

College Guild
PO Box 6448, Brunswick ME 04011

Inventions

Unit 1 of 5

Inventions by Mistake and Early Inventions

Welcome to College Guild's Inventions Course! This is a five unit course that covers important technological advances from ancient times to the modern day. We'll talk about everything from prehistoric tools to the computer and eventually imagine what the future might look like, with robots and self-driving cars.

Some things to know about this course:

1. There are no right or wrong answers here, as the questions are meant to encourage creative and imaginative thinking. Approach this course like an inventor might, with an innovative spirit and a curious mind.
2. Answer all the questions that are in bold print. When we receive a completed Unit back, you'll be sent the next one, along with your original work and feedback from your reader. You don't need to return the questions—it saves us both postage.
3. Take the time to read the questions thoroughly and find the most creative way to word your answers. There is no specific deadline to complete any Unit, but we would get concerned if we hadn't heard back from you in 2-3 months. You can ask for an extension if your own circumstances make that necessary. Remember how often the mail service loses things and if you don't hear back from us after a month, write to make sure your Unit was received and the next unit sent out.
4. Let us know if you need a dictionary, free to CG students who complete the first Unit.

Inventions by Mistake

Did you know that some of our favorite inventions were the result of accidents? This may come as a surprise, but the following five products came about unintentionally. Their creators had no idea what impact they would have!



Chocolate Chip Cookies: One day, an inn owner named Ruth Wakefield was trying to make chocolate cookies, but she had no baker's chocolate, which was one of the ingredients. Instead, she took some sweetened chocolate and broke it into small pieces, expecting it to melt evenly into the dough and make chocolate cookies. When she opened her oven, she was surprised to see that the chocolate hadn't behaved as expected.



Silly Putty: During World War Two, James Wright was an engineer at General Electric. As rubber was hard to come by for soldiers' boots and airplane tires, he was hoping to create a substance that could be used as a rubber substitute. He ended up with a sticky, gooey material that couldn't replace rubber but made a great toy!



Microwave: Percy Spencer was an engineer at Raytheon Corporation conducting research on radar, which is a system to detect objects' speed, angle and distance. One day, he was conducting research on magnetrons, or tubes to go into the radar machine. He realized that a candy bar had melted in his pocket. Curious as to why this had occurred, he put popcorn kernels into the tube. To his surprise, they popped.



Potato Chips: George Crum was a chef who got frustrated with a demanding customer. This customer kept sending back his plate of fried potatoes, wanting them to be sliced thinner and thinner. Crum lost his temper and sliced them as thin as he possibly could. Contrary to what he expected, the customer was delighted with the crunchy potatoes and wanted more!



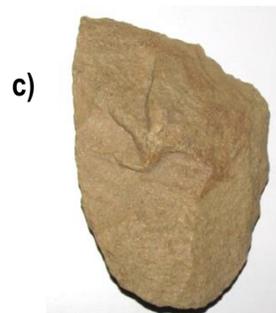
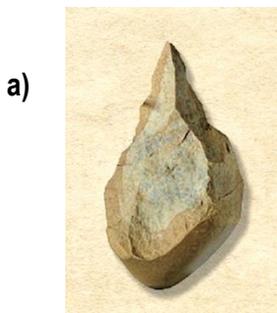
Sticky Notes: Researcher Spencer Silver was working in 3M Laboratories trying to make a strong new adhesive for gluing things together. Instead, he ended up creating a really weak adhesive that barely made things stick. His colleague started spreading this adhesive on little pieces of paper to use as bookmarks that could be easily removed without damaging pages, and the idea stuck.

1. Imagine that you are one of the five people above who has just discovered something by mistake. Write a letter to a friend or family member telling them about it. Feel free to make up more details than are provided above or create your own story about how this invention came to be.
2. Was there ever a time in your life where you or someone you knew made a mistake that turned out to be a lucky one? Tell us about it. If you can't think of one, imagine a scenario.
3. What do you think makes someone an inventor? Can anyone be an inventor? Why or why not?

Early Tools and Intelligence

Even the earliest humans were inventors. The Smithsonian Museum of Natural History in Washington, D.C. holds ancient discoveries that archeologists believe were used by early humans as tools. (Archeologists are people who study human history through the excavation of sites and the analysis of physical remains). Some of these tools are at least 2.6 million years old. They were the very first inventions.

4. **Imagine you are an archeologist and have just dug up the tools below. Explain what you imagine each tool might have been used for.**



5. **The inventions above look like they were created from raw material with a use in mind. If you find an object such as a rock and use it for some purpose like cracking open a shell, do you think that counts as an invention (even though you haven't carved it into anything)? Why or why not?**
6. **If you use an existing invention for a purpose other than the purpose it was intended for, do you think that counts as a new invention? Why or why not?**
7. **Imagine that you have to go back in time to live among cavemen. What one invention from modern times will you take with you and why? Keep in mind that you will need food, clothing and shelter.**

Though humans are the most technologically advanced species, we aren't the only ones to create and use tools! Crows have been known to make their own tools by taking twigs from bushes and using them to get insects and larvae out of logs. They even make hook-like tools by trimming ferns or twigs. Chimpanzees poke pieces of grass into termite mounds to "fish" for tasty termites. Elephants use branches as back scratchers or fly swatters. Sea otters use rocks to break open shellfish and clams.



8. **How are these animals similar to early humans? How are they different?**

9. Imagine that you are one of the animals pictured above and your buddy asks what you are doing. Write a conversation in which you explain to him what you are up to. (Translate Crow or Chimp into English, please).

