

I ♥ STEM Taught®

4th - 8th Grade Edition

# Einstein

Always Ask Why



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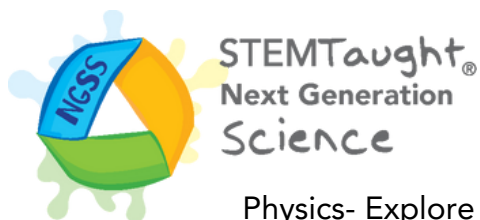
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Physics- Explore the effects of magnetism (Motion and Stability: Forces and Interactions 3-PS2-3). Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.

Physics- Energy changes when objects collide (Energy 4-PS3-3). Ask questions and predict outcomes about the changes in energy that occur when objects collide.

Physics- Understand that gravity pulls toward the center of the earth (Motion and Stability: Forces and Interactions 5-PS2-1). Support an argument that the gravitational force exerted by Earth on objects is directed down.

Energy and Motion- Kinetic energy transfer(MS-PS3-5 ). Construct, use, and present arguments to support the claim that when the motion energy of an object changes, energy is transferred to or from the object.





Day 1:  
A Curious Trinket



## Day 1: A Curious Trinket

Interactive Story Ideas!



**Storytelling Role-Play: 1-5 sand dollars each**  
(2 students to help cut out props and 6 students to role play)

Choose 3 girl volunteers and 3 boy volunteers to be Albert, his mother, his father, Uncle Jakob, the station master, and the headmaster. Tell students to listen for their parts.



**New word: 1-5 sand dollars**  
(Students can earn a sand dollar for discussion participation)

**Compass:** A compass is a tool that helps us find directions. Since it has a magnetized needle or short pin that can spin freely, it always points north towards the North Pole. It lines up with the line of Earth's magnetic force.

\*Remind the students that they can earn a sand dollar if they tell you some time during the day what the new word means. If they get it wrong, remind them of the definition and have them try again in a few minutes.



## Day 1 Albert Einstein: A Curious Trinket

It is 1884 in Ulm, Germany, and the city throbs with the promise of change. Thousands of sparkling new locomotives pull tens of thousands of passengers to their destinations.

“*Alle einsteigen!* (All aboard!)” calls the station master (Whistle prompt, blow and call out!) as the train leaps to action. “Chug-chug-chug-chug,” steam billows out and the pistons resume their fast-paced dance. They hurtle through windy plains and charming cities, gently rocking their precious cargo on happy, happy days.

Five-year-old Albert, though, feels anything but happy. He feels miserable because he is sick. Today, he feels just as sad as his house cat Tiger does when it rains. He hates being sick as much as he hates socks—and that is a lot. He tries playing with his puzzles, which he usually enjoys. He tries building a multi-story house out of cards—his record is 14 stories because he can focus so well! But—“Achoo!”—all the cards fall down when he sneezes. (Cards prompt, try to balance them and build a house).

Albert’s father, Hermann, knows just what to do. “My dear son,” he says, “I know you’re not feeling well today. Here is a curious trinket that might cheer you up.”

Hermann hands Albert a shiny, golden compass (Compass prompt, present Albert with this gift). Albert didn’t speak until he was older than most children do when they talk, but he was always listening, observing the world around him, and thinking up great questions.

Albert is entranced by the compass, especially the small needle! No matter which way he turns it—left, right, or in between—no matter where he holds it: high above his head, under his big toe, on top of a tree or under the bed—it moves automatically to point in one specific direction. He was amazed that some invisible, mysterious force could control the needle inside the compass. (Explore the compass! Hold it up, down, to the left and to the right.)

All Albert can think is: Why?

With time, Albert begins finding more places to ask why. Sometimes, he finds out the answer right away. Other times, he sits with the question and it takes years to figure out the answer. But he loves the process, and as his mother, Pauline, reads him fairy tales every night, he let his thoughts settle softly like a cloud over his wonderful “why” questions.

Every week, Albert’s family’s friend Max comes over to visit. He gives Albert a geometry book and helps him learn more about science and math. (Book prompt, read and explore). Geometry is fascinating to Albert, because the shapes fit together as snugly as a key in its lock.

## Day 1 Albert Einstein: A Curious Trinket

Albert also learns to play the violin. When he plays with his mother on the piano, even the birds stop and listen. "I don't think in words, Mama," says Albert.