Be CALM

Operation Sense

Beginning Curriculum for Adults Learning Math

STUDENT PACKET

Public Adult Education of MA
LIVE TO LEARN

SABES

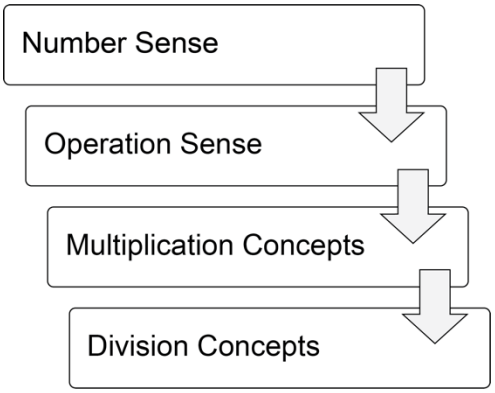
TERC
Because math and science build futures

Created with funding from Public Adult Education of Massachusetts by the SABES Mathematics and Adult Numeracy Curriculum & Instruction PD Team, which is managed by TERC, Inc.

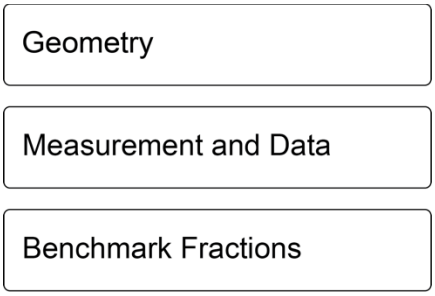
Acknowledgements

The titles in the BeCALM series were developed and piloted in the classroom by Melissa Braaten for the SABES Mathematics and Adult Numeracy Curriculum & Instruction PD Team, with contributions from Yvonne Readdy, Emily Rudd, and Sherry Soares.

The BeCALM series includes four sequential packets:



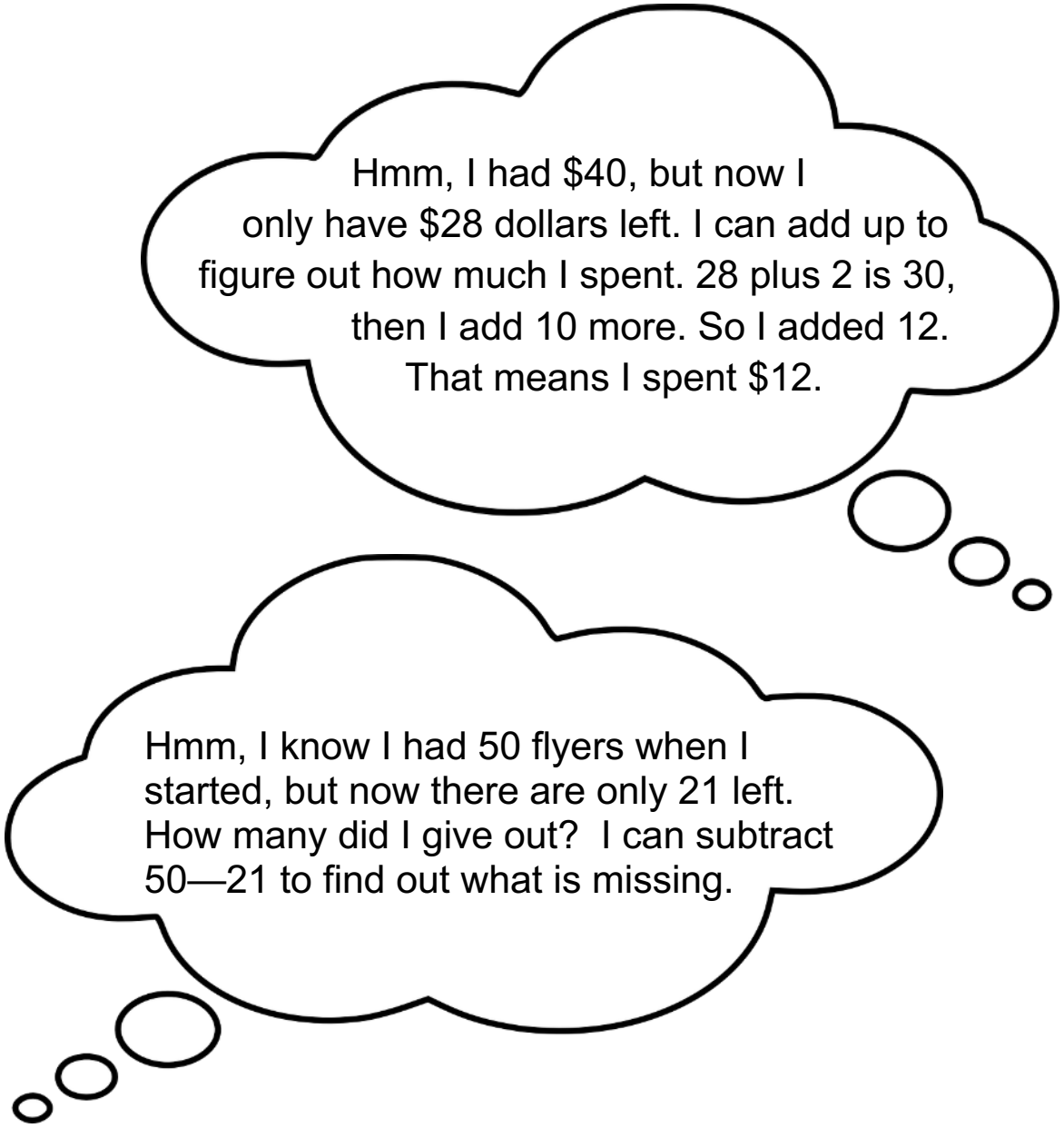
and three non-sequential packets:



Activities from the EMPower™ and EMPower Plus™ series title *Everyday Number Sense: Mental Math and Visual Models* Student Book are used and/or adapted with permission from the author, TERC, Inc.

Operation sense is the understanding of how the basic operations (addition, subtraction, multiplication, and division) are related to each other, and how they are used to solve real world problems.

Operation sense also involves having multiple strategies for performing different operations. The next couple of units will focus on operation sense with addition and subtraction.



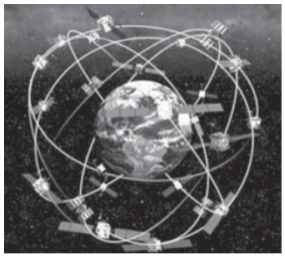
UNIT 1: Hundreds and Thousands

Using Transportation in the U.S.

This article and the one on the following page were published on page 10 of The Change Agent, Issue 43 "Transportation", September 2016.

Not Finding My Way with GPS

By Adnan Mesrabi



GPS uses satellites to calculate your position on Earth.

I had been in this country for only two weeks. It was my first day at the University of New Haven. It was very cold. I did not have a car.

I did not want to miss my first day at the university. I had only one choice: the train. Inside the train, I was comfortable and warm, but outside the train, I was freezing. I used my GPS to get directions to the university, but I forgot to put my GPS on "walk" mode. I left it in "drive" mode.

It took me to Interstate 95. I was very confused, and I was going the wrong way. I did not know what I could do. I decided to return to the train station and wait for my friends to give me a ride.

Adnan Mesrabi is originally from Syria. He left his country in 2012 because of the war. He was a good student. In his last year in high school, he was ranked second in his city. Now he is at student at East Shore Region Adult & Continuing Education in Branford, CT, where he is studying for the TOEFL so that he can go to college.

Sometimes You Just Have to Do It!

By Rose Carmelle Sandy Valcin

When I came to the U.S., my husband said to me, "My love, in America you must be independent. You have to be able to go anywhere, sometimes alone." In my native country, when I wanted to go out, I always found someone to go with me. But in the U.S., people go out alone.

My husband taught me how to drive. I thought it was going to be difficult for me because in America you have to move fast. The day arrived that I had to drive by myself. I had no choice because I had to get the children to school, and my husband had gone to work early. I took the wheel and I drove! I was really excited (because I was going to drive alone) and angry (because I wasn't ready). Obviously, my husband thought differently. Thank God, everything went well. Since that day, I learned how to go everywhere I want without the help of my husband. The ease of private transportation is so good, it makes you independent and always ready to go!

Rose C. Sandy Valcin is 28 years old. She is from Haiti, and she has two handsome boys. She earned a bachelor's degree in business administration in the Dominican Republic. She is fluent in Spanish, French, and Creole. Now, she is learning English at Atlantic Technical College in Fort Lauderdale, FL, so that she can get a better job.

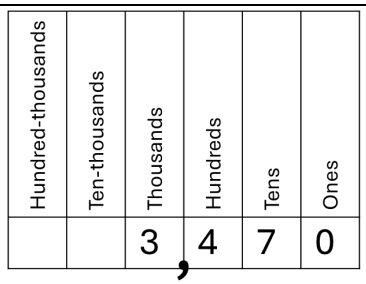
Questions for Discussion

How do you prefer to get to school or work?

How do you prefer to travel?

How has access to transportation affected your life?

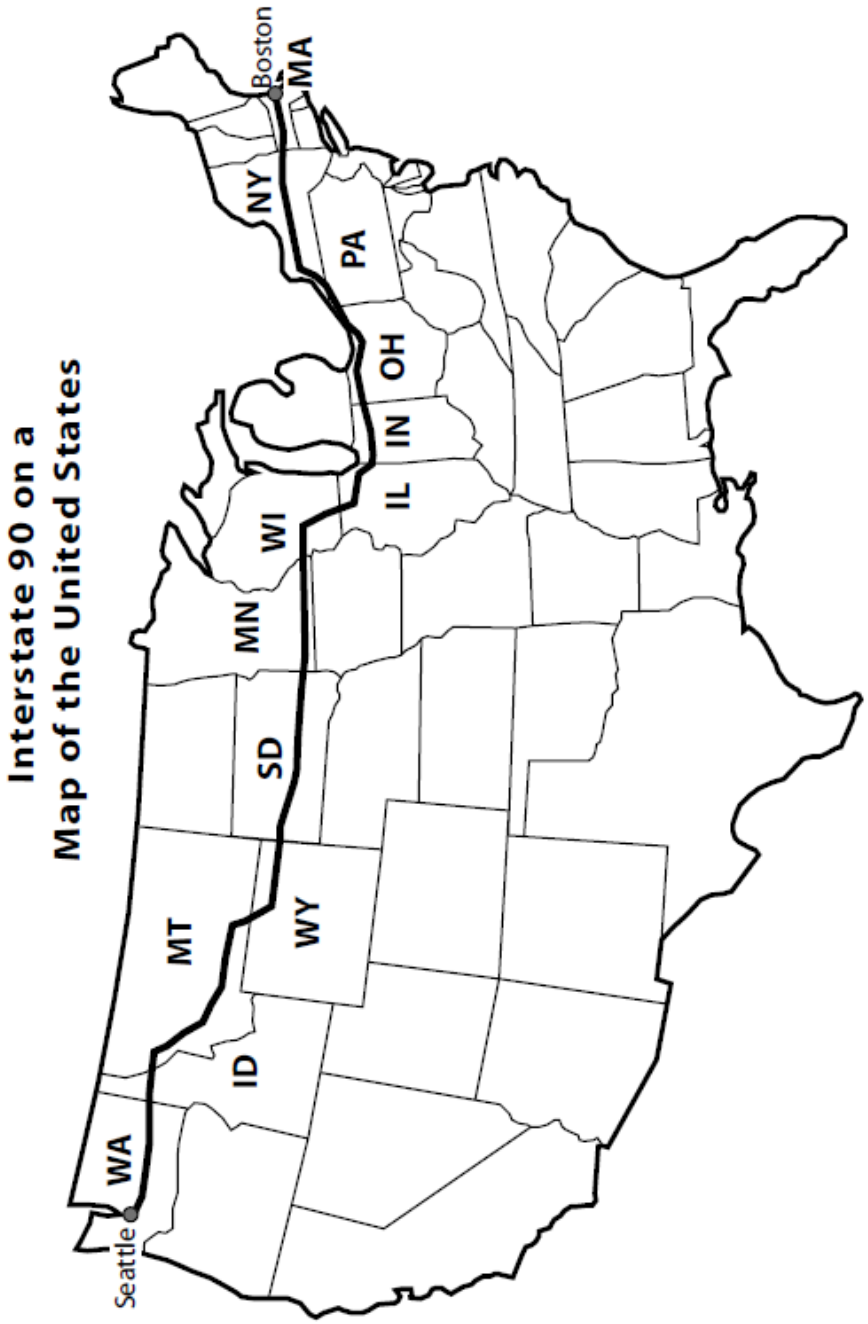
Vocabulary List for This Unit

Word	Definition	Example
digit	a _____ used to write numbers.	0, 1, 2, 3, 4, 5, 6, 7, 8, and 9
place value	each digit in a number has a place value, which tells how much that digit is _____	 In this number, the 4 is worth 400.
rounding	_____ a number by choosing a benchmark close to the number. It is common to round to place values (the nearest 10 or 100, for example)	3,470 rounded to the nearest 100 is 3,500.
four-digit number	a four-digit number will have digits in the _____, hundreds, tens, and ones place.	3,470 is a four-digit number Three thousand, four hundred seventy

Word	Definition	Example

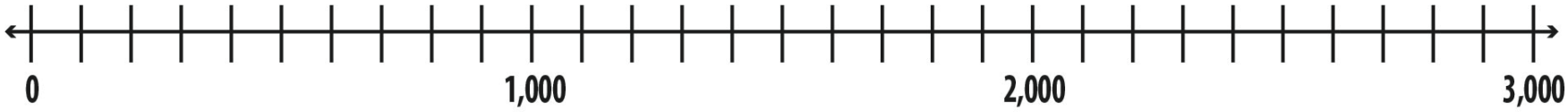
How Many Miles to Boston?

Interstate 90 (I-90) is the longest highway in the United States. It extends across the country from Seattle, Washington, to Boston, Massachusetts, crossing many states for a total of about 3,000 miles.



Use the number line below to think about a cross-country trip from Seattle to Boston. You should plan to travel 300 miles a day.

How many days will your trip take?



Source: EMPower™ book Everyday Number Sense: Mental Math and Visual Models

Planning a Trip

Starting in Seattle, WA (mile 0), plan a trip across the country to Boston on I-90. You want to travel about 300 miles per day. Circle each city that you will stay in (see page 9). Then, answer the questions below.

