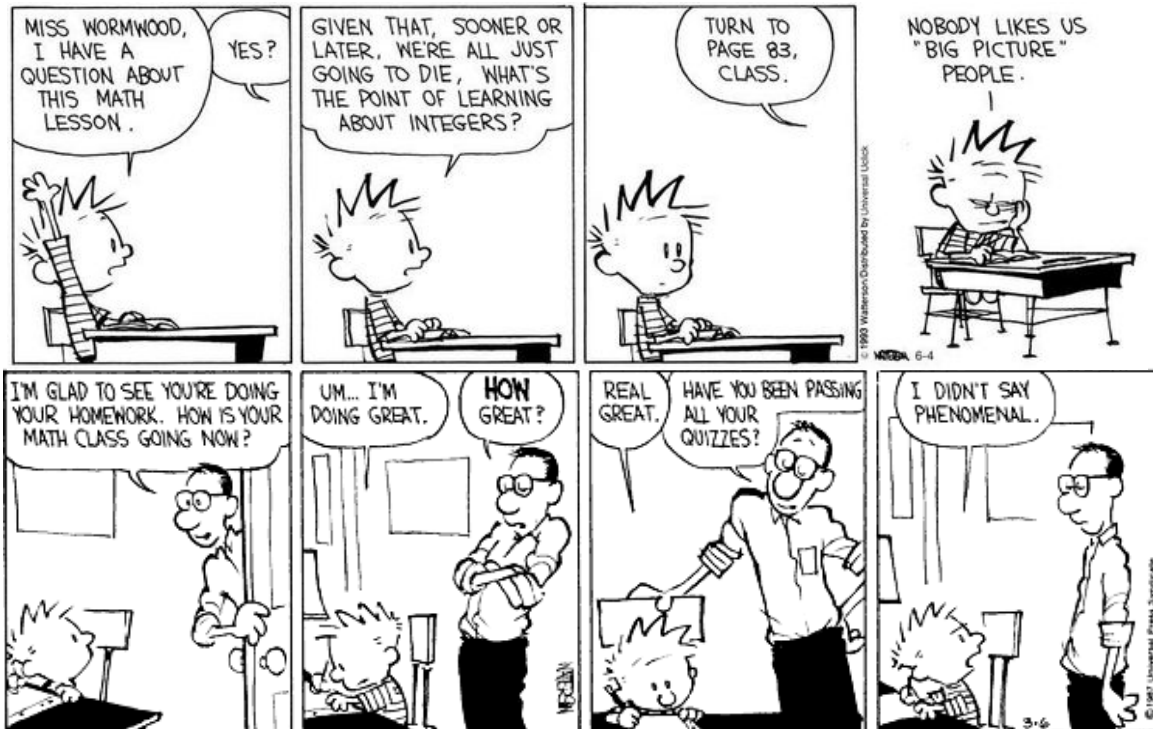


ACCELERATED MATHEMATICS: CHAPTER 2

INTEGERS IN SPORTS

TOPICS COVERED:

- Introduction to integers
- Opposite of a number and absolute value
- Adding integers
- Subtracting integers
- Multiplying and dividing integers
- Multiplying and dividing expressions
- Negative exponents
- Scientific and standard notation



INTEGERS

For this chapter you can choose your concepts and the order in which you wish to learn them. You will be expected to know all concepts in this chapter for quizzes and tests.

Key Vocabulary & Basics: Integers, Absolute Value, Opposite, Comparing, Ordering

<i>Completed</i>	<i>Type of activity</i>	<i>Location</i>
	Video	Khan Academy, 6 th grade, Negative Numbers
	Reading	Activity 2-1
	Solving	Activity 2-2
	Challenge	Activity 2-10
	GameTime	Skyjo, card game

Addition of Integers

<i>Completed</i>	<i>Type of activity</i>	<i>Location</i>
	Video	Khan Academy, 7 th grade, Adding Integers
	Hands-on chips	Table with Mr. Mangham
	Solving	Activity 2-3
	Solving	Activity 2-4
	Challenge	Tangle Table
	GameTime	Integer Golf I

Subtraction of Integers (This is the one you really need to know well)

<i>Completed</i>	<i>Type of activity</i>	<i>Location</i>
	Video	Khan Academy, 7 th grade, Subtracting Integers
	Hands-on chips	Table with Mr. Mangham
	Hands-on flags	Integer Party, See Mr. Mangham
	Solving	Activity 2-5
	Reading	Activity 2-6
	Creating	Create a fun cereal box, board game, song, video, website, etc. to teach students how to subtract integers

INTEGERS

For this chapter you can choose your concepts and the order in which you wish to learn them. You will be expected to know all concepts in this chapter for quizzes and tests.

Addition and Subtraction of Integers

<i>Completed</i>	<i>Type of activity</i>	<i>Location</i>
	Number lines	Activity 2-7
	Number lines / chips	Activity 2-8
	Word problems	Activity 2-9
	Golf word problems	Activity 2-11
	Temperature word problems	Activity 2-12
	GameTime	Square Game, Activity 2-14
	GameTime	Positive 4, Activity 2-15

Multiplication/Division of Integers

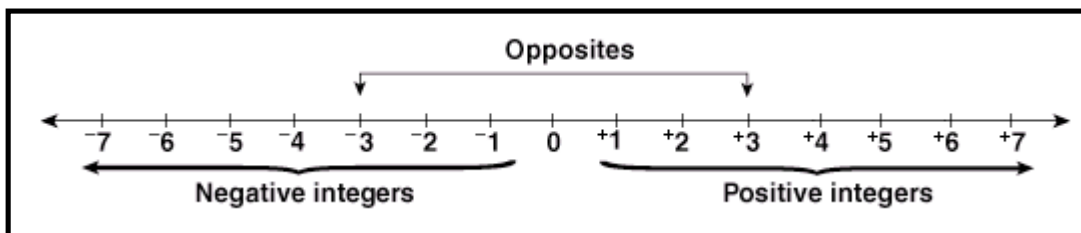
<i>Completed</i>	<i>Type of activity</i>	<i>Location</i>
	Video	Khan Academy, 7 th grade, Multiplying and Dividing Integers
	Solving	Activity 2-16
	Reading	Activity 2-17
	Number Lines	Activity 2-18
	Riddle	Activity 2-19
	GameTime	Flipping for Integers
	GameTime	Integer Golf II







All Integer Operations

<i>Completed</i>	<i>Type of activity</i>	<i>Location</i>
	Solving	Activity 2-20
	Solving	Activity 2-21
	Solving	Activity 2-22
	GameTime	Dice Challenge
	GameTime	24 game
	Creating	Create a fun cereal box, board game, song, video, website, etc. to teach to teach students important integer concepts

We are about to take a trip. We are now leaving the land of positive numbers. Not for good, but we want to become world travelers and so we are going to pack our bags and go to the land of Negative Numbers! Come join us on this magical journey.

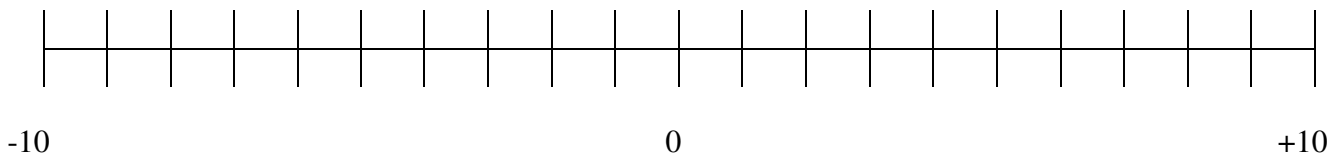
The number line can be used to represent the set of integers. Look carefully at the number line and the definitions that follow.



