



“I Don’t Get It!”

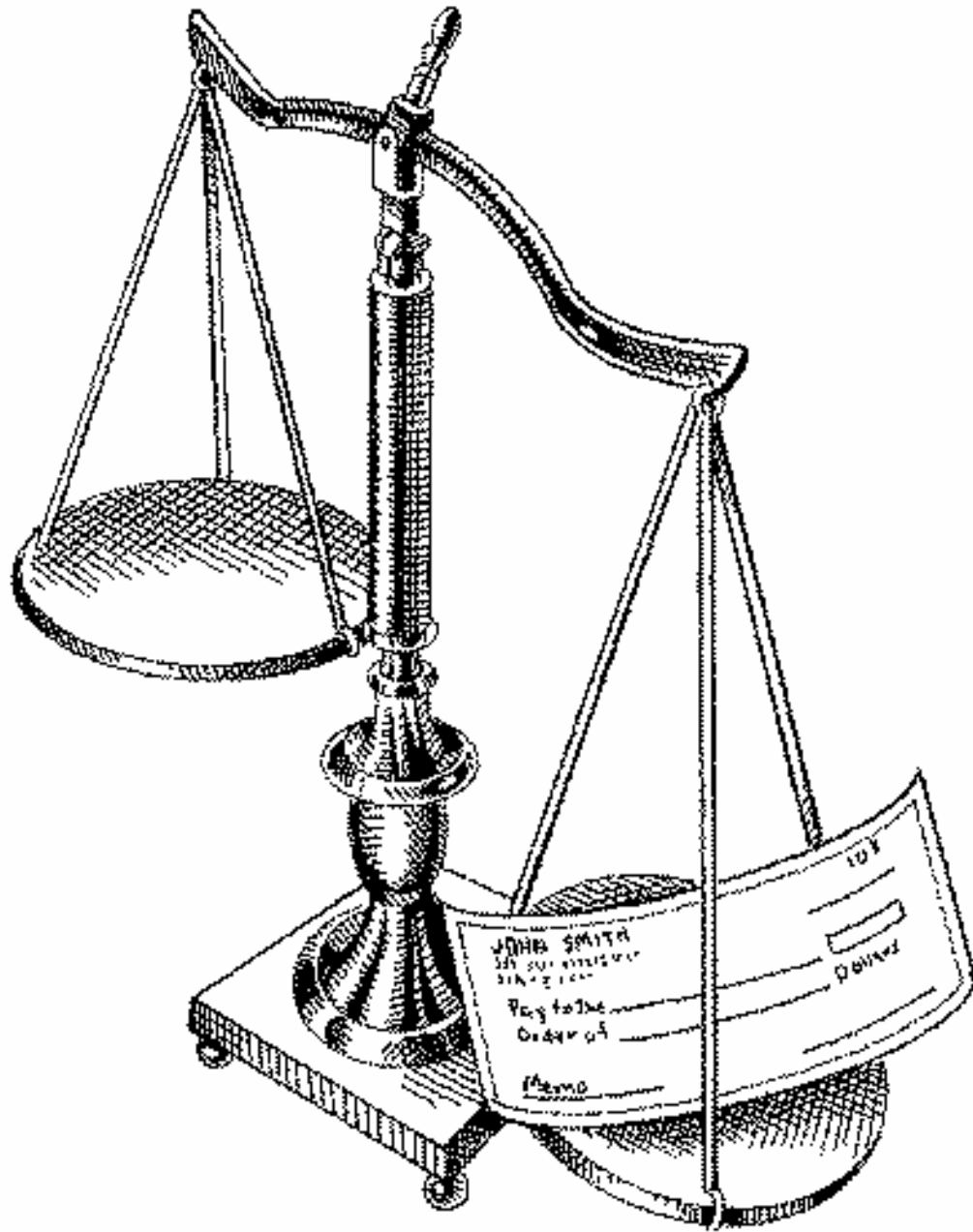
**The Middle School Math
Dictionary and
Instruction Manual**

