

Subject: TAG

Grade: K,1,2

Note: TAG instruction occurs one day a week for each student. These plans are meant to replace the time that would be spent on core learning activities (reading, ELA/writing, math social studies/science) for that one day each week. Students should still complete activities for specials classes (art, music, PE) on their TAG day.

Week 5

Standards (include both TAG standards and grade level standards addressed)	<p>S1P2. Obtain, evaluate, and communicate information to demonstrate the effects of magnets on other magnets and other objects.</p> <p>S1P1. Obtain, evaluate, and communicate information to investigate light and sound.</p> <p>TAG Creative Thinking and Problem Solving Gifted students demonstrate skills in fluency, flexibility, elaboration and originality to generate innovative ideas, products, and/or solutions to problem.</p> <p>TAG Advanced Research Skills Gifted students will use logic, reasoning, and criteria to conduct comparisons and make and evaluate decisions.</p> <p>TAG Higher Order and Critical Thinking Gifted students will use logic, reasoning, and criteria to conduct comparisons and make and evaluate decisions.</p>
Brief Description	During this lesson, students will learn about magnets, the Earth's poles, and the northern lights. Students will read texts about magnets and the northern lights. There is an optional experiment as well. Students will then answer the 3 Questivities question stems.

Student Directions:

1. Color the map of the earth. Be sure to trace the lines showing the north poles and the south poles.
2. What are poles? Students will complete the magnet handout. Adapted from <https://www.greatschools.org/library/cms/29/25829.pdf>
3. Optional Experiment: Fridge Magnet Experiment
4. Read the article: What Causes the Northern Lights? Adapted from <https://theconversation.com/curious-kids-what-causes-the-northern-lights-111573>

5. Students will complete the Questivities questions #1 – 3 (NOTE: You may either write or draw your answers).

Color the Earth and trace the pole lines.

North Pole



South Pole



The magic of magnets

Background knowledge

Every magnet has a *north pole* and a *south pole*. When like poles are placed near one another, they will *repel* or push each other away. When unlike poles are placed near one another, they will attract, or pull toward, each other. This is also known as the *Law of Poles*: “Like poles repel; unlike poles attract.”

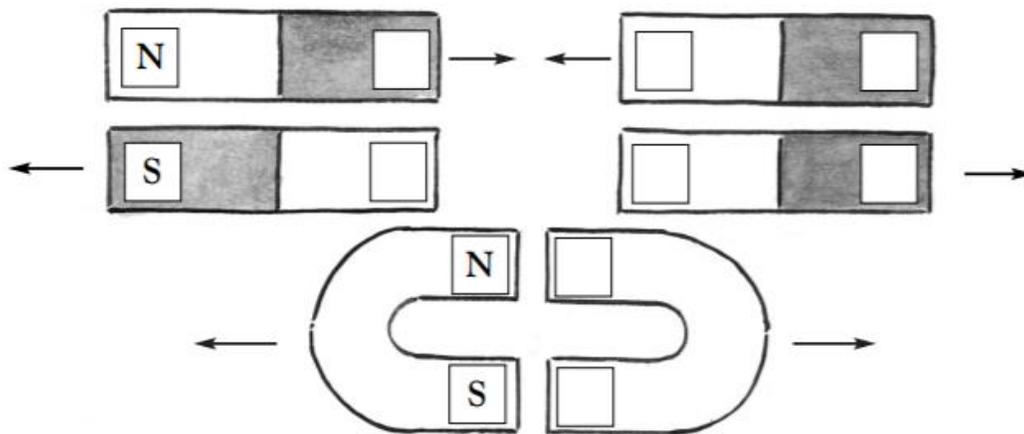
Science activity

Donna told her friends that she could perform magic. She took out a magnet, placed it near a closed shoebox, and said “Abracadabra, move away box!” To the amazement of her friends, the box began to move. What did Donna know that her friends did not?

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The diagrams below show pairs of magnets. The arrows show the direction in which the magnets move when placed near each other. In the boxes on each magnet, write the symbol (N or S) to show the correct pole.



Brainstorming: How many things can you name that are opposites?

Example: Night & Day

_____ & _____ _____ & _____ _____ & _____

Optional Experiment

Raid the Fridge!

Do you have 2 fridge magnets? Now is the time to explore with them! Try these things:

- Rub the magnets together. What do you feel as you move the magnets around?
- Put one magnet on the table and hold the other magnet near it. What happens?
- Can you find something around you that the magnet will stick to besides the fridge?
- How many items can you find that will stick to the magnet all at once?



What Causes the Northern Lights?

The energy for making the northern lights comes from the Sun. The Sun creates something called the “solar wind”. It is like a sun burp, and it pushes tiny particles into space.

Did you know that the Earth is a giant magnet? When the solar wind reaches planet Earth, it runs into the Earth’s magnetic field. The magnetic field pulls the solar wind toward the Earth’s north and south poles.

When the solar wind gets past the magnetic field, it runs into the Earth’s atmosphere. The atmosphere is like a big blanket of gases surrounding our planet. As the solar wind hits the gases in the atmosphere, they release energy – and this is what causes the northern and southern lights!

It is easiest to see the northern lights in winter when it is very dark at night, outside of cities and away from streetlights.

Fun Facts

- The northern lights are bright enough to be seen from space.
- The most common colors of the northern lights are green, pink, purple, red, yellow and blue.
- Earth isn't the only planet to have lights around the poles — scientists have found them on Neptune, Jupiter, Saturn and Uranus.
- The northern lights also make sounds like claps, crackles and static.



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Questivities #1:

An alien saw the Northern Lights from space. He sent you a message asking you to explain what they are.

LIST two facts you could tell the alien.

1. _____

2. _____

Questivities #2:

Compare/Contrast:

What is one thing that makes the Earth's poles the SAME as a place found along the Equator (middle of the earth)?

What is one thing that makes the Earth's poles DIFFERENT from a place found along the Equator (middle of the earth)?

Questivities #3:

What would happen if there was a light switch that could turn the northern lights on and off?