-  **The number line goes on forever in both directions.** This is indicated by the arrows.
-  Whole numbers greater than zero are called **positive integers**. These numbers are to the right of zero on the number line.
-  Whole numbers less than zero are called **negative integers**. These numbers are to the left of zero on the number line.
-  The integer **zero is neutral**. It is neither positive nor negative.
-  The **sign** of an integer is either positive (+) or negative (-), except zero, which has no sign.
-  Two integers are **opposites** if they are each the same distance away from zero, but on opposite sides of the number line. One will have a positive sign, the other a negative sign. In the number line above, +3 and -3 are labeled as opposites.

Integers – the whole numbers and their opposites (positive counting numbers, negative counting numbers, and zero)	5, 7, 0, -5, -7, -200
Opposite of a number – a number and its opposite are the same distance from zero on the number line	-7 and 7 are opposites
Absolute value – the number of units a number is from zero on the number line without regard to the direction	The absolute value of -6 is 6. The sign for absolute value is two parallel lines: $ -6 = 6$

1-10. Place the correct letter corresponding to each integer on the number line below.



A. -5	B. +2	C. -7	D. 4	E. -9
F. -1	G. +6	H. -3	I. 0	J. -6

Write an integer to represent each situation.

11.	lost \$72		12.	gained 8 yards		13.	fell 16 degrees	
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Name the opposite of each integer.

14.	26		15.	-83		16.	+100	
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Compare the following integers. Write $<$, $>$, or $=$.

17.	$-5 \underline{\hspace{1cm}} 8$	18.	$12 \underline{\hspace{1cm}} -13$	19.	$-10 \underline{\hspace{1cm}} -21$	20.	$-7 \underline{\hspace{1cm}} -11$
-----	---------------------------------	-----	-----------------------------------	-----	------------------------------------	-----	-----------------------------------

Find the absolute value of the following numbers.

21.	$ +11 $		22.	$ -6 $		23.	$ -55 $		24.	$ 0 $	
25.	$ 28 $		26.	$ -203 $		27.	$ +75 $		28.	$ -3 $	

Write true or false.

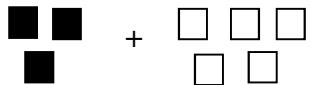
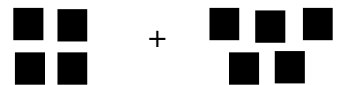
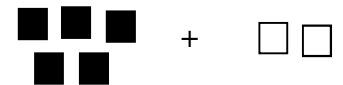
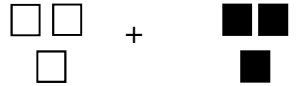
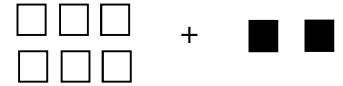

29.	$-3 > -7$		30.	$9 > -1$		31.	$-6 > -2$	
32.	$ -5 < -5$		33.	$ -8 = 8 $		34.	$-5 < -6$	

35. List the following temperatures from greatest to least.

A	The temperature was 25 degrees Fahrenheit below zero.	
B	The pool temperature was 78 degrees Fahrenheit.	
C	Water freezes at 32 degrees Fahrenheit.	
D	The low temperature in December is -3 degrees Fahrenheit.	
E	The temperature in the refrigerator was 34 degrees Fahrenheit.	

Write a numerical expression for each model. Find the sum.

■ = one negative □ = one positive

1. 	2. 	3. 
4. 	5. 	6. 

Draw a model of the following problems using chips similar to the pictures above. Then solve. Use a separate sheet of paper.

7.	$-2 + -8$		8.	$8 + -4$		9.	$-6 + 3$	
10.	$6 + -4$		11.	$-1 + 7$		12.	$-8 + 3$	
13.	$-2 + -6$		14.	$6 + -9$		15.	$-5 + -7$	
16.	$-7 + 4$		17.	$4 + 8$		18.	$-3 + 10$	
19.	$2 + -1 + -3$		20.	$0 + -5$		21.	$3 + 2 + -1$	
22.	$-5 + 5$		23.	$-6 + 1$		24.	$6 + -1$	

25.	If the low temperature one day was -8° and the midpoint temperature that day was 5° , what was the high temperature that day?	
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Let today be 0, and let days in the past be negative and days in the future be positive.

26.	If today is Tuesday, what integer stands for last Sunday?	
27.	If today is Wednesday, what integer stands for next Saturday?	
28.	If today is Friday, what integer stands for last Saturday?	
29.	If today is Monday, what integer stands for next Monday?	

[Adding Negative Numbers | Mean Girls and Darth Vader | PBSMathClub](#)**Solve.**

1.	$-2 + -8$		2.	$8 + -4$		3.	$-6 + 3$	
4.	$6 + -4$		5.	$-1 + 7$		6.	$-8 + 3$	
7.	$-2 + -6$		8.	$6 + -9$		9.	$-5 + -7$	
10.	$-4 + -7$		11.	$4 + -7$		12.	$-4 + 7$	
13.	$2 + -1 + -3$		14.	$0 + -5$		15.	$3 + 2 + -1$	

Some of the sixth grade teachers decide to try out for the Dallas Cowboys. They each are allowed one rushing attempt against the Cowboys defense. The table below summarizes the results of their attempts:

Canaan	-8	Winnard	-19	Bailey	+18
Underwood	+24	Moreland	+2	Fauatea	-26
Snow	-13	Mangham	+37	Scogin	+6

Use the table above to answer the following addition problems. Show both your expressions and answers on a separate sheet of paper.

16.	Mangham + Fauatea	17.	Underwood + Canaan
18.	Snow + Winnard	19.	Bailey + Scogin
20.	Winnard + Mangham	21.	Snow + Scogin
22.	Moreland + Underwood	23.	Canaan + Fauatea
24.	$ \text{Snow} + \text{Bailey} $	25.	Scogin + Canaan
26.	Underwood + Mangham	27.	Winnard + Fauatea
28.	Bailey + Winnard + Snow	29.	Bailey + Scogin + Moreland
30.	Fauatea + Winnard	31.	Canaan + Bailey

32.	Place the teachers in order from the worst carry (smallest) to the best carry (largest).	
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Compare. Write $<$, $>$, or $=$.

33.	$-5 + -6$ _____ $6 + -5$	34.	$-8 + 10$ _____ $-3 + 6$
35.	$-4 + -9$ _____ $-8 + -5$	36.	$20 + -12$ _____ $-12 + -4$

TANGLE TABLE

Adding Integers. Time limit: 6 minutes with a partner, 10 minutes individual

+	-9	-7	11	6	-2	-5	8	-10	1	-4	3	-12
2												
-5												
8												
-12												
-10												
7												
-1												
-6												
4												
3												
-11												
-9												

An integer and its opposite are the same distance from 0 on a number line. The integers 5 and -5 are opposites. The sum of an integer and its opposite is 0. To subtract an integer add its opposite.

$$t = 6 - 9$$

$$m = -10 - -12$$

Example 1: $t = 6 + -9$

Example 2: $m = -10 + +12$

$$t = -3$$

$$m = 2$$

Subtract.

1.	$-2 - -8$		2.	$8 - (-4)$		3.	$-6 - 3$	
4.	$6 - -4$		5.	$-1 - 7$		6.	$3 - 8$	
7.	$-4 - (-7)$		8.	$4 - -7$		9.	$-4 - 7$	
10.	$2 - (-1) - (-3)$		11.	$-8 - 8$		12.	$2 - 3 - -1$	
13.	$-5 - (-5)$		14.	$-6 - 1$		15.	$6 - -1$	

In hockey, each player is given a plus/minus rating. This rating is based on how many goals are scored by their team while the player is on the ice minus how many goals are scored by the opposing team while the player is on the ice. A high number is good and a low number is bad. Here are the best and worst plus/minus ratings for 2009-2010:

1	Jeff Schultz – WSH	+50	874	Ryan Potulny – EDM	-21
2	Alex Ovechkin – WSH	+45	875	Kyle Okposo – NYI	-22
3	Mike Green – WSH	+39	876	Steve Staios – EDM	-27
4	Nicklas Backstrom – WSH	+37	877	Shawn Horcoff – EDM	-29
5	Daniel Sedin – VAN	+36	878	Rod Brind'Amour – CAR	-29
6	Alexander Semin - WSH	+36	879	Patrick O'Sullivan – EDM	-35

Use the table above to answer the following subtraction problems. Show both your expressions and answers on a separate sheet of paper.