1. Will you spend more than one night in any state? Which one(s)?

2. Which town is closest to the halfway mark?

3. How many days will you spend traveling across the country?

4. Did you use rounding and mental calculations to arrive at your answers? How?

Travel Data for I-90

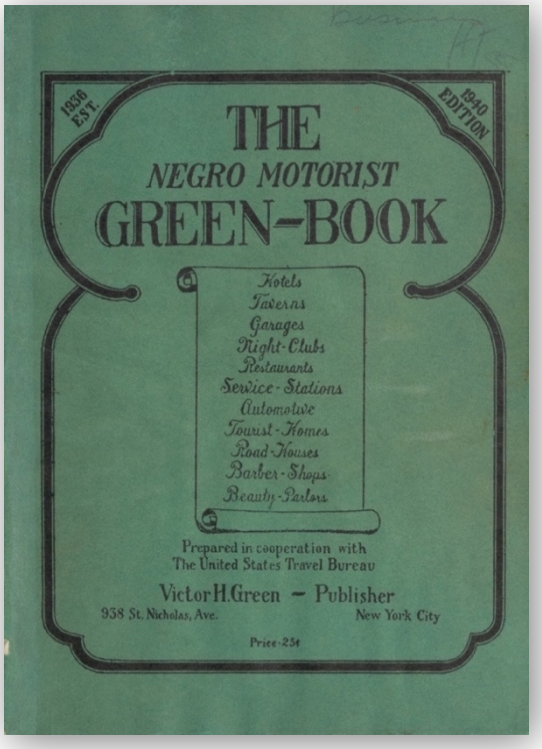
Seattle, WA (Jct I-5)—0	Sundance, WY—1,111	Rockford, IL—2,020
Mercer Island, WA—5	Spearfish, SD—1,143	Belvidere, IL—2,029
Bellevue, WA—8	Sturgis, SD—1,161	Elgin, WI—2,059
Issaquah, WA—15	Rapid City, SD—1,189	O'Hare Airport, IL—2,082
Easton, WA—69	Box Elder, SD—1,196	Junction I-94, IL—2,089
Cle Elum, WA—82	Wall, SD—1,242	Chicago, IL—2,097
Ellensburg, WA—108	Kadoka, SD—1,282	Junction I-94, IL—2,104
Kittitas, WA—114	Murdo, SD—1,323	Hammond, IN—2,119
Moses Lake, WA—174	Jct I-83, SD—1,340	Gary, IN—2,126
Sprague, WA—243	Presho, SD—1,357	Portage, IN—2,136
Spokane, WA—280	Kennebec, SD—1,367	South Bend, IN—2,179
Greenacres, WA—293	Chamberlain, SD—1,395	Elkhart, IN (I-80)—2,189
Post Falls, ID—302	Plankinton, SD—1,440	Junction I-69, IN—2,231
Coeur d'Alene, ID—310	Mitchell, SD—1,462	Toledo, OH— 2,309
Kellogg, ID—348	Hartford, SD—1,519	Lorain, OH—2,387
Wallace, ID—359	Sioux Falls, SD—1,530	Cleveland, OH—2,415
Superior, MT—418	Luverne, MN—1,556	Euclid, OH—2,430
Alberton, MT—446	Worthington, MN—1,588	Madison, OH—2,458
Missoula, MT—475	Jackson, MN—1,618	Conneaut, OH—2,486
Drummond, MT—525	Fairmont, MN—1,646	Erie, PA—2,513
Deer Lodge, MT—555	Albert Lea, MN—1,702	Junction I-86, PA—2,525
Butte, MT—593	Austin, MN—1,722	Buffalo, NY—2,605
Whitehall, MT—626	Rochester, MN—1,753	Rochester, NY—2,669
Bozeman, MT—678	St. Charles, MN—1,776	Syracuse, NY—2,748
Columbus, MT—778	La Crosse, WI—1,823	Utica, NY—2,826
Billings, MT—821	Sparta, WI—1,845	Amsterdam, NY—2,890
Junction I-94, MT—826	Junction I-94, WI—1,864	Schenectady, NY—2,918
Hardin, MT—865	Mauston, WI—1,889	Albany, NY—2,938
Crow Agency, MT—879	Wisconsin Dells, WI—1,904	W. Springfield, MA— 3,019
Sheridan, WY—947	Junction I-39, WI—1,925	Worcester, MA—3,069
Buffalo, WY—981	Madison, WI—1,955	Junction I-95, MA—3,098
Gillette, WY—1,050	Janesville, WI—1,988	Boston, MA—3,112
Moorcroft, WY—1,078	Beloit, WI—2,002	

Traveling and Civil Rights in the U.S.
A Short History

1. *The Negro Motorist Green-Book* (1940 edition)

This guidebook was written by Victor H. Green, an African American mailman from New York City. It appeared yearly between 1936 and 1966. It helped black travelers navigate "sundown towns" which black people had to leave by sunset. Sometimes it was called "Negro Traveller's Green-Book.

History Note: The word “Negro” was commonly used by African Americans to refer to themselves during earlier periods in American history.



The guide for travel and vacations as shown in the Hollywood movie Green Book (2018).
Source:
https://en.wikipedia.org/wiki/The_Negro_Motorist_Green_Book#/media/File:The_Negro_Motorist_Green_Book.jpg

2. Travelling While Black

The Green Book was created and published during a period of Jim Crow segregation in the United States. Car travel had become popular, but Black Americans (as well as other ethnic and religious minorities, such as Mexicans and Jews) faced harassment, discrimination, or violence when they tried to use certain public accommodations like restaurants, hotels, and gas stations. The Green Book listed business in each city that were safe and friendly to African Americans so they could travel safely.

> *There will be a day sometime in the near future when this guide will not have to be published. That is when we as a race will have equal opportunities and privileges in the United States. It will be a great day for us to suspend this publication for then we can go wherever we please, and without embarrassment.*

Source: Introduction, *Negro Motorist Green Book,* 1948 edition. https://www.history.com/news/the-green-book-the-black-travelers-guide-to-jim-crow-america

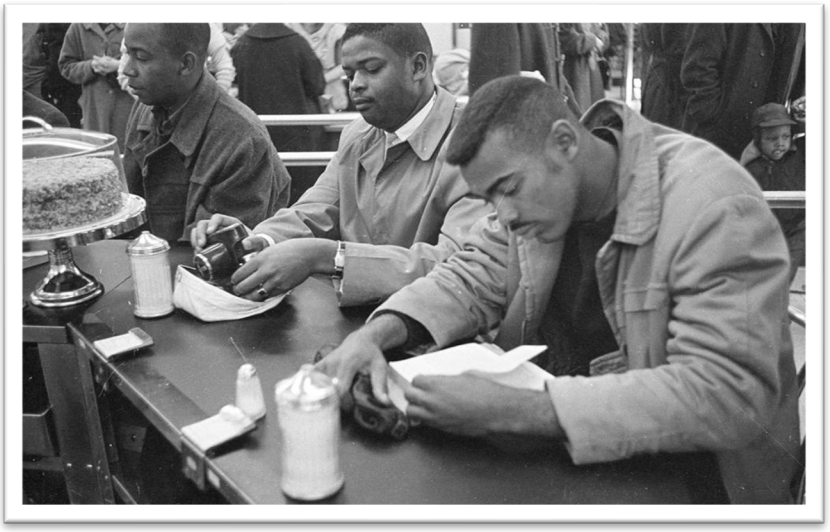
3. Montgomery Bus Boycott: Resisting Discrimination in Transportation

African Americans faced discrimination not only in long distance car travel, but in local transportation as well. Under Jim Crow, buses, especially in the South, were segregated. Black riders had to sit in the back of the bus and were regularly harassed by drivers. In 1955, African Americans in Montgomery, AL, successfully boycotted (refused to ride) the buses for 381 days. They set up systems of carpooling and ride sharing to make this possible.

This eventually brought an end to the segregation of buses when the U.S. Supreme Court ruled that segregated buses were illegal because they did not provide "equal protection under the law," as guaranteed by the 14th Amendment. This was an early victory against Jim Crow segregation.

4. Resisting Discrimination in Public Accommodations

One form of protest used successfully during the Civil Rights movement of the 1960s were lunch counter sit-ins. Under Jim Crow, African Americans were not allowed to sit and eat at certain lunch counters.



Three Civil Rights protesters at Woolworth's Sit-In, Durham, NC, 10 February 1960, as part of a series of protests that led to the end of legal segregation. Source: State Archives of North Carolina under Public Domain

Restaurants could discriminate and only serve white customers. During the sit-ins, black college students would sit quietly at the whites-only lunch counters. They were harassed and sometimes beaten. They refused to fight back, other than to sit peacefully until they were forcibly removed or arrested.

This helped the movement gain support, as more people saw how violent Jim Crow segregation was. Segregation in public accommodations like restaurants and hotels was outlawed under the Civil Rights Act of 1964, one of the great accomplishments of the Civil Rights Movement of the 1950s and 1960s.

Traveling and Civil Rights in the U.S. – Vocabulary List for This Unit

Sundown towns

towns where African Americans (and sometimes other minorities, such as Jews) were harassed and mistreated. They were called sundown towns because black people were told to get out of town before sundown (or else they would be threatened with violence).

Jim Crow

a term for the system of harsh laws and practices that forced African Americans to use separate and inferior institutions, such as schools, public transportation, and public accommodations. This was enforced both legally with harsh punishments and through intimidation and violence.

Segregation

requiring different races to use different facilities. While many claimed that segregation involved “separate but equal” facilities, this was not the reality. African Americans almost always encountered inferior treatment and access under segregation.

Boycott

to refuse to use a certain service or to buy a certain product. Boycotts are used as a form of protest by withholding money from certain companies until they make changes.

Sit-in

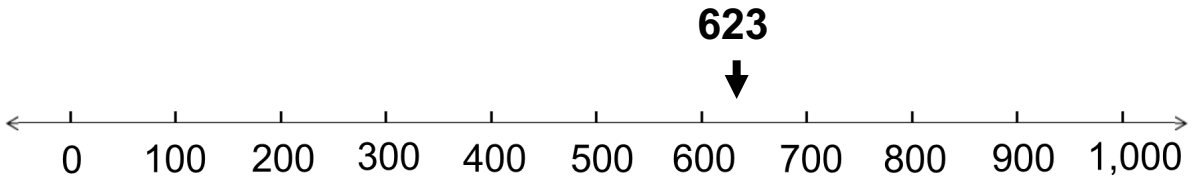
a form of non-violent protest in which people would peacefully sit in places they were not permitted to by law. This was used as a way to protest segregation, because the violent way that protesters were treated helped the movement gain sympathy and support.

Civil Rights Act of 1964

made segregation in public accommodations illegal, and outlawed discrimination in employment.

Between Which Hundreds?

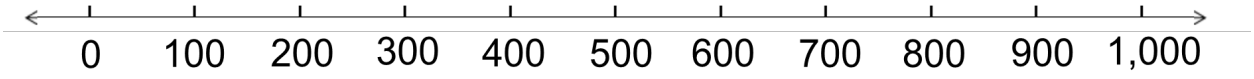
We can count by 100. Many numbers will fall between the hundreds.



This is more than 600, but less than 700.

We can say that it is **between 600 and 700.**

Use the number line below to help you decide *between which hundreds* each amount will be.



(a) 345 is between _____ and _____.

(b) 123 is between _____ and _____.

(c) 670 is between _____ and _____.

(d) 50 is between _____ and _____.

(e) 991 is between _____ and _____.

Between Which Hundreds Extension: Larger Amounts

(a) 1,345 is between _____ and _____.

(b) 2,123 is between _____ and _____.

(c) 5,670 is between _____ and _____.

(d) 1,050 is between _____ and _____.

(e) 2,391 is between _____ and _____.

In your own words:

How do you decide which hundreds the amount is between?

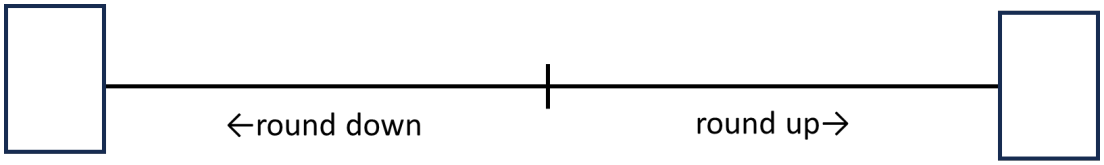
These will be our **benchmarks** for **rounding to the nearest hundred**.

Rounding to the Nearest Hundred Number Lines

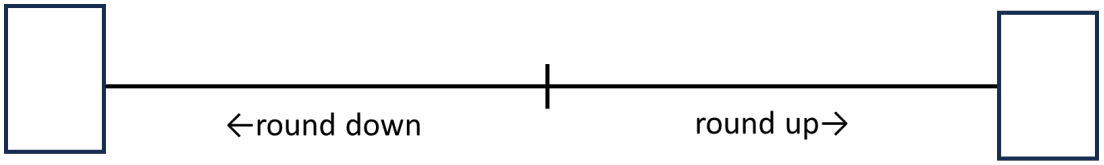
1. Put the hundred benchmarks in the boxes. Label the midpoint.
2. Which side of the midpoint is the exact amount?
3. Circle the hundred nearest to the exact amount.

Example: 239

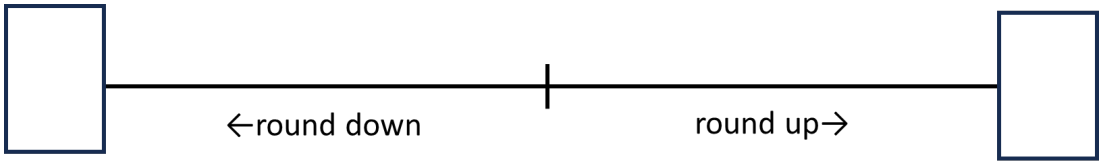
Exact amount: 803



Exact amount: 632



Exact amount: 374



Rounding Distances: Nearest 100 Miles

The number 3,000 is a "friendlier" number than 3,112; the number 400 is easier to think about than 392; and 50 is easier to work with than 47. We often **round** numbers to friendlier benchmarks so we can work with them more easily.

Round each of distances of I-90 to the nearest hundred miles.
Example using Washington: Is 298 closer to 200 or 300?

State	I-90 Distance (in miles)	Rounded to the Nearest 100 Miles
Washington	298	
Idaho	73	
Montana	558	
Wyoming	207	
South Dakota	412	
Minnesota	275	
Wisconsin	188	
Illinois	103	
Indiana	157	
Ohio	244	
Pennsylvania	47	
New York	391	
Massachusetts	159	
Total	**3,112**	

Source: EMPower™ book Everyday Number Sense: Mental Math and Visual Models

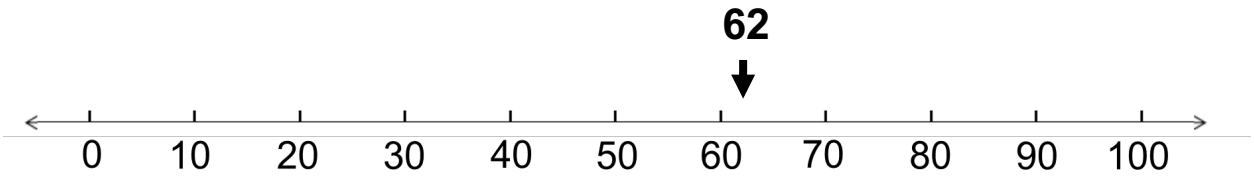
Counting Up and Down by 10s

Count Up by 10, Starting at…		
20	360	610
30	370	620

Count Down by 10, Starting at…	
310	200
300	190

Between Which Tens?

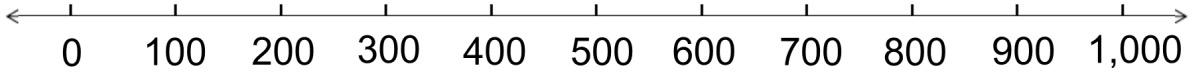
When we count by tens, many numbers fall in between.



This is more than 60, but less than 70.

We can say that it is **between 60 and 70.**

Use the number line below to help you decide *between which tens* each amount will be.



(a) 34 is between _____ and _____.

(b) 15 is between _____ and _____.

(c) 67 is between _____ and _____.

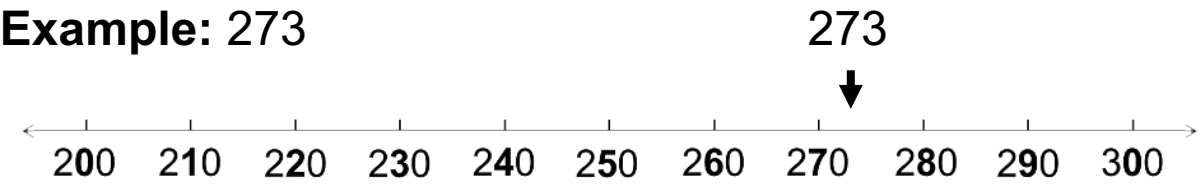
(d) 59 is between _____ and _____.

(e) 91 is between _____ and _____.

Between Which Tens Extension: Larger Amounts

When you count by tens into larger amounts, pay attention to the tens place.

Example: 273



273 is between 270 and 280.

(a) 3**4**5 is between _____ and _____.

(b) 1**2**3 is between _____ and _____.

(c) 6**7**0 is between _____ and _____.

(d) 2**3**4 is between _____ and _____.

(e) 3**9**1 is between _____ and _____.

In your own words:

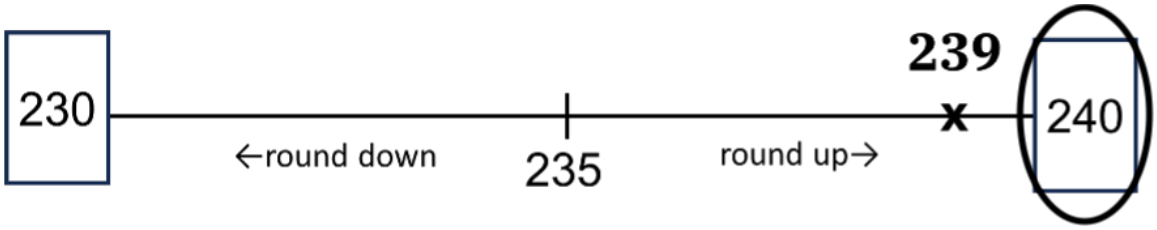
How do you decide which tens the amount is between?

These will be our **benchmarks** for **rounding to the nearest ten**.

