RIVER CITY SCIENCE ACADEMY

2019-2020 School Year

ESP

Elite Scholars Program

Algebra-1 Honors

SUMMER ASSIGNMENT

Mr. Bekir Durmus
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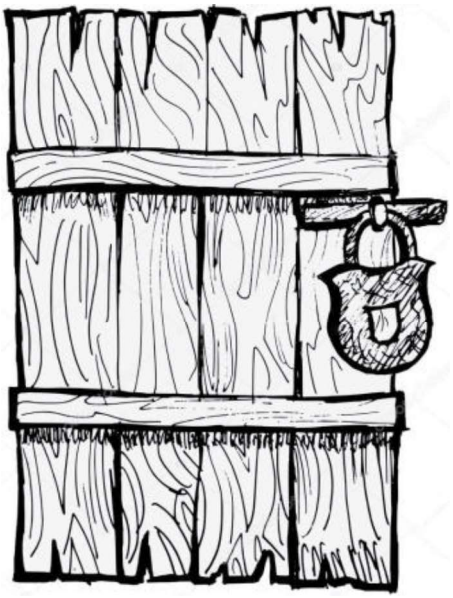
ESCAPE ROOM EDU

Adding and Subtracting Integers

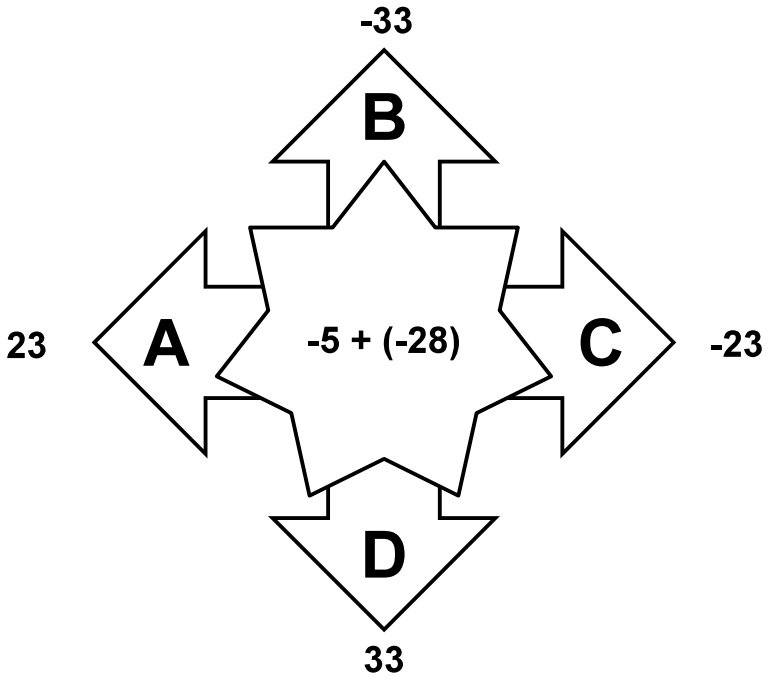


Mission Objective

A mad mathematician trapped your whole class in the classroom. In order to escape, you must use your knowledge of adding and subtracting integers to convince him to let you go. Answer the questions at each level and be sure to record each answer. Once all levels are complete, you can break out and save the day. You must hurry and escape before you remain trapped in math class forever!