16.	Schultz – Okposo	17.	Staios – Green
18.	Sedin – Ovechkin	19.	O'Sullivan – Semin
20.	Potulny – Backstrom	21.	Brind'Amour – Horcoff
22.	Green – O'Sullivan	23.	Semin – Schultz
24.	Staios – Brind'Amour	25.	Potulny – Schultz
26.	Semin – Sedin – Schultz	27.	Backstrom – Green
28.	Horcoff – Ovechkin	29.	Ovechkin – O'Sullivan
30.	Okposo – Staios	31.	Potulny – Brind'Amour

Subtracting integers is often the hardest of the four basic operations for students. Sometimes students try to take a shortcut and they don't change the signs to "add the opposite." The problem can be easy to miss when you don't change these signs.

Here are some other explanations to help you remember why we can change the subtracting problem to an addition problem.

PARTY #1: This is a positive party. It is filled with positive people. What could you do to make this party less positive?

- One option would be to make some of the positive people go home. *This means you are subtracting positive people.*
- A second option would be to bring in some negative people. *This means you are adding negative people.*

Therefore you have accomplished the same thing two different ways.

Subtracting positives is the same as adding negatives.

PARTY #2: This is a negative party. It is filled with negative people. What could you do to make this party less negative (more positive)?

- One option would be to make some of the negative people go home. *This means you are subtracting negative people.*
- A second option would be to bring in some positive people. *This means you are adding positive people.*

Therefore you have accomplished the same thing two different ways.

Subtracting negatives is the same as adding positives.

SUBTRACTION EQUALS ADDING THE OPPOSITE

$$\oplus - \oplus \text{ changes to } \oplus + \ominus$$

$$\oplus - \ominus \text{ changes to } \oplus + \oplus$$

$$\ominus - \oplus \text{ changes to } \ominus + \ominus$$

$$\ominus - \ominus \text{ changes to } \ominus + \oplus$$

Keep Flip Change "KFC" Rule

Adding the Opposite can be simplified into the "KFC" Rule.

"KFC" works like this:

K for **KEEP** the first number as it is

F for **FLIP** the Subtraction into an Addition symbol

C for **CHANGE** the Sign of the second number.

Below are several rushing attempts in a football game. Plot the attempts on the number lines below to determine the total amount of yardage.

1. a gain of 3 yards and then
a gain of 4 yards ($3 + 4$)



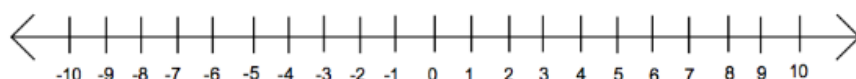
2. a loss of 5 yards and then
a gain of 7 yards ($-5 + 7$)



3. a loss of six yards and
then another loss of 2 yards
($-6 + -2$)



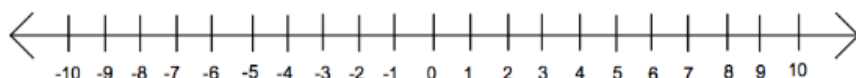
4. a gain of 8 yards and then
a loss of 9 yards ($8 + -9$)



5. a loss of 3 yards and then
a loss of 1 yard ($-3 + -1$)



6. a gain of 7 yards and then
a loss of 7 yards ($7 + -7$)



7. $7 - 2$



8. $4 - 6$



9. $-6 - -1$



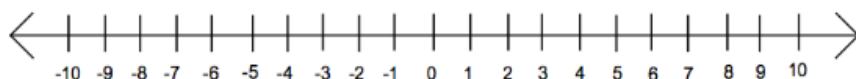
10. $5 - -3$

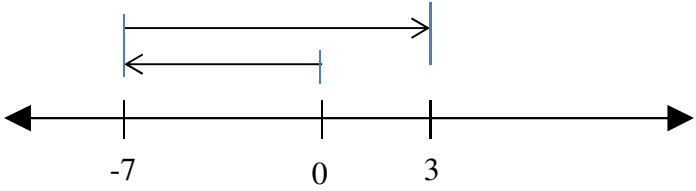
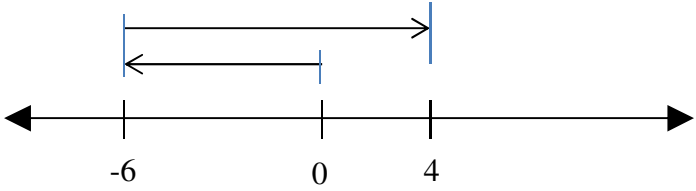


11. $-3 - 4$



12. $-2 - -5$



1.	<p>Which expression is represented by the model below?</p>  <p>A. $-7 + 0$ B. $-7 + 7$ C. $-7 + 3$ D. $-7 + 10$</p>	
2.	<p>Which expression is represented by the model below?</p>  <p>A. $-6 - 4$ B. $-6 - (-4)$ C. $4 - 6$ D. $-6 - (-10)$</p>	
3.	<p>Model the following expressions by drawing number lines.</p> <p>A. $-4 + -2$ B. $5 + -3$ C. $-2 + 8$ D. $-4 + 6 + -3$</p>	
4.	<p>Model the following expressions by drawing two-color counters.</p> <p>A. $-4 + -2$ B. $5 + -3$ C. $-2 + 8$ D. $-4 + 6 + -3$</p>	
5.	<p>Model the following expressions by drawing number lines.</p> <p>A. $-4 - (-2)$ B. $5 - (-3)$ C. $-2 - 8$ D. $-4 - 6 - (-3)$</p>	
6.	<p>Model the following expressions by drawing two-color counters.</p> <p>A. $-4 - (-2)$ B. $5 - (-3)$ C. $-2 - 8$ D. $-4 - 6 - (-3)$</p>	

Order from least to greatest.

7.	$\{6, -3, 1, -1, -5, 7, 0, 9\}$	
8.	$\{2, -1, 3, 4, -6, 13, -8, 2\}$	

First write an expression for each word problem and then solve.

Show all work on a separate sheet of paper.

1.	Jerry Jones has overdrawn his account by \$15. There is \$10 service charge for an overdrawn account. If he deposits \$60, what is his new balance?
2.	The outside temperature at noon was 9 degrees Fahrenheit. The temperature dropped 15 degrees during the afternoon. What was the new temperature?
3.	The temperature was 10 degrees below zero and dropped 24 degrees. What is the new temperature?
4.	The football team lost 4 yards on one play and gained 9 yards on the next play. What is the total change in yards?
5.	The temperature in Tahiti is 27 degrees Celsius. The temperature in Siberia is -33 degrees Celsius. What is the difference in temperatures?
6.	Horatio Hornswoggle was born in 57 BC. (BC would be negative years) and died in 16 AD (AD would be positive years). How old was Horatio when he died?
7.	You have a bank account balance of \$357 and then write a check for \$486. What is your new balance?
8.	A mountain climber is at an altitude of 4572 meters and, at the same time, a submarine commander is at -609 meters. What is the difference in altitudes?
9.	The Roman Empire was established in 509 B.C. and fell 985 years later. In what year did the Empire fall?
10.	A scuba diver is at an altitude of -12 meters and a shark is at an altitude of -31 meters. What is the difference in altitudes?
11.	A submarine descended 32 feet below the surface of the ocean. It then rose 15 feet to look at a shark. Write an expression and solve to find the submarines current depth.
12.	In January, the temperature at Mt. Everest averages $-36^{\circ}C$. It can drop as low as $-60^{\circ}C$. In July, the average summit temperature is 17 degrees Celsius warmer. What is the average temperature at the summit of Mt. Everest in July?
13.	What is the difference in elevation between Mt. McKinley (+20,320 feet) and Mt. Everest (+29,035 feet)?
14.	Find the difference in elevation between Death Valley (-282 feet) and the Dead Sea (-1348 feet).
15.	The highest ever recorded temperature on earth was $136^{\circ}F$ in the US and the lowest was $-129^{\circ}F$ in Antarctica. What is the difference of these temperatures recorded on Earth?
16.	The temperature in Mrs. Cagle's room was $-14^{\circ}F$ yesterday, but it rose $8^{\circ}F$ today. What is the new temperature today?
17.	The boiling point of water is $212^{\circ}F$ and $-460^{\circ}F$ is its absolute lowest temperature. Find the difference between these two temperatures.