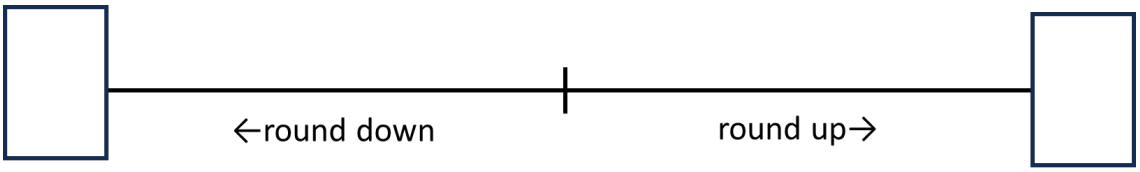
Rounding to the Nearest Ten Number Lines

1. Put the tens benchmarks in the boxes. Label the midpoint.
2. Which side of the midpoint is the exact amount?
3. Circle the ten nearest to the exact amount.

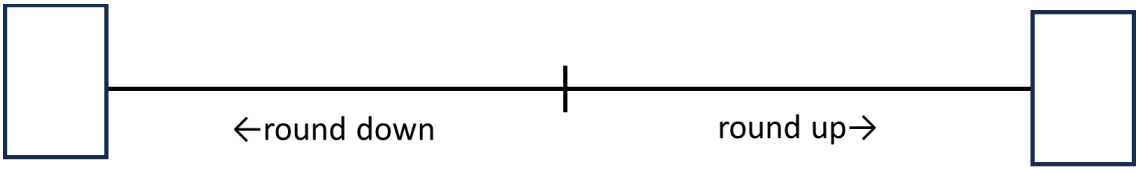
Example: 239



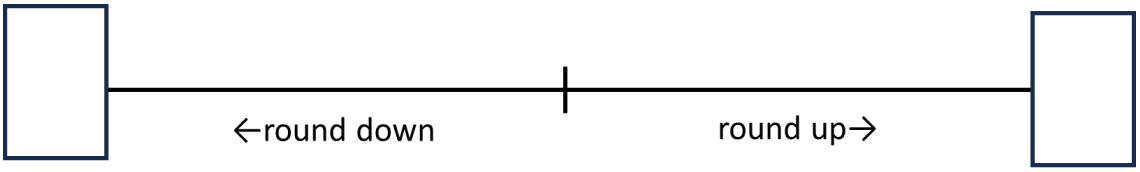
Exact amount: 823



Exact amount: 632



Exact amount: 374



Rounding Distances: Nearest 10 Miles

This time, round each of the distances to the nearest ten miles. Pay close attention to *which* tens the number is between.

Example using Montana: Is 558 closer to 550 or 560?

State	I-90 Distance (in miles)	Rounded to the Nearest 10 Miles
Washington	298	
Idaho	73	
Montana	558	
Wyoming	207	
South Dakota	412	
Minnesota	275	
Wisconsin	188	
Illinois	103	
Indiana	157	
Ohio	244	
Pennsylvania	47	
New York	391	
Massachusetts	159	
Total	**3,112**	

Source: EMPower™ book Everyday Number Sense: Mental Math and Visual Models

Place Value Practice

Use the place value chart to help you read the numbers below.

Hundred-thousands	Ten-thousands	Thousands	Hundreds	Tens	Ones

768

2,560

27,000

450,400

Reading and Writing Large Numbers

Have one partner be Student A and the other Student B. Student A reads the first set of numbers, while Student B writes them down. Then partners switch and Student B reads the second set of numbers.

Student A:

Boston to New York City	190 miles
Boston to Orlando, FL	1,286 miles
Boston to Santo Domingo, Dominican Republic	1,650 miles
Boston to Los Angeles, CA	2,982 miles
Boston to Mogadishu, Somalia	7,437 miles

Student B:

Boston to Chicago	982 miles
Boston to Port-au-Prince, Haiti	1,643 miles
Boston to Guatemala City, Guatemala	3,496 miles
Boston to Conakry, Guinea	4,123 miles
Boston to Christchurch, New Zealand	9,290 miles

Writing Large Numbers

Write the standard form for each number written in words.

1. Twenty-five thousand, four hundred

2. Four thousand, eight hundred fifty

3. One hundred twenty thousand, one hundred fifty

4. Two hundred eighty thousand

5. Two hundred thousand, eighty

6. Thirteen thousand, sixty-five

7. Two thousand, seven hundred

8. One thousand, eight

9. Thirty thousand, eight hundred thirty-five

10. One hundred twenty-nine thousand, one hundred twenty-nine

High and Not-So-High Peaks

The mountains listed here are in alphabetical order.

Bradbury Mountain in the United States	485 feet
Cadillac Mountain in the United States	1,532 feet
Kilimanjaro in Tanzania	19,340 feet
Mt. Apo in the Philippines	9,692 feet
Mt. Cook in New Zealand	12,349 feet
Mt. David in the United States	48 feet
Mt. Etna in Italy	10,902 feet
Pico Duarte in the Dominican Republic	10,417 feet

List the mountains and their heights from lowest to highest.

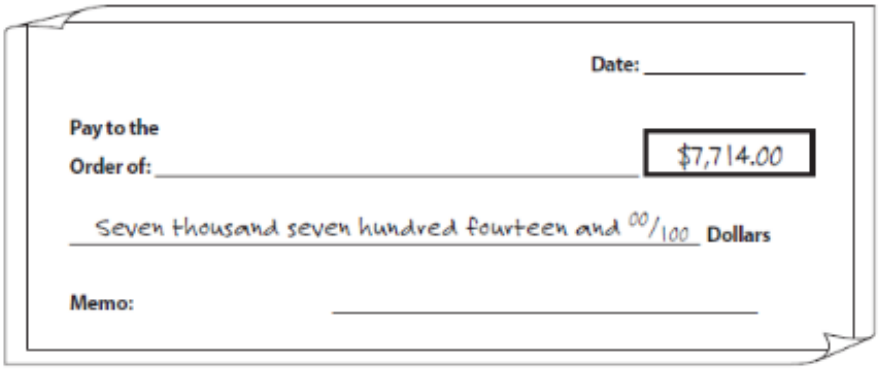
Mountain Name	**Height (in feet)**
a.	
b.	
c.	
d.	
e.	
f.	
g.	
h.	

Source: EMPower™ book Everyday Number Sense: Mental Math and Visual Models

Writing Checks

Write the amount of the check in words.

Example:

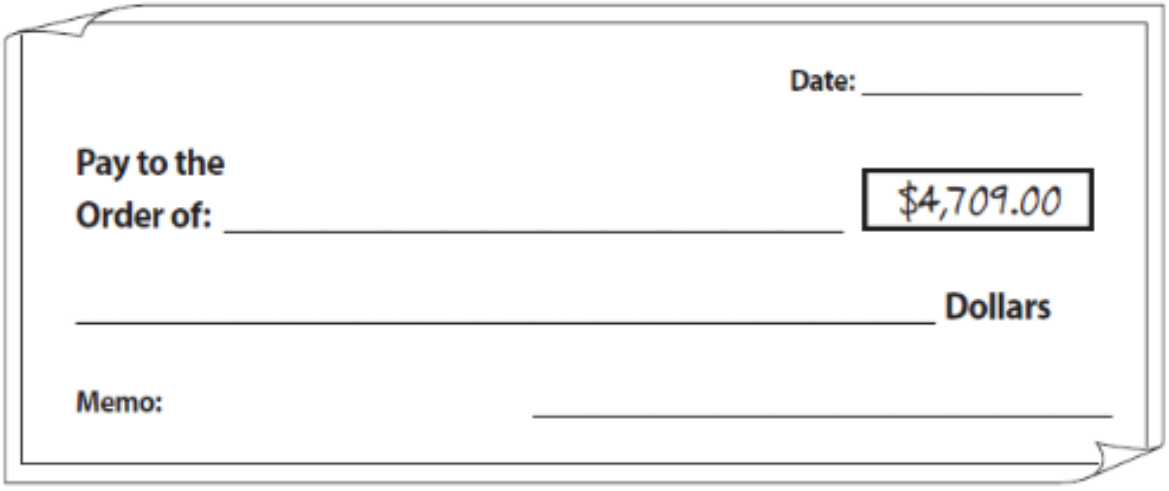

Date: _____

Pay to the
Order of: _____ $7,714.00

Seven thousand seven hundred fourteen and 00/100 Dollars

Memo: _____

a.

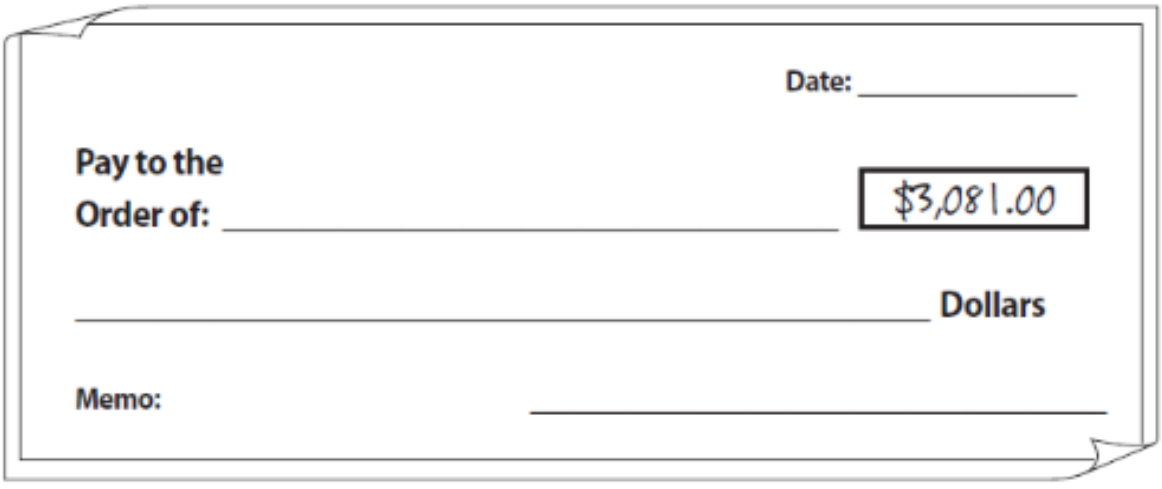

Date: _____

Pay to the
Order of: _____ $4,709.00

_____ Dollars

Memo: _____

b.

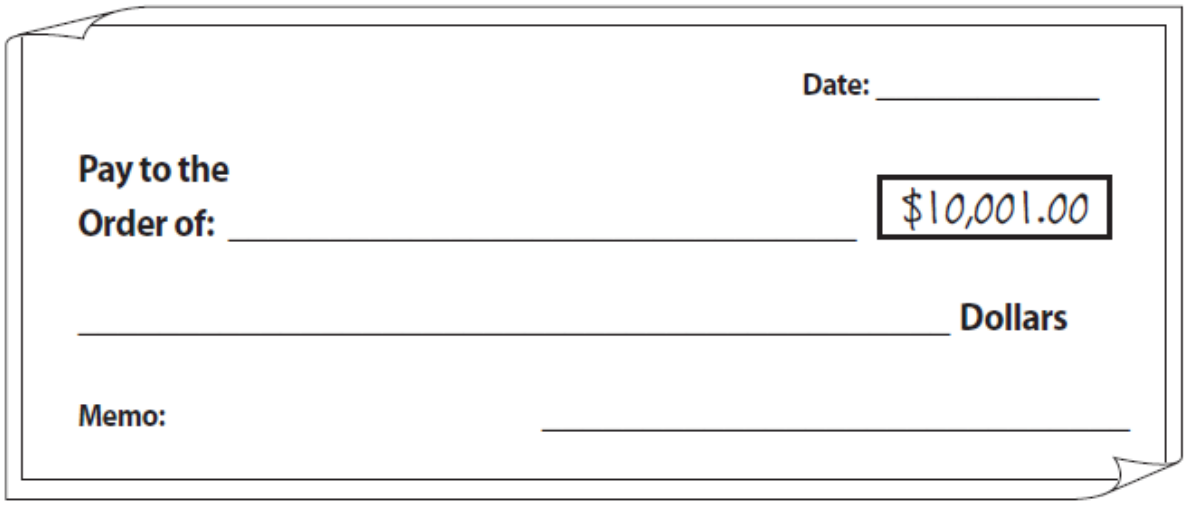

Date: _____

Pay to the
Order of: _____ $3,081.00

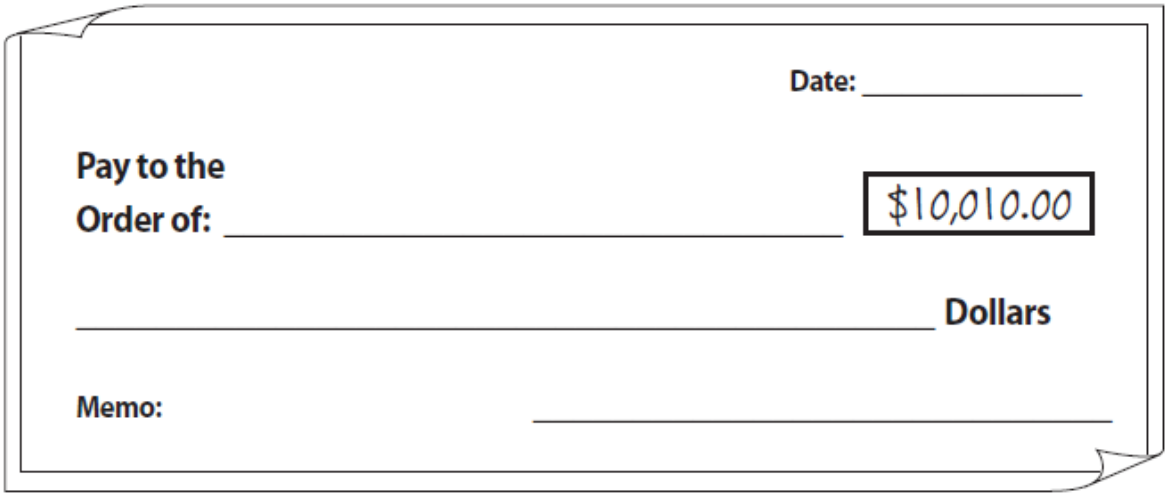
_____ Dollars

Memo: _____

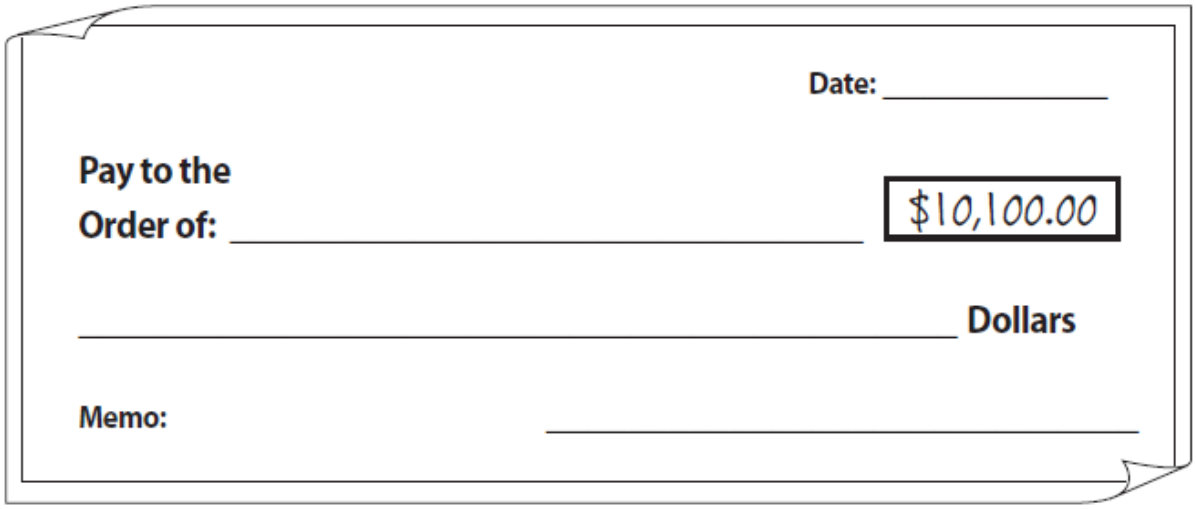
c.


