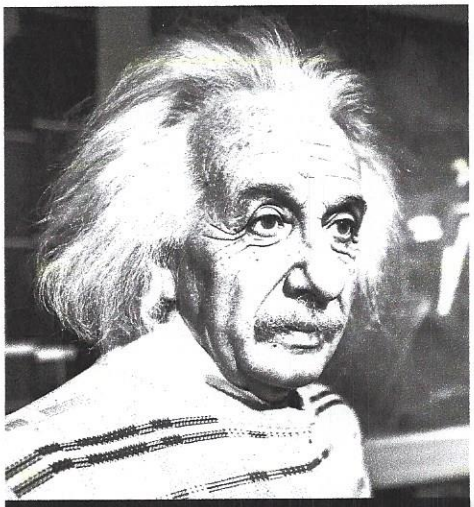
6th L. Arts
4/29/20

Name: _____

Great Minds: Albert Einstein

by Lydia Lukidis



"I am enough of an artist to draw freely upon my imagination. Imagination is more important than knowledge. Knowledge is limited. Imagination encircles the world."
- Albert Einstein

You would probably recognize Albert Einstein from his photos. Yep, he was the guy with the crazy hair! But he also had some great ideas. He was more than just a scientist. He was a genius who changed our lives. He made some of science's biggest discoveries. He also developed some important theories. Some of these theories may seem complicated. But they concern everybody. Science is everywhere and affects us every day. Einstein's discoveries made things like television, DVD players, and garage door openers possible.

Einstein was born in Germany in 1879. When he was five years old, his dad gave him a compass. It became his favorite toy. He would stare at the needle of the compass as it moved. It seemed like magic at first. Einstein wanted to understand how the needle moved. So he learned about magnetism. Magnetism is about the invisible force of magnets. It can make objects stick together or move away. Einstein also learned a lot about science and electronics because of his dad. His dad owned an electronics company. It was no surprise that Einstein ended up loving math and science. He started performing experiments at a very young age.

Einstein performed extremely well in school. He quickly advanced to higher level math and science topics, and his teachers were impressed by his grasp of college-level physics concepts by the time he was eleven. When he was young, he met a Polish medical student named Max Talmud. Talmud became his tutor. He showed Einstein a children's textbook about science. Einstein became curious about light and other things.

Einstein later attended school in Switzerland. He made many friendships. He also met his future wife, Mileva Maric. She was a Serbian physics student. Einstein received his

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doctorate in 1905. That same year, he published many important scientific papers.

After that, Einstein became a professor in Germany. But times were tough back then. Hitler and his Nazi party started a war against Jewish people. Einstein was Jewish. So he decided to leave and go to the United States. That was in 1933. And it's a good thing he did. The world needed him to be free and pursue his passions.

Einstein was not an inventor like Thomas Edison or Alexander Graham Bell. But his theories and discoveries changed the way we look at things. Some example are time, space, matter, energy, and gravity.

Einstein is best known for his Theory of Relativity. You probably heard of the equation $E=mc^2$. *E* stands for energy, *m* stands for mass, and *c* stands for speed of light. But what does this all mean? Yes, it is as complicated as it sounds! Here's the most basic way to explain it. The theory is a scientific explanation about how space relates to time. This was very important. It changed the way scientists looked at the universe. This theory also brought on inventions like the nuclear bomb and nuclear energy.

Einstein made many other discoveries. For example, he figured out that light is made up of many little particles called photons. He called this the quantum theory of light. At the time, some other scientists did not agree with this theory. But later, it was proven. This was an important discovery. It led to many inventions such as television.

Here's one more example of an important discovery Einstein made. Along with scientist Satyendra Bose, he discovered a new state of matter. Regular states of matter are gas, liquid, and solid. Einstein and Bose found another one. They named it the Bose-Einstein Condensate. Today, it's used in cool things like lasers.

Einstein's work was and is valuable to the world. This is one of the reasons he eventually won the Nobel Prize in Physics. The Nobel Prize is a very famous award given to someone who has done outstanding work in different subjects like science or medicine. Einstein died in 1955. He was later named "Person of the Century" by TIME Magazine.

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1. Based on the information in the article, which statement is true about Albert Einstein's younger years?

   a. Einstein's teachers were disappointed in his lack of interest in math and science.
   b. Einstein was tutored by a Polish medical student, Max Talmud.
   c. Einstein wanted to be a physics professor like his father.
   d. Einstein's first time traveling abroad was when he fled Germany for the U.S. in 1933.

2. Even though Albert Einstein wasn't an inventor, his discoveries paved the way for many inventions. Name **six** things that were invented because of Einstein's work in math and science.

   1. _____ 2. _____ 3. _____

   4. _____ 5. _____ 6. _____

3. Einstein is very famous for his Theory of Relativity. His equation, $E=mc^2$, is a scientific explanation for how space relates to time. What does each part of the equation stand for?