A negative sign signifies the opposite of an integer. For example, the opposite of 4 is -4 . The opposite of -4 would be $-(-4)$. As we have learned from subtracting and our discussions of subtraction $-(-4)$ is equal to 4.

Simplify each expression.

1.	$-(-8)$		2.	$-(27)$		3.	$- 36 $		4.	$ -45 $	
5.	$- -14 $		6.	$- 0 $		7.	$ -(-12) $		8.	$-(-57)$	
9.	$ -(-20) $		10.	$- 51 $		11.	$- -25 $		12.	$- -(-16) $	

Match the integer expression with the verbal expression.

13.	$- 12 $		(A) the opposite of negative twelve
14.	$ -12 $		(B) the absolute value of twelve
15.	$- -12 $		(C) the opposite of the absolute value of negative twelve
16.	$-(-12)$		(D) the absolute value of negative twelve
17.	$ 12 $		(E) the opposite of the absolute value of twelve

Solve and explain.

18.	Is there a least positive integer? Explain.	
19.	Is there a greatest positive integer? Explain.	
20.	Is there a smallest integer that is negative? Explain.	
21.	Is there a largest integer that is negative? Explain.	

Write always, never, or sometimes.

22.	The sum of two negative integers is negative...	
23.	The sum of a positive integer and a negative integer is positive...	
24.	The sum of 0 and a negative integer is positive...	
25.	Zero minus a positive integer is negative...	
26.	The difference of two negative integers is negative...	

Temperature on Pluto = $-370^{\circ}F$	Temperature on Mercury = $950^{\circ}F$	Temperature on Earth = $59^{\circ}F$
Temperature on the moon during the day = $417^{\circ}F$	Temperature on the moon during the night = $-299^{\circ}F$	Temperature at moon's poles is constantly $-141^{\circ}F$

Using the table above, write and solve five word problems involving the concepts we have learned about integers. At least three of the problems should involve addition or subtraction.

2010 PGA Tour Masters Results							
Place	Name	4th Round Score	Final Score	Place	Name	4th Round Score	Final Score
1	Phil Mickelson	-5	-16	18	Ernie Els	-4	-1
2	Lee Westwood	-1	-13	26	Kenny Perry	+2	+1
3	Anthony Kim	-7	-12	36	Lucas Glover	+2	+4
4	Tiger Woods	-3	-11	38	Retief Goosen	+1	+6
6	Fred Couples	-2	-11	42	Zach Johnson	+3	+7
10	Ian Poulter	+1	-5	45	Sergio Garcia	+6	+10

In golf, the goal is to get the **lowest** score possible. A score of "E" is equivalent to a 0. Use the table to answer the following questions.

1. List the 12 players above in order from best to worst based on their **4th round score**. If there is a tie, the player with the better final score should come first.

1.	2.	3.	4.
5.	6.	7.	8.
9.	10.	11.	12.

- 13-24. Determine the absolute value of the **final score** for each player.

Phil Mickelson		Lee Westwood		Anthony Kim		Tiger Woods	
Fred Couples		Ian Poulter		Ernie Els		Kenny Perry	
Lucas Glover		Retief Goosen		Zach Johnson		Sergio Garcia	

- Determine the **sum** of the following groups of players' **final scores**.

25.	Woods + Goosen		26.	Perry + Couples	
27.	Garcia + Kim		28.	Johnson + Els + Garcia	
29.	Mickelson + Poulter		30.	Woods + Kim + Glover	
31.	Westwood + Els		32.	Goosen + Couples + Els	

- Determine the **difference** of the following groups of players' **final scores**.

33.	Woods – Goosen		34.	Perry – Couples	
35.	Mickelson – Westwood		36.	Kim – Woods – Els	
37.	Poulter – Couples		38.	Glover – Garcia	
39.	Johnson – Els		40.	Goosen – Garcia – Woods	

The following table lists the highest and lowest temperatures recorded in some [states](#) in the [United States](#), in both Fahrenheit and Celsius.

State	Record high	Record low	State	Record high	Record low
Alaska	100 °F / 38 °C	-80 °F / -62 °C	Montana	117 °F / 47 °C	-70 °F / -57 °C
Arizona	128 °F / 53 °C	-40 °F / -40 °C	Nevada	125 °F / 52 °C	-50 °F / -46 °C
Arkansas	120 °F / 49 °C	-29 °F / -34 °C	New Mexico	122 °F / 50 °C	-50 °F / -46 °C
California	134 °F / 57 °C	-45 °F / -43 °C	New York	108 °F / 42 °C	-52 °F / -46 °C
Colorado	118 °F / 47.8 °C	-61 °F / -52 °C	North Carolina	110 °F / 43 °C	-34 °F / -37 °C
Florida	109 °F / 43 °C	-2 °F / -19 °C	North Dakota	121 °F / 49 °C	-60 °F / -51 °C
Georgia	114 °F / 44 °C	-17 °F / -27 °C	Oklahoma	120 °F / 49 °C	-31 °F / -35 °C
Hawaii	100 °F / 38 °C	15 °F / -9 °C	South Carolina	113 °F / 45 °C	-22 °F / -30 °C
Idaho	118 °F / 48 °C	-60 °F / -51 °C	South Dakota	120 °F / 49 °C	-58 °F / -50 °C
Louisiana	112 °F / 46 °C	-16 °F / -27 °C	Texas	120 °F / 49 °C	-23 °F / -31 °C
Maine	105 °F / 41 °C	-50 °F / -45 °C	Utah	117 °F / 47 °C	-69 °F / -56 °C
Michigan	112 °F / 44 °C	-51 °F / -46 °C	Vermont	105 °F / 41 °C	-50 °F / -46 °C
Minnesota	115 °F / 46 °C	-60 °F / -51 °C	Wyoming	115 °F / 46 °C	-63 °F / -53 °C
Missouri	118 °F / 48 °C	-40 °F / -40 °C			

- List the five warmest state high temperatures. List each of the five states and their corresponding high temperature.
- List the five lowest state record low temperatures. List each of the five states and their corresponding low temperature.
- According to the data, which state has the greatest range in temperature between its record high and record low? What is that range?
- According to the data, which state has the least range in temperature between its record high and record low? What is that range?
- According to the data, what is the range in temperature between the record high and record low for the entire U.S.? What is that range?
- What is the range in record temperatures for the state that you live in now?
- I have always thought of California as a warm place, especially after living in Illinois most of my life. Which of these two states has had a lower record cold temperature? Write a math sentence to find the positive difference between their record low temperatures.
- Find as many pairs of record low temperatures that have a difference of 30 degrees. Write and solve math sentences to confirm or show that they have a difference of 30 degrees.