Date:
Pay to the
Order of:
$10,001.00
Dollars
Memo:

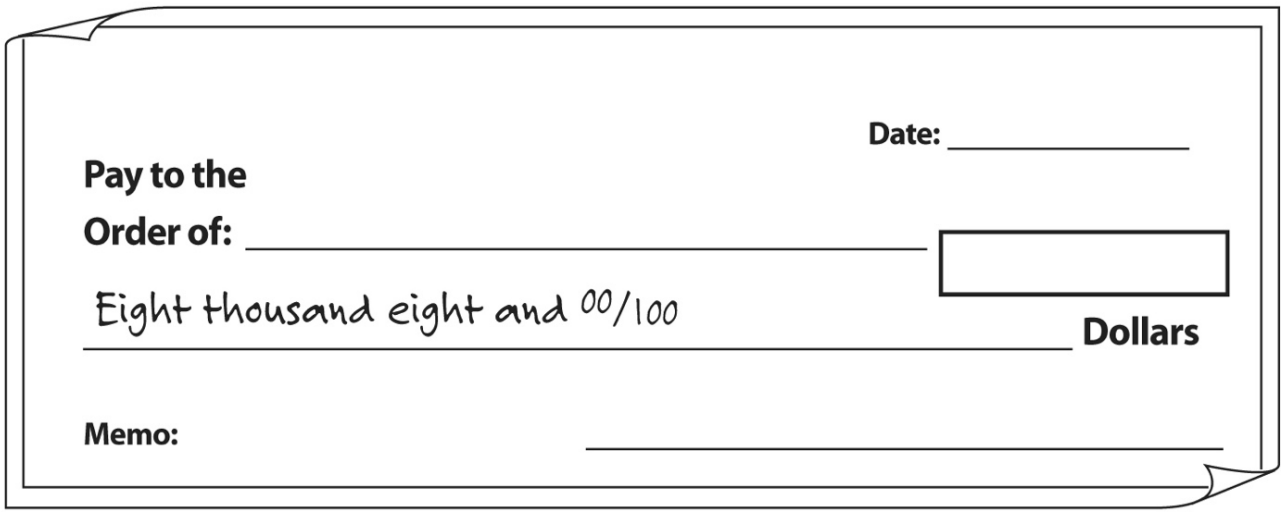
d.


Date:
Pay to the
Order of:
$10,010.00
Dollars
Memo:

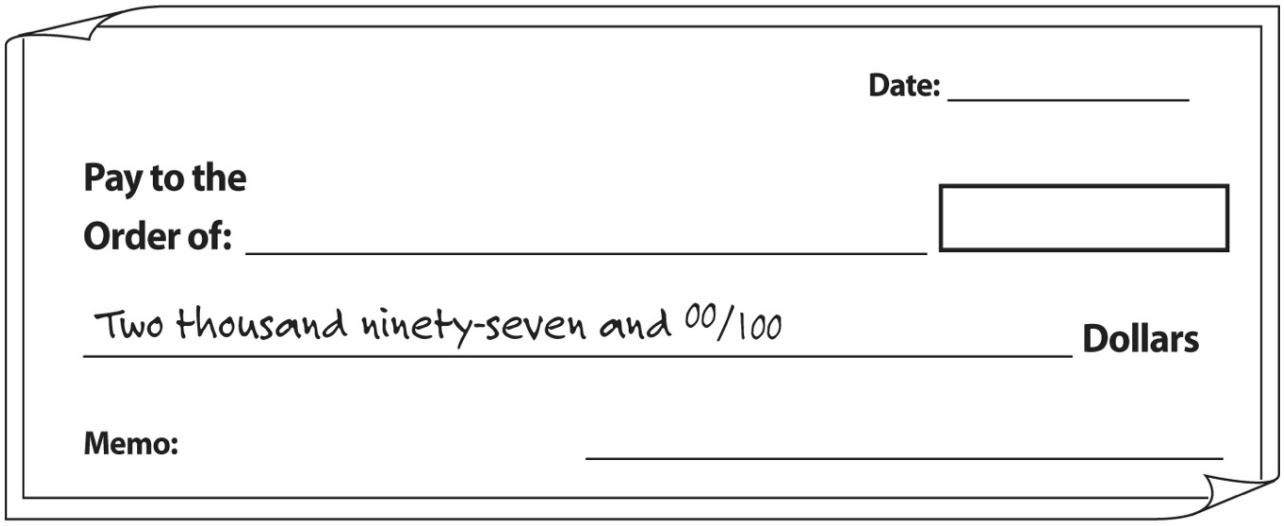
e.


Date:
Pay to the
Order of:
$10,100.00
Dollars
Memo:

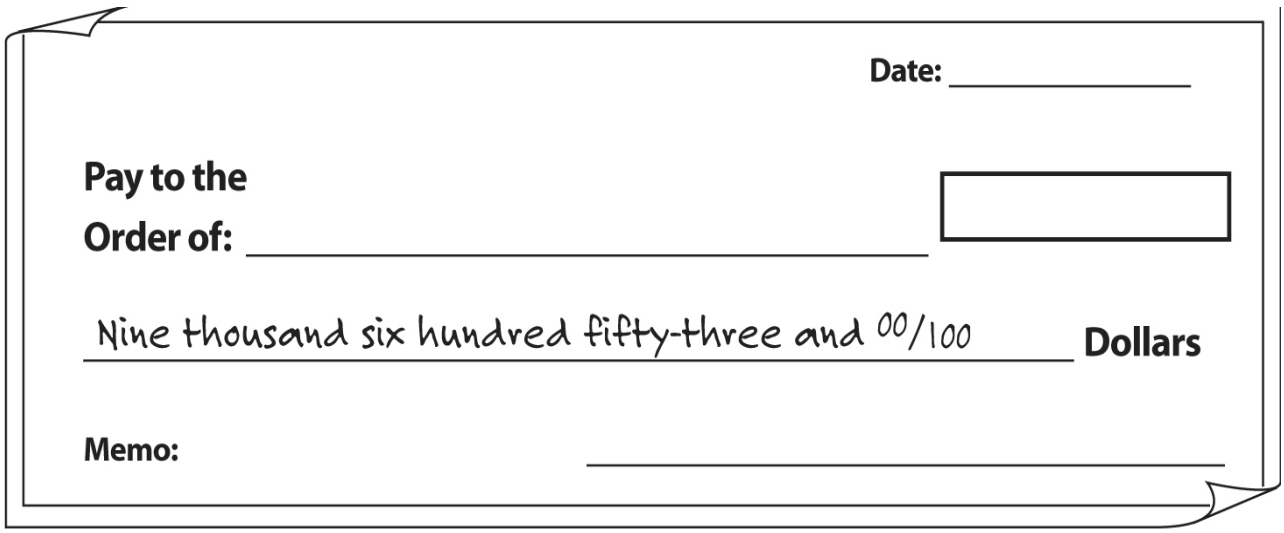
h.



g.



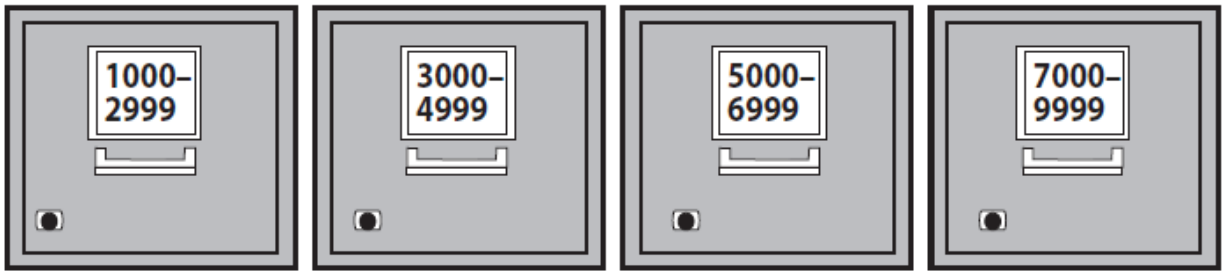
f.



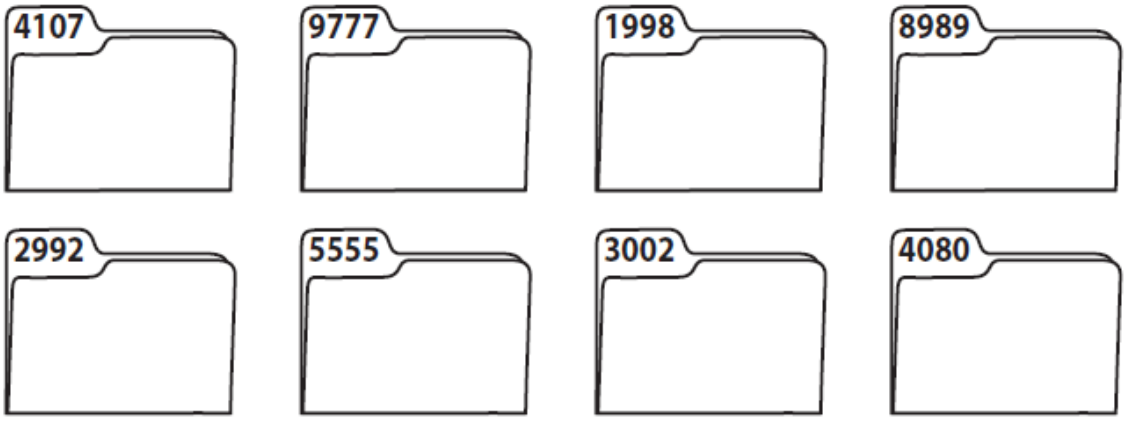
Source: EMPower™ book Everyday Number Sense: Mental Math and Visual Models

Filing

Shown here are pictures of some file cabinet drawers and files to go in them. Look at the account numbers on each file, find the drawer where it belongs, and write the account number below that drawer. The first file has been done for you.



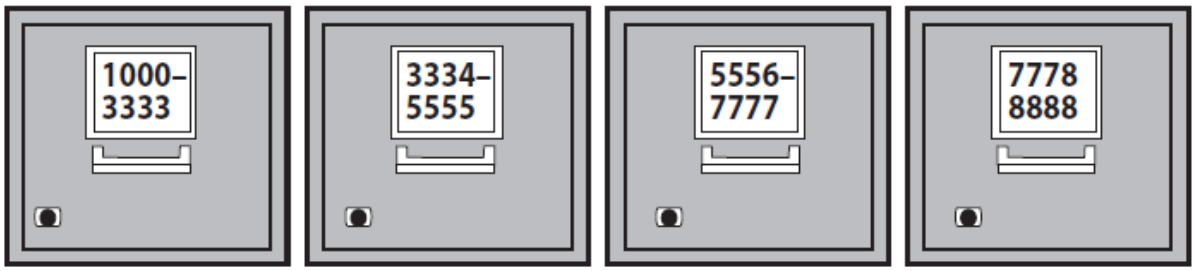
A. _____ B. 4107 C. _____ D. _____



Source: EMPower™ book *Everyday Number Sense: Mental Math and Visual Models*

More Filing

This time, the drawers are set up differently. Write the account number of the file below the drawer where it belongs. The first file has been done for you.



A. 2110 B. _____ C. _____ D. _____

Source: EMPower™ book Everyday Number Sense: Mental Math and Visual Models

Which One Doesn't Belong? 1

Choose one number that you don't think belongs with the rest. Explain why.

500	1,500
1,501	1,005

Now pick another number and explain why it doesn't belong.

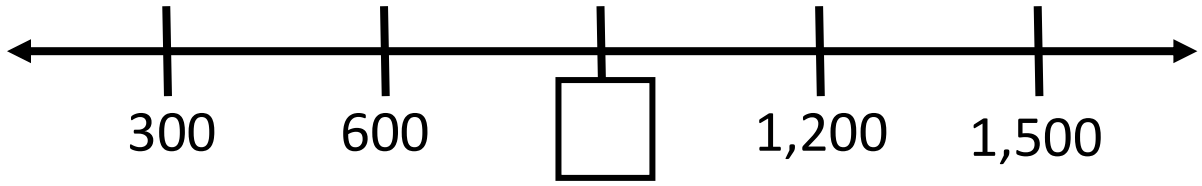
Close to 1,000

Directions: Using the digits 1 to 9, place a digit in each box to make the sum as close to 1,000 as possible.

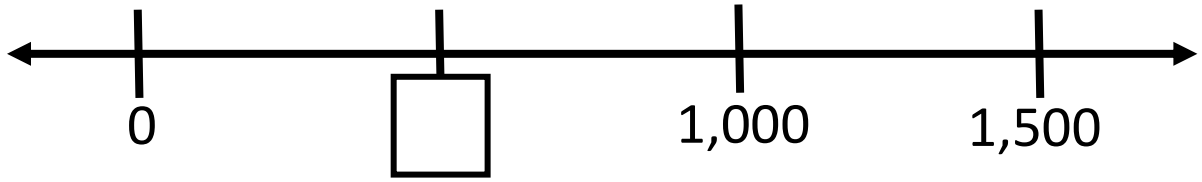
Number Line Puzzles 1a

Fill in the missing numbers.

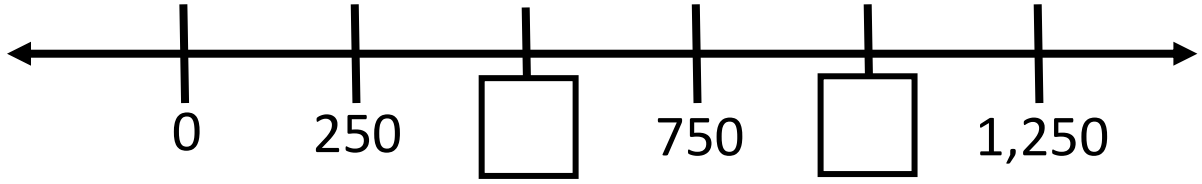
A



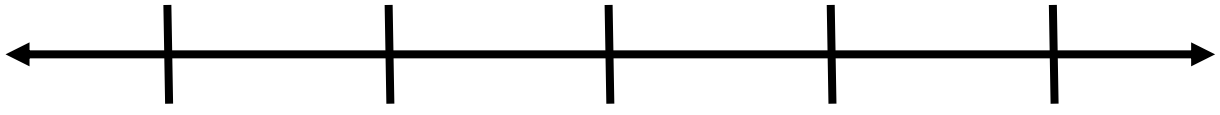
B



C



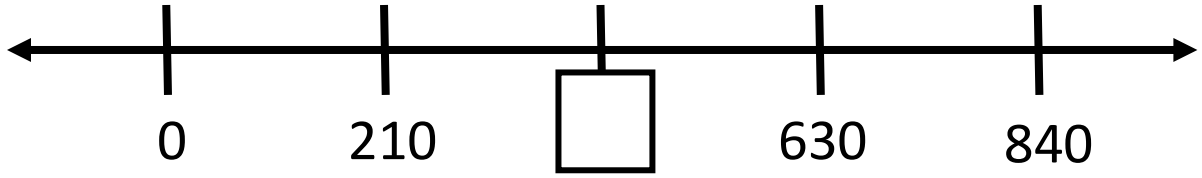
Create your own number line puzzle below.



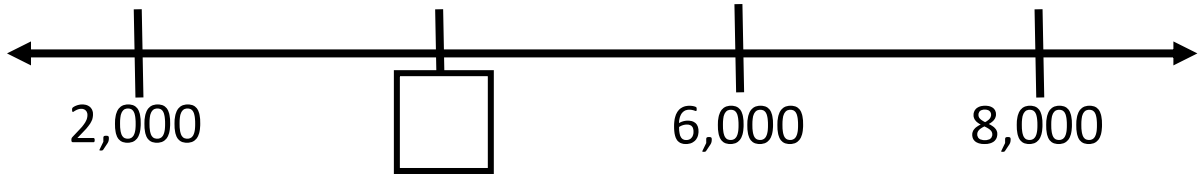
Number Line Puzzles 1b

Fill in the missing numbers.

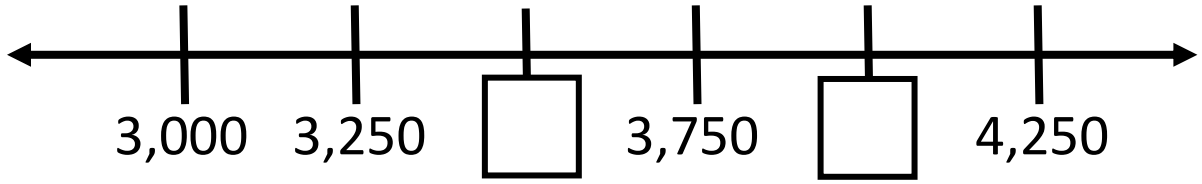
A



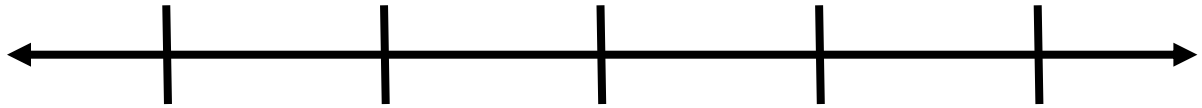
B



C



Create your own number line puzzle below.



