 is not included in the graph. In order to represent this, you put a circle on the number -1 (not filled in) and a solid arrow to the left. The open circle means that the number ‘-1’ is not included in the set, and the arrow to the left means that all numbers less than -1 are included in the answer. So for instance, the following numbers are included in the answer: -1.0001, -1.1, -1.5, -2, -3, ..... These are just examples to show the point.

34) Graph the following on a number line: The set of points represented by:  
 $x > 3$

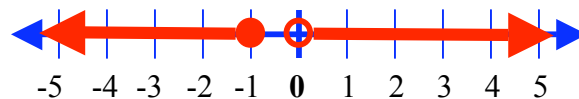
**Ans:**



$x > 3$  means that you are interested in the points on the line “greater than 3”. Because it is a “greater than” sign and not a “greater than or equal to sign”, the number 3 is not included in the graph. In order to represent this, you put a circle on the number 3 (not filled in) and a solid arrow to the right. The open circle means that the number ‘3’ is not included, and the arrow to the right means that all numbers greater than 3 are included in the solution.

35) Graph the following on a number line: The set of points represented by:  
 $x > 0$  and  $x \leq -1$

Ans:

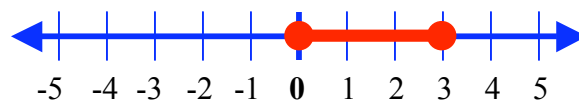


$x > 0$  means that you are interested in the points on the line “greater than 0”. Because it is a “greater than” sign and not a “greater than or equal to sign”, the number 0 is not included in the graph. In order to represent this, you put a circle on the number 0 (not filled in) and a solid arrow to the right. The open circle means that the number ‘0’ is not included, and the arrow to the right means that all numbers greater than 0 are included in the solution.

The problem also asks you to include the points represented by  $x \leq -1$ . You use filled in circle at the point -1 to note that the point “-1” is included in the answer and an arrow to the left to show that all points less than or equal to “-1” are included.

36) Graph the following on a number line: The set of points represented by:  
 $0 \leq x \leq 3$

**Ans:**



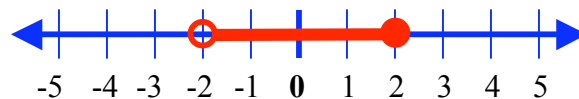
You read  $0 \leq x \leq 3$  in the following way. Start from the middle and read outwards. In English you would read it as “x is greater than or equal to zero and less than or equal to 3”.

Because both ends are inclusive (due to the “greater than or equal to and less than or equal to signs”), you use solid circles to show that the end points are inclusive (the points 0 and 3 are part of the graph). The line segment between the points 0 and 3 show that all points between 0 and 3 are part of the solution. Again, the easiest way to read these is to start in the middle with the “x” and read outward to the left and to the right. The way this is written is exactly equivalent to:

$x \geq 0$  and  $x \leq 3$ . The way it is written in the problem is just a shorter way of writing this.

37) Graph the following on a number line: The set of points represented by:  
 $-2 < x \leq 2$

**Ans:**



You read  $-2 < x \leq 2$  in the following way. Start from the middle and read outwards to the left and right. In English you would read it as “x is greater than to -2 and less than or equal to 2”.

Notice that the first inequality is “x is greater than -2”, but since it isn't “greater than or equal to -2”, this means that the point -2 is not included in the graph. This is why there is an open circle in the graph at -2.

The other portion stating that “x is less than or equal to 2”, which means that the point “2” is included in the solution. This is why a closed circle is used at the point “2”.

The line segment between the points -2 and 2 show that all points between -2 and 2 are part of the solution. Again, the easiest way to read these is to start in the middle with the “x” and read outward to the left and to the right. The way this is written is exactly equivalent to:  $x > -2$  and  $x \leq 2$ . The way it is written in the problem is just a shorter way of writing this.

38) What is  $|3|$  equal to?

**Ans: 3**

Absolute value is very simple. You take what is inside of the vertical lines, remove the sign (if it is negative) and the result is the answer. So basically you take the inside, and ignore the sign. “Absolute Value” is telling you how “large” the number independent of its sign.

39) What is $ -7 $ equal to?	<p style="text-align: center;"><b>Ans: 7</b></p> <p>Absolute value is very simple. You take what is inside of the vertical lines, remove the sign (if it is negative) and the result is the answer. So basically you take the inside, and ignore the sign. "Absolute Value" is telling you how "large" the number independent of its sign.</p>
40) What is $ -0.5 $ equal to?	<p style="text-align: center;"><b>Ans: 0.5</b></p> <p>Absolute value is very simple. You take what is inside of the vertical lines, remove the sign (if it is negative) and the result is the answer. So basically you take the inside, and ignore the sign. "Absolute Value" is telling you how "large" the number independent of its sign.</p>
41) What is $ 1.67 $ equal to?	<p style="text-align: center;"><b>Ans: 1.67</b></p> <p>Absolute value is very simple. You take what is inside of the vertical lines, remove the sign (if it is negative) and the result is the answer. So basically you take the inside, and ignore the sign. "Absolute Value" is telling you how "large" the number independent of its sign.</p>
42) What is $ \frac{3}{4} $ equal to?	<p style="text-align: center;"><b>Ans: <math>\frac{3}{4}</math></b></p> <p>Absolute value is very simple. You take what is inside of the vertical lines, remove the sign (if it is negative) and the result is the answer. So basically you take the inside, and ignore the sign. "Absolute Value" is telling you how "large" the number independent of its sign.</p>



43) What is  $\left|2\frac{4}{9}\right|$  equal to?

**Ans:**  $2\frac{4}{9}$

Absolute value is very simple. You take what is inside of the vertical lines, remove the sign (if it is negative) and the result is the answer. So basically you take the inside, and ignore the sign. "Absolute Value" is telling you how "large" the number independent of its sign.