Solve each equation.

1.	$x = -7 + (-5)$		2.	$10 + 9 = n$	
3.	$w = -12 + (-5)$		4.	$t = -13 + (-3)$	
5.	$ -10 + 12 = z$		6.	$ -7 + 8 = k$	
7.	$m = -11 + (-6)$		8.	$0 + (-21) = b$	
9.	$ -13 + (-11) = h$		10.	$f = -52 + 52$	
11.	$6 + 5 + (-4) = t$		12.	$ -4 + (-5) + 6 = m$	
13.	$k = -3 + 8 + (-9)$		14.	$a = -6 + (-2) + (-1) $	
15.	$10 + (-5) + 6 = n$		16.	$c = -8 + 8 + (-10)$	
17.	$36 + (-28) + (-16) + 24 = y$		18.	$x = -31 + 19 + (-15) + (-6)$	

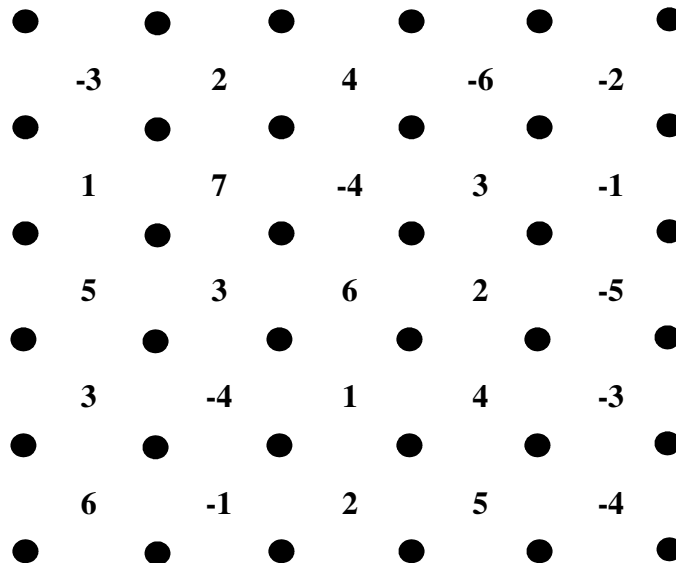
Solve each equation.

19.	$-4 - 1 = f$		20.	$h = -5 - (-7)$	
21.	$z = 9 - 12$		22.	$a = -765 - (-34)$	
23.	$652 - (-57) = b$		24.	$c = 346 - 865$	
25.	$d = -136 - (-158)$		26.	$x = 342 - (-456)$	
27.	$y = -684 - (-379)$		28.	$b = -658 - 867$	
29.	$657 - 899 = t$		30.	$3004 - (-1007) = r$	
31.	$-21 - 24 = b$		32.	$-15 - (-86) = a$	

Tell if each of the subtraction sentences would always, sometimes, or never be true. Support your answer with examples.

33.	positive – positive = positive		34.	negative – positive = negative	
35.	negative – negative = positive		36.	positive – negative = negative	
37.	negative – positive = positive		38.	positive – positive = negative	

Directions: Players take turns joining any two dots next to each other. Diagonals are not allowed. When a player makes a square, the player's initials go in the box. When all the squares are completed, add up all the integers in your boxes. Then subtract this total from 25. The player with the highest score is the winner.

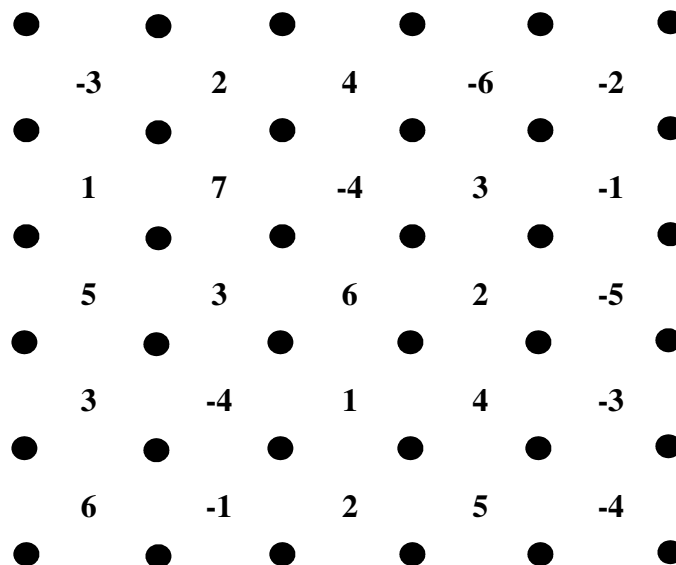
ROUND 1

PLAYER 1: TOTAL OF ALL BOXES: _____

Now subtract this total from 25: $25 - \underline{\quad} = \underline{\quad}$ (final score)

PLAYER 2: TOTAL OF ALL BOXES: _____

Now subtract this total from 25: $25 - \underline{\quad} = \underline{\quad}$ (final score)

ROUND 2

In two minutes name as many sums of integers that yield a positive 4 as you can. You may loop pairs of integers that are next to each other, either horizontally, vertically, or diagonally.

-4	8	-3	7	-2	4	-7	5	-1	9	-4	7
1	-8	2	-4	5	-5	1	-7	6	-4	8	-5
-9	2	-5	7	-3	8	-8	2	-3	6	-5	4
5	-1	2	-4	4	-6	5	-4	9	-1	4	-7
-7	6	-1	8	-3	2	-1	4	-3	6	-7	3
3	-2	8	-5	7	-9	4	-3	7	-2	5	-5
-8	6	-4	3	-7	2	-9	6	-2	1	-8	5
2	-4	6	-2	5	-1	7	-5	5	-6	9	-3
-6	9	-2	8	-1	7	-2	3	-3	9	-1	6
4	-3	2	-9	7	-3	6	-5	7	-8	3	-2

In two minutes name as many sums of integers that yield a positive 4 as you can. You may loop pairs of integers that are next to each other, either horizontally, vertically, or diagonally.

-4	8	-3	7	-2	4	-7	5	-1	9	-4	7
1	-8	2	-4	5	-5	1	-7	6	-4	8	-5
-9	2	-5	7	-3	8	-8	2	-3	6	-5	4
5	-1	2	-4	4	-6	5	-4	9	-1	4	-7
-7	6	-1	8	-3	2	-1	4	-3	6	-7	3
3	-2	8	-5	7	-9	4	-3	7	-2	5	-5
-8	6	-4	3	-7	2	-9	6	-2	1	-8	5
2	-4	6	-2	5	-1	7	-5	5	-6	9	-3
-6	9	-2	8	-1	7	-2	3	-3	9	-1	6
4	-3	2	-9	7	-3	6	-5	7	-8	3	-2

Integer Golf I

There are 18 holes to play in Dice Golf. The par for each hole is listed on the scorecard.

Eagle = 2 strokes below par (-2)

Birdie = 1 stroke below par (-1)

Par = Exactly the number of shots expected (0)

Bogey = 1 stroke over par (+1)

Double Bogey = 2 strokes over par (+2)

Triple Bogey = 3 strokes over par (+3)

Roll 3 dice and use the sum to determine your result		Par 3	Par 4	Par 5
	3	Triple Bogey	Triple Bogey	Triple Bogey
	4	Par	Bogey	Bogey
	5	Bogey	Par	Par
	6	Par	Par	Par
	7	Birdie	Birdie	Par
	8	Par	Par	Birdie
	9	Par	Bogey	Bogey
	10	Bogey	Par	Par
	11	Par	Par	Birdie
	12	Birdie	Birdie	Par
	13	Par	Par	Par
	14	Bogey	Bogey	Par
	15	Par	Par	Bogey
	16	Birdie	Birdie	Birdie
	17	Double Bogey	Double Bogey	Eagle
	18	Hole in One!!!!	Eagle	Double Bogey

SCORECARD

Write your score compared to par for each hole (+2, -1, etc.) After 9 holes total your scores.