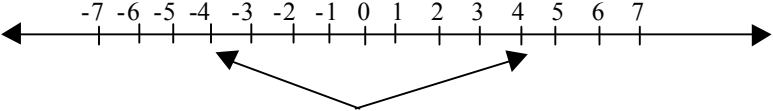
By Nancy L. Wilkinson



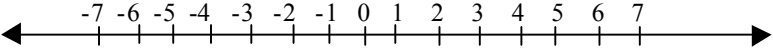
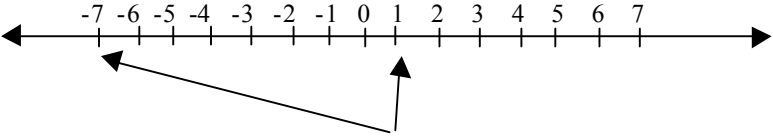
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Algebra and Integers



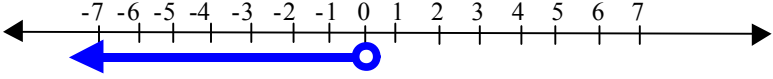
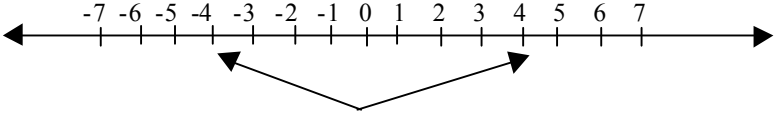
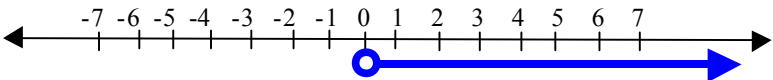
Subject Area	Word	Definition						
Algebra and Integers	Absolute Value	<p>The distance from zero on a number line</p>  <p>The absolute value of 4 and -4 is 4. They are both 4 spaces from zero.</p> <p>Absolute value is written as -4 or 4.</p>						
Algebra and Integers	Equations – Property of Equality - Addition	<p><u>You can add the same value to both sides of an equation</u></p> <table border="0" data-bbox="667 764 1036 852"> <tr> <td style="text-align: center;">Arithmetic</td> <td style="text-align: center;">Algebra</td> </tr> <tr> <td style="text-align: center;">$2 = 2$</td> <td style="text-align: center;">If $a = b$ then</td> </tr> <tr> <td style="text-align: center;">$2 + 4 = 2 + 4$</td> <td style="text-align: center;">$a + c = b + c$</td> </tr> </table>	Arithmetic	Algebra	$2 = 2$	If $a = b$ then	$2 + 4 = 2 + 4$	$a + c = b + c$
Arithmetic	Algebra							
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Algebra and Integers	Equations – Property of Equality - Division	<p><u>You can divide both sides of an equation by the same value except zero</u></p> <table border="0" data-bbox="651 949 1295 1037"> <tr> <td style="text-align: center;">Arithmetic</td> <td style="text-align: center;">Algebra</td> </tr> <tr> <td style="text-align: center;">$24 = 24$</td> <td style="text-align: center;">If $a = b$ then</td> </tr> <tr> <td style="text-align: center;">$24 \div 4 = 24 \div 4$</td> <td style="text-align: center;">$a \div c = b \div c$ (c cannot equal zero)</td> </tr> </table>	Arithmetic	Algebra	$24 = 24$	If $a = b$ then	$24 \div 4 = 24 \div 4$	$a \div c = b \div c$ (c cannot equal zero)
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Algebra and Integers	Equations – Property of Equality - Multiplication	<p><u>You can multiply both sides of an equation by the same value</u></p> <table border="0" data-bbox="651 1134 1036 1222"> <tr> <td style="text-align: center;">Arithmetic</td> <td style="text-align: center;">Algebra</td> </tr> <tr> <td style="text-align: center;">$6 = 6$</td> <td style="text-align: center;">If $a = b$ then</td> </tr> <tr> <td style="text-align: center;">$6 \cdot 4 = 6 \cdot 4$</td> <td style="text-align: center;">$a \cdot c = b \cdot c$</td> </tr> </table>	Arithmetic	Algebra	$6 = 6$	If $a = b$ then	$6 \cdot 4 = 6 \cdot 4$	$a \cdot c = b \cdot c$
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Algebra and Integers	Equations – Property of Equality - Subtraction	<p><u>You can subtract the same value to both sides of an equation</u></p> <table border="0" data-bbox="651 1318 1036 1407"> <tr> <td style="text-align: center;">Arithmetic</td> <td style="text-align: center;">Algebra</td> </tr> <tr> <td style="text-align: center;">$6 = 6$</td> <td style="text-align: center;">If $a = b$ then</td> </tr> <tr> <td style="text-align: center;">$6 - 4 = 6 - 4$</td> <td style="text-align: center;">$a - c = b - c$</td> </tr> </table>	Arithmetic	Algebra	$6 = 6$	If $a = b$ then	$6 - 4 = 6 - 4$	$a - c = b - c$