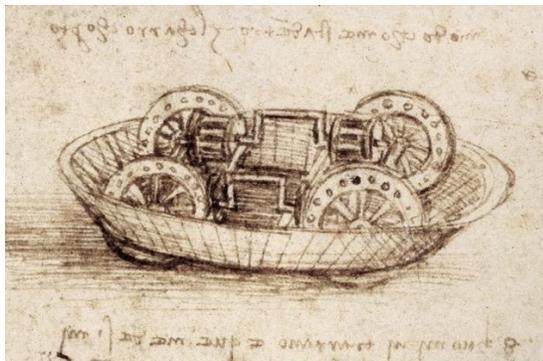
Leonardo da Vinci, Renaissance Man

Let's fast forward to the 1400s. It was then that Leonardo da Vinci, a man considered to be one of the most multi-talented and intelligent people of all time, studied in Italy, filling up 13,000 pages with notes, drawings and ideas. While Leonardo is widely recognized for his painting, especially the world famous *Mona Lisa*, he also is known for dreaming up inventions that were very advanced for his time. He imagined flying machines and shoes for walking on water. Most of Leonardo's handwritten notes are in mirrored cursive, which means that he wrote in such a way that if he held his page to a mirror, it could be read normally. People speculate that he wrote this way because he was left-handed and if he wrote from right to left he wouldn't smudge his ink as he was writing.

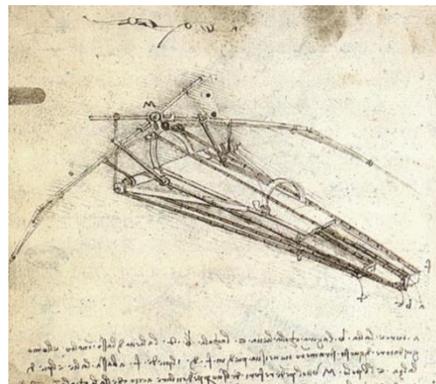
10. Try writing your name as Leonardo did. Try printing first. As an extra challenge, can you do it in cursive? Could you imagine writing like this all the time?

Leonardo Leonardo
 Leonardo Leonardo

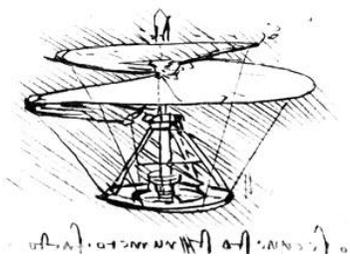
11. Sketch your own invention. It can be practical or silly, and you don't have to be an artist like Leonardo to do this! Add a few sentences to explain what it does. (Forwards writing is fine for this one 😊).



Self-propelled cart, similar in concept to today's car

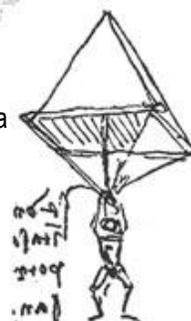


Leonardo's flying machine, 1488



Leonardo imagined a helicopter

An idea for a parachute



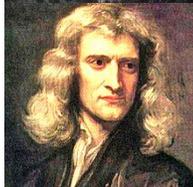
Other Famous Inventors



Hero (10-70): Hero was an Ancient Alexandrian inventor who invented the first vending machine where putting a coin into a slot would trigger the dispensing of a small amount of holy water. He also invented a wind-powered organ, mechanisms for the Greek theater and a cart operated by a falling weight.



Johannes Gutenberg (1400-1468): Gutenberg was a German publisher who invented the printing press, allowing for the mass-production of books. This invention made books cheaper and more accessible to common people.



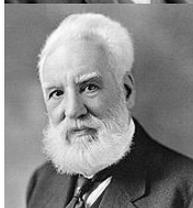
Isaac Newton (1643-1727): Newton was an English physicist. You may know of Newton for his discovery of gravity, the force that pulls objects down towards the Earth and keeps us from floating off into space. However, he also built the first practical reflecting telescope and invented calculus.



Benjamin Franklin (1706-1790): Franklin was one of America's founding fathers and appears on the one-hundred-dollar bill. He also was a great inventor who invented the lightning rod (which protects buildings from lightning strikes), bifocals (a special type of eyeglasses) and the Franklin stove (a metal-lined type of fireplace).



Thomas Crapper (1836-1910): Though the term "crap" doesn't come from Thomas Crapper's name, Thomas Crapper was coincidentally a plumber in London who is credited with inventing improvements to the flush toilet.



Alexander Graham Bell (1847-1922): Bell was a Scottish engineer who invented the telephone. He began experimenting with hearing devices because his mother and wife were both deaf and because his family members studied formal speaking.



Thomas Edison (1847-1931): Edison, an American, is best known for creating the light bulb. He also invented a phonograph (record player) and the motion picture camera.



Wilbur and Orville Wright (1867-1912) & (1871-1948): The American Wright brothers were the first to successfully build and fly an airplane. They made Leonardo da Vinci's dream a reality a few hundred years later.

12. Write a short story in which at least one of the inventions mentioned above appears.
13. Which two of the inventions from this list would you consider to be the most important and why?
14. If you could have dinner with one of the famous inventors listed above, who would you choose and why? What would you ask them about?
15. Pick one invention mentioned above and write a poem about it.

Below are some quotes from the inventors we have learned about:

“Opportunity is missed by most people because it is dressed in overalls and looks like work.” –Thomas Edison

“They who can give up essential liberty to obtain a little temporary safety deserve neither liberty nor safety.” –Benjamin Franklin

“Truth is ever to be found in simplicity, and not in the multiplicity and confusion of things.” –Isaac Newton

“Art is never finished, only abandoned.” –Leonardo da Vinci

“If we worked on the assumption that what is accepted as true really is true, then there would be little hope for advance.” –Orville Wright

16. Choose one of these quotes to rewrite in your own words. Write an essay explaining why you agree or disagree with this inventor’s idea.

Remember: First names only & please let us know if your address changes

Sources:

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