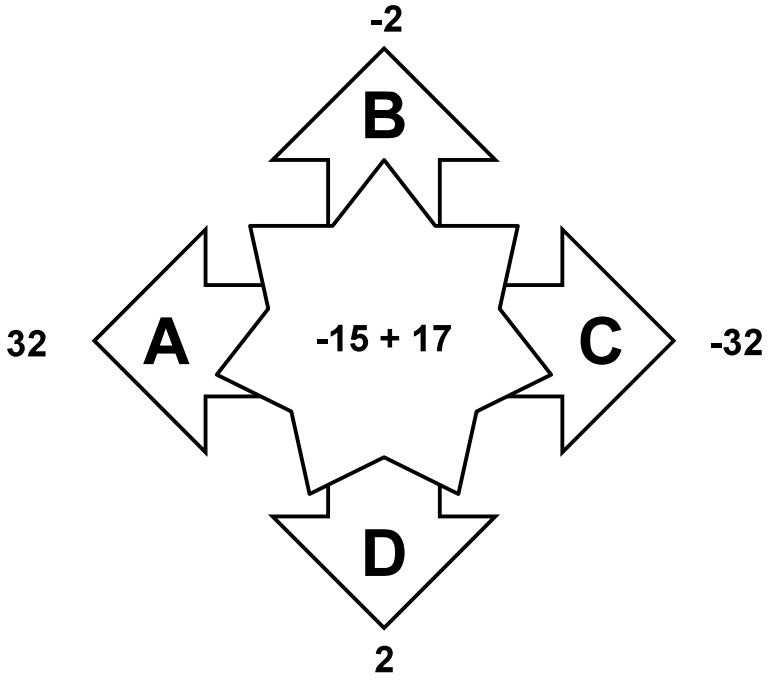
Level 1

Q2



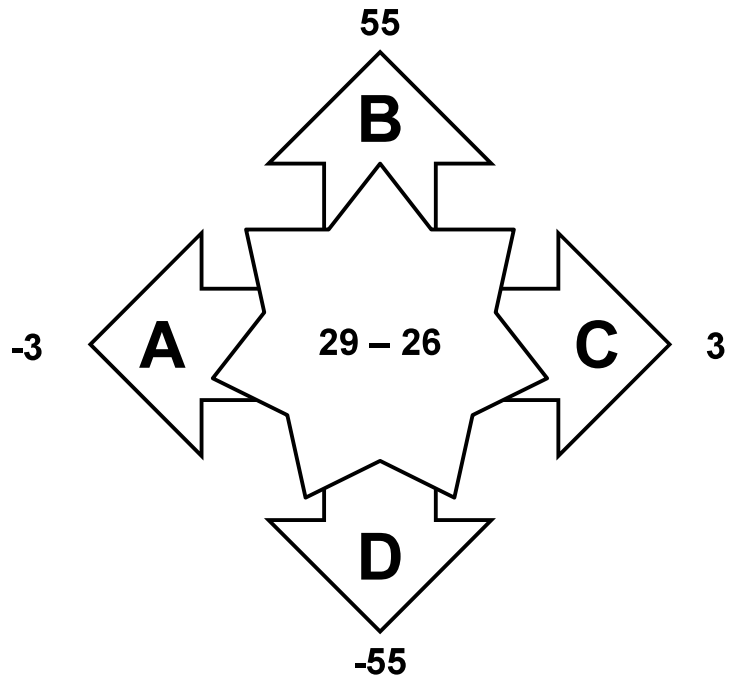
Level 1

Q1



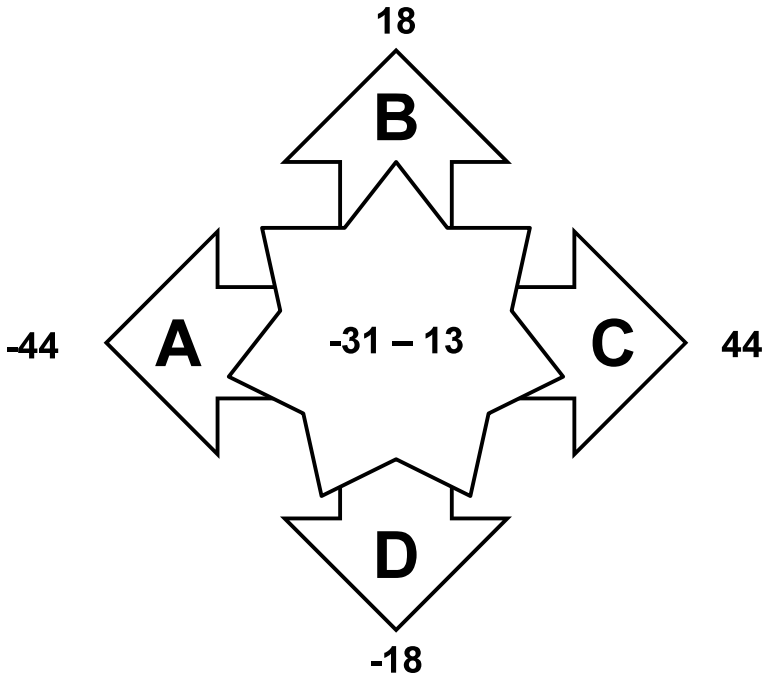
LEVEL 1

Q4

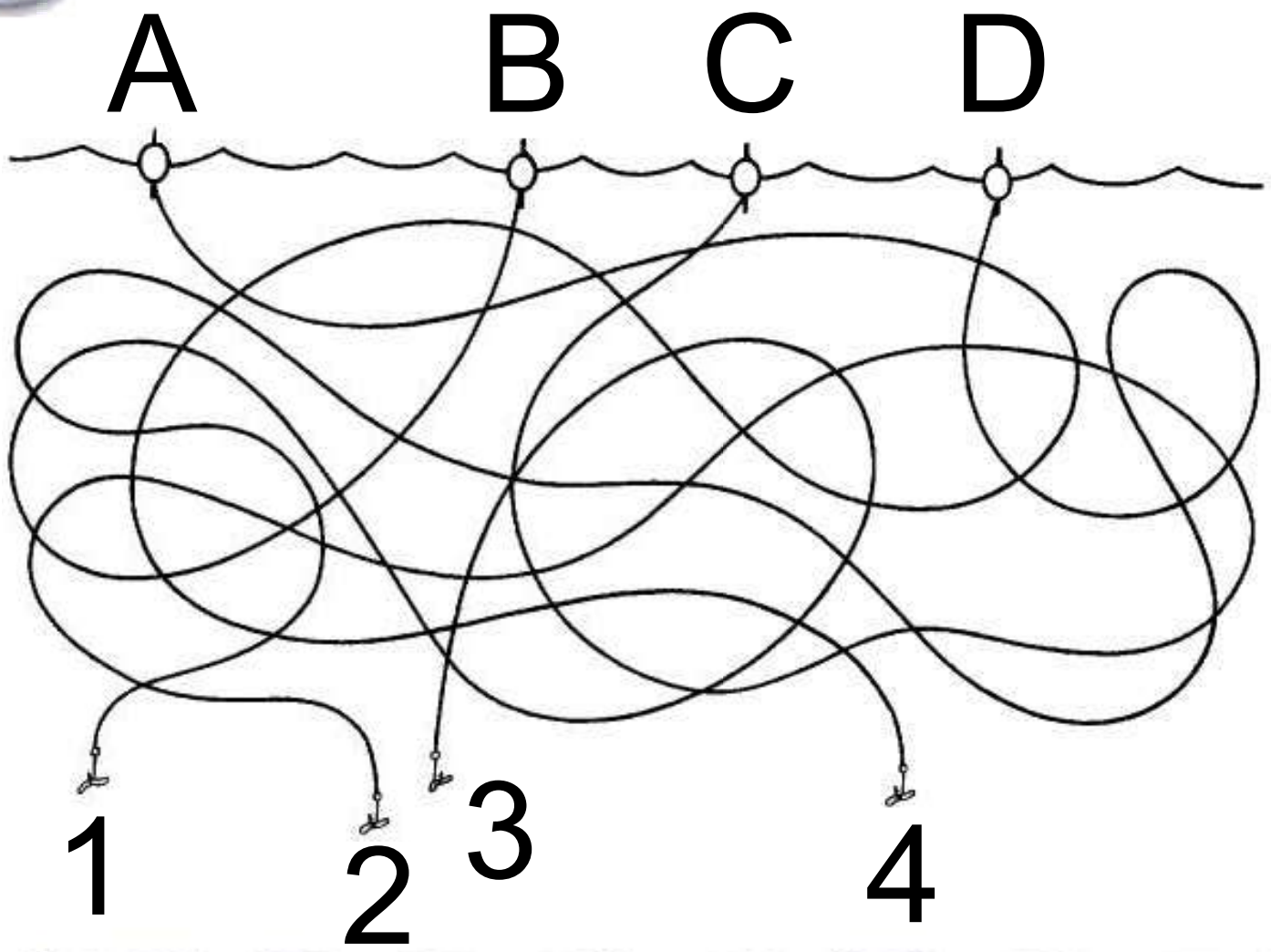


LEVEL 1

Q3

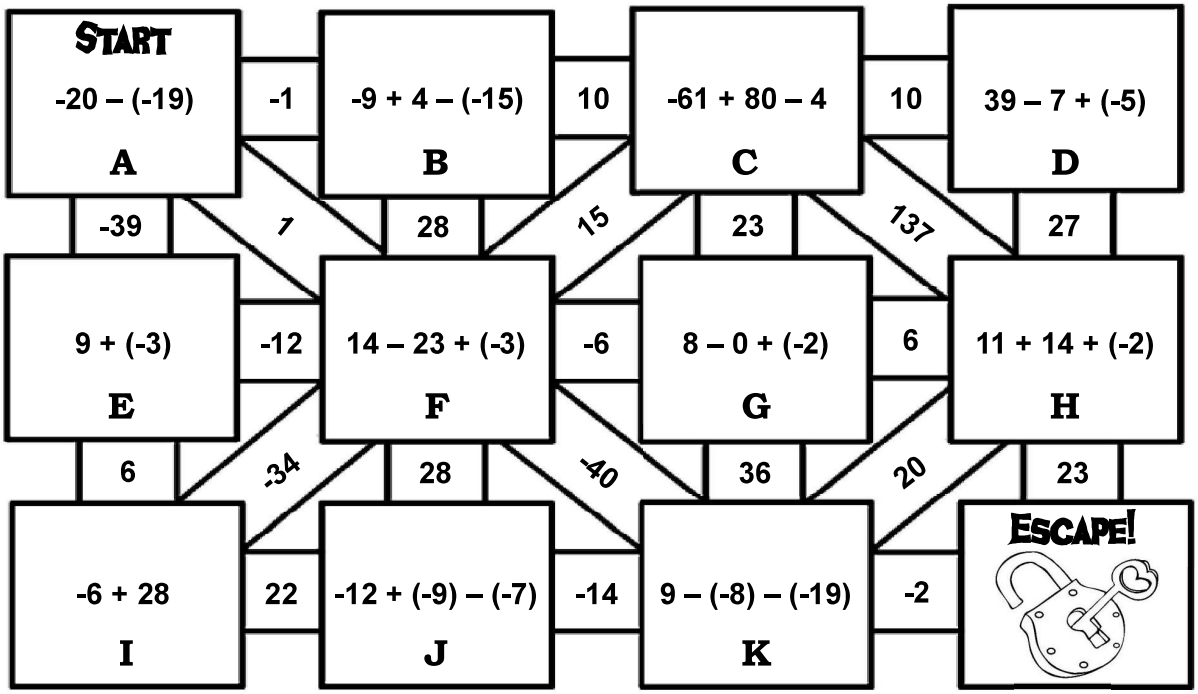


Level 1



Level 4

Use your answers to guide you to the end of the maze to make your escape.



Level 2

Solve each problem and write the matching letter on the blank above the answer.

E 24 – 39	C 4 + (-47)	U -39 + 13	T -33 – 21
H 42 + (-21)	S -37 – (-12)	A -14 + 46	M -5 – 50

Where can you find the most math teachers?

-55	32	-54	21	32	-43	21	-26	-25	-15	-54	-54	-25

Make Your Escape!

Adding & Subtracting Integers

Name _____

Digital Link: bit.ly/2BOm4cf

Level 1

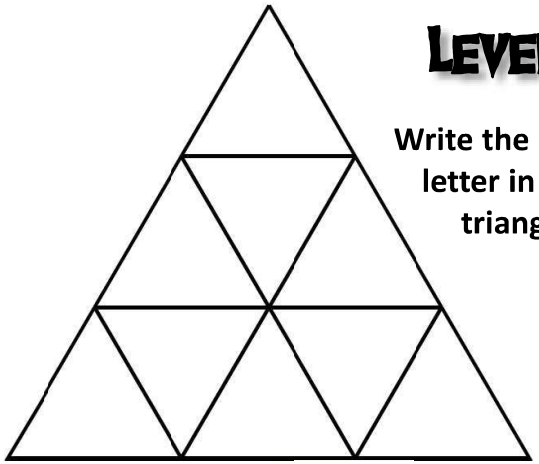
Answers	Q1	Q2	Q3	Q4
Codes	Digit 1	Digit 2	Digit 3	Digit 4

Level 2

Where can you find the most math teachers?

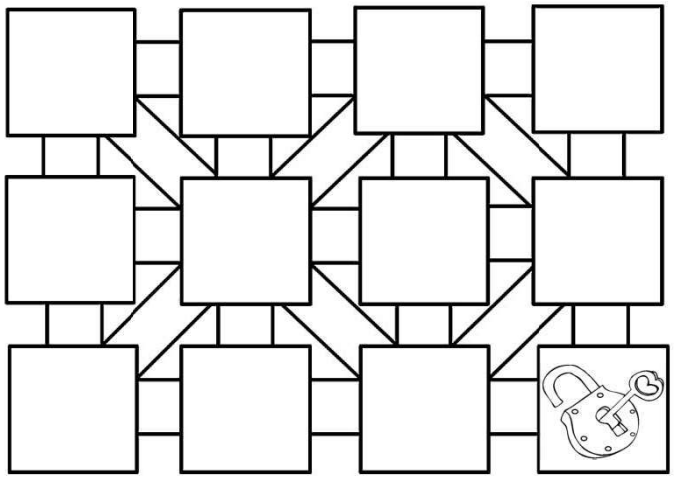
_ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Level 3



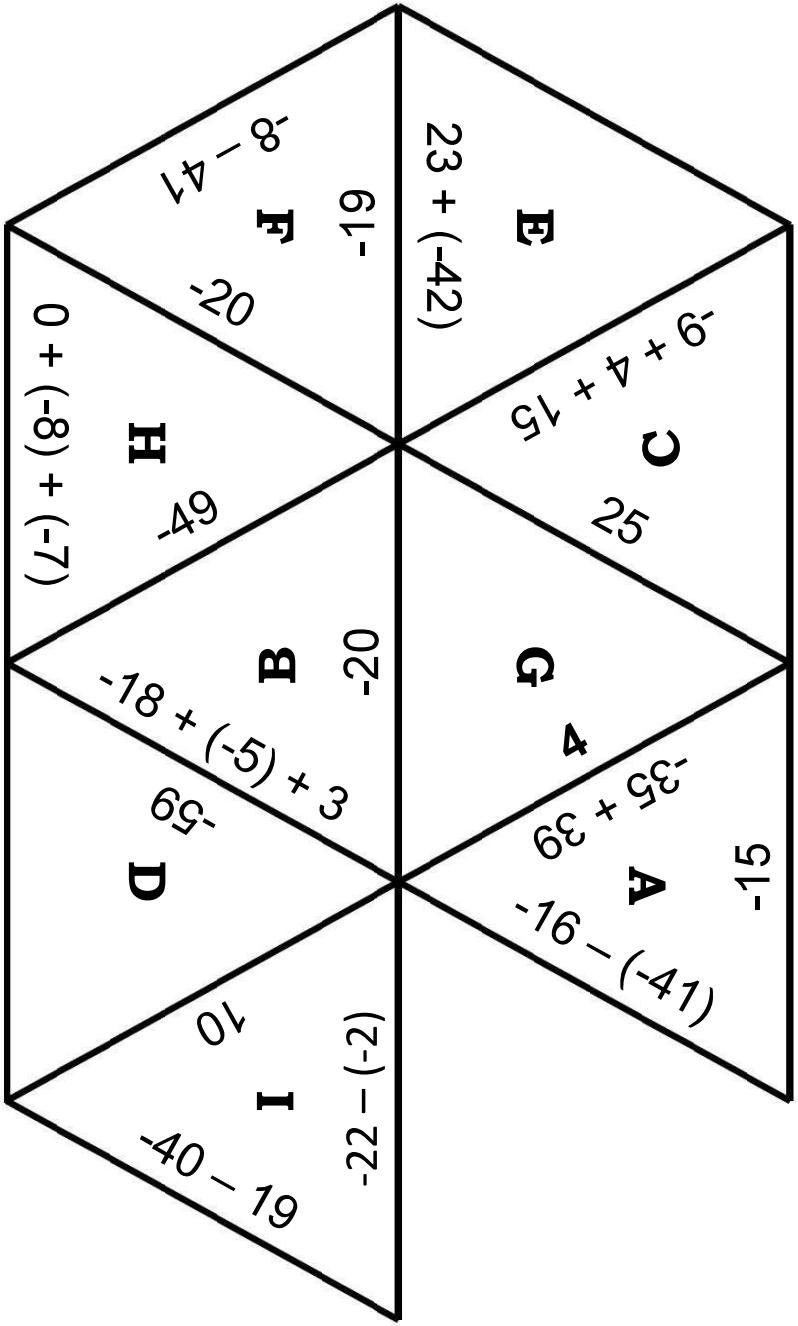
Write the correct letter in each triangle

Level 4

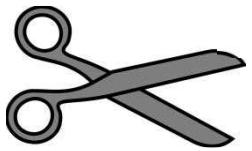
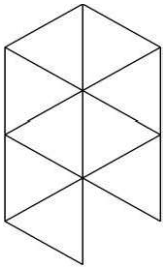


Write the correct pathway of letters to the finish line
Draw arrows between each box

Congratulations, you escaped!