UNIT 2: Subtraction and Number Lines

Counting Centuries

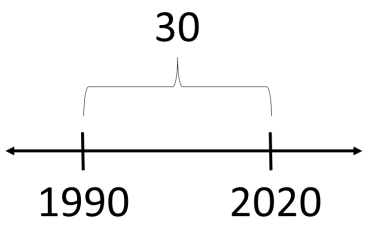
century: 100 years

The way we count centuries can be confusing. Many of us were born in a year that starts with 19__. So why do those people say that they were born in the Twentieth Century?

Years CE	Century	Years CE	Century
0-99	1st	1000-1099	
100-199	2nd	1100-1199	
200-299	3rd	1200-1299	
300-399	4th	1300-1399	
400-499	5th	1400-1499	
500-599		1500-1599	
600-699		1600-1699	
700-799		1700-1799	
800-800		1800-1899	
900-999		1900-1999	

Right now, we are in the _____ century, which goes from 2000-2099.

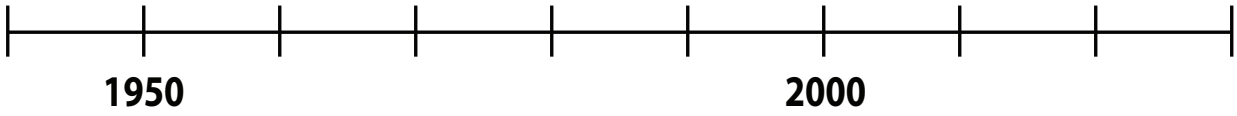
Vocabulary List for This Unit

Word	Definition	Example
decade	_____ years	
century	_____ years	The Twentieth Century lasted from 1900 to 1999.
millennium	_____ years	In the year 2000, we started a new millennium.
difference	the _____ of subtraction. On a number line, it is the _____ between two numbers.	 2020 – 1990 = 30

Word	Definition	Example

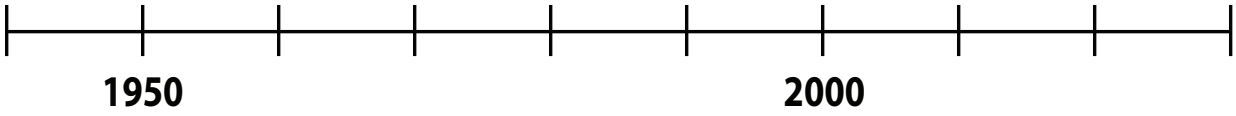
Birthday Numbers

1. Use the following number line to find the birth year of someone 48 years old today. Then write down, step by step, what you did in your head.



2. Use the number line to find the birth year of someone 36 years old today. Then, write down your steps.

3. Use the number line to determine the age of a person born in 1949. Write down your steps.



4. Use the number line to show your age. Write down your steps.

Source: EMPower™ book Everyday Number Sense: Mental Math and Visual Models

Timeline of American History

A timeline can be used to show when important events happened. It can help us to see visually the order in which things happened and how much time was between them.

If you were making a timeline of American History, what are some events that you would include? Choose 3–5 events that you think should be included. Explain why you chose them.

1.

2.

3.

4.

5.

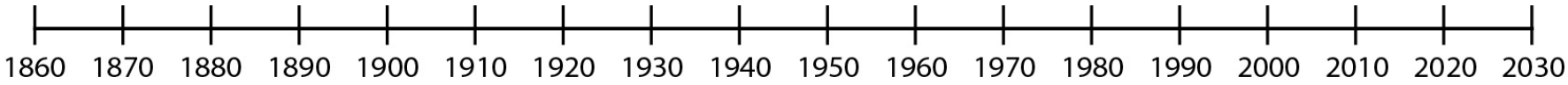
How Long Ago?

For each event, use the number line to help you figure out how many years ago the event happened. Each interval on the number line is one **decade** (ten years).

Then write an equation for your method of solving.

1. 1861 — United States Civil War Starts

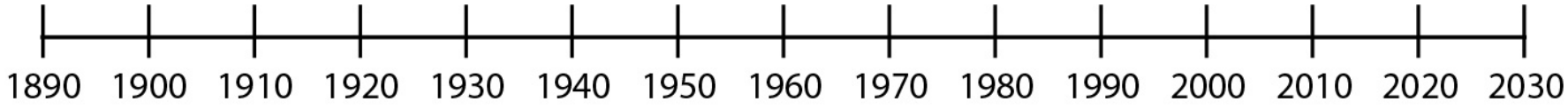
The North (the Union) fought the South (the Confederacy) over the continuation of slavery and states' rights.



- The U.S. Civil War started _____ years ago.
- Equation(s) for my method of solving the problem:

2. 1903 — Wright Brothers First Flight

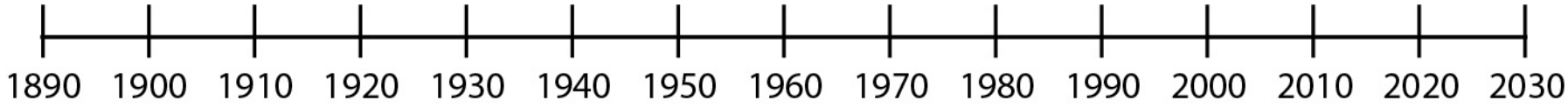
The Wright Brothers flew their first plane in Kitty Hawk, North Carolina. They built their plane and its engine in their bicycle shop. They flew three times that first day. On the first day, their third and final flight went a distance of 852 feet and lasted 59 seconds.



- This flight was _____ years ago.
- Equation(s) for my method of solving the problem:

3. 1906 — San Francisco Earthquake

In San Francisco, California, an earthquake killed more than 500 people. It caused a huge fire which destroyed homes and stores across the entire city.



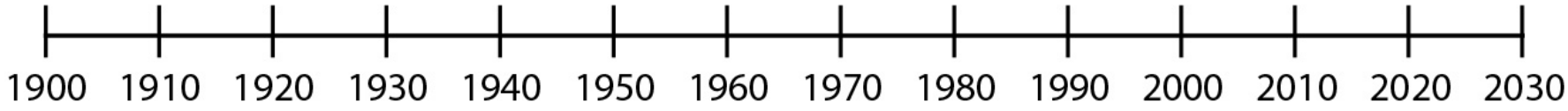
- The San Francisco Earthquake occurred _____ years ago.
- Equation(s) for my method of solving the problem:

4. 1918 — The Great Flu Pandemic

A deadly flu pandemic swept across the world. Around 500,000 Americans died, young and old, as well as millions around the world.

Look familiar? Masks were used during the 1918 flu pandemic to try to help slow the spread of the virus. Large gatherings were limited, and other business was done outside when possible. There was no way to quickly make a vaccine at the time, and this deadly virus infected about one-third of the world's population (~33%). »»


The Washington Times
WASHINGTON, FRIDAY EVENING, SEPTEMBER 27, 1918.
Gauze Mask to Halt Spread of Plague
This is the first picture of the new mask adopted and being made by the Red Cross to prevent the spread of Spanish influenza in the United States. The picture shows the mask being worn by a Red Cross worker, who is engaged in making the masks. The masks are designed to halt the exhaling or inhaling of the influenza germ. They are five inches wide and six inches across, and are composed of two thicknesses of gauze. They are tied in back.

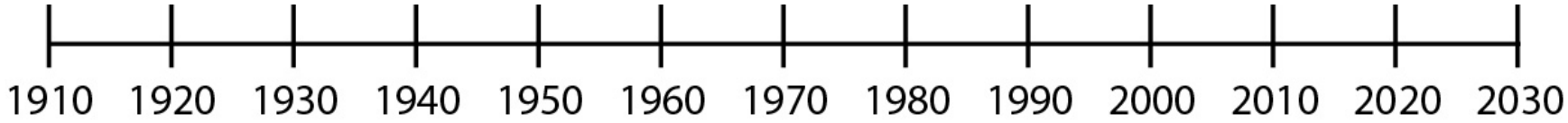


- The Great Flu Epidemic took place _____ years ago.
- Equation(s) for my method of solving the problem:

5. 1920 — Women Granted the Right to Vote

The 19th Amendment to the Constitution passed, giving women over the age of 21 the right to vote. Many black women were involved in working for women's right to vote but were often excluded from events led by white women. These black suffragettes (women who worked for the right to vote) faced racism and sexism as they worked towards civil rights for all.

"If white American women, … need the ballot, that right protective of all other rights... how much more do black Americans, male and female need the strong defense of a vote to help secure them their right to life, liberty and the pursuit of happiness?" —Adella Hunt Logan, *Colored American Magazine*, 1905



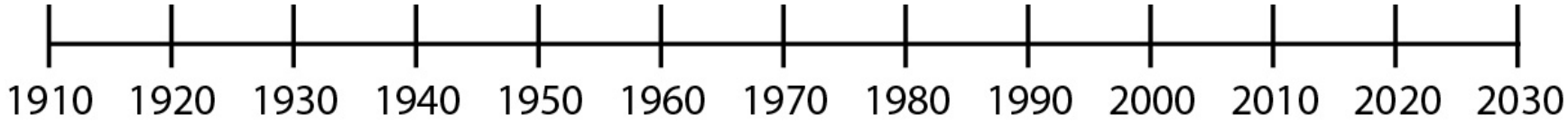
- Women were granted the right to vote _____ years ago.

- Equation(s) for my method of solving the problem:

6. 1929 — The Stock Market Crash

The United States stock market crashed on October 29, 1929. People were making deals with no money to back them up. The crash caused banks and businesses to fail. Millions of people were put out of work. It was the beginning of the Great Depression.

People wait in line for food during the Great Depression.

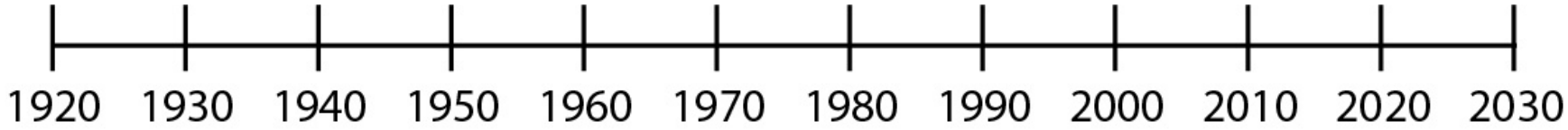


- The stock market crash occurred _____ years ago.
- Equation(s) for my method of solving the problem:

7. 1935 — The "Dust Bowl"

In 1935, after years of little or no rain, the farmland in the central part of the United States turned to dust. On a day called Black Sunday, a strong wind blew the dust into gigantic black clouds of dirt that covered everything, turning day into night.

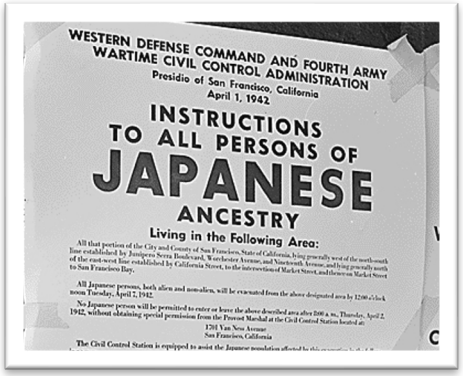
With their farms ruined, many farmers and their families took what little they had and left their land. Many ended up in California, where millions of people with no jobs lined up every day in soup lines for something to eat.



- Black Sunday happened _____ years ago.

- Equation(s) for my method of solving the problem:

8. 1941 — Attack on Pearl Harbor and Aftermath


WESTERN DEFENSE COMMAND AND FOURTH ARMY
WARTIME CIVIL CONTROL ADMINISTRATION
Presidio of San Francisco, California
April 1, 1942

INSTRUCTIONS
TO ALL PERSONS OF
JAPANESE
ANCESTRY
Living in the Following Area:

All that portion of the City and County of San Francisco, State of California, lying generally west of the north-south line established by Junipero Serra Boulevard, Worchester Avenue, and Nineteenth Avenue, and lying generally north of the east-west line established by California Street, to the intersection of Market Street, and thence on Market Street to San Francisco Bay.

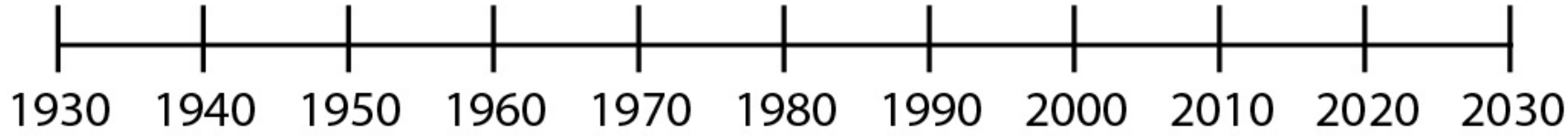
All Japanese persons, both alien and nonalien, will be evacuated from the above designated area by 12:00 o'clock noon Tuesday, April 7, 1942.

No Japanese person will be permitted to enter or leave the above described area after 2:00 a. m., Thursday, April 2, 1942, without obtaining special permission from the Provost Marshal at the Civil Control Station located at:

1701 Van Ness Avenue
San Francisco, California

The Civil Control Station is equipped to assist the Japanese population affected by this

On December 7, 1941, the Japanese Air Force bombed the American Naval Base at Pearl Harbor in Hawaii. This unexpected attack pushed the US to get involved in World War II. A few months later, the US government started forcing Japanese American citizens and residents in concentration camps. This imprisonment continued for almost four years. It was not until 1988 that the US government officially apologized for this action and paid reparations to remaining survivors, admitting that the actions were based on “race prejudice, war hysteria, and a failure of political leadership.”

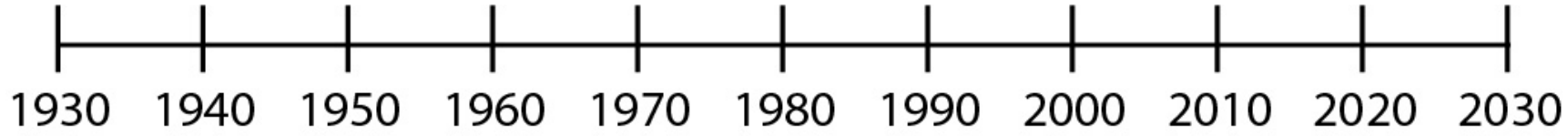


- The attack on Pearl harbor happened _____ years ago.
- Equation(s) for my method of solving the problem:

9. 1945 — World War II Ends

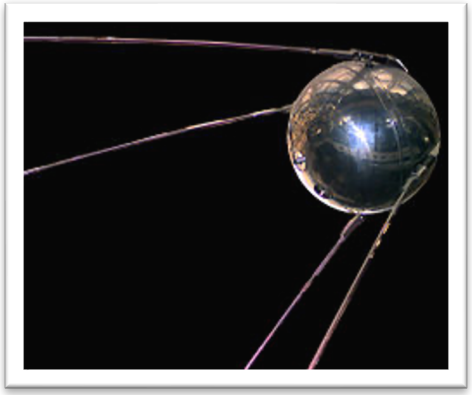
Did you know? So many men were drafted to fight in the war that the US government started recruiting millions of women (black and white) to work in the factories to make items needed for the war. Before then, not many women worked in factories. The nickname for these women was "Rosie the Riveter."

World War II began in 1939, when Germany, led by Hitler, invaded other countries in Europe. The dictators in Italy and Japan joined forces with Hitler; Britain and France declared war on Germany. Before the war was over, 25 countries across the world, including the United States, were involved. More than 52 million people died in fighting, in concentration camps, and from atomic bombs that the US dropped on Japan. The war ended in 1945, when Germany and Japan surrendered.

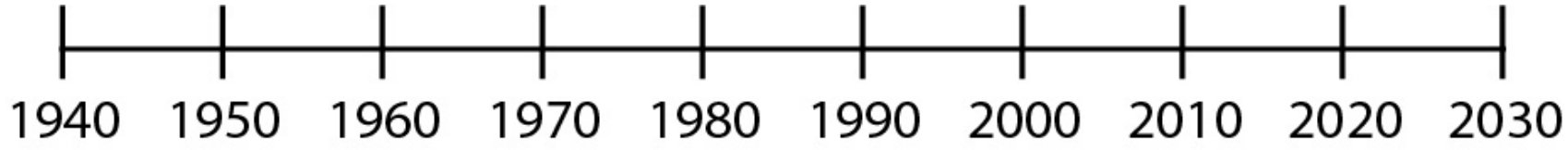


- World War II ended _____ years ago.
- Equation(s) for my method of solving the problem:

10. 1957 — Soviets Launch Sputnik



The Soviet Union sent the first satellite, named Sputnik, into space. Sputnik was the size of a basketball and circled Earth every 98 minutes. From Earth, you could see it crossing the sky. Sputnik collected information about space and sent it back to Earth.