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Subject Area	Word	Definition
Algebra and Integers	Equations – Solving a One Step Equation	<p><u>How to solve one step equations:</u></p> <p>1) Rewrite the equation to add, subtract, multiply or divide the opposite number to each side. Examples:</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="border: 1px solid black; padding: 5px; width: 15%;"> $2X = 7$ $2X \div 2 = 7 \div 2$ </div> <div style="border: 1px solid black; padding: 5px; width: 15%;"> $\frac{X}{2} = 8$ $\frac{X}{2} \cdot 2 = 8 \cdot 2$ </div> <div style="border: 1px solid black; padding: 5px; width: 15%;"> $X - 7 = 10$ $X - 7 + 7 = 10 + 7$ </div> </div> <p>2) Rewrite the equation on each side to simplify all addition or subtraction. Examples:</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="border: 1px solid black; padding: 5px; width: 15%;"> $2X \div 2 = 7 \div 2$ $X = 3.5$ </div> <div style="border: 1px solid black; padding: 5px; width: 15%;"> $\frac{X}{2} \cdot 2 = 8 \cdot 2$ $X = 16$ </div> <div style="border: 1px solid black; padding: 5px; width: 15%;"> $X - 7 + 7 = 10 + 7$ $X = 17$ </div> </div>
Algebra and Integers	Equations – Solving a Two Step Equation	<p><u>How to solve two step equations:</u></p> <p>1) Rewrite the equation to add or subtract the opposite number to each side</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="border: 1px solid black; padding: 5px; width: 15%;"> $2X - 4 = 3$ $2X - 4 + 4 = 3 + 4$ </div> <div style="border: 1px solid black; padding: 5px; width: 15%;"> $\frac{X}{2} + 2 = 10$ $\frac{X}{2} + 2 - 2 = 10 - 2$ </div> </div> <p>Examples:</p> <p>2) Rewrite the equation on each side to simplify all addition or subtraction. Examples:</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="border: 1px solid black; padding: 5px; width: 15%;"> $2X - 4 + 4 = 3 + 4$ $2X = 7$ </div> <div style="border: 1px solid black; padding: 5px; width: 15%;"> $\frac{X}{2} + 2 - 2 = 10 - 2$ $\frac{X}{2} = 8$ </div> </div> <p>3) Rewrite the equation to multiply or divide the number next to the variable on each side of the equation. Examples:</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="border: 1px solid black; padding: 5px; width: 15%;"> $2X = 7$ $2X \div 2 = 7 \div 2$ </div> <div style="border: 1px solid black; padding: 5px; width: 15%;"> $\frac{X}{2} = 8$ $\frac{X}{2} \cdot 2 = 8 \cdot 2$ </div> </div> <p>4) Simply your new equation. Examples:</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="border: 1px solid black; padding: 5px; width: 15%;"> $2X \div 2 = 7 \div 2$ $X = 3.5$ </div> <div style="border: 1px solid black; padding: 5px; width: 15%;"> $\frac{X}{2} \cdot 2 = 8 \cdot 2$ $X = 16$ </div> </div>