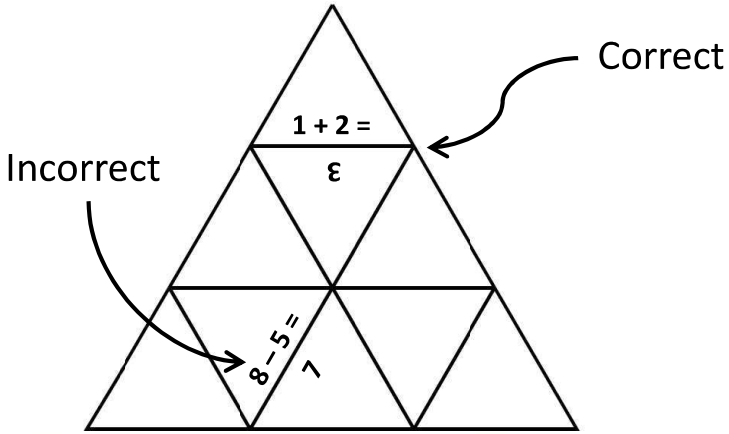


LEVEL 3

1.   apart.

2. Solve the 9 problems.

3. Build a triangle so that each edge has the same answers facing each other.



PROJECT BASED LEARNING

Map Out Your Future!

College, career, buying a house, and more to dream BIG about!

Which college will you choose? What makes it the best choice?

_____
_____
_____
_____
_____
_____
_____

What will be the cost of attending this college for 4 years?

Estimated total cost: _____

Name: _____

The Future is BRIGHT

It's time to think about your future! Let's start with college. Not everyone chooses to attend college, but some day you might decide to! Choose 3 colleges to research and fill in the table below.

	Choice #1:	Choice #2:	Choice #3:
College Name:			
Located in:			
Mascot:			
Cost of Tuition:			
Cost of Room and Board:			
# of Students:			
Distance from Home:			

$$$

If you are making the average salary for your career, what will you get paid each month?

(Gross Pay) _____

Not all of that money goes into your pocket. Some of it gets taken out. Use the chart below to calculate how much money is taken out for each category:

4% State Taxes	11% Federal Taxes	6% Social Security	2% Medicare

How much money is left over each month after the above amounts are taken out of your pay check?

(Net Pay) _____

Off to Work!

	Career Choice #1:	Career Choice #2:	Career Choice #3:
Career:			
Average Salary:			
Degree Needed:			

Which career will you choose? What makes it the best choice?

_____

_____

_____

_____

_____

_____

The Future is

BRIGHT:

Part 2

Browse the Cars for Sale advertisements. Find three cars you would be interested in buying some day. Record information about each card below:

	Choice #1:	Choice #2:	Choice #3:
Car Type:			
Monthly Price:			
Mileage:			

Circle your favorite choice!

HOUSES FOR SALE

	House #1:	House #2:	House #3:
Purchase Price:			
Estimated Monthly Payment:			
# of Bedrooms:			
# of Bathrooms:			
Located in:			
Year Built:			

www.realtor.com

Putting it All Together: Budget

Monthly Salary: _____

Item:	Cost:
Student Loan Payment: (about 1% of your college's yearly tuition)	
Car Payment:	
House Payment:	
Utilities (Electric, Gas, Water):	$135 (estimated cost)
Internet:	
Cable TV:	
Gasoline:	$100 (estimated cost)
Food:	
Health Insurance:	$75.00 (estimated cost)
Total:	

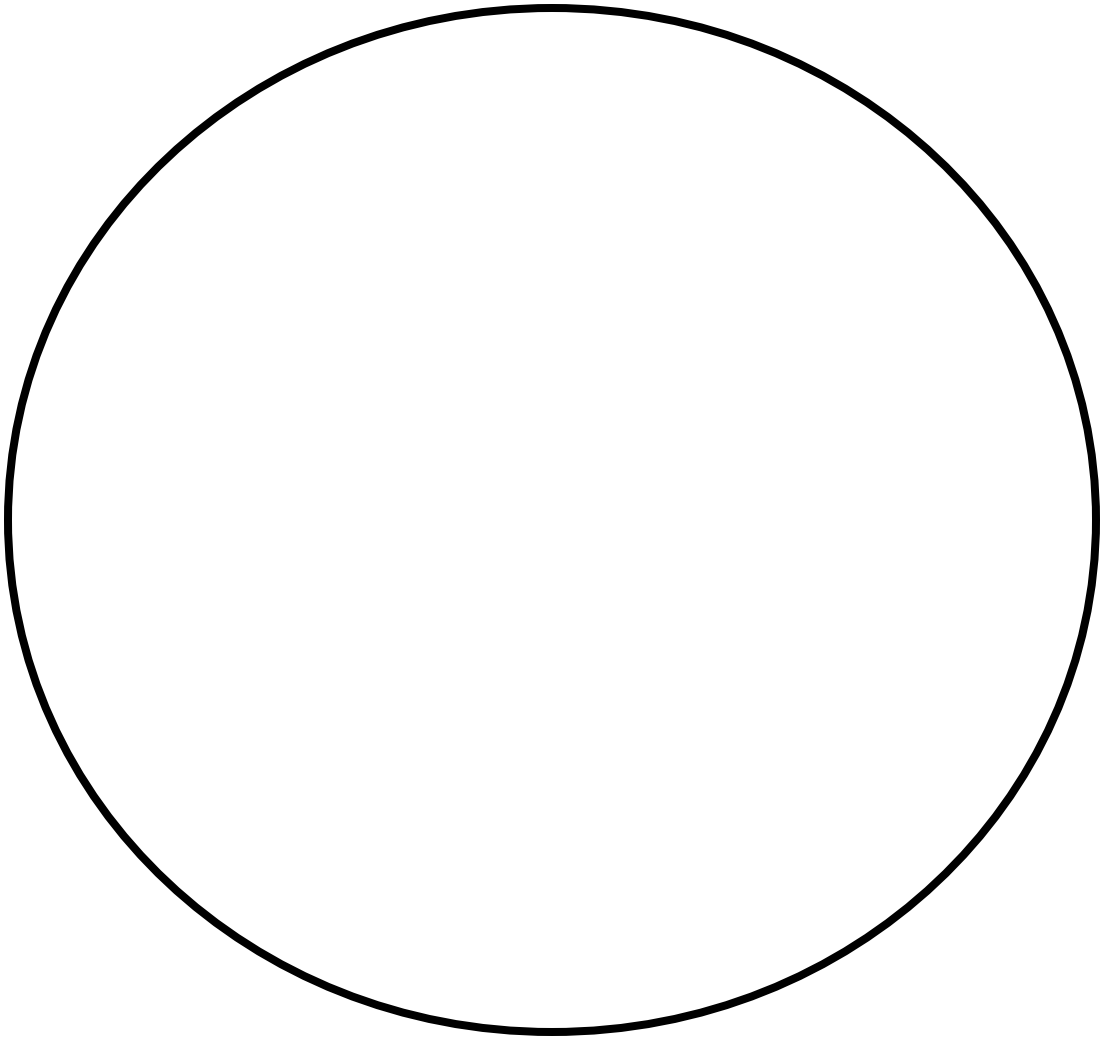
How much money will you have left over to put into savings each month? _____

How much "fun" money will you have left over each month? (Money to go to movies, go out to dinner, etc.) _____

How could you cut costs in order to save more money?

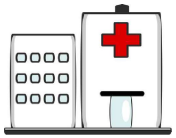
Monthly Expenses

Using your budget, create a pie graph to show how much of your monthly paycheck you are spending in different areas. In the key, calculate what fraction of your total paycheck is taken up by each expense. Don't forget to give each item its own color or design!



KEY

Life Events

Congratulations! You had twins! Your hospital bill comes to: $8,200	Your car breaks down on the way to work. Your bill from the mechanic comes to: $1,300
Uh-oh! The heater in your house has gone out. A new one will cost you: $4,165	OUCH! You have kidney stones! You have to visit the emergency room. Your bill comes to: $1,250 
Congratulations! You had a baby girl! The hospital bill comes to: $6,500	Your roof is leaking! It's time to replace it. A new roof will cost you: $5,300
Your daughter needs a computer to do her homework for school. The total comes to: $970	You come home to discover your house has been robbed! The cost of repairs comes to: $1,780

LIFE HAPPENS!

Get a Life Event from your teacher. Answer the questions below.

What will this life event cost you?

_____

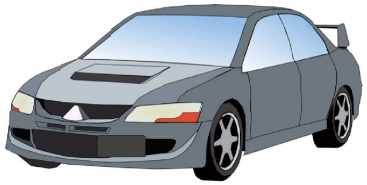
Do you have enough money left over in your budget to cover these costs?

How many months of savings will it take you to pay for this life event?

What will you do if you can't afford this life event?

How will you help yourself be more prepared for future life events?

