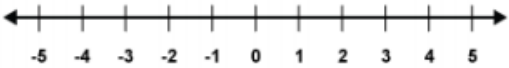


**Interactive Notebook Pg. 29**

**INTEGERS**-all the whole numbers and their opposites.



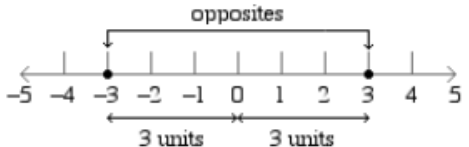
<p><b>Negative numbers</b> A number that is less than zero Below zero Decrease Withdraw Loss below sea level</p>	<p><b>Neutral Number</b></p>	<p><b>Positive numbers</b> A number greater than zero Above zero Increase Deposit Gain above sea level</p>
--	------------------------------	--

owing/borrowing money

**Examples**

1. Gain 7 yards 7
2. 100 feet below sea level -100
3. \$5 deposit 5
4. \$25 withdrawal -25

**OPPOSITES**-numbers that are equal distance from zero but on **OPPOSITE** sides of the number line.




Number stays the same, sign changes to the opposite.

**\*\*Same Number but Different Signs**

**Examples**

1.  $-11 = \underline{11}$
2.  $48 = \underline{-48}$
3.  $-32 = \underline{32}$
4.  $7 = \underline{-7}$

**ABSOLUTE VALUE** - the distance between a number and **zero** on a number line.



**★ Absolute value, or distance, is always positive. ★**

**Examples**

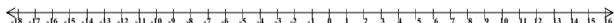
5.  $|5| = \underline{5}$
6.  $|-8| = \underline{8}$
7.  $-|12| = \underline{-12}$
8.  $|-1| + |6| = \underline{7}$   
 $1 + 6$

**\*\*\* NEGATIVES OUTSIDE OF THE BAR ARE AN EXCEPTION TO THE RULE AS YOU ARE NOT FINDING THE ABSOLUTE VALUE OF THE NEGATIVE JUST THE NUMBER INSIDE!!!**

**Interactive Notebook Pg. 30**

COMPLETE AS HOMEWORK ON MONDAY SEPTEMBER 24th

**Integers, Opposites, Absolute Value –  
Worksheet #1**



Write the integer that can be used to represent the situation.

- 1) a **loss** of 8 yards \_\_\_\_\_
- 2) 29 degrees **below zero** \_\_\_\_\_
- 3) 7 strokes **over** par \_\_\_\_\_
- 4) a **debt** of \$500 \_\_\_\_\_
- 5) a **gain** of 25 yards \_\_\_\_\_
- 6) 320 feet **below sea level** \_\_\_\_\_
- 7) a **profit** of \$1000 \_\_\_\_\_

Insert the correct comparison symbol. (<, >, =)

- 8)  $-9 \square -3$       9)  $-1 \square -4$       10)  $0 \square -11$
- 11)  $4 \square -13$       12)  $-2 \square 1$       13)  $-8 \square -10$

Order the following lists of integers from **least to greatest**.

- 14) -6, -3, 9, -14, -1
- 15) -5, -13, -32, -6, -19
- 16) -3, 1, -8, 0, -5

Simplify each expression.

- 17) the opposite of -6 \_\_\_\_\_
- 18)  $|-48|$  \_\_\_\_\_
- 19) the opposite of 17 \_\_\_\_\_
- 20)  $|10|$  \_\_\_\_\_
- 21) the opposite of 40 \_\_\_\_\_
- 22)  $|19|$  \_\_\_\_\_
- 23) the opposite of -32 \_\_\_\_\_
- 24)  $|-25|$  \_\_\_\_\_
- 25) the opposite of 14 \_\_\_\_\_
- 26)  $|0|$  \_\_\_\_\_

Simplify each expression using:  $x = 4, y = 10, z = 5$

(SUBSTITUTION: replace each variable with the corresponding number)

- 27)  $5y - 3x$       28)  $xy \div (z + 3)$   
 $5 \cdot 10 - 3 \cdot 4$        $4 \cdot 10 \div (5 + 3)$
- 29)  $\frac{x^2 - 2z}{6}$       30)  $18 - (2y + 8) \div x$   
 $\frac{4^2 - 2 \cdot 5}{6}$        $18 - (2 \cdot 10 + 8) \div 4$

Which of the following can be represented by the integer -25?