Subject Area	Word	Definition
Algebra and Integers	Evaluate	<p><u>To evaluate, you replace the variable with a number</u></p> <p>In the expression, $x + 8$, if you put 2 in for x, the expression would be: $2 + 8$.</p>
Algebra and Integers	Integers	<p><u>The set of whole numbers and their opposites</u></p>  <p>All of the whole numbers found on a number line are integers.</p>
Algebra and Integers	Integers - Adding	<p><u>How to add integers:</u></p> <ol style="list-style-type: none"> 1. Look at the sign for each number. Example: $-6 + -6 =$ (The signs would be - and -) 2. If the signs are the same, add the two numbers and take that sign. Example: $-6 + -6 = -12$, $6 + 6 = 12$ 3. If the signs are different, take the larger number minus the smaller number. The sign on the answer is the sign of the higher number in the problem. Example: $-6 + 3 = -3$ ($6 - 3 = 3$ and 6 is the higher number so the answer is negative.)
Algebra and Integers	Integers – Comparing and Ordering	<p><u>The further to the right an integers lies on the number line, the greater its value</u></p>  <p>-One (1) is greater than -7 because it lies further to the right.</p>

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Algebra and Integers	Integers – How to Subtract	<p><u>How to subtract integers:</u></p> <p>1) Look at your problem and circle all of the signs that are side by side without a number in between the two signs.</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>Example: $-3 + -6$, $-3 - -6 =$</p> <p>$-3 \textcircled{+} -6$, $-3 \textcircled{-} -6 =$</p> </div> <p>2) If there are two negatives side by side, change them into a positive. If there is a negative and a positive side by side, change them into a negative. Rewrite your problem.</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>Example: $-3 + -6$, $-3 - -6 =$</p> <p>$-3 - 6 =$, $-3 + 6 =$</p> </div> <p>3) Look at the sign for each number. Example: $-6 - 6 =$ (The signs would be – and -)</p> <p>4) If the signs are the same, add the two numbers and take that sign. Example: $-6 - 6 = -12$</p> <p>5) If the signs are different, subtract the larger number minus the smaller number. The sign on the answer is the sign of the higher number in the problem. Example: $6 - 3 = 3$ ($6 - 3 = 3$ and 6 is the higher number so the answer is positive.)</p>
Algebra and Integers	Integers – Multiplying and Dividing	<p><u>How to multiply and divide integers:</u></p> <p>1) Look at the signs of each number.</p> <p>2) If the signs are the same, multiply or divide the numbers and your answer would be positive. Examples: $-6 * -3 = 18$, $5 * 3 = 15$, $24 \div 6 = 4$, $-24 \div -6 = 4$</p> <p>3) If the signs are different, multiply or divide the numbers and your answer would be negative. Examples: $6 * -3 = -18$, $-5 * 3 = -15$, $-24 \div 6 = -4$, $24 \div -6 = -4$</p>
Algebra and Integers	Inverse Operations	<p><u>The operation used to make zero or one</u></p> <p>Example: In the equation $X + 6$, the inverse operation would be to subtract 6, since you first added six.</p>

Subject Area	Word	Definition
Algebra and Integers	Negative Number	<p><u>A number that is to the left of zero on the number line</u></p> 
Algebra and Integers	Opposites	<p><u>Two numbers that are the same distance from 0 on a number line but are in opposite directions</u> Example: -3, 3 -5, 5 -123, 123</p>  <p>-4 and 4 are the same distance apart.</p>
Algebra and Integers	Positive Number	<p><u>A numbers to the right of zero on a number line</u></p>  <p>From right after zero on, are positive numbers.</p>
Algebra and Integers	Solution	<p><u>The answer you get after you solve an equation</u></p> <p>Example: The solution for $2X = 6$ is 3 because $2 \cdot 3 = 6$.</p>
Algebra and Integers	Value	<p><u>The number that stands for the variable</u></p> <p>In the equations $x + 6 = 8$, the value of x is 2. <u> </u></p>
Algebra and Integers	Variable	<p><u>A symbol that stands for a number</u></p> <p>In the algebraic problem $x + 6$, x is called a variable because it can stand for any number.</p>