Cars for Sale



Stylish Sedan

Color: Charcoal Gray
Miles: 12,000
Price: $2,160 per year*

**for a 5-year payment plan*

Lean Green Machine

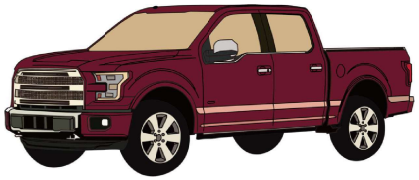
Color: Forest Green
Miles: 47,000
Price: $1,788 per year*

**for a 5-year payment plan*

Old Pickup

Color: Pearl White
Miles: 125,000
Price: $1,284 per year*

**for a 5-year payment plan*



Big-n-Tough Truck

Color: Maroon
Miles: 1120
Price: $3,408 per year*

**for a 5-year payment plan*

Cars for Sale

Smart Car

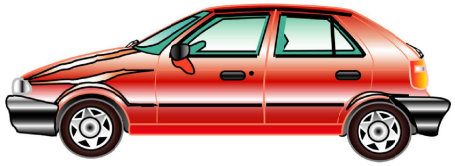
Color: Lime Green
Miles: 3,100
Price: $1,176 per year*

**for a 5-year payment plan*

Old Classic

Color: Cherry Red
Miles: 116,000
Price: $1,044 per year*

**for a 5-year payment plan*



Hatchback

Color: Fire Engine Red
Miles: 18,000
Price: $1,344 per year*

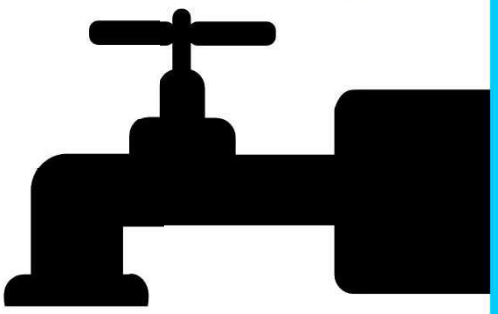
**for a 5-year payment plan*

Sports Car

Color: Metallic Purple
Miles: 600
Price: $4,440 per year*

**for a 5-year payment plan*

WATER RIGHTS



21st Century 21 Math Projects

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BOTTLED WATER BY THE NUMBERS

Name _____ Date _____

If you walk through a public place, you will likely see bottles of water all around. In recent years, there is a growing controversy about the bottled water industry and the perceived quality of tap water. Studies have shown that tap water is usually as healthy as their bottled counterparts, have more stringent safety clearances and costs far less. Taste tests confirm that people generally prefer the taste of tap water. This is not to diminish the importance of bottled water because in many regions around the world people do not have access to safe drinking water. However, in communities with safe drinking water many are beginning to ask the question: "Why pay for and use all these bottles?"

Using the information below from the EPA and PackH20, rewrite their water fact sheet into algebraic expressions or equations. Use the expression or equation to evaluate it for a situation.

FACT #1	Bottled water is 2000 times the cost of tap water.
EXPRESSION/ EQUATION	**(EVALUATE)** It is recommended to drink eight glasses of water every day. With tap water this would cost $0.49 a year. How much would this cost if a person only purchased bottled water?
FACT #2	Americans buy 500,000,000 bottles of water every week.
EXPRESSION/ EQUATION	**(EVALUATE)** How many bottles of water would Americans use in 52 weeks?
FACT #3	1,530 plastic bottles are produced with every barrel of oil.
EXPRESSION/ EQUATION	**(EVALUATE)** It takes 1,300,000 barrels of oil to power 100,000 cars for a year. How many bottles would be made for 1,300,000 barrels of oil? Is this more than the total number of bottles from Fact #2?

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FACT #4	In 2012, only 23% of all bottles are recycled.
EXPRESSION/ EQUATION	**(EVALUATE)** In 2012, the average American used 167 bottles of water. How many were recycled?
FACT #5	A filtered pitcher can replace bottles of water for $0.19 a day.
EXPRESSION/ EQUATION	**(EVALUATE)** How much would it cost on average to use a filtered pitcher for 30 days?
FACT #6	It takes three times the amount of water to create the bottle than it does to fill it.
EXPRESSION/ EQUATION	**(EVALUATE)** If a bottle of water holds 16.8 ounces, how much water would be needed to create the bottle?

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WATER RIGHTS

Name _____ Date _____

Is access to safe and reliable drinking water a human right?

Is water a commodity or a shared natural resource?

As of today there are 1.1 billion people who do not have access to safe drinking water and researchers estimate that by 2025 there will be 3 billion people who will live in "water-stressed regions". The problem is two-fold. One, some regions and cities do not have the necessary infrastructure to provide this service to their people. Two, given today's pollution and the increased demand for water, some areas that previously had safe drinking water may lose it.

In the assignment, you will analyze the present reality, the challenges of water collection and the long-term health effects of today's water issues. Using the information below from the EPA and PackH20, rewrite their statistics into algebraic expressions or equations. Use the expression or equation to evaluate it for a situation.

THE REALITY

1.	4,900 children under the age of 5 die per day due to water and sanitation problems.	EXPRESSION
	How many children under the age of 5 die per year due to water and sanitation problems? Per 10 years?	EVALUATE
	How many days will it take for there to be 1,000,000 child deaths?	SOLVE
2.	30,000 people die every week from diseases caused by unsafe water and unhygienic living conditions.	EXPRESSION
	How many people die from diseases caused by unsafe water and unhygienic living conditions in one year? In 5 years?	EVALUATE
	How many weeks will it take for there to be 1,000,000 deaths?	SOLVE

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THE REALITY

3.	A shower uses about 7.5 gallons of water every minute.	EXPRESSION
	How many gallons of water does a 5 minute shower take?	EVALUATE
	The average person in a slum in a developing region uses 1.32 gallons (5 liters) of water every day. How long of a shower would it be to use 1.32 gallons?	SOLVE
4.	The average household's water leaks can account for 10,000 gallons of water wasted every year.	EXPRESSION
	If there are 115,000,000 households in the United States, how many gallons of water are wasted?	EVALUATE
	How many households will it take to waste 2,000,000,000,000 gallons of water?	SOLVE
5.	In the United States each person uses more than 185 gallons of water each day.	EXPRESSION

In the table below, use the information to write an expression for the water use of each country. Solve the expression equal to 185 gallons to determine how many days it takes people in other countries to use one American's daily supply of water.

COUNTRY	DAILY WATER USAGE (IN GALLONS)	EXPRESSION	SOLVE = 185 gallons
BANGLADESH	14.8		
CHINA	48.4		
EGYPT	101.5		
ETHIOPIA	5.5		
INDIA	64.9		
MEXICO	89.6		
NIGERIA	5.1		
SENEGAL	7.6		
SOUTH AFRICA	43.1		

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COLLECTING

Around the world, families spend large portions of their day collecting water from local sources, boiling it and using it. This responsibility generally falls on women and children.

1.	76% of the time women and children are the ones who face the burden of carrying water. In a village of 500 people, approximately how many women and children carry the water?	EXPRESSION EVALUATE
2.	Women in water-stressed regions walk on average 3.5 miles every day to get water to their homes. How many miles would a person walk in 365 days? How many days would it take to carry water 500 miles?	EXPRESSION EVALUATE SOLVE
3.	The average daily carrying time is 18 minutes. How many minutes would a person carry water in a week? How many days would it be until a person carried water for 24 hours?	EXPRESSION EVALUATE SOLVE

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HEALTH EFFECTS

With the responsibility of carrying water long distances, many people develop ways to do this with the least burden. In many societies, women and children balance the water containers on their head. This has become a cultural norm in many parts of the world, but it often results in neck and back pain for the carrier.

The lack of access to water also dramatically increases a person's chance of diseases like scabies, skin sepsis, ulcers and leprosy. Additionally, when the water that is available is not safe, water-borne diseases such as cholera, typhoid, dysentery and hepatitis increase

1.	69% of all water carriers report neck or back pain. If there are 9,000,000 people who carry water in Senegal, how many people would report neck or back pain?	EXPRESSION EVALUATE
2.	The average distance that a full water container is carried is 1104 feet. If a person makes 18 trips of water in a week, how many feet will they travel with a full container? How many trips would it take to travel 5,280 feet (1 mile)?	EXPRESSION EVALUATE SOLVE
3.	A woman on average makes three trips for water during a day, but usually collects less water on each trip. On the first trip the water container weighs x lbs. On the second trip, it weighs half of the first trip. On the third trip, it was half of the second trip. The average water container weighs 44 pounds. If this is the weight of the first trip, what was the total weight of the three trips during the day?	EXPRESSION EVALUATE
4.	There are 2,460,000 student absences each day from water related illness. How many student absences are there in 180 days (approximately one school year)? How many days would it take to have 1,000,000,000 absences?	EXPRESSION EVALUATE SOLVE

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CARRYING THE LOAD

Name _____ Date _____

What is it like to carry a container of water for your family? You will soon find out. This is the reality for billions of people every single day. In this activity, you will carry a load of water a predetermined distance. You will be timed to determine how long it takes you to do this. As a point of reference, the average water carrier will carry a total of 132 pounds of water in a single day.

VARIABLES

X =	feet	Y =	times	P =	lbs	t =	seconds

QUESTIONS

1.	You will travel x feet to carry water to your family y times every day. What are the total feet that you will travel?	EXPRESSION
	How far would you travel in 30 days?	EVALUATE
2.	You will carry a container that weighs p pounds y times a day. What is the total amount of weight that you will carry?	EXPRESSION
	How many total pounds of water would you carry in 7 days?	EVALUATE
3	It will take you t seconds to carry the water, which you will do y times a day. What is the total amount of time you will be carrying water?	EXPRESSION
	How many hours would you spend carrying water in a year?	EVALUATE

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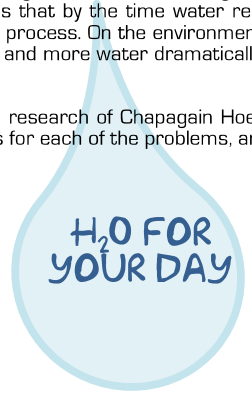
WATER CONSERVATION

Name _____ Date _____

Community-wide water shortages are becoming more common across the country. Often we take for granted filling a glass of water, flushing a toilet and taking showers. The truth of the matter is that by the time water reaches our faucet that is only the end of an elaborate, energy-consuming process. On the environmental side of the issue, freshwater supplies are limited and pumping more and more water dramatically changes the ecosystem.

In this project, use the Water Conservation Tables from the research of Chapagain Hoekstra, the director of the Water Footprint Network, to write expressions for each of the problems, and use the expression to evaluate it for a situation.

DAILY ACTIVITY	WATER USED ON AVERAGE (IN GALLONS)
Flush Toilet	6
Load of Laundry	35
Run Dishwasher	20
Take a Bath	50
Take a Shower	37.5
Wash Dishes by Hand	20
Water a Small Lawn	35



1.	a) The water usage of flushing the toilet and taking a shower.	EXPRESSION
	b) Jenna flushes a toilet seven times and takes one shower. How much water does she use?	EVALUATE
2.	a) The water usage of washing dishes by hand and taking a bath.	EXPRESSION
	b) Aiden washes dishes by hand three times and takes one bath. How much water does he use?	EVALUATE
3.	a) The water usage of laundry, running the dishwasher and watering a small lawn.	EXPRESSION
	b) Djamil runs three loads of laundry, two loads of dishes and waters his lawn once. How much water does he use?	EVALUATE
4.	Write your own:	EXPRESSION
		EVALUATE

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H_2O FOR THE FARM

In order to raise animals or grow crops, many gallons of water are used. In the table are the estimated amounts of water to produce a single pound of each product.