Names	Hole	1	2	3	4	5	6	7	8	9	Score (Out)	
	Par	4	4	5	4	3	4	5	3	4		
Names	Hole	10	11	12	13	14	15	16	17	18	Score (In)	Total Score
	Par	4	3	4	4	5	4	3	5	4		

Multiplying Integers Rules

$$\begin{aligned} (+) \times (+) &= (+) \\ (-) \times (-) &= (+) \\ (+) \times (-) &= (-) \\ (-) \times (+) &= (-) \end{aligned}$$

Dividing Integers Rules

$$\begin{aligned} (+) \div (+) &= (+) \\ (-) \div (-) &= (+) \\ (+) \div (-) &= (-) \\ (-) \div (+) &= (-) \end{aligned}$$

Solve each equation.

1.	$m = 2(-8)$		2.	$t = -3(-4)$		3.	$x = 8(-4)$	
4.	$p = (-5)(-5)$		5.	$r = (-12)(5)$		6.	$w = (-4)^2$	
7.	$e = -12(13)$		8.	$x = (4)(-16)(-6)$		9.	$y = (20)(-5)(-5)$	
10.	$h = (-12)^2$		11.	$d = -7 \bullet -8$		12.	$b = -9(10)$	

Evaluate each expression if $m = -6$, $n = 3$, and $p = -4$.

13.	$-4m$		14.	np		15.	$2mn$	
16.	$-2m^2$		17.	$-5np$		18.	$-10mp$	
19.	$-12np$		20.	mnp		21.	p^2	

Solve each equation.

22.	$g = 52 \div -4$		23.	$d = -125 \div -25$		24.	$q = -32 \div -16$	
25.	$e = -120 \div -12$		26.	$t = 45 \div -9$		27.	$p = 33 \div -3$	
28.	$z = -36 \div 12$		29.	$d = -200 \div -25$		30.	$c = -88 \div 11$	

Evaluate each expression if $e = -36$, $f = 4$, and $g = -3$.

31.	$\frac{e}{f}$		32.	$\frac{e}{g^2}$		33.	$\frac{e}{fg}$	
34.	$\frac{e^2}{f}$		35.	$\frac{-48}{g}$		36.	$\frac{eg}{f}$	
37.	$\frac{e^2}{fg}$		38.	$\frac{-100}{f}$		39.	$\frac{e^2}{g^2}$	

40.	At noon on Friday, the temperature was 0 degrees. Six hours later the temperature was -18 degrees. On average, what was the temperature change per hour?
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Why is it when you multiply two negative numbers you get a positive number? Good question!

The First Answer

Some people think of a negative as meaning “not”. So if I say, “I am not going to the store,” that is sort of the negative version of “I am going to the store.”

So what do two “nots” mean? Consider this sentence: “You may tell me NOT to go to the store, but I’m NOT going to do what you say!” By negating your negation, I am insisting that I will go to the store.

Two “nots” cancel each other out, just like two negatives.

The Second Answer

Let’s use negatives with money. A green chip is worth \$5. A red chip means that I owe you \$5. So if you lose \$5, you can represent that by giving up a green chip or by picking up a red chip. So a green chip is +\$5 and a red chip is -\$5.

If you gain three green chips, what happens? 3 times \$5 equals a \$15 gain.

If you gain three red chips, what happens? 3 times -\$5 equals a \$15 loss.

What if you lose three green chips? You just lost \$15. -3 times \$5 equals a \$15 loss.

What is you lose three red chips? You just gained \$15. -3 times -\$5 equals a \$15 gain.

The Third Answer

How about proving it with a pattern?

$3 \bullet 5$	+15
$2 \bullet 5$	+10
$1 \bullet 5$	+5
$0 \bullet 5$	0
$-1 \bullet 5$	-5
$-2 \bullet 5$	-10

So....

$3 \bullet -5$	-15
$2 \bullet -5$	-10
$1 \bullet -5$	-5
$0 \bullet -5$	0
$-1 \bullet -5$	+5
$-2 \bullet -5$	+10

1. $2 \bullet 3$

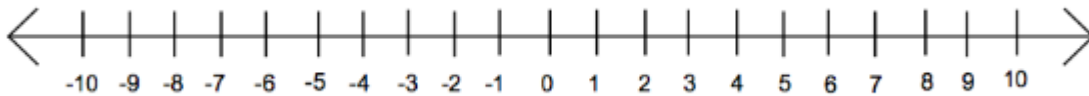
2. $2 \bullet -3$

3. $4 \bullet -2$

4. $3 \bullet -3$

5. $1 \bullet -8$

6. $-2 \bullet -3$



The multiplication table below contains 42 mistakes. Shade in each box that contains a mistake. You will end up with a famous farming expression.

X	2	-4	-9	6	3	8	-1	4	-8	-2	-6	7	-5	9	-7
-3	6	-12	-27	-18	9	-24	-3	12	-24	6	-18	-21	-15	27	-21
9	-18	-36	-81	54	-27	72	9	36	-72	-18	54	63	45	81	63
-6	12	-24	54	-36	18	-48	-6	24	48	12	-36	-42	-30	-54	-42
5	-10	-20	-45	30	-15	40	5	20	-40	-10	30	35	25	45	35
-7	14	-28	-63	-42	21	-56	-7	28	-56	14	-42	-49	-35	63	-49

Five friends compete in two golf tournaments. Their overall scores for each tournament are listed in the tables below. What is the difference in the means (averages) of each tournament?

Durham Cup	
<i>Golfer</i>	<i>Score</i>
Mr. Mangham	-5
Mr. Underwood	-7
Mrs. Oliver	-12
Mrs. Taylor	+4
Mrs. Fauatea	Even (0)

Southlake Classic	
<i>Golfer</i>	<i>Score</i>
Mrs. Bailey	-14
Ms. Winnard	-6
Mrs. Canaan	-18
Mrs. Shabanaj	+3
Mrs. Snow	Even (0)

Flipping For Integers

The object of this game is to have the highest score at the end of the game. You may play in a group of 2 or a group of 3.

You need: your game card, a red/yellow chip, a single die

Rules: Each player takes turns flipping their chip and rolling their die. The chip represents whether your number is positive (yellow) or negative (red). For example, if you flip a red and roll a 4 your number is -4 . Place your number in **any of the ten rows** on your scoring sheet. After each player has had ten turns and all rows are filled in calculate your values and add them together to get your final score.

GAME 1	
$5 + \underline{\quad}$	
$7 - \underline{\quad}$	
$3 \bullet \underline{\quad}$	
$-2 \bullet \underline{\quad}$	
$(\underline{\quad})^2$	
$6 - 2 \bullet \underline{\quad}$	
$\underline{\quad} - 4 \bullet -1$	
$8 - \underline{\quad} + 5$	
$-4 \bullet \underline{\quad} \bullet -2$	
$6 - (\underline{\quad})^2$	
TOTAL	

GAME 2	
$5 + \underline{\quad}$	
$7 - \underline{\quad}$	
$3 \bullet \underline{\quad}$	
$-2 \bullet \underline{\quad}$	
$(\underline{\quad})^2$	
$6 - 2 \bullet \underline{\quad}$	
$\underline{\quad} - 4 \bullet -1$	
$8 - \underline{\quad} + 5$	
$-4 \bullet \underline{\quad} \bullet -2$	
$6 - (\underline{\quad})^2$	
TOTAL	

Finished? You can play **Integer War** with a deck of cards. Black cards are positive and red cards are negative. Each person flips a card over at the same time. The first person to state the sum of the two cards wins both of them. In the event of a tie, two additional cards are played until there is a winner.