- A. a profit of 25 dollars
- B. 25 feet below sea level
- C. a gain of 25 yards
- D. a surplus of 25 computers

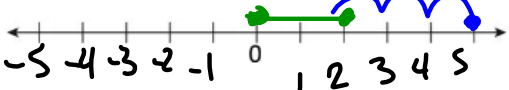
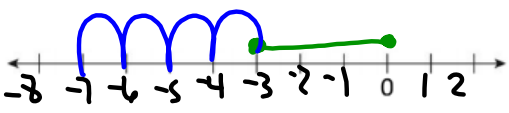
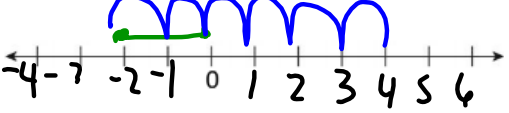
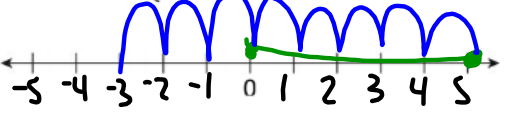
Interactive Notebook Pg. 31

Integer Operations

<p><b>Adding Signed Numbers</b></p> <p>Same sign: add the absolute value of the numbers. Keep the sign.</p> <p>Different signs: subtract the absolute value of the numbers. Use the sign of the number with the greater absolute value.</p>	<p><math>-3 + (-1) = -4</math> (same: add)</p> <p><math>-4 + (-5) = -9</math> (same: add)</p> <p><math>6 + (-10) = -4</math> (diff: sub)</p> <p><math>-16 + (+5) = -11</math> (diff: sub)</p> <p><math>-4 + (-2) + (+6) =</math> <math>-6 + 6 = 0</math></p> <p><b>*** Additive Inverse***</b></p>	<p><math>-3 \times (-1) =</math></p> <p><math>-4 \times (2) =</math></p> <p><math>7 \cdot (-3) =</math></p> <p><math>-2 \cdot (+4) =</math></p> <p><math>-4(-2) + 3(-2) =</math></p>	<p><b>Multiplying Signed Numbers</b></p> <p><math>(+) \cdot (+) = +</math></p> <p><math>(-) \cdot (-) = +</math></p> <p><math>(+) \cdot (-) = -</math></p> <p><math>(-) \cdot (+) = -</math></p>
<p><b>Subtracting Signed Numbers</b></p> <p>To subtract signed numbers, add the opposite.</p> <ul style="list-style-type: none"> <li>- Keep the first number</li> <li>- Change the subtraction sign to addition</li> <li>- Change the sign of the second number</li> <li>- Follow rules for adding signed numbers</li> </ul>	<p><math>-5 - (-4) =</math></p> <p><math>-1 - (-35) =</math></p> <p><math>10 - (-8) =</math></p> <p><math>-20 - (+19) =</math></p>	<p><math>-30 \div (-6) =</math></p> <p><math>44 \div 4 =</math></p> <p><math>6 \div (-12) =</math></p> <p><math>-12 \div (+6) =</math></p>	<p><b>Dividing Signed Numbers</b></p> <p><math>(+) \div (+) = +</math></p> <p><math>(-) \div (-) = +</math></p> <p><math>(+) \div (-) = -</math></p> <p><math>(-) \div (+) = -</math></p>