Food Product	Estimated Amount of Water to Produce (in gallons/pound)
Beef	1,558
Corn	60
Eggs	180
Milk	84
Pork	467
Poultry	288
Rice	192
Soybeans	228
Wheat	102

1.	a) The amount of water to produce beef.	EXPRESSION
	b) The average cow produces 475 pounds of beef. How many gallons of water is estimated to be needed to raise a cow?	EVALUATE
2.	a) The amount of water to produce corn, soybeans and wheat.	EXPRESSION
	b) A restaurant orders 35 pounds of corn, 15 pounds of soybeans and 80 pounds of wheat. How much water does this use?	EVALUATE
3.	a) The amount of water to produce poultry and rice.	EXPRESSION
	b) Sariah's mom uses three pounds of poultry and one pound of rice for a family dinner. How much water does this use?	EVALUATE
4.	Write your own:	EXPRESSION
		EVALUATE

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H_2O FOR YOUR PLATE

In order to produce and transport products, many gallons of water are used in the production cycle. In the table are the estimated amounts of water to produce a single pound of each product.

Food Item	Estimated Amount of Water to Produce (in gallons)
Apple (1)	18
Apple Juice (1 glass)	50
Bread (1 slice)	10
Cheese Pizza	317
Coffee (1 cup)	37
Egg (1)	36
Hamburger	634
Milk (1 glass)	53
Potato	7
Potato Chips (Bag)	49
Tomato (1)	3

1.	a) The amount of water to produce coffee and an egg.	EXPRESSION
	b) Before work, Paulina drinks two cups of coffee and eats three eggs. How many gallons of water is estimated to be needed for this?	EVALUATE
2.	a) The amount of water to produce cheese pizza and milk.	EXPRESSION
	b) A family orders 5 cheese pizzas and has 10 glasses of milk for a party.	EVALUATE
3.	a) The amount of water to produce hamburger, tomato, potato chips and apple juice.	EXPRESSION
	b) The Sall family orders 4 hamburgers (with 4 tomatoes), 3 bags of potato chips and one apple juice from a restaurant. How many gallons of water is estimated to be needed for this?	EVALUATE
4.	Write your own:	EXPRESSION
		EVALUATE

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WATER RIGHTS

TAKE ACTION INFOGRAPHIC

Name _____ Date _____

It is clear that one of the most important issues in regard to Water Rights and Conservation is to communicate to the masses that there IS an issue. An infographic is a visual representation of data, graphs and facts. They are often the medium of choice to not only catch someone's eye, but also share important information.

In this project, you will need to use elements from your mathematical research of Water Rights to create an engaging Infographic. You can either create a poster or a power point presentation.

The grade will break down into the following components:

100 Points	the product is informative and outlines the essential issues with water rights	30
	at least 8 pieces of mathematical evidence	25
	at least 4 types of graphs	25
	the product is visually engaging and easy to read	20

Algebra

CSI

CRACKING THE CODE

Equations

THE EVIDENCE

INVESTIGATOR:_____

1.

CLUE

2.

CLUE

3.

CLUE

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4.

CLUE

5.

CLUE

6.

CLUE

CRYPTIC TEXT MESSAGE

SUSPECT

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CSI: Equations

Detectives,

Once again the world has been rocked by a string of high profile robberies. This time it seems the Middle East has been victim of the evil genius group, the Mathemagicians. Notes signed "Kareem Al-Jabr" have been discovered at each of the robbery sites. The codename "Al-Jabr" is the Arabic word that algebra comes from. Because of Kareem, we suspect the criminal enjoys basketball. Once again a cryptic text message was sent, but requires the puzzles to be cracked. We believe the Mathemagicians have been successfully piecing together a world-conquering device.

Again we've been told the result of the cryptic text message will calculate to Kareem Al-Jabr's favorite number. Thus far there are six suspects that police have questioned. It is hoped that someone with a relatively strong number sense can crack some codes that have puzzled the detectives on the case so far.

Your job is to bring Kareem Al-Jabr to justice and save the planet. You need to be prepared to state your case and demonstrate your understanding of the following skills that Al-Jabr is known to use in his notes.

- Solving One and Two Step Equations
- Solving Multi-Step Equations
- Translating Equations
- Using Formulas

In your investigation, be sure to show all of your work. We need to have clear evidence that supports your calculations and conclusions. This is not a time to be sloppy. The slightest miscalculation or illegible footnote could result in a not guilty verdict.

Oh, did I mention that use of a calculator might prematurely set off his world conquering device? Good luck to you, gumshoe.

Chief Harris

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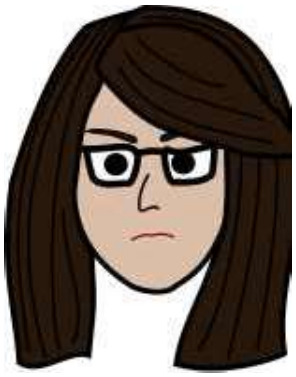
THE SUSPECTS

Who is Kareem Al-Jabr?

Name	Bao
Occupation	Insurance Agent
Favorite Number	290

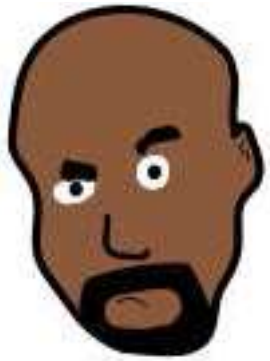
Name	Trish
Occupation	Lawyer
Favorite Number	0

Name	Chloe
Occupation	High School Teacher
Favorite Number	97



Name	Eugene
Occupation	Musician
Favorite Number	1/4

Name	Darryl
Occupation	Optometrist
Favorite Number	9



Name	Hiram
Occupation	Grocer
Favorite Number	-210

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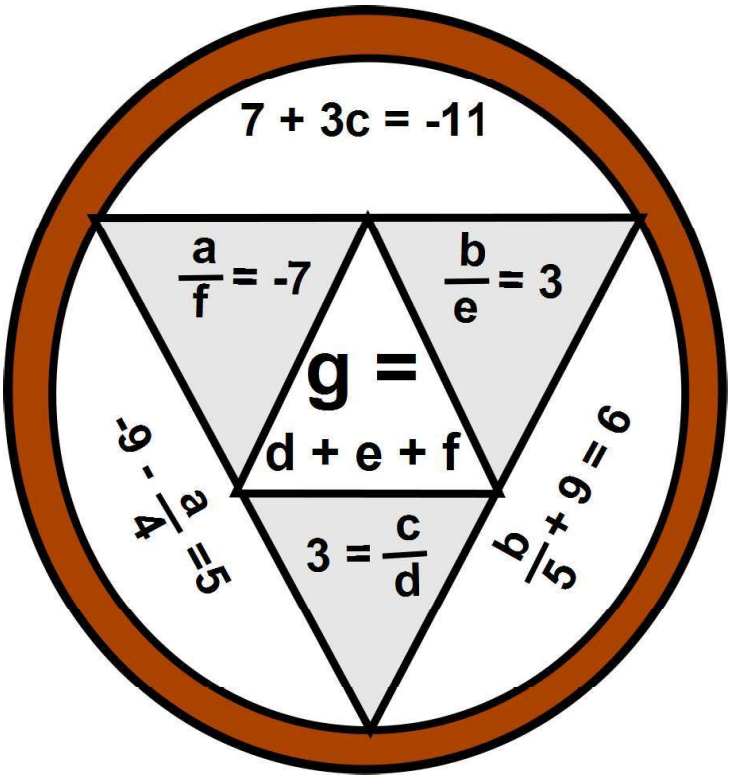
Scene #1 Egyptian Museum -- Cairo

In the middle of the night, Kareem Al-Jabr softly repelled into the heavily alarmed security system. Al-Jabr most definitely has soft feet and great swag. He left with hundreds of coins from the ancient world.



These coins look really, really old. I'll be sellin these on eBay, check out my listings @WorldlySwagg14. I'm about to knock over the home of Algebra! Come enjoy the ride with me?

Can you find the value of g in the center?

g = ____

Scene #2 National Museum of Iraq - Baghdad, Iraq

A baked clay tablet with Hammaurabi's Code was found astray this morning. It appears Kareem Al-Jabr was attempting to translate the document.

While my Akkadian is a little rusty, my swagg tells me rule 204 says:

"WHAT YOU DO TO ONE SIDE YOU BETTER DO TO THE OTHER SIDE. OTHERWISE YOUR HAND WILL BE CUT OFF."

Solve each equation to solve for t.

i. $3a - 5 = 7a - 33$	**ii.** $28 - 2.2b = 11.6b - 54.8$	**iii.** $8c + 12 = 7c + 9$
iv. $a + ct = b + t$	**t = ____**	

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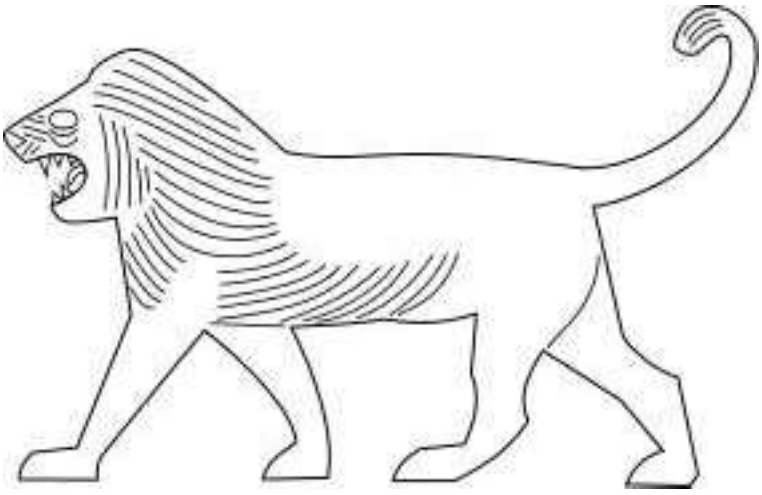
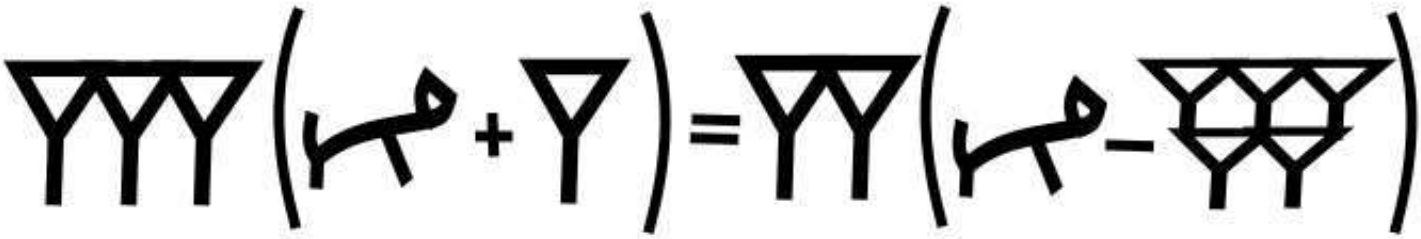
Scene #3 Ancient Babylon -- Iraq

Etched into the grounds of Babylon, Kareem Al-Jabr left the this note. It's suspected he used Babylonian numerals.