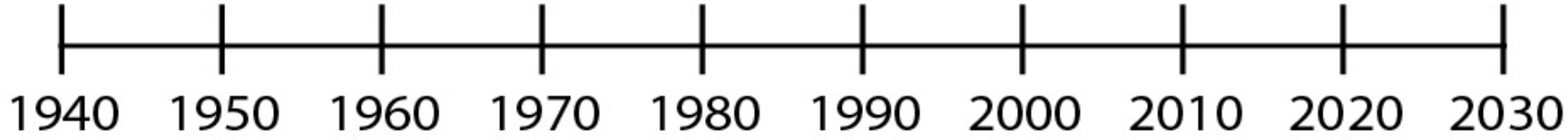


- Sputnik was launched _____ years ago.

- Equation(s) for my method of solving the problem:

11. 1963 — President John F. Kennedy Assassinated

John F. Kennedy, the 34th President of the United States, was shot and killed in Dallas, Texas. (The next day, his supposed assassin, Lee Harvey Oswald, was shot and killed by a visitor to the jail where Oswald was being held.)

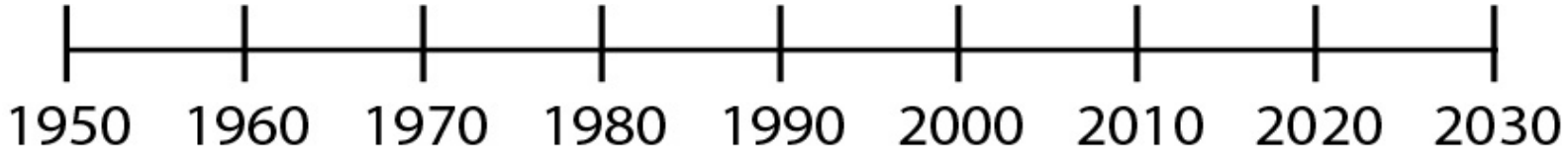


- President Kennedy was shot and killed _____ years ago.
- Equation(s) for my method of solving the problem:

12. 1964 — Civil Rights Act Passed

After decades of activism, the Civil Rights Act of 1964 was signed into law. This outlawed discrimination on the basis of race, creed (religion or beliefs), or country of origin.

President Lyndon B Johnson signs the Civil Rights Act on July 2, 1964, into law. Dr. Martin Luther King, Jr. can be seen standing behind him.

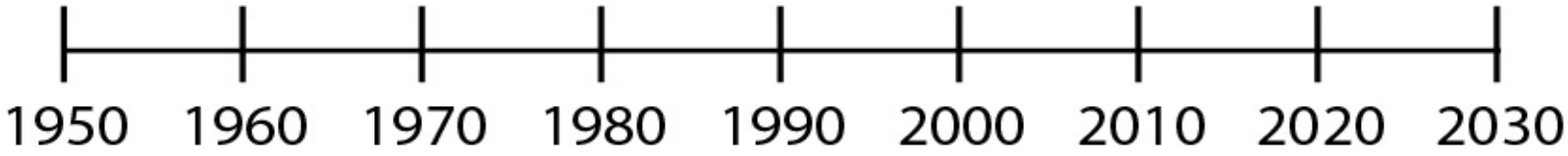


- The Civil Rights Act became law _____ years ago.
- Equation(s) for my method of solving the problem:

13. 1975 — The Vietnam War Ends

The United States got involved in a war in Vietnam to stop the spread of Communism. The war became very unpopular; thousands of people thought the United States should not have interfered. For the first time in history, public opinion caused the United States to withdraw from a war.

Credit: uwdigitalcollections License: CC BY 2.0



- The Vietnam War ended _____ years ago.
- Equation(s) for my method of solving the problem:

Source: EMPower™ book Everyday Number Sense: Mental Math and Visual Models

Math Inspection: Make It True

Place an equal sign and addition or subtraction signs to make a new equation that is true for each problem below.

a.	40	20	40	20
b.	40	20	40	20
c.	40	20	40	20
d.	40	20	40	20

Source: EMPower™ book Everyday Number Sense: Mental Math and Visual Models

Math Inspection: Check Both Sides of the Equal Sign

Look at the equations below. How do the numbers change from the left to the right side of the equal sign? Why does this keep the value equal?

9 – 6 = 10 – 7

19 – 13 = 20 – 14

25 – 9 = 26 – 10

Source: EMPower™ book Everyday Number Sense: Mental Math and Visual Models

Count Up and Down by 10s

Count Up by 10, Starting at…		
27	365	619
37	375	629

Count Down by 10, Starting at…	
315	203
305	193

Source: EMPower™ book Everyday Number Sense: Mental Math and Visual Models

By What Did I Count?

Look at the pattern. Find the missing number.

1. 63, 73, _____, 93, 103

   By what did I count?

2. 40, 70, _____ , 130, 160

   By what did I count?

3. 114, 214, 314, _____

   By what did I count?

4. 250, 240, _____ , 220

   By what did I count?

5. 377, 337, _____ , 257

   By what did I count?

6. 1,006, _____ , 986, 976

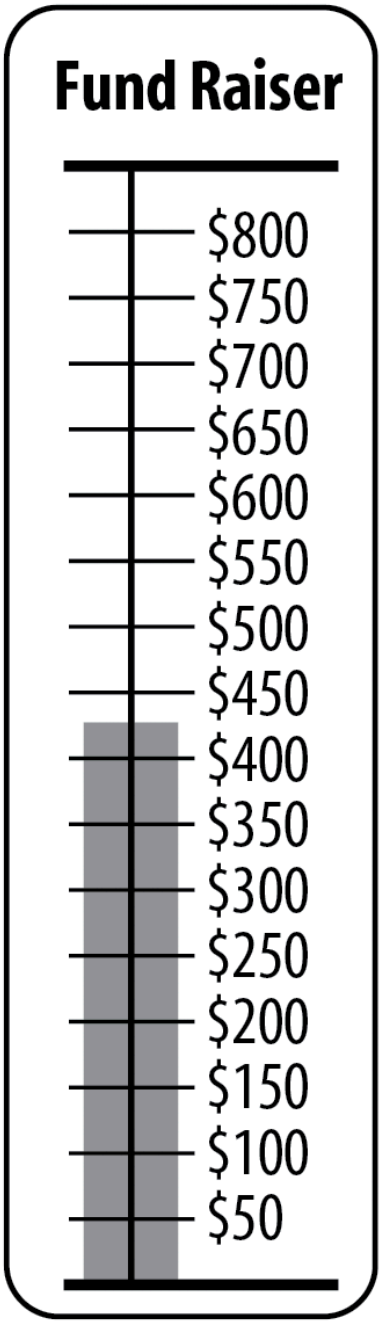
   By what did I count?

7. 1,006, _____ , 806, 706

   By what did I count?

Test Practice

The Sunshine Library is trying to raise $750 for a new computer. According to the sign, how much more do they need to raise?



Which One Doesn't Belong? 2

Choose one expression in this picture that you don't think belongs with the rest. Explain why.

$15 - 9$	$16 - 10$
$14 - 8$	$10 - 16$

Now pick another expression and explain why it doesn't belong.

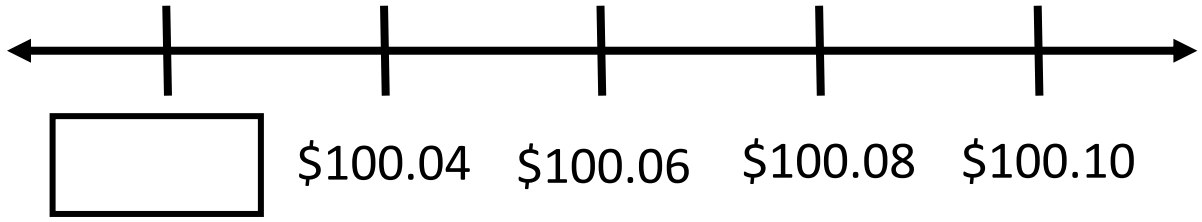
Subtraction to Get the Smallest Difference

Directions: Using the digits 1 to 9, at most one time each, fill the boxes below to create the smallest possible difference.

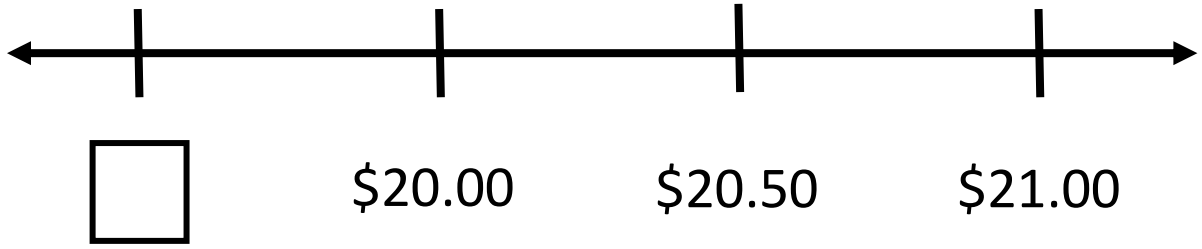
Number Line Puzzles 2

Fill in the missing numbers.

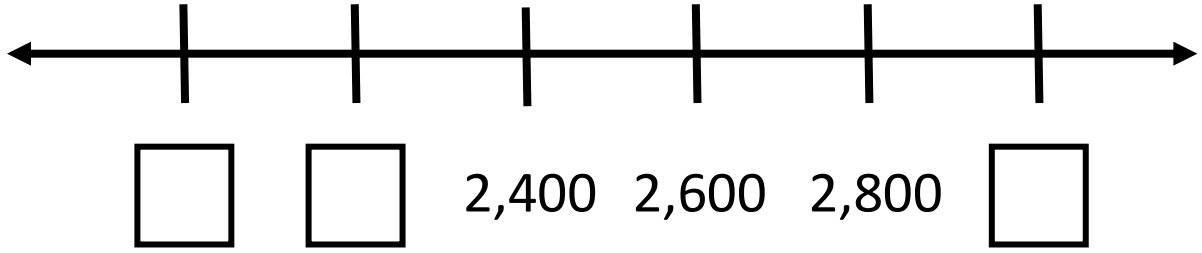
A



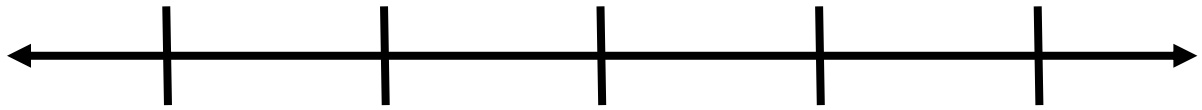
B



C



Create your own number line puzzle below.



UNIT 3: Going Deeper with Subtraction

Revenue – Costs = Profit

Have you ever wanted to own your own business?

8. Business owners have to keep track of whether they are making a profit.

Revenue – Costs = Profit

Revenue
the money a business takes in

Costs
the money a business pays out

Profit
the extra money the business owner earns by running the business

Let's say in May, your business took in $1,200 in revenue. You had to pay $800 in costs for materials and fees.

$1,200 – $800 = _____ profit

If the costs are greater than the revenue, then instead of a profit, the business owner has a loss.

How's Business?

Revenue – Costs = Profit

Business Reports for May

Phill's Bike Shop

Revenue: $1,500

Costs: $400

Profit:

Maria's Catering

Revenue: $1,200

Costs: $600

Profit:

Saul's Computer Repair

Revenue: $2,000

Costs:

Profit: $1,600

Juana's Accounting Services

Revenue: $2,300

Costs:

Profit: $1,800

Mel's Paint Shop

Revenue: $1,200

Costs: $1,500

Profit:

Destiny's Beauty Supply

Revenue:

Costs: $500

Profit: $50

Which companies did well in May?

Which companies struggled?

How do you know?

Starting a Cleaning Business

The name of our business is Edwin and Zulma LLC Cleaning Service. We recently opened a cleaning service for commercial and residential cleaning.

Zulma and Edwin are originally from El Salvador. They are both enrolled in an adult education program in Maine. This reading contains excerpts from an interview with them. The content was edited for length and clarity.

What expenses do you have?

Right now we just started, we have a lot expenses. We got new vacuums, we got new machines for cleaning the floors, the chemicals. We also had to purchase QuickBooks (accounting software). So right now it seems like a lot. But once we set up it will just be supplies, and that's it.

We were able to get a credit card for the business from the bank with no interest for 18 months. As soon as we get more business, we going to pay the credit card off.

Right now I am starting with my accounting and I keep all of my receipts and try to keep organized.

How do you decide how much to charge a customer?

We look into how much time it will take and how big the house or apartment is. Then we take all that into consideration. We ask the customer if they want windows cleaned, if they say yes, we add extra time for that. We ask if they want cabinets cleaned inside and out, and if they say yes, we add time for that and then, we put that all together and come up with the price.

We also see about how much supplies we will need, how much gas, and if we have to pay for parking.

How did you decide on your hourly rate?

I have other friends that have cleaning services, and I charge a little bit less, to get customers, and it's been working. And it's still better than working for other people.

expenses
costs

accounting
keeping track of all the money going in and out of a business

interest
the fee a person pays when he or she borrows money from a bank or company

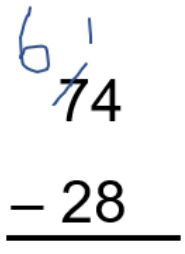
hourly rate
the amount of money charged for each hour

Questions for Discussion

1. Zulma and Edwin named some different expenses for their business. Which of those expenses do they need to pay once? Which expenses will they need to pay again and again?

2. Name some of the things that Edwin and Zulma consider when they are deciding how much to charge for a cleaning job.

Vocabulary List for This Unit

Word	Definition	Example
revenue	the money a business _____	
cost	the money a business _____ for its expenses	
profit	the money a business owner has left after costs are subtracted from revenue. "_____"	
regrouping	a method of subtracting in which value can be regrouped from one _____ into another. For example, one 10 can be regrouped into 10 ones.	

Word	Definition	Example

Ways to Think about Subtraction

Read carefully and solve each problem. Show your work and your thinking with pictures or equations.

A. Myrna had $80 when she went into the store. She came out with $30. How much did she spend?

B. Myrna has $30. Jodi has $80. How much more money does Jodi have?

C. Myrna had $80. She spent $30 on groceries. How much does she have now?

Source: EMPower™ book Everyday Number Sense: Mental Math and Visual Models

1. What is the same about each of the three problems?

2. How are they different?

Subtraction Can Mean…

Missing Amount

You know the starting amount and the ending amount. You subtract to find out what is missing.

A. Myrna had $80 when she went into the store. She came out with $30. How much did she spend?

Comparison

You have two amounts. You want to know how much more one amount is than the other. You subtract to find the difference.

B. Myrna has $30. Jodi has $80. How much more money does Jodi have?

Take Away

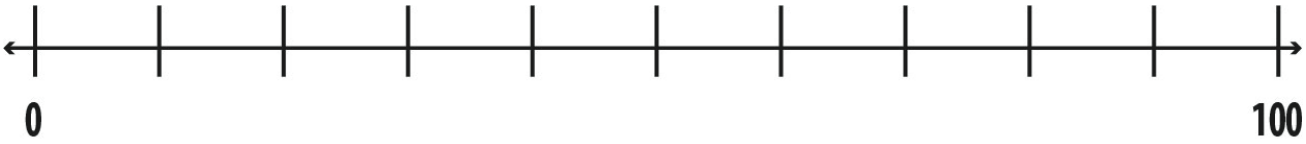
You have a starting amount. You take some away. You subtract to find what is left.

C. Myrna had $80. She spent $30 on groceries. How much does she have now?

Visual Models of Subtraction

Missing Amount

A. Myrna had $80 when she went into the store. She came out with $30. How much did she spend?



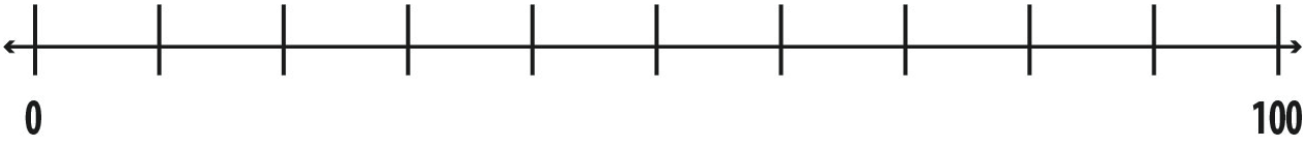
Before

After

What happened to get from here to here?