Integer Golf II

The object of this game is to have the fewest strokes. You may play in a group of 2 or a group of 3.

You need: this scorecard, 1 green die, 1 red die

Rules: The youngest player goes first. Alternatively, you can both play the same hole at the same time.

Green die = positive integer, Red die = negative integer

Roll the two dice for Hole 1. If you do not get the objective, roll again. Your score is how many rolls of the two dice it takes to meet the objective. After the last hole, each player finds the total number of strokes used in the game.

INTEGER GOLF SCORECARD

Player 1:

Player 2:

Player 3:

Hole #	Objective	Strokes Player 1	Strokes Player 2	Strokes Player 3
1	The sum is negative			
2	The product is less than -10			
3	The sum is -3 or 3			
4	The difference is less than -8			
5	The sum is divisible by 2			
6	The quotient of the absolute value of the two numbers is 2			
7	The absolute value of the sum is 4			
8	The quotient is -2			
9	The sum of the absolute value of the two numbers is 8			
10	The sum is -4 or 5			
11	The product is -12			
12	The product is divisible by 3			
13	The quotient is -1			
14	The absolute value of both numbers is even			
15	The difference is -2			
16	The product of the absolute value of the two numbers is 18			
17	The sum is zero			
18	The product is greater than -12			
Total Strokes				

Dice Challenge

GOAL: High total score wins!

Get three different colored dice: red, green, and white (or any three different colors).

- Roll the red die.
- Roll the white die and subtract the white die amount from the red die amount. Sometimes this produces a positive number and sometimes this produces a negative number. This is your score as of now.
- Decide if you want to roll the green die or not. It is optional. If you do not, then your score as of now is your final score for this round. If you roll the green die, then...
 - If the green die is a 1 or 2, your score for this round doubles.
 - If the green die is a 3 or 4, your score for this round clears to zero.
 - If the green die is a 5, your score for this round is the opposite of your original score.
 - If the green die is a 6, your score for this round is squared.

Round	Person 1	Person 2	Person 3
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
Total			

$(-9)^2$ means the number -9 squared. This is equal to $+81$.

-9^2 means to solve for 9 squared and then find the opposite. This is equal to -81 .

Solve.

1.	$-9 + (-13)^2$	2.	$(-5 - -6)^2 \bullet -87$	3.	$(-6 + 17) - 20$
4.	$32 + -37$	5.	$(-15 \div 3) + 14$	6.	$(-13 \bullet 2) + (-12)^2$
7.	$(-10 + -5)(-2)^2$	8.	$(-3 - 4)^2 \div 7$	9.	$(-5 - -30)(3)$

10.	$(-9 \bullet 6) + -4$	11.	$(-30 - -22) \bullet 6$	12.	$(-8 \bullet -8) - -8^2$
13.	$(-13 + -12)(-4)$	14.	$\frac{(16 \bullet -16)}{-8^2}$	15.	$\frac{(-64 \div 2)}{-2}$
16.	$(-7)^2 + -11$	17.	$-60^2 \div -5$	18.	$(-12 + -18) \div -15$
19.	$-9^2 - (-19)$	20.	$-7 \bullet (-11)^2$	21.	$(42 \div -7) - 6$

22.	$3^3 \bullet (-5)^2$	23.	$2^5 - 5^3$	24.	$3 + 2^4 + (5 - 2)^3$
25.	$(-7)^2 + 2 \bullet 3^2$	26.	-14^2	27.	$-11^2 - (-13)^2$
28.	$(-6)^2 + (-2)^2$	29.	$1^3 + (-1)^4 - 2^5$	30.	$2^4 - 3^3$

31.	I am an integer. When you add -1 to me, the sum is the opposite of the difference when you subtract -5 from me. What integer am I?	
32.	Find two integers having a product of negative 30 and a sum of negative 1.	
33.	Find two integers having a product of positive 27 and a sum of negative 12.	
34.	Find two integers having a product of negative 64 and a sum of positive 12.	
35.	Find two integers having a product of positive 40 and a sum of negative 13.	
36.	Which is larger, n or $2n$? Why?	
37.	Mangham Architecture has monthly profits of \$1200, \$755, $-\$450$, \$210, and $-\$640$ over 5 months. What was the average profit for those months?	
38.	Which of the following are equal to -7 ? $\frac{-7}{1}, \frac{7}{1}, \frac{-7}{-1}, \frac{7}{-1}, \frac{-7}{1}, \frac{7}{-1}, \frac{7}{-1}, \frac{-7}{-1}$	

Solve showing all work (tornadoes) on a separate sheet of paper.

1.	$5 + 3(9 - 6)^4$		2.	$9 + 4^2 \cdot 5$	
3.	$(-4)^3 \cdot 2 - 10$		4.	$6 - (-7) - 18$	
5.	$(5)^3 - 9 \cdot 4 \div 2 + 6$		6.	$8 + 7(2 - 9)^4$	
7.	$19 + 8^2 \cdot (-2)$		8.	$(-2)^3 \cdot 12 - 13$	
9.	$10 - (-56) - 15$		10.	$(18)^2 - 64 \div 2^3 - (-5)$	
11.	$8 - 4(10 - 6)^4$		12.	$17 + 21^2 \cdot (-2)$	
13.	$(-1)^3 \cdot (-7) - 10$		14.	$16 - 18 - 21$	
15.	$(2)^4 - 19^2 \div 19 + 4$		16.	$-10 - 3(7 - 3)^3$	
17.	$-21 - 3^2 \cdot 5$		18.	$(2)^5 \div (2 \cdot 8) - 5$	
19.	$-5 - (-25) + 23$		20.	$(194)^0 - 7^2 + 343 \div 7$	

Complete the table below.

	x	$ x $	$ x +2$	$2 x $
1.	4			
2.	3			
3.	2			
4.	1			
5.			2	
6.	-1			
7.	-2			
8.	-3			
9.	-4			

10.	When x is negative, its absolute value is....	
11.	$ x $ is negative always, sometimes or never?	
12.	$ x +2$ is positive always, sometimes or never?	
13.	$ x $ is less than $2 x $ always, sometimes or never?	
14.	$2 x $ is greater than $ x +2$ always, sometimes or never?	

Kyle has four integer cards. Two cards show positive integers and two cards show negative integers.

-9	8	4	-5
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15.	What is the sum of all four cards?	
16.	What is the largest sum Kyle can make with two cards?	
17.	What is the smallest sum Kyle can make with two cards?	
18.	What is the smallest sum that Kyle can make with three cards?	
19.	What is the largest difference Kyle can make with two cards?	
20.	What is the smallest difference Kyle can make with two cards?	
21.	What is the difference closest in value to 10 that Kyle can make with two cards?	
22.	What is the largest product Kyle can make with two cards?	
23.	What is the smallest product Kyle can make with two cards?	
24.	What is the largest product Kyle can make with three cards?	
25.	What is the smallest quotient Kyle can make with two cards?	

When multiplying monomials, add the exponents of like terms.
 When dividing monomials, subtract the exponents of like terms.

Examples $x^2 y^3 \bullet x^4 y^2 = x^6 y^5$
 $\frac{x^5 y^3}{x^2 y} = x^3 y^2$

Important $x^0 = 1$ **Anything to the zero power always equals one.**

Find each product or quotient. Express your answer in exponential form.