I was going to etch this a few spots over, but it seems the US military built a helipad in Babylon. Good thing it's not an ancient civilization that should be cherished forever. Well at least they didn't crush the ground with their tanks. Oh wait, are those tank tracks?

See if you can solve this puzzle from the ruins.



=_____

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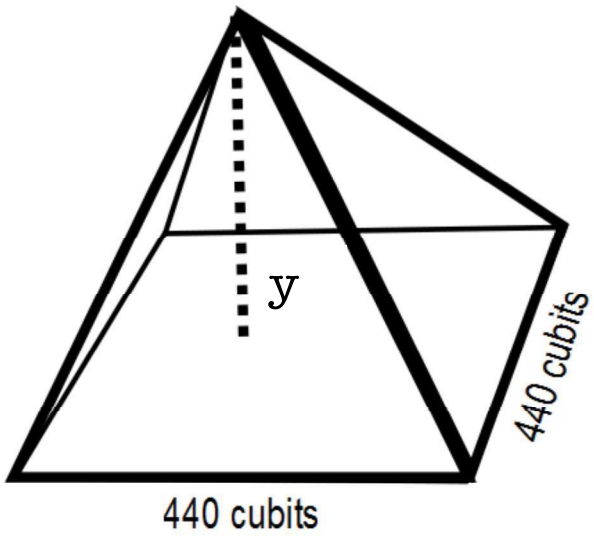
Scene #4 The Great Pyramids -- Giza, Egypt

Kareem Al-Jabr snuck past Pyramid Security at an unspecified time. While we are unsure what he stole, we are in the process of taking inventory of all the mummies.



Hmmm...so sure the algebra stuff isn't that hard. Let's see if you can handle some swagg-rific geometry.

The volume of the pyramid is 18,069,333.33333 cubits^3

How tall is it? I'll be a nice person. Here's the formula for the volume of a pyramid: V = (1/3)lwh

(Round your answer to the nearest whole number)

y = _____

Scene #5 Sphinx -- Giza, Egypt

We suspect after his robbery at the pyramid, Al-Jabr went outside, ate a picnic lunch, and climbed the Sphinx. Our research team suspects Al-Jabr stole a limestone fragment of the Sphinx's beard.

I so stole a piece of that dude's beard. Check this out, here's some good ol' Egyptian math right off the Rhind Papyrus! I stole that too!

PROBLEM 44.

THE SUM OF A QUANTITY "P" TOGETHER WITH ITS TWO-THIRDS, AND ITS HALF BECOMES 234.

What is the quantity "p"?

p = _____

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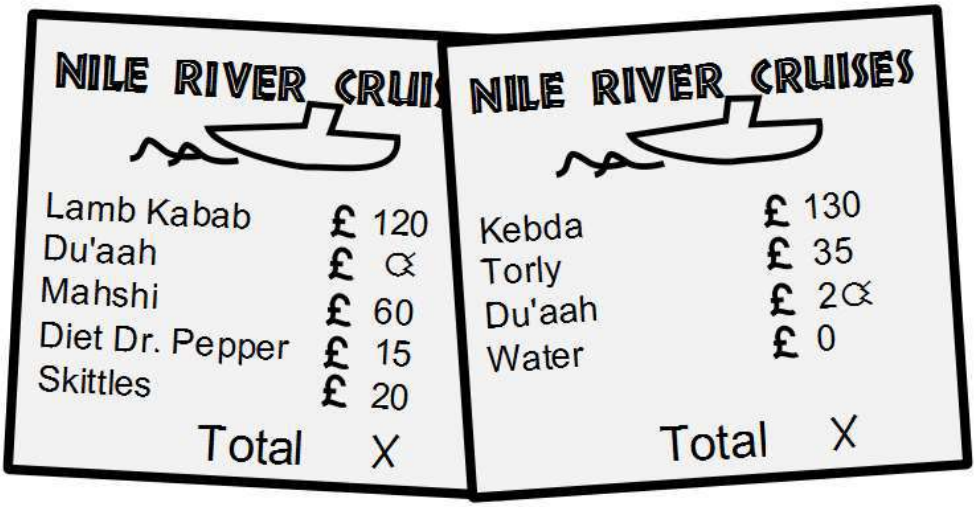
Scene #6 Nile River Cruise -- Alexandria, Egypt

After the pair of robberies at Giza, Al-Jabr hopped on a Nile River cruise. He stole a dangerous amount of shampoo.

Livin it up on the Nile. Gotta go get my swaggilicious self on the dance floor. Check out these two receipts – I had to pay with Egyptian Pounds after my Swaggcard got denied.



What a coincidence! Both receipts totaled to the same amount... X. I really wish I knew how much a Du'aah cost. They were yummy.

☪ = _____

CRYPTIC PUZZLE SOLVER TEXT MESSAGE

check dis out. You got no chance.

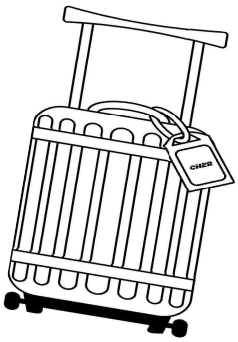
☪ ÷ G + Y – P • T + ☭

Kareem 'Master of Swagg' Al-Jabr

© Clark Creative Education

Summer Road Trip

Real Life Math



Debbie is planning a summer road tip across the United States! Using your knowledge of ratio, rates, proportions, and percents, you will help Debbie with the following tasks:

Task #1 : Calculating Total Miles Traveled

Task #2: Choosing a Car Rental

Task #3: Snack Shopping

Task #4: Calculating Hotel Costs

Task #5: Problems Involving City Attractions

Task #6: Calculating Miscellaneous Expenses

Name: _____

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Miles Traveled

Debbie pulls out her map to figure out how many miles she will be traveling. The map below says that 1 cm = 204 miles. Debbie doesn't yet know the exact route she will take to each place, but she wants an estimate of the distance between each city. Making a straight line from one city to the next, use a ruler to find the actual distance in miles. Estimate your measurement to the nearest quarter of a centimeter.

#1: San Diego to Albuquerque:	#2: Albuquerque to Omaha
#3: Omaha to Chicago	#4: Chicago to Nashville

Total Miles: _____

1 cm = 204 mi

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Car Rental

Debbie will be traveling for 16 days and needs to decide on a car rental. Below are her options. Help Debbie figure out her least expensive option based on rental costs and how much she will be spending on gas if the national average is $2.85 per gallon. Debbie plans to only use the car to travel from one city to the next. Once in the city, she will be using public transportation. Calculate the cost of each of her options (including gas).

Nissan Versa	Toyota Prius	Jeep Wrangler
* $37/day *This is the cost for a maximum of 200 miles in day. Any distance beyond 200 miles is charged $0.25 per mile (for that day) * 39 miles per gallon	* $44/day *Unlimited daily miles. * 50 miles per gallon	* $65/day *This is car rental is 40% off it's listed price because it is the Manager's Special for the month of June *Unlimited daily miles. * 25 miles per gallon

Debbie should rent the:_____

Her total cost will be:_____

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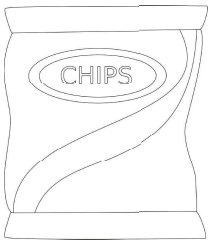
Snack Shopping

Debbie wants to stock up on her favorite snacks before heading out on her trip. At the grocery store there are choices about which size to purchase. Debbie decides that's she will purchase whichever size is the better deal based on its unit cost. Find the unit cost of each option below and help Debbie purchase her snacks.

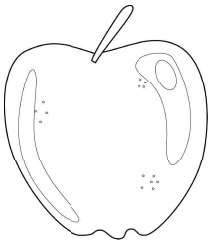
CHIPS



☐#1: 10 oz for $2.99

☐#2: 15 oz for $3.99

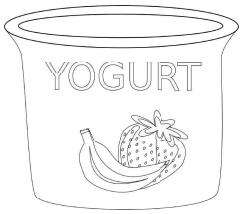
APPLES



☐#1: A bag of 10 apples for $7.99

☐#2: A bag of 14 apples for $9.99

YOGURT



☐#1: 16 oz cup for $2.50

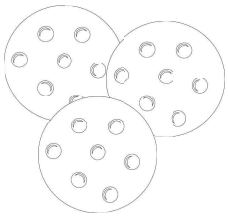
☐#2: 24 oz cup for $4.25

WATER

☐#1: 24 bottles for $3.49

☐#2: 36 bottles for $5.99

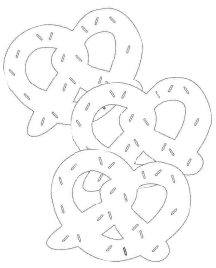
COOKIES



☐#1: 20 cookies for $5.75

☐#2: 30 cookies for $7.50

PRETZELS



☐#1: 8 oz bag for $4.50

☐#2: 14 oz bag for $5.89

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Hotel Cost

Debbie needs to know how much money she is spending on hotels. Below is the information for the hotel rates where she has chosen to stay in each city. She will stay at each hotel for a total of FOUR nights.
Help Debbie calculate the cost of the hotel stay in each city, then find the total cost.

Albuquerque Hotel $139 per night plus 8% taxes and fees.	**Omaha Hotel** $122 per night plus 9% taxes and fees.
Chicago Hotel $198 per night (Special: 10% off 4th night) plus 8.5% taxes and fees.	**Nashville Hotel** $175 per night plus 9% taxes and fees. $10 parking per day.