Comparison

B. Myrna has $30. Jodi has $80. How much more money does Jodi have?



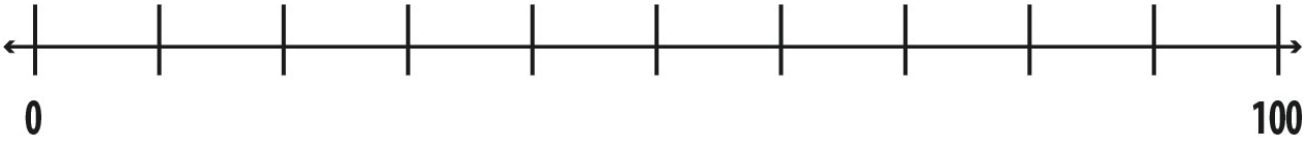
Jodi

Myrna

What's the difference between them?

Take Away

C. Myrna had $80. She spent $30 on groceries. How much does she have now?



Before **Now?**

Write Your Own Problems

Missing Amount

You know the starting amount and the ending amount. You subtract to find out what is missing.

Write your own missing amount problem here:

_____

_____

_____

_____

_____

Comparison

You have two amounts. You want to know how much more one amount is than the other. You subtract to find the difference.

Write your own comparison problem here:

_____

_____

_____

_____

_____

Take Away

You have a starting amount. You take some away. You subtract to find what is left.

Write your own take away problem here:

_____

_____

_____

_____

_____

How Do You See It?

$$40 - 27 =$$

Draw a picture or a diagram to show how you understand this problem.

Write a word problem that involves 40 – 27.

Source: EMPower™ book Everyday Number Sense: Mental Math and Visual Models

Check Both Sides of the Equal Sign —Addition

40 + 5 = 30 + 15

600 + 80 + 4 = 500 + 180 + 4

4,000 + 200 + 70 + 5 = 3,000 + 1,200 + 70 + 5

1. What changes from the left side to the right side of the equation?

2. Write your own equation like this.

3. Use that idea to complete these equations.

a) 90 + 4 = 80 + _____

b) 70 + 6 = 60 + _____

c) 400 + 80 = 300 + _____

Source: EMPower™ book *Everyday Number Sense: Mental Math and Visual Models*

The Regrouping Strategy ("Borrowing")

74 – 28

	Tens		Ones
74	70	+	4
– 28	– 20	+	8

	Tens		Ones
6 1 ~~7~~4	60	+	14
– 28	– 20	+	8

Check Both Sides of the Equal Sign—Subtraction

30 – 17 = 33 – 20

42 – 28 = 44 – 30

70 – 38 = 72 – 40

1. What changes from the left side to the right side of the equation?

2. Write your own equation like this.

3. Use that idea to complete these equations.

a) 71 – 26 = ____ – 30

b) 94 – 39 = 95 – ____

c) 47 – 18 = ____ – 20

Source: EMPower™ book *Everyday Number Sense: Mental Math and Visual Models*

Test Practice Problems

1. The temperature at mid-day was 98 degrees. The weather forecaster said that there would be a 30 degree drop by 6:00 pm. Which expression below represents the expected temperature in the evening?

   (a) 98 + 30
   (b) 98 – 30
   (c) 30 – 98
   (d) 98 – 30 – 6
   (e) 98 – 6

2. Rosa budgeted $300 for food this month. On her first two trips to the grocery store, she spent $35.23 and $67.34. Which of the estimates is closest to the amount of money she has left to spend on food for the month?

   (a) About $50
   (b) About $100
   (c) About $150
   (d) About $200
   (e) About $250

3. Todd is traveling from Denver to Little Rock, for a total of 966 miles. If he travels 259 on the first day and 329 on the second day, which expression represents the number of miles he has left to travel?

   (a) 259 + 329
   (b) 259 + 329 + 966
   (c) (259 + 329) - 966
   (d) 966 – (259 + 329)
   (e) 966 – 259 + 329

4. Jo had a twenty-dollar bill in their wallet. After buying a few things at the store, they noticed that they had a five-dollar bill and three one-dollar bills. Which expression would represent the amount of money spent at the store?

   (a) 3 – 5 – 20

   (b) 20 – (5 + 3)

   (c) 20 – 5 + 3

   (d) (3 + 5) – 20

   (e) 8 – 20

5. Main Street Grocery Store received a shipment of 1,200 oranges. They sold 263 on the first day. How many remained for them to sell?

   (a) About 50

   (b) About 150

   (c) About 950

   (d) About 1,250

   (e) About 1,400

6. Makayla loves to look at car deals online. What is the largest amount she can save?

   (a) ~~$23,999~~ Now $22,998

   (b) ~~$28,995~~ Now $26,495

   (c) ~~$21,000~~ Now $19,999

   (d) ~~$37,998~~ Now $37,500

Source: EMPower™ book *Everyday Number Sense: Mental Math and Visual Models*

Which One Doesn't Belong? 3

Choose one expression that you don't think belongs with the rest. Explain why.

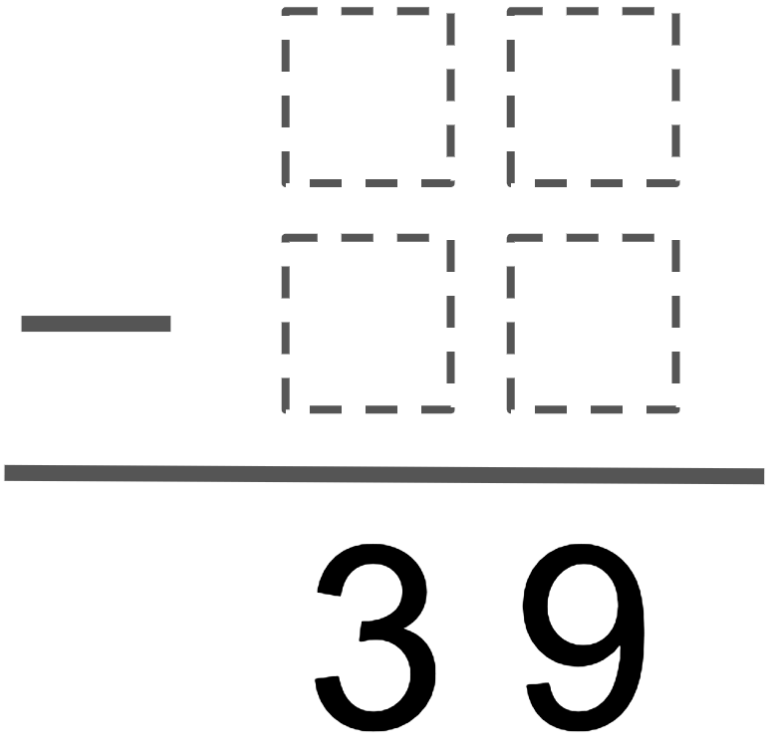
1,000 + 300 + 40 + 5	1,300 + 45
1,000 + 200 + 140 + 5	1,000 + 300 + 30 + 15

Now pick another expression and explain why it doesn't belong.

Subtraction with Regrouping

Put digits in the boxes so that the difference is 39.

You cannot use 0.

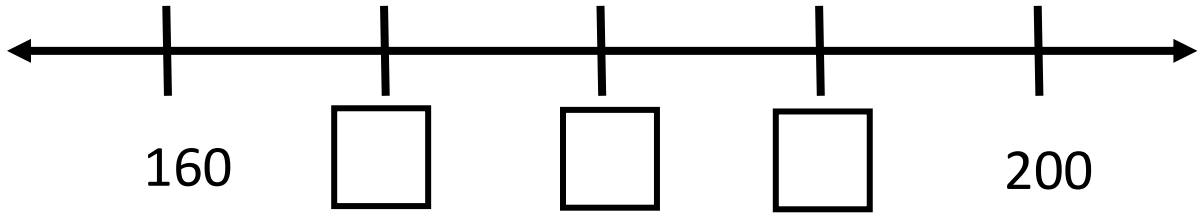


Source: Chris Ignaciuk on Openmiddle.com

Number Line Puzzles 3

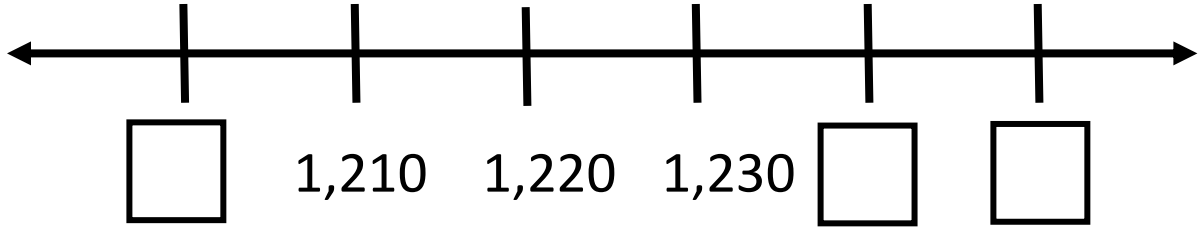
Fill in the missing numbers.

A

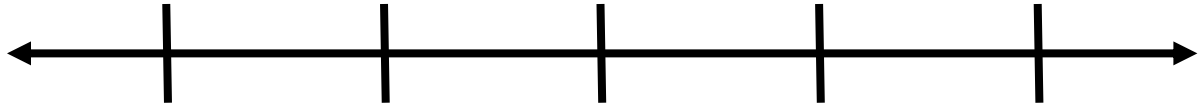


B

C



Create your own number line puzzle below.



UNIT 4: Our Base Ten System

Our number system is called "base ten." That is because we make groups of ten when we write and describe numbers. Notice that the numbers 0 – 9 each have their own symbol.

0 1 2 3 4 5 6 7 8 9

When we get to ten, we don't have a new symbol. Instead, we count it as one group of **ten**. We use the symbols 1 and 0 to represent ten.

1 0

1 ten 0 ones

After that, we count groups of tens and ones. When we have ten groups of ten, we use another place value and say we have one group of a **hundred**.

1 0 0

1 hundred 0 tens 0 ones

When we get ten hundreds, we call it a **thousand**.

1 0 0 0

1 thousand 0 hundreds 0 tens 0 ones

Every time we have ten of one group, we create a new group with a new place value.

Why ten? Math historians believe this system came from the fact that we have ten fingers, and humans have always used fingers to visualize numbers.

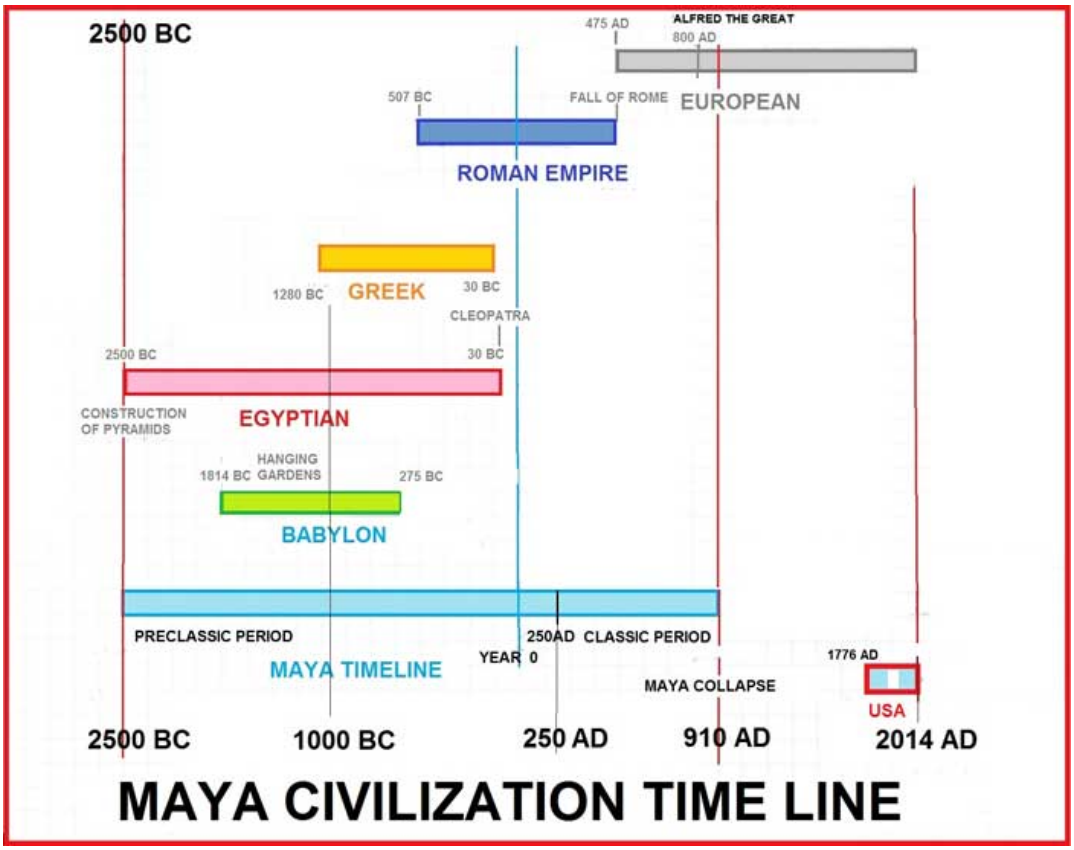
The base ten system we use today, along with the symbols we use for the digits 0 – 9, originally comes from India almost two thousand years ago. The system was adjusted over time and eventually spread around the world.

Other Number Systems

Base ten is not the only type of number system! Older civilizations had other types of number systems, based on 60 or 20 or 5. Even today, other base systems are used for specific purposes.

Maya: Base 20

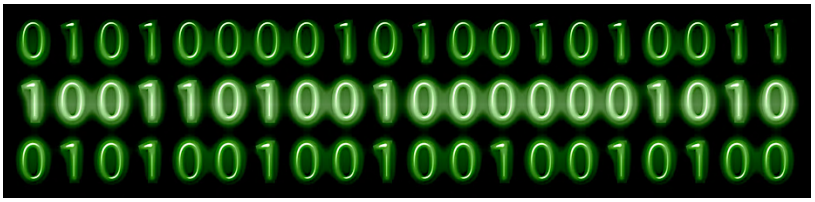
The Maya civilization was in Central America, centered around modern-day Guatemala. While the Maya political empire collapsed over a thousand years ago, the Maya people, culture, and languages still live in that part of the world.



The ancient Maya had very advanced mathematics. They used a base 20 system. That means they had different symbols for numbers 0 – 19, then grouped them into groups of 20. When they had 20 groups of 20, they would group that into one group of 400.

Binary: Base 2

Computers use a system called binary, which is base 2. That means it only has two symbols, 0 and 1. When you have two of something, you use a new place value. When you have two groups of two, you use another place value, and so on.



As an example, let's use the year two thousand twenty-one. Here's what the year 2021 would look like in different number systems:

Base 10: 2,021

2 x 1,000 + **0** x 100 + **2** x 10 + **1**

(Each place value is 10 times bigger.)

Base 20: 511

5 x 400 + **1** x 20 + **1**

(Each place value is 20 times bigger.)

Base 2: 11111100101

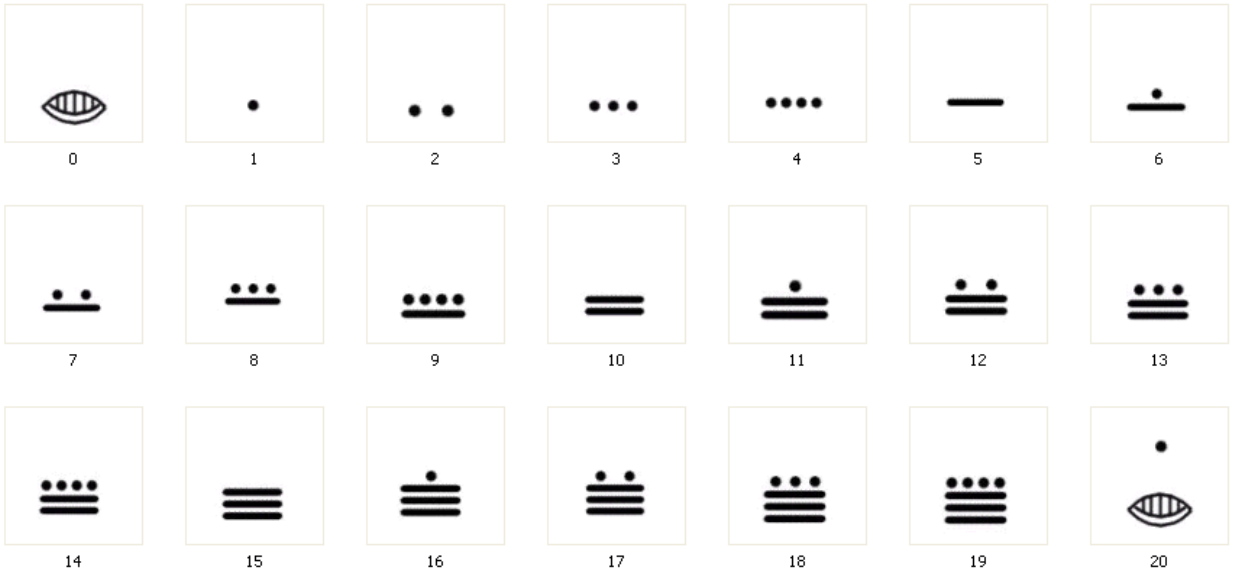
1 x 1,024 + **1** x 512 + **1** x 256 + **1** x 128 + **1** x 64 + **1** x 32 + **0** x 16 + **0** x 8 + **1** x 4 + **0** x 2 + **1**

(Each place value is 2 times bigger.)