   E - _____ m - _____ c - _____

4. In addition to Einstein's Theory of Relativity, describe **two** other important discoveries Einstein made during his life.

   _____

   _____

   _____

5. What honor was bestowed on Albert Einstein later on in his career?

   _____

You may use your notes from last week to help you answer the following:

1. Is the following question statistical or non-statistical? How many hours did you sleep last night?	2. Is the following question statistical or non-statistical? How many cars were sold each day this month?	3. Is the following question statistical or non-statistical? How many leaves did each branch have on it?
4. How could you change the following non-statistical question to make it a statistical question? Who has the most pets on your block?	5. Create your own example of a statistical question.	6. Create your own example of a non-statistical question.
7. Is the following question statistical or non-statistical? How long is each girl's hair in your class?	8. Is the following question statistical or non-statistical? How many presidents were under 50 when inaugurated?	9. Is the following question statistical or non-statistical? What size shoes does each person in the class wear?
10. In your own words, briefly define ***statistics***.	11. In your own words, briefly tell what a ***statistical question*** is.	12. How could you change the following non-statistical question into a statistical question? How many students passed the math test?

13. Harley believes that the question “What size shoe do 6th graders wear?” is a statistical question. Is she correct? Why or why not? Justify your answer.	14. Write a statistical question that you could ask your classmates that has to do with sports.	15. Write a non-statistical question that you could ask your classmates that has to do with lunch.
16. Is the following question statistical or non-statistical? Justify your answer. What time does each student wake up in the morning?	17. Is the following question statistical or non-statistical? Justify your answer. How many bread rolls did each person at the table eat?	18. Justin believes that the question, “Do you like green beans?” is a statistical question. Do you think he is correct? Why or why not?
19. In your own words, briefly tell what a ***non-statistical question*** is.	20. How could you change the following question into a statistical question? Do you like music?	21. How could you change the following question into a non-statistical question? How many siblings does each student have?

Name_____

Periodic Table Packet

Directions: Use a Periodic table to find the information asked for below:

1. What is the atomic number of:
Calcium____
Iron ____
Gold_____
Uranium_____

2. What is the Atomic mass of:
Calcium _____
Iron_____
Uranium_____
Copper_____

3. How many protons do the following have?
Calcium____
Gold_____
Copper_____
Iron_____

4. How many electrons do the following have?
Gold____
Iron_____
Copper_____
Uranium_____

5. Does mercury have more protons and electrons than tin?

6. Is mercury a heavier element than tin?

7. Does potassium have more electrons than neon?

8. Does hydrogen have more electrons than Uranium?

9. Which has more protons, sulfur or iodine?

10. Write the symbols or the names for each of these elements:

Chlorine _____ Zn _____
Copper _____ Helium _____
Potassium _____ Iron _____
Silver _____ P _____
Na _____ Ne _____
Sn _____ Mercury _____

PERIODIC TABLE OF ELEMENTS

Atomic # / Symbol / Name / Weight

C Solid
Hg Liquid
H Gas
Rf Unknown

Metals: Alkali metals; Alkaline earth metals; Lanthanoids (Lanthanides); Actinoids (Actinides); Transition metals; Post-transition metals
Metalloids
Nonmetals: Other nonmetals; Noble gases

Prictogens; Chalcogens; Halogens

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	1 H Hydrogen 1.008																	2 He Helium 4.0026
2	3 Li Lithium 6.94	4 Be Beryllium 9.0122											5 B Boron 10.81	6 C Carbon 12.011	7 N Nitrogen 14.007	8 O Oxygen 15.999	9 F Fluorine 18.998	10 Ne Neon 20.180
3	11 Na Sodium 22.990	12 Mg Magnesium 24.305											13 Al Aluminium 26.982	14 Si Silicon 28.085	15 P Phosphorus 30.974	16 S Sulfur 32.06	17 Cl Chlorine 35.45	18 Ar Argon 39.948
4	19 K Potassium 39.098	20 Ca Calcium 40.078	21 Sc Scandium 44.956	22 Ti Titanium 47.867	23 V Vanadium 50.942	24 Cr Chromium 51.996	25 Mn Manganese 54.938	26 Fe Iron 55.845	27 Co Cobalt 58.933	28 Ni Nickel 58.693	29 Cu Copper 63.546	30 Zn Zinc 65.38	31 Ga Gallium 69.723	32 Ge Germanium 72.630	33 As Arsenic 74.922	34 Se Selenium 78.971	35 Br Bromine 79.904	36 Kr Krypton 83.798
5	37 Rb Rubidium 85.468	38 Sr Strontium 87.62	39 Y Yttrium 88.906	40 Zr Zirconium 91.224	41 Nb Niobium 92.906	42 Mo Molybdenum 95.95	43 Tc Technetium (98)	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.91	46 Pd Palladium 106.42	47 Ag Silver 107.87	48 Cd Cadmium 112.41	49 In Indium 114.82	50 Sn Tin 118.71	51 Sb Antimony 121.76	52 Te Tellurium 127.60	53 I Iodine 126.90	54 Xe Xenon 131.29
6	55 Cs Caesium 132.91	56 Ba Barium 137.33	57–71	72 Hf Hafnium 178.49	73 Ta Tantalum 180.95	74 W Tungsten 183.84	75 Re Rhenium 186.21	76 Os Osmium 190.23	77 Ir Iridium 192.22	78 Pt Platinum 195.08	79 Au Gold 196.97	80 Hg Mercury 200.59	81 Tl Thallium 204.38	82 Pb Lead 207.2	83 Bi Bismuth 208.98	84 Po Polonium (209)	85 At Astatine (210)	86 Rn Radon (222)
7	87 Fr Francium (223)	88 Ra Radium (226)	89–103	104 Rf Rutherfordium (267)	105 Db Dubnium (268)	106 Sg Seaborgium (269)	107 Bh Bohrium (270)	108 Hs Hassium (277)	109 Mt Meitnerium (278)	110 Ds Darmstadtium (281)	111 Rg Roentgenium (282)	112 Cn Copernicium (285)	113 Nh Nihonium (286)	114 Fl Flerovium (289)	115 Mc Moscovium (290)	116 Lv Livermorium (293)	117 Ts Tennessine (294)	118 Og Oganess (294)