Total Hotel Cost:_____

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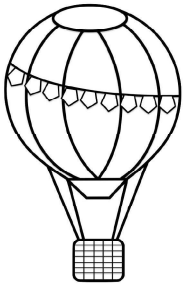
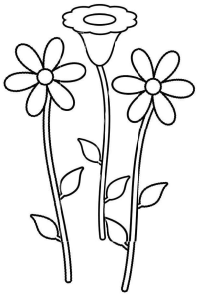
City Attractions:

Debbie is excited to see all the wonderful attractions that all the cities have to offer. Answer the questions below about the attractions that Debbie will be visiting.

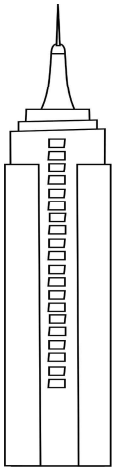
1) Debbie is excited to see the hot air balloons in Albuquerque, New Mexico. She found out that for every 5 balloons in the sky, 2 of them will be rainbow colored. If there are 150 balloons in the sky, how many will be rainbow colored?



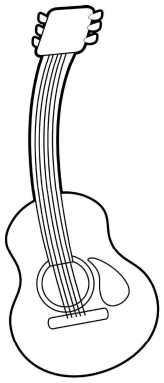
2) Debbie can't wait to see the beautiful flowers at Omaha's Botanical Center. She heard recently that the Center wants a total of 1 million daffodils in its gardens. If they have already planted 52,000 daffodils, what percentage of their goal have they already achieved?



3) Once in Chicago, Debbie plans to visit the Willis Tower; the 2nd tallest building in the Western Hemisphere. It's height is 81.8% of the height of the tallest building in the Western Hemisphere, the One World Trade Center in New York. If the One World Trade Center is 1,776 feet tall, how tall is the Willis Tower (to the nearest foot)?



4) Debbie will be attending a concert at the Grand Ole Opry in Nashville, Tennessee. If the average number of songs performed there in a 10 day period is 167. Approximately how many songs are performed there in a years time?



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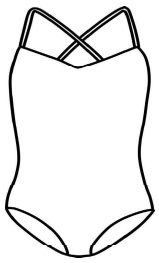
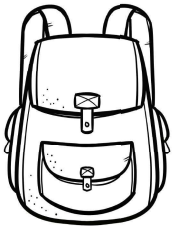
Miscellaneous Expenses

Before leaving on her trip, Debbie has a few last minute things to purchase. Help her figure out the costs below:

Suitcase Debbie found a suitcase that was originally $129, but now is on sale for 30% off. If sales tax is 8.75%, what is her final cost?	Work:
Swim Suit It's summer time, and that means Debbie will be swimming in those awesome hotel pools! The suit she has her eye on was purchased from the store for $16 and marked up 40%. What is the retail price?	Work: 
Shoes With so much to explore in every city, Debbie needs to purchase a new pair of comfy and supportive walking shoes. The shoes she wants just went on sale for $39.99. If they were marked down 20%, what was the original price?	Work:
Backpack Once Debbie arrives in each city, she'll need a backpack to carry around with her. What was the percent markup is a store bought the backpack for $25 and sold it to Debbie for $40?	Work: 

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positive and negative

INTEGERS

Negative Integers are whole numbers less than zero

Positive Integers are whole numbers greater than zero

Zero is neither positive nor negative

Absolute Value

the number of units away from zero on the number line. The number is always positive or zero. The absolute value is shown as X | |

$|20| = 20$ $|-7| = 7$ $|0| = 0$

Opposite Integers

are the same number of units away from zero but are on opposite sides of the number line. One Integer is positive, the other is negative

4 and -4 are opposite integers

-15 and 15 are opposite integers

Name: _____ Date: _____ Period: _____

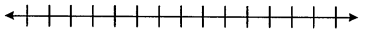
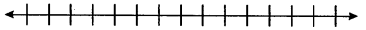
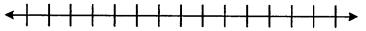
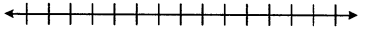
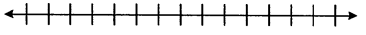
Adding Integers

When adding integers with different signs ask yourself these two questions.
Question 1: What do you have more of positives or negatives?
Question 2: How many more positives or negatives do you have?

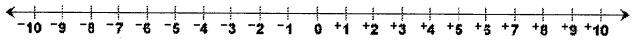
1.) -100 + 36 = _____
2.) 100 + -36 = _____
3.) -100 + -36 = _____
4.) -84 + -96 = _____
5.) -27 + -480 = _____
6.) -7 + 14 = _____
7.) 20 + -10 = _____
8.) -16 + 16 = _____
9.) -14 + 30 = _____
10.) -15 + 16 = _____
11.) -30 + 15 = _____
12.) -18 + 25 = _____
13.) -5 + 15 = _____
14.) -24 + 14 = _____
15.) 14 + -12 = _____
16.) -14 + 8 = _____
17.) -30 + 2 = _____
18.) 15 + -10 = _____
19.) -8 + 14 = _____
20.) 256 + -25 = _____

Adding Integers Number Lines

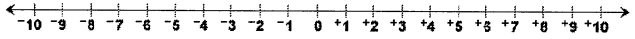
Use number lines and an equation to model each expression.

Expression	Number Lines	Equation
1. (−4) + (−3)		
2. 2 + 7		
3. 3 + (−5)		
4. (−6) + (−3)		
5. (−4) + 4		
6. (−5) + 1		
7. (−8) + 10		
8. 2 + (−8)		
9. (−7) + 2		
10. (−2) + (−2)		

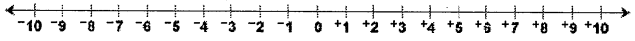
1.) -7 - 3 = _____



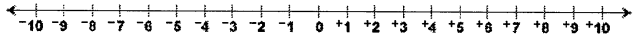
2.) -7 + 3 = _____



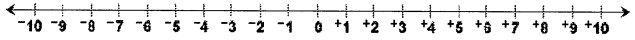
3.) 8 - 13 = _____



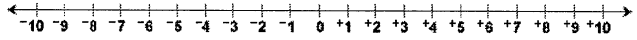
4.) 8 + -13 = _____



5.) 5 - -3 = _____



6.) 5 + 3 = _____



Explain the relationship between problem 1 and 2.

_____

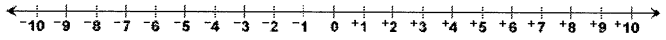
_____

_____

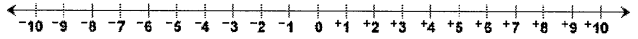
Name: _____ Date: _____ Period: _____

Subtracting Integers with a Number Line

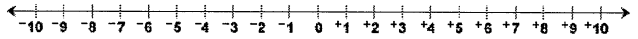
Example 1: 7 - 6 = _____



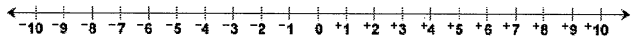
Example 2: 7 + -6 = _____



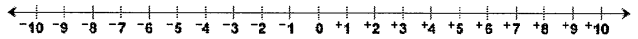
Example 3: 5 - 8 = _____



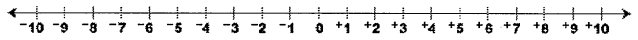
Example 4: 5 + -8 = _____



Example 5: 6 - -2 = _____



Example 6: 6 + 2 = _____



Compare the examples. Do you notice a relationship between them?

21.) The temperature at noon on a winter day was 8° C. At midnight, the temperature had dropped 15°. What was the temperature at midnight? *(Write the equation and solve.)*

22.) An architectural drawing of a building shows the elevation of the basement floor to be -12 feet. The elevation of the roof is 32 feet. What is the total distance from the roof to the basement floor? *(Write the equation and solve.)*

23.) A football team gained 6 yards on a first down, lost 15 yards on the second down, and gained 12 yards on the third down. How many yards do they need to gain on the fourth down to have a 10 yard gain from their starting position? *(Hint: Draw it on a number line.)*

24.) Carla's credit card statement showed that she owed $350. She made a payment of $200, then she charged $23 for gasoline. She returned a sweater she had charged earlier for a refund of $35. Then she charged $15 at the bookstore. What is her new balance?

25.) In 2000, Bob's 401(k) fund lost $9000. In 2001, it lost another $10,000, and in 2002, it lost $17,000. In 2003, it gained $16,000, and in 2004 it gained $12,000. How much more does it have to gain to be worth what it was at the start of 2000?

Name: _____ **Date:** _____ **Period:** _____

Adding Integers

1.) On Tuesday the mailman delivers 3 checks for $5 each and 2 bills for $2 each. If you had a starting balance of $25, what is the ending balance?
A) 26
B) 36
C) -26
D) 6

2.) You owe $225. on your credit card. You make a $55 payment and then purchase $87 worth of clothes at Dillards. What is the integer that represents the balance owed on the credit card?
A) 257
B) 367
C) -367
D) -257

3.) During the football game. Justin caught three passes. One was for a touchdown and went 52 yards. The other was for a first down and was for 17 yards. The other was on a screen pass that did not work so well and ended up a gain of -10 yards. What was the total yardage gained by Justin on the pass plays?
A) -39
B) 59
C) 62
D) 69

4.) A monkey sits on a limb that is 25 ft above the ground. He swings up 10 ft, climbs up 6 ft more then jumps down 13 ft. How far off the ground is the monkey now?
A) 54 ft
B) 31 ft
C) 25 ft
D) 28 ft

5.) Mary has $267 in her checking account. She writes checks for $33, $65, and $112. What is the balance in her account now?
A) -67
B) 67
C) -57
D) 57

Name: _____ **Date:** _____ **Period:** _____

Dividing Integers

1.) GEOLOGY The length of an island is changing at the rate of 17 inches per year. How long will it take for the change in the length of the island to be -255 inches? *(Write the equation and solve.)*

2.) POPULATION The population of a small town is changing at a rate of 255 people per year. How long will it take for the change in population to be -2,040 people? *(Write the equation and solve.)*

3.) DEPRECIATION The value of a piece of office equipment is changing at a rate of -$175 per year. How long will it take for the change in value to be -$1,050? *(Write the equation and solve.)*

4.) Without doing any calculations, Stefani said that the quotients (-252) ÷ (-18) and (+252) ÷ (+18) must be the same. How did she know? *(Answer in a complete sentence.)*

5.) Steven borrowed $12 per month from his mother to pay for the art supplies he needed for an evening class. At the end of the course, he owed his mother $48. How long was the course? *(Write the equation and solve.)*

