The Time Machine

Let's go back in time. We can do this with our imaginations and a little arithmetic. We're going back over 200 years to the time when the United States of America was being created.

_____ Write down your current age in years.

_____ Write down the current age of one of your parents (or the age of a guardian who is about the age of a parent.)

_____ Subtract the first number from the second. Write it here.
This is how many years ago your parent (or guardian) was the same age you are today. That difference is a measure we'll call the "generational difference."

_____ Write down the current year

_____ Write down the *generational difference* you calculated above.

_____ Subtract your *generational difference* from the current year. The answer is the year your parent or guardian was the same age you are now.

Q: Does that seem like a long time ago?
Ask your parent or guardian about a newsworthy event that happened around that year. Find out more about that event by talking to a family member, reading an encyclopedia, or doing a web search to find a news article or a book.

Definition:
A **generation** is a family group. Children are in a different generation from their parents. Your parents and their brothers and sisters (that is, your aunts and uncles) are in the same generation. Your grandparents, that is your parent's parents are in an older generation. You are in a younger generation.

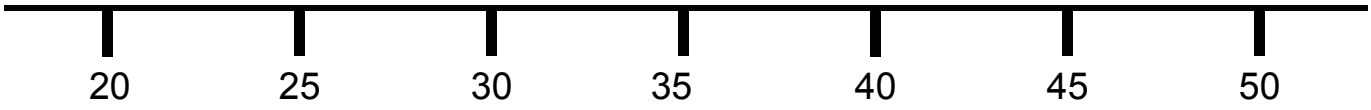
Averaging

Ask five classmates what numbers they calculated as their *generational differences*. Write them in the blanks to the right; include your answer, too. To a scientist or researcher, these numbers are called **data points**.

_____ + _____ + _____ +

_____ + _____ + _____ =

Number Line



Mark on the Number Line above where the six data points fall.

Calculating:

Add together the six numbers (your data points). Divide that sum by six (or by however many numbers you used to arrive at your sum.) The resulting answer, called a **quotient** in arithmetic, is the average generational difference for you and your five classmates. It represents for the group of classmates together the average *generational difference*. This number represents the **best estimate** of the *generational difference* for any member of your group. Mark this **average** on the Number Line.

_____ = Sum

Divide by 6

_____ = Quotient

You can repeat this calculation of an average for any group of students, including your entire class.

Estimating:

Before you calculate the average, look at the numbers and make your "best guess" at a number that you think is equally close to all of them on a number line. This "best guess" is your **estimate**. Making a "good guess" is called estimating." If you are good at mental math, you may actually be able to calculate the average in your head without using pencil and paper.

When was that?

_____ Write down the current year

_____ Write down the "average generational difference" (the quotient) for you and your five classmates.

Subtract the "average generational difference" from the current year.

_____ This answer is the best estimate of the year any of the parents or guardians of you and your five classmates would have been your current age. It is just an estimate. It may be exactly the year for some of you; for others, it may be earlier or later than the year each person calculated for himself or herself individually.

Optional Exercise:

If you repeated this exercise to calculate the "generational difference" between your parents and their parents (that is, your grandparents), you would probably come up with a different number for a "generational difference." Likewise you would come up with a different number from your group of classmates for the "average generational difference" between these two older generations.

If you have time and if you know your grandparents' ages, repeat this calculation of an average using each of your parents and their parents. Of course, you will be able to calculate two numbers: one for your mother's side of the family and one for your father's.

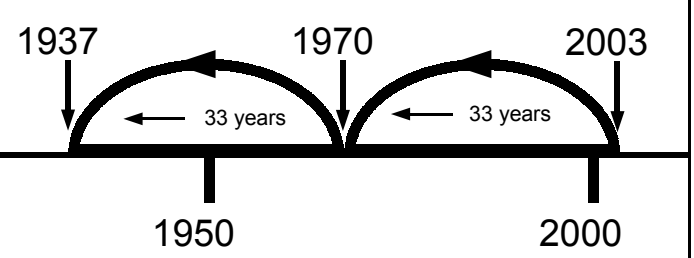
Building a Timeline

If your teacher chooses, you can calculate the "average generational difference" for your entire class. To do this you would add up the generational differences calculated by each member of your class and divide by the number of students in your class. It would not be unusual for your answer to be close to 33 years, though answers from 20 to 40 would be reasonable, too.