1.	$2^2 \bullet 2^4 \bullet 2^1$		2.	$x^4 \bullet x^2 \bullet x^5$	
3.	$(3x^2)(-2xy)$		4.	$x \bullet y \bullet z \bullet y \bullet x \bullet z$	
5.	$(x^2 y)(-4x^6 y^3)$		6.	$(-5a^2 m^7)(-3a^5 m)$	
7.	$(x^2 z)(-4xyz)$		8.	$(-2n^2)(y^4)(-3n)$	
9.	$x^3(x^4 y^2)$		10.	$(-5r^2 s)(-3rs^4)$	
11.	$(a^2 b^2)(a^3 b)$		12.	$(2n^3)(-6n^4)$	
13.	$(5wz^2)(8w^4 z^3)$		14.	$(c^2 d)(-10c^3 d)$	
15.	$5^9 \div 5^2$		16.	$\frac{x^5}{x^1}$	
17.	$10^{10} \div 10^3$		18.	$\frac{m^7}{m^4}$	
19.	$\frac{a^7}{a^6}$		20.	$\frac{6^8}{6^3}$	
21.	$8^4 \div 8^3$		22.	$\frac{(-3)^9}{(-3)^8}$	
23.	$\frac{r^6 r^4}{r^8}$		24.	$\frac{a^{40}}{a^{16}}$	
25.	$\frac{b^7}{b^7}$		26.	$\frac{(-z)^{12}}{(-z)^{10}}$	
27.	$\frac{f^2 f^2}{f^3}$		28.	$c^3 \bullet 2d^3 \bullet 4c^4$	
29.	$2t^9 \bullet 8s^9 \bullet t^6$		30.	$6w^2 \bullet 4x^9 \bullet 6x^{14}$	
31.	$\frac{a^2 b^{12}}{ab^4}$		32.	$\frac{c^6 d^2}{c^5 d}$	

Convert each number into either standard form or scientific notation.

1.	$8.7 \cdot 10^6$		2.	$2.9 \cdot 10^{-2}$	
3.	$1.4685 \cdot 10^7$		4.	$7.16 \cdot 10^{-5}$	
5.	0.0003141		6.	5.65	
7.	938,000,000		8.	0.3054	
9.	0.00001		10.	80,000	

Rank the planets from the lowest mass to the highest mass, then write each in standard notation.

Planet	Approx. Mass (kg)	Rank	Mass in standard notation (kg)
Mercury	$3.1881 \cdot 10^{23}$		
Venus	$4.883 \cdot 10^{24}$		
Earth	$5.979 \cdot 10^{24}$		
Mars	$6.418 \cdot 10^{23}$		
Jupiter	$1.901 \cdot 10^{27}$		
Saturn	$5.684 \cdot 10^{26}$		
Uranus	$8.682 \cdot 10^{25}$		
Neptune	$1.027 \cdot 10^{26}$		

Convert each distance from the Sun into scientific notation.

Planet	Approx. distance (mi.)	Distance in scientific notation	Planet	Approx. distance (mi.)	Distance in scientific notation
Mercury	36,300,000		Jupiter	484,000,000	
Venus	67,200,000		Saturn	888,000,000	
Earth	93,000,000		Uranus	1,780,000,000	
Mars	142,000,000		Neptune	2,800,000,000	

Insects are the most successful form of life on Earth. Estimates are that there are 200,000,000 insects for each person on the planet. If the world's population is about 7 billion people, how many insects do we share Earth with? Write your answer in scientific notation.

Fairy flies are 0.0002 meters in length. If there were 2,000,000 fairy flies lined up head to tail, how far would they stretch? Write your answer in scientific notation.

Using Scientific Notation

Scientists use scientific notation to write really **large numbers**. This is done with positive powers of ten.

$$80,000,000,000 = 8 \times 10^{10}$$

10 jumps right

They also use scientific notation to write very **small numbers**. This is done with negative powers of ten.

$$0.0000003 = 3 \times 10^{-7}$$

7 jumps left

When a number is expressed in scientific notation, it is written as a product of a factor and a power of 10. **The factor part must be greater than or equal to 1 and less than 10** (i.e. exactly one number to the left of the decimal). If the number is negative the factor part must be less than or equal to -1 and greater than -10 .

Convert each number into either standard form or scientific notation.

1.	$4.2 \cdot 10^{-6}$		2.	$3.75 \cdot 10^{-2}$	
3.	$-8.45 \cdot 10^{-7}$		4.	$-6.32 \cdot 10^{-5}$	
5.	$-3.5 \cdot 10^1$		6.	$4.125 \cdot 10^5$	
7.	$3.72 \cdot 10^{-6}$		8.	$-6.1 \cdot 10^8$	
9.	$-3.4 \cdot 10^{-3}$		10.	$3.45 \cdot 10^6$	
11.	$2.2846 \cdot 10^7$		12.	$3.45 \cdot 10^{-4}$	
13.	0.00000008		14.	4,862	
15.	9,000,000		16.	0.000023	
17.	0.000603		18.	42,000,000	
19.	423,000		20.	1,100,000,000	
21.	0.0000061		22.	0.00412	
23.	3,250,000		24.	32,500,000,000	

Solve. Write all answers in scientific notation.

25.	$(8.2 \cdot 10^3)(3.1 \cdot 10^4)$		26.	$(6.4 \cdot 10^2)(9.3 \cdot 10^{11})$	
27.	$(6.8 \cdot 10^{-8})(9.1 \cdot 10^4)$		28.	$(1.5 \cdot 10^{-1})(7.3 \cdot 10^{-3})$	
29.	$(2 \cdot 10^{-5})(4.5 \cdot 10^{-4})$		30.	$(12 \cdot 10^{-3})(13 \cdot 10^7)$	
31.	$\frac{8 \cdot 10^7}{2 \cdot 10^3}$		32.	$\frac{9 \cdot 10^{10}}{3 \cdot 10^{-2}}$	
33.	$\frac{7.5 \cdot 10^2}{1.5 \cdot 10^6}$		34.	$\frac{8 \cdot 10^8}{3.2 \cdot 10^5}$	

Your guide will be used as an example on ManghamMath.com. Please make sure all work will show up when a picture is taken. This is one time that a Sharpie, pen, or colored pencils would be a good idea.

Choose one of the following topics: Weather (Temperature), Money, Golf, Time (Years), Elevations and Altitudes, Game/Video Game Scores, Football, or Physical Science (Atoms and Molecules).

Your Survival Guide will consist of 4 pages (1 folded piece of construction paper). The goal is to *teach integers* to students who have not learned about them yet. The following describes what information should be included in each part.

Part 1: Title

- Your title must include the words “Survival Guide to Integers”

Part 2: Teach an Introduction to Integers - Use your topic

- Give three specific examples of how negative numbers relate to your topic.
- Give **definitions and examples** for these words:
 - Integer (provide examples of integers and numbers that are not integers)
 - Opposite of a number
 - Absolute value

Part 3: Teach Addition of integers - Use your topic

- **Show/explain/teach** how to add a positive and a negative integer with **two** of the following:
 - Yellow and red chips
 - Number lines
 - Mathematically
- Provide one word problem related to your topic for the reader to answer.

Part 4: Teach Subtraction of integers - Use your topic

- **Show/explain/teach** how to subtract an integer from another integer with **two** of the following:
 - Yellow and red chips
 - Number lines
 - Mathematically
- Provide one word problem related to your topic for the reader to answer.

Part 5: Teach the Rules for multiplying and dividing integers - Use your topic

- Create your own graphic to demonstrate the rules for multiplying and dividing
- Your graphic should relate to your topic in some way
- Give examples of how to apply the rules
- Provide one multiplication word problem related to your topic for the reader to answer.
- Provide one division word problem related to your topic for the reader to answer.

Make it NEAT AND EASY TO FOLLOW

Mini-Survival Guide

Name: _____

	Possible points	My points
Intro to Integers	20	
Addition of Integers	30	
Subtraction of Integers	30	
Mult/Div of Integers	20	
Total	100	

Mini-Survival Guide

Name: _____

	Possible points	My points
Intro to Integers	20	
Addition of Integers	30	
Subtraction of Integers	30	
Mult/Div of Integers	20	
Total	100	