For elements with no stable isotopes, the mass number of the isotope with the longest half-life is in parentheses.

6	57 La Lanthanum 138.91	58 Ce Cerium 140.12	59 Pr Praseodymium 140.91	60 Nd Neodymium 144.24	61 Pm Promethium (145)	62 Sm Samarium 150.36	63 Eu Europium 151.96	64 Gd Gadolinium 157.25	65 Tb Terbium 158.93	66 Dy Dysprosium 162.50	67 Ho Holmium 164.93	68 Er Erbium 167.26	69 Tm Thulium 168.93	70 Yb Ytterbium 173.05	71 Lu Luteti 174.97
7	89 Ac Actinium (227)	90 Th Thorium 232.04	91 Pa Protactinium 231.04	92 U Uranium 238.03	93 Np Neptunium (237)	94 Pu Plutonium (244)	95 Am Americium (243)	96 Cm Curium (247)	97 Bk Berkelium (247)	98 Cf Californium (251)	99 Es Einsteinium (252)	100 Fm Fermium (257)	101 Md Mendelevium (258)	102 No Nobelium (259)	103 Lr Lawren (266)

Ptable.com

Genghis Khan

c. 1167–1227

HOW HE AFFECTED THE WORLD Genghis Khan was a fierce warrior, brilliant military leader, and wise ruler. About 700 years ago, he conquered most of Asia on behalf of Mongolia. He built the largest, most powerful empire the world had ever seen.

As you read the biography below, think about how Genghis Khan's fierceness, intelligence, and tolerance helped him build a huge empire.

Genghis Khan was born in a ger in the hills of northern Mongolia. His family belonged to one of many nomadic clans that herded sheep in and around the Gobi Desert. By the age of 25, he had united all of the wandering Mongol tribes into one unit and assumed leadership over them.

Genghis Khan spent five years organizing this new state. He divided the people using a military system—into groups of 10, 100, 1,000 and 10,000. He made sure every group had plenty of food and supplies. He promoted education, law and order, and kept very strict **discipline**. Genghis Khan was highly respected, and the people obeyed his laws.

By 1206, Genghis Khan began to expand his empire. He planned brilliant military strategies and soon conquered neighboring groups. His armies even **breached** the Great Wall to take over China. He then turned westward to face the powerful Turkish Empire. The fierce reputation of Genghis Khan and his armies had already spread across Asia. When the Mongol armies arrived, many groups surrendered without a fight. Khan won victory against the Turks, greatly expanding the Mongol Empire.

VOCABULARY

discipline control

breached broke through

tolerant respectful of others' beliefs

revolt uprising against the government

In 1222, he conquered Russia. His empire now included nearly the entire continent of Asia, the largest the world had ever seen.

Although Genghis Khan was vicious in battle, he was mild and **tolerant** as a ruler. Many of the conquered peoples experienced better daily conditions than they had before. Khan provided safety and food, and he allowed each culture to practice their own religion and speak their own language.

Genghis Khan died around the age of 60 during a trip to China to stop a **revolt**. Khan's sons and grandsons continued to successfully rule the Mongol Empire for more than 150 years after his death. The fantastic military achievements of Genghis Kahn remain unmatched by any other leader. He is one of the most admired, feared, and respected world leaders in history.

WHAT DID YOU LEARN?

1. Recall How did Genghis Khan organize his people?

_____

_____

2. Contrast Describe Genghis Khan as a warrior and as a ruler.

_____

_____