**\*\*\* Additive Inverse:** When you Add Opposites to equal zero!

## Adding Integers Note Page

Same Sign	Different Signs																		
Both numbers are positive, or both numbers are negative	One number is positive, one is negative																		
Ex. $8 + 5$ or $-7 + (-5)$	Ex. $-7 + 3$ or $5 + (-2)$																		
<p><b>Number Lines:</b> Show that <math>2 + 3 = 5</math> on a number line:</p>  <p>Show that <math>-3 + -4 = -7</math> on a number line:</p> 	<p><b>Number Lines:</b> Show that <math>-2 + 6 = 4</math> on a number line:</p>  <p>Show that <math>5 + (-8) = -3</math> on a number line:</p> 																		
<p><b>Integer Chips:</b> <span style="color: red;">zero pair</span></p> <p>Show that <math>2 + 4 = 6</math> with chips:  <span style="color: green;">++</span> <span style="color: blue;">++++</span> = 6</p> <p>Show that <math>-3 + (-1) = -4</math>  <span style="color: green;">---</span> <span style="color: blue;">-</span> = -4</p>	<p><b>Integer Chips:</b></p> <p>Show that <math>5 + (-4) = 1</math> with chips:  <del>+</del> <del>+</del> <del>+</del> <del>+</del> <del>+</del> <del>-</del> <del>-</del> <del>-</del> <del>-</del> <del>-</del> = 1</p> <p>Show that <math>-6 + (2) = -4</math></p>																		
<p><b>The Rule:</b> Add <span style="color: red;">the numbers</span> together and <span style="color: red;">Keep</span> the same sign.</p>	<p><b>The Rule:</b> Subtract the <span style="color: red;">Small</span> number from the <span style="color: red;">big</span> number and keep the sign of the <span style="color: red;">larger</span> number.</p>																		
<p><b>Examples:</b></p> <ol style="list-style-type: none"> <li>1) <math>4 + 3 = \underline{7}</math></li> <li>2) <math>-4 + (-3) = \underline{-7}</math></li> <li>3) <math>-100 + (-200) = \underline{-300}</math></li> <li>4) <math>25 + 40 = \underline{65}</math></li> </ol>	<p><b>Examples:</b></p> <ol style="list-style-type: none"> <li>1) <math>-8 + 5 = \underline{-3}</math></li> <li>2) <math>8 + (-5) = \underline{3}</math></li> <li>3) <math>6 + (-4) = \underline{2}</math></li> <li>4) <math>-6 + 4 = \underline{-2}</math></li> </ol>																		
<p><b>The song (to the tune of Row, Row, Row Your Boat)</b>                  Same signs, add and keep                  Different signs, subtract                  Take the sign of the larger number,                  Then you'll be exact.</p> <p style="text-align: center; color: red; font-weight: bold;">ON YOUR OWN</p>																			
<b>Mixed Practice:</b>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">1) <math>3 + (-5) = \underline{-2}</math></td> <td style="width: 33%;">2) <math>-2 + (-3) =</math></td> <td style="width: 33%;">3) <math>7 + 1 =</math></td> </tr> <tr> <td>4) <math>-4 + (-2) = \underline{-6}</math></td> <td>5) <math>-8 + (-1) = \underline{-9}</math></td> <td>6) <math>-5 + 3 =</math></td> </tr> <tr> <td>8) <math>-15 + 5 = \underline{-10}</math></td> <td>9) <math>-4 + (-5) = \underline{-9}</math></td> <td>10) <math>-3 + 0 =</math></td> </tr> <tr> <td>12) <math>-5 + 8 = \underline{3}</math></td> <td>13) <math>-2 + 9 = \underline{7}</math></td> <td>14) <math>-5 + 5 =</math></td> </tr> <tr> <td>16) <math>-6 + 1 = \underline{-5}</math></td> <td>17) <math>-3 + (-2) = \underline{-5}</math></td> <td>15) <math>-6 + (-6) =</math></td> </tr> <tr> <td></td> <td>18) <math>-2 + 2 =</math></td> <td>19) <math>5 + 3 + (-2) =</math></td> </tr> </table>	1) $3 + (-5) = \underline{-2}$	2) $-2 + (-3) =$	3) $7 + 1 =$	4) $-4 + (-2) = \underline{-6}$	5) $-8 + (-1) = \underline{-9}$	6) $-5 + 3 =$	8) $-15 + 5 = \underline{-10}$	9) $-4 + (-5) = \underline{-9}$	10) $-3 + 0 =$	12) $-5 + 8 = \underline{3}$	13) $-2 + 9 = \underline{7}$	14) $-5 + 5 =$	16) $-6 + 1 = \underline{-5}$	17) $-3 + (-2) = \underline{-5}$	15) $-6 + (-6) =$		18) $-2 + 2 =$	19) $5 + 3 + (-2) =$
1) $3 + (-5) = \underline{-2}$	2) $-2 + (-3) =$	3) $7 + 1 =$																	
4) $-4 + (-2) = \underline{-6}$	5) $-8 + (-1) = \underline{-9}$	6) $-5 + 3 =$																	
8) $-15 + 5 = \underline{-10}$	9) $-4 + (-5) = \underline{-9}$	10) $-3 + 0 =$																	
12) $-5 + 8 = \underline{3}$	13) $-2 + 9 = \underline{7}$	14) $-5 + 5 =$																	
16) $-6 + 1 = \underline{-5}$	17) $-3 + (-2) = \underline{-5}$	15) $-6 + (-6) =$																	
	18) $-2 + 2 =$	19) $5 + 3 + (-2) =$																	

2  
:

**Lesson 2-4**

Pages 95-99

**Add.** Determine which rule to use based on signs (Same or Different). Then Solve

- |                                |               |                 |
|--------------------------------|---------------|-----------------|
| 1. $-4 + 8$ diff./sub: = 4     | 2. $14 + 16$  | 3. $-7 + (-7)$  |
| 4. $-9 + (-6)$ same/add = -15  | 5. $-18 + 11$ | 6. $-36 + 40$   |
| 7. $42 + (-18)$ diff./sub = 24 | 8. $-42 + 29$ | 9. $18 + (-32)$ |
| 10. $12 + (-9)$ diff./sub = 3  | 11. $-24 + 9$ | 12. $-7 + (-1)$ |

Evaluate each expression if  $a = 6$ ,  $b = -2$ ,  $c = -6$ , and  $d = 3$ .