For the sake of consistency, let's take 33 years as the "average generational difference" for your entire class. On the next page, use 33 years to calculate the years back through time at which each previous generation (your parents, your grandparents, your great-grandparents, etc.) would have been the age you are now. (See the example below and right.) Plot those years on the Timeline.

Example: 2003 minus 33 years = 1970; 1970 minus 33 years = 1937; etc.

Example of Building a Timeline



Building a Timeline (continued)

_____ = Current year
-33

_____ = Year your parents were your age now
-33

_____ = Year your grandparents were your age
-33

_____ = Year your great-grandparents were your age
-33

_____ = Year your great-great grandparents were your age
-33

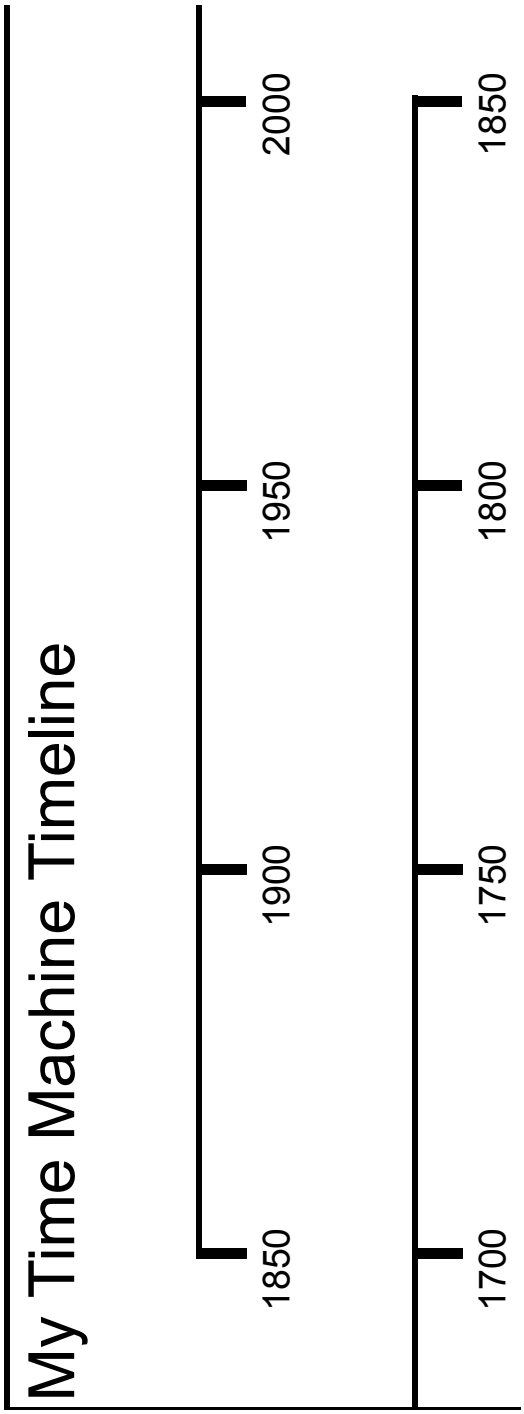
_____ = Year your great-great-great grandparents were your age
-33

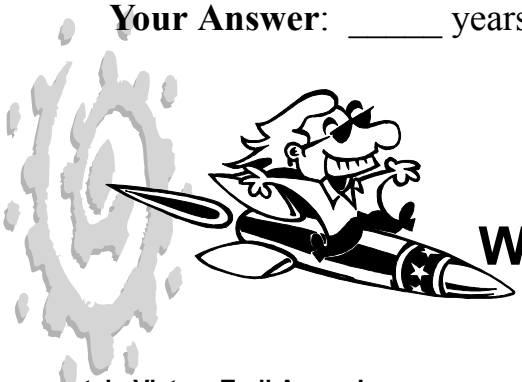
_____ = Year your great-great-great-great grandparents were your age
-33

_____ = Year your great-great-great-great-great grandparents were your age

How old were your G-G-G-G-G grandparents in 1780?

Your Answer: _____ years old





Your time machine has arrived! Welcome to the 18th Century.

Bonus question: Why are the 1700s called the 18th Century?