	Expression	Same or Different Signs	Quotient	Positive or Negative
6.)	20 ÷ - 4			
7.)	6 ÷ - 3			
8.)	- 8 ÷ 2			
9.)	- 9 ÷ - 3			
10.)	- 12 ÷ - 2			

1.) Alice owes $6 to each of her 4 friends. How much money does she owe? *(Write the equation and solve.)*

2.) The temperature drops 2° per hour for 12 consecutive hours. What is the change in temperature? *(Write the equation and solve.)*

3.) Adriana lost 3 pounds per month after she began practicing Pilates. At this rate how many pounds will she lose in the 4 next months? *(Write the equation and solve.)*

4.) In a winder day in Paris the temperature was -4° C at 9 a.m. At dawn, radio announced that the temperature was three times colder. What was the temperature at 6 p.m.? *(Write the equation and solve.)*

5.) EVAPORATION: The height of the water in a tank decreases 3 inches each week due to evaporation. What is the change in the height of the water over a five week period due to evaporation? *(Write the equation and solve.)*

	Expression	Same or Different Signs	Product	Positive or Negative
6.)	5 x - 4			
7.)	2 x - 3			
8.)	- 2 x 4			
9.)	- 3 x - 3			
10.)	- 6 x - 2			

Multiplication Magic

Steps:

1.) Complete the table.
2.) Choose any number and circle it.
3.) Mark out all other numbers in that same row and column.
4.) Now choose another number that has not been circled and cross out all other numbers in that same row and column.
5.) Repeat step 4 until you have circled four numbers.
6.) Find the product of the circled numbers.

x	+ 5	- 1	+ 5	- 4
+ 3				
- 2				
- 4				
+ 2				

The magic product is 4800!

What is your product? _____

Magic Sum

Steps:

1.) Complete the table.
2.) Choose any number and circle it.
3.) Mark out all other numbers in that same row and column.
4.) Now choose another number that has not been circled and cross out all other numbers in that same row and column.
5.) Repeat step 4 until you have circled four numbers.
6.) Find the sum of the circled numbers.

+	+ 30	- 10	+ 40	- 25
+65				
- 15				
- 20				
+ 35				

The magic sum is 100!

Extending Integers

Write an equation and use a vertical number line to match the given situation for problems 5 through 8.

5. An elevator was on the third floor and went down four floors. Where is the elevator?

6. The elevator was two floors down in the basement and went up five floors. Where is the elevator?

7. The elevator was on the first floor and was needed on the second floor down in the basement. How many floors did it need to move and in what direction?

8. The elevator was 1 floor down in the basement and was needed on the second floor. How many floors did it need to move and in what direction?

Extending Integers

1. Use the given clues to identify the three integers. Write an equation to show the sum of the three integers and use a number line to model the equation.

Clue 1: The first integer is 2 units to the left of 0.

Clue 2: The second integer is 2 units less than the first integer.

Clue 3: The third integer is 6 units more than the first integer.

2. Use the given clues to identify the three integers. Write an equation to show the difference of the three integers and use a number line to model the equation.

Clue 1: The first integer is 2 more than negative 7.

Clue 2: The second integer is 4 less than 3.

Clue 3: The third integer is 6 units more than the first integer.

3. Use the given clues to identify the three integers. Write an equation to show the product of the three integers.

Clue 1: The first integer is 4 less than negative 6.

Clue 2: The second integer is 4 less than 23.

Clue 3: The third integer is 8 units more than the first integer.

4. Use the given clues to identify the two integers. Write an equation to show the quotient of the two integers and use positive and negative tiles to model the equation.

Clue 1: The first integer is 14 more than negative 6.

Clue 2: The second integer is 4 less than 2.

5. Gary was reviewing his monthly bank statement. He had three withdrawals of $75, $150, and $425. He had two deposits of $500 and $206. If his balance at the beginning of the month was $29, what is his current balance after the withdrawals and deposits? Write a number sentence to match the situation and solve the problem.

Name: _____ Date: _____ Period: _____

Task Card Activity

Record you answers below.

1.) _____ 2.) _____

3.) _____ 4.) _____

5.) _____ 6.) _____

7.) _____ 8.) _____

9.) _____ 10.) _____

11.) _____ 12.) _____

13.) _____ 14.) _____

15.) _____ 16.) _____

17.) _____ 18.) _____

19.) _____ 20.) _____

1.

Arrange the integers in the set from least to greatest.

12, -3 , 0 , 9, -5, | -3 |

2.

Arrange the integers in the set from least to greatest.

15, -20, -5, | -50 |

3.

Compare the integers using <, >, or =.

-9 ⬭ -5

4.

Compare the integers using <, >, or =.

| -8 | ⬭ -8

5.

Compare the integers using <, >, or =.

24 ⬭ -32

6. The lowest recorded temperature in Alabama was 27° F below zero. In Florida, the lowest recorded temperature was 2° F below zero. The lowest temperature ever recorded in Hawaii was 12° F above zero. Write the names of these three states in order from the highest to the lowest recorded temperatures.

7.

Which of the following situations cannot be represented by the integer 10?

A. a balloon rises 10 ft into the air
B. the stock market gains 10 points
C. the town lies 10 ft below sea level
D. Jon received a gift of $10

8.

Write the integer for the situation.

a deposit of $25

9.

Write the integer for the situation.

a decrease of 35 points

10.

Write the integer for the situation.

forward 5 feet

11.

Write the integer for the situation.

125 ft below sea level

12.

Write the integer for the situation.

discount of $10

13.

Write the integer for the situation.

descending 50 ft

14.

Find the absolute value of the integer.

| 48 |

15.

Find the absolute value of the integer.

| -28 |

16.

Find the absolute value of the integer.

| -9 |

17. Find the absolute value of the integer.

| 100 |

18. Write the opposite of the integer.

74

19. Write the opposite of the integer.

- 4

20. Write the opposite of the integer.

18

Integers at Sea

On a separate piece of paper, draw the ocean (sea level 0 ft). X axis

On the left side of your paper, draw the Y axis (a vertical number line) with 0 feet at sea level. Be sure to look at the largest and smallest numbers you will need to label. Next, label your axis skipping space between integers (each integer represents 1 foot). Watch out for positive and negative integers. You will draw the following items on your picture:

1. A jumping dolphin 3 feet above sea level
2. A whale 20 feet below sea level
3. A buoy at sea level
4. A fish 12 feet below sea level
5. A seagull at 3 feet above sea level
6. A sea horse 8 feet below sea level
7. A man fishing from a boat (The man is 5 feet above sea level, and his hook is 5 feet below sea level)
8. A helicopter 10 feet above sea level
9. A diver 15 feet below sea level
10. A treasure chest 25 feet below sea level (at the bottom of your y axis)

Name: _____

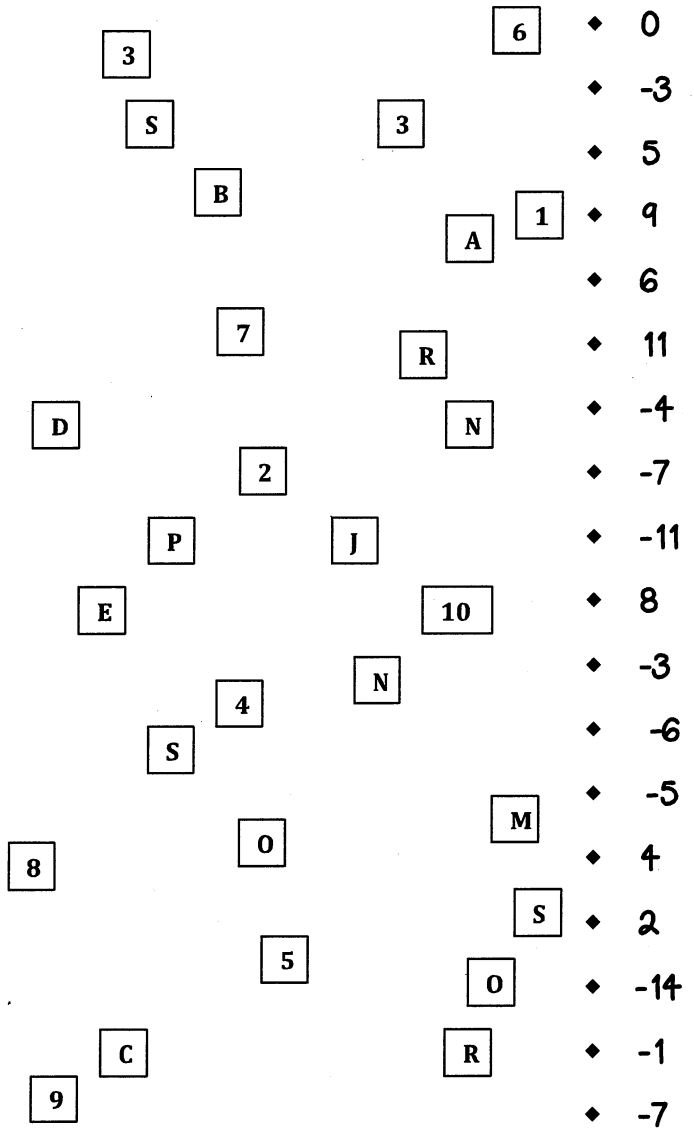
Date: _____ Per. _____

Subtracting Integers - Line Puzzle

Directions: Subtract the integers on the left and match it with the correct number on the right. If a line goes through a number *and* a letter, put the letter in the numbered box below and watch the answer to the riddle appear!

What do you call a dinosaur who is sleeping?

1)	(-3) – (-8)	◆	◆ 0
2)	4 – (-7)	◆	◆ -3
3)	(-6) – (-6)	◆	◆ 5
4)	(-4) – 3	◆	◆ 9
5)	5 – (-4)	◆	◆ 6
6)	(-1) – 2	◆	◆ 11
7)	(-8) – 3	◆	◆ -4
8)	(-5) – 1	◆	◆ -7
9)	6 – (-4) – 4	◆	◆ -11
10)	7 – 6 – (-7)	◆	◆ 8
11)	(-8) – (-3) – (-7)	◆	◆ -3
12)	1 – 3 – 1	◆	◆ -6
13)	1 – 1 – 4	◆	◆ -5
14)	4 – 4 – (-4)	◆	◆ 4
15)	(-8) – 1 – 5	◆	◆ 2
16)	(-6) – (-8) – 7	◆	◆ -14
17)	3 – 2 – 8	◆	◆ -1
18)	6 – 3 – 4	◆	◆ -7



1	2	3	4	5	6	7	8	9	10

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