More Maya Mathematics

Not only did the ancient Maya people have a different base system (base 20), but they had their own symbols as well.

Take a look at the symbols below for the numbers 0 – 20.

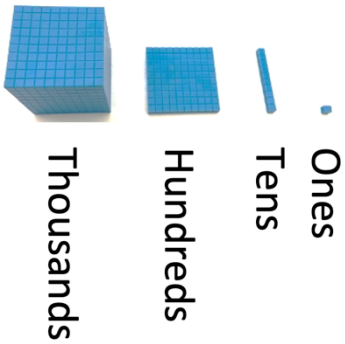


What do you notice?

What do you wonder?

What do you think the symbol — represents? Why does it appear several times in some numbers?

Vocabulary List for This Unit

Word	Definition	Example
base ten	as place values move left, each gets _____ bigger	
parentheses	in math notation, parentheses can be used to show _____	4 x 5 can be written as 4(5) or (4)(5)
double	to _____ by two (or, to add a number to _____)	double 25 is 50 25 x 2 = 50 25 + 25 = 50

Word	Definition	Example

How Do You Want Your Money?

Three friends went to cash paychecks. Each paycheck was for $2,643. Each person wanted their cash in a different way using only $1,000, $100, $10, and $1 bills.

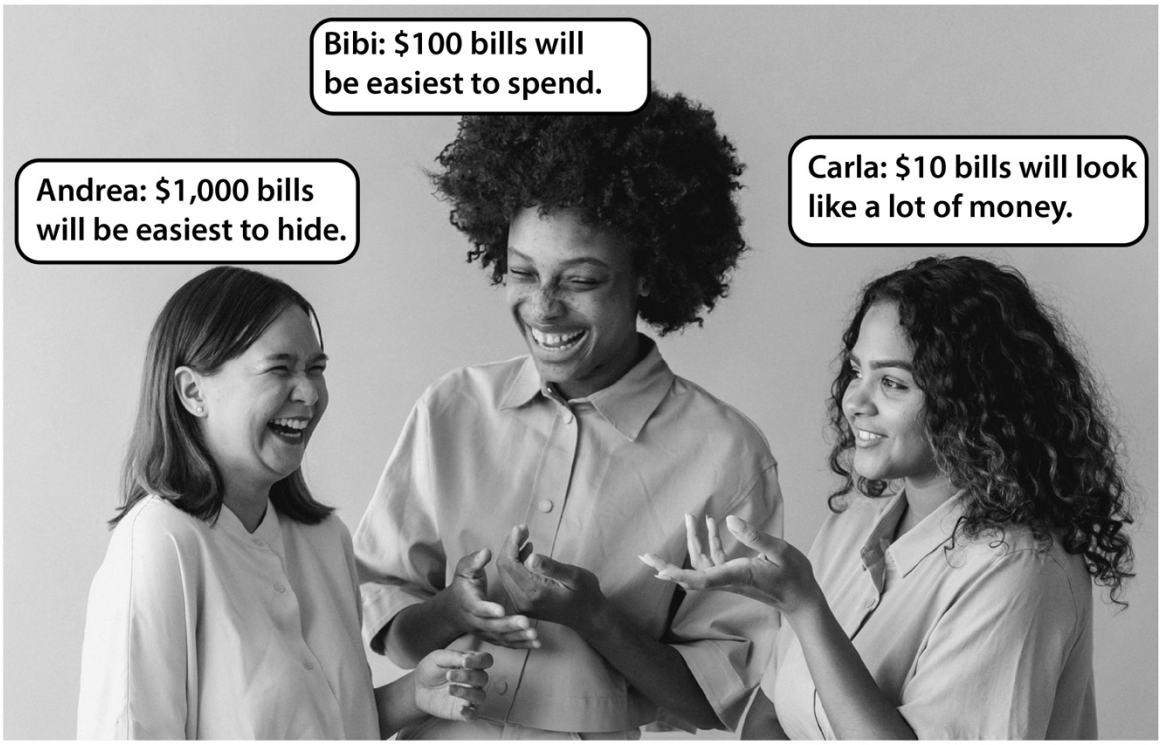


Photo by Antonius Ferret from Pexels

1. How did each person receive her money?

   Andrea:

   Bibi:

   Carla:

2. Suppose the checks were for $1,305 each. How would each receive her money?

Andrea:

Bibi:

Carla:

3. Suppose the checks were for $3,045 each. How would each receive her money?

Andrea:

Bibi:

Carla:

Adapted from EMPower™ book Everyday Number Sense: Mental Math and Visual Models

Where Can I Cash My Check?

Check Cashing Services

Advantages:

- Allow you to cash a check without a bank account
- Make money available almost immediately

Disadvantages:

- Charge high fees, so the take home money is less
- Having a lot of money in cash can be risky

Traditional Banks

Advantages:

- Safe place to store your money
- No fee to cash a check if you have an account
- You can write checks or use a debit card to pay with money from your account

Disadvantages:

- It takes time and usually a photo ID to open an account.
- People with a bad banking history report may have a hard time opening an account.
- You may have to wait a day or two for a check to clear before you can withdraw the money.

Fees, Fees, Fees

Maria is paid $600 a week. Every week, she cashes her paycheck at the local check cashing service. Each time, she pays a $7 fee.

How much will she pay in fees? Continue the pattern.

Weeks	Total Paid in Fees
1	$7
2	$14
3	
4	
5	
6	
7	
8	
9	
10	

After one year, Maria will have paid the $7 fee 52 times! She will have paid a total of $364 in fees.

Mystery Numbers

Use a calculator to help you. Decide what needs to be done to get from the starting number to the end number.

The first problem has been done for you.

Starting Number	Operation and Amount	End Number
1. 1,543	+ 30 =	1,573
2. 826	=	526
3. 1,988	=	3,988
4. 1,988	=	2,088
5. 7,070	=	7,670
6. 2,006	=	2,506
7. 4,260	=	4,240
8. 10,765	=	8,765
9. 9,999	=	9,599
10. 1,750	=	2,350

Source: EMPower™ book *Everyday Number Sense: Mental Math and Visual Models*

True or False?

Mark each equation T (true) or F (false). Change all the false equations to make them true.

Statement	True or False?	False Statement Changed to Be True
1. 4 thousands = 40 hundreds		
2. 100(10) = 10(100)		
3. 6,503 = 6(1,000) + 53(10)		
4. 666 + 40 = 1,066		
5. 5,958 – 300 = 2,958		
6. 92(10) = 9(100) + 2(1)		
7. 57(100) + 4 = 5,704		
8. 2(1,000) + 5(100) = 20(100) + 50(10)		

Source: EMPower™ book *Everyday Number Sense: Mental Math and Visual Models*

More Mystery Numbers

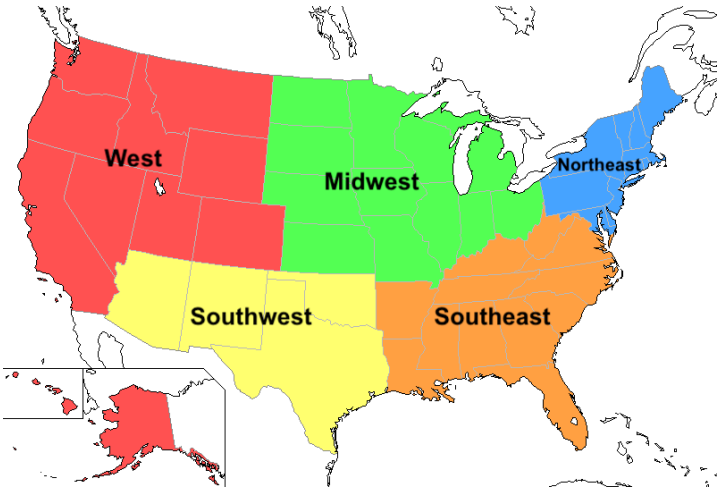
Use a calculator to help you. Decide what needs to be done to get from the starting number to the end number.

Starting Number	Operation and Amount	End Number
1. 543	+ 1,000 =	1,543
2. 876	=	526
3. 1,088	=	3,088
4. 1,077	=	707
5. 21,156	=	21,156
6. 2,006	=	1,706
7. 4,640	=	4,590
8. 10,065	=	10,060
9. 9,009	=	9
10. 1,750	=	2,350

Source: EMPower™ book *Everyday Number Sense: Mental Math and Visual Models*

Mental Math Practice: Double Trouble

Try to do as many of these doubling and halving problems as you can in your head. Use a calculator to check your answers.



1. It was a wet year all over the United States. Average rainfall doubled in each region this year. What are the missing numbers?

Region	Average Rainfall (in)	This Year's Total Rainfall (in)
a. Midwest	_____	48
b. Southeast	_____	38
c. Northeast	44	_____
d. West	_____	118
e. Southwest	9	_____

What is true about the 1s digit in numbers that, when doubled, end in "8"? Will this always be true?

2. Xiomara delivers groceries. She has to return to the store after each delivery. She looked up the distance to each delivery site that she visited today so she could calculate how far she drove.

	Store to Site	**Round Trip**
a. Delivery 1	7 miles	_____
b. Delivery 2	17 miles	_____
c. Delivery 3	27 miles	_____
d. Delivery 4	37 miles	_____

What is true about the 1s digit in all the answers?

Source: EMPower™ book *Everyday Number Sense: Mental Math and Visual Models*

Test Practice

1. John earned $5,906 last month. Which one of the following is not a way he could take his earnings?

   (a) 5($1,000) + 9($100) + 6($10)

   (b) 5($1,000) + 9($100) + 6($1)

   (c) 59($100) + 6($1)

   (d) 590($10) + 6($1)

   (e) 5($1,000) + 90($10) + 6($1)

2. 3($1,000) + 5($10) + 2($1) + 1($100) =

   (a) $1,135

   (b) $3,152

   (c) $3,521

   (d) $5,213

   (e) $5,352

3. Kay wants her group to raise more money this year than they ever have before. Last year's sales were $350; this year Kay wants to raise $900. How does this year's goal compare with last year's sales?

   (a) Ten times more than last year

   (b) About double last year's sales

   (c) About $600 more than last year

   (d) About ten times less than last year

   (e) About $6,000 more than last year

4. Vera's company has given her a sales goal of $5,000. She has sold $495 worth of merchandise. How do her actual sales compare with her goal?

   Her goal is ...

   (a) Double what she has sold

   (b) About $500 less than what she has sold

   (c) About $5,000 more than what she has sold

   (d) About $500 more than what she has sold

   (e) About 10 times more than what she has sold

5. N stands for an unknown number. N + 10 = 260. What does N equal?

   (a) 26

   (b) 160

   (c) 250

   (d) 260

   (e) 270

6. How much more than 39,705 is 40,005?

Source: EMPower™ book *Everyday Number Sense: Mental Math and Visual Models*

Which One Doesn't Belong? 4

Choose one group of numbers that you don't think belongs with the rest. Explain why.

8 80 800 8,000	5 55 555 5,555
9 900 90,000 9,000,000	12 102 1,002 10,002

Now pick another group and explain why it doesn't belong.

Greatest Difference of Two Rounded Numbers

Directions: Find two numbers that round to 500. What is the difference between them? Try to find two numbers that both round to 500 with the greatest possible difference.

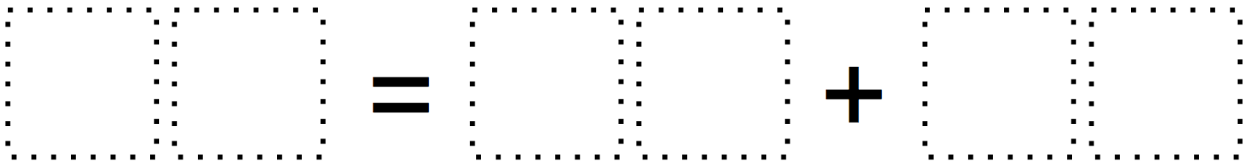
Source: https://www.openmiddle.com/ Michael Wiernicki, Graham Fletcher, and Rachel Nelli

Create an Equation

Directions: Fill in the boxes to create a true equation.

What is the largest sum you can make?

What is the smallest sum you can make?

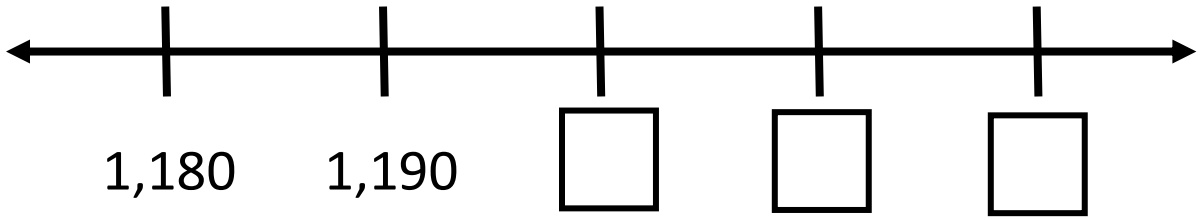


Adapted from source: https://www.openmiddle.com/ Eric Appleton

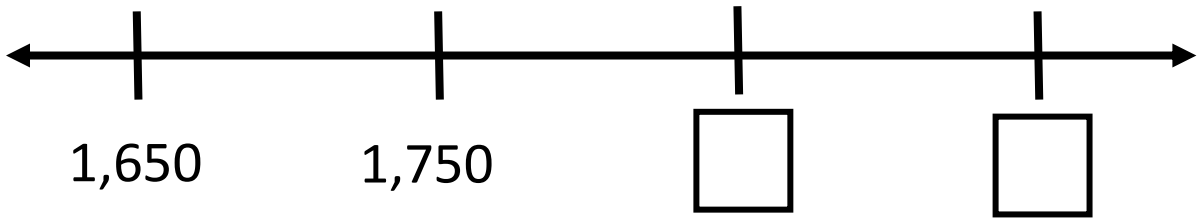
Number Line Puzzles 4

Fill in the missing numbers.

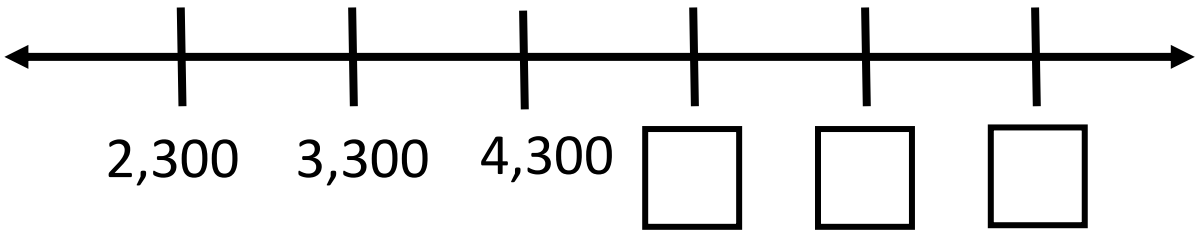
A



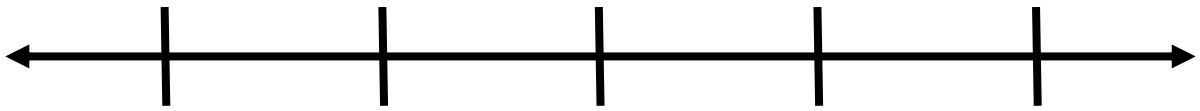
B



C



Create your own number line puzzle below.



Blank Number Lines

Blank Number Lines