- |                |                |                 |
|----------------|----------------|-----------------|
| 13. $-96 + a$  | 14. $b + (-5)$ | 15. $c + (-32)$ |
| 16. $d + 98$   | 17. $-120 + b$ | 18. $-120 + c$  |
| 19. $5 + b$    | 20. $a + d$    | 21. $c + a$     |
| 22. $d + (-9)$ | 23. $b + c$    | 24. $d + c$     |

#13-24: Show substitution (replacing variable with number), Determine which rule to use (same or different signs) then solve.

Examples:

- |                       |                      |                       |
|-----------------------|----------------------|-----------------------|
| 13. $-96 + a$         | 14. $b + (-5)$       | 15. $c + (-32)$       |
| $-96 + 6$             | $-2 + (-5)$          | $-6 + (-32)$          |
| (diff sign sub) = -90 | (same sign add) = -7 | (same sign add) = -38 |

## Thursday Independent Work...

- > pages 29 and 30 completed
- > Pg 35: ONLY THE ADDITION!! - show work like examples provided on previous slide
  - (We will discuss subtraction on Monday)
- > Page 27-28: needs to be done for NB checks
- > TesTeach (located in google classroom) -- NB Pages 19-23
- > **HAVE YOUR NOTEBOOK READY FOR MONDAYS CHECK!!**
  - Pages 14 - 25 are being checked for complete and correct!
  - Pages 26 - 36 need to be set up.
    - « page. 27-28: should be done
  - *ONLY blank pages are 12-13 and 24*
- *khan academy or glossary if all other work is completed!!*

## Subtracting Integers Note Page

**The Rule:** Change the subtraction sign to an addition sign, and ALSO change the very next number's sign to the opposite sign. THEN, following the adding integers rules.

**Simply put:** Change it to "Adding the Opposite" or "Stay, Flip, Flip"

Proof that changing the subtraction sign to "Adding the Opposite" works:

What is  $4 - 3$ ? \_\_\_\_

Now compute  $4 - 3$  but change it to "Adding the Opposite":  $4 - 3$  will become \_\_\_\_\_

Now following the adding integers rules for  $4 + (-3) = 1$

Examples:  $-7 - 5$  will become  $-7 + (-5) = -12$

$-3 - (-6)$  will become  $-3 + (+6) = 3$

$4 - 9$  will become  $4 + (-9) = -5$

$8 - (-4)$  will become  $8 + (-4) = 4$

Practice problems:

1) $-4 - 6$ becomes _____. The final answer is ____
2) $6 - 9$ becomes _____. The final answer is ____
3) $5 - (-4)$ becomes _____. The final answer is ____
4) $-2 - (-3)$ becomes _____. The final answer is ____.

More practice:

5)  $-5 - 4 = \underline{\quad}$  (Same signs add and keep the sign)

6)  $3 - 8 = \underline{\quad}$  (Different signs, subtract and keep the big number's sign)

7)  $-1 - (-5) = \underline{\quad}$  (Different signs, subtract and keep the big number's sign)

8)  $6 - (-2) = \underline{\quad}$  (Same signs add and keep the sign)

9)  $-3 - 0 = \underline{\quad}$

10)  $-8 - 2 = \underline{\quad}$

11)  $-4 - (-6) = \underline{\quad}$

12)  $-1 - 1 = \underline{\quad}$

13)  $-5 - 2 = \underline{\quad}$

14)  $7 - 2 = \underline{\quad}$

15)  $-2 - 6 = \underline{\quad}$

16)  $-5 - 5 = \underline{\quad}$

17)  $-6 - 3 = \underline{\quad}$

18)  $-4 - (-6) = \underline{\quad}$

19)  $0 - (-4) = \underline{\quad}$

20)  $8 - (-2) = \underline{\quad}$

**Lesson 2-5**

Pages 103–106

**Subtract.** Rewrite as addition, Determine which rule to use (same or different) and solve

1.  $3 - 7$

2.  $-5 - 4$

3.  $-6 - 2$

4.  $8 - 13$

5.  $6 - (-4)$

6.  $12 - 9$

7.  $-2 - 23$

8.  $63 - 78$

9.  $0 - (-14)$

10.  $15 - 6$

11.  $18 - 20$

12.  $-5 - 8$

13.  $21 - (-37)$

14.  $-60 - 32$

15.  $57 - 63$

#16-27: On notebook page: Show substitution, Rewrite as addition, Determine which rule to use, and solve

Evaluate each expression if  $k = -3$ ,  $p = 6$ ,  $n = 1$ , and  $d = -8$ .

16.  $55 - k$

17.  $p - 7$

18.  $d - 15$

19.  $n - 12$

20.  $-51 - d$

21.  $k - 21$

22.  $n - k$

23.  $-99 - k$

24.  $p - k$

25.  $d - (-1)$

26.  $k - d$

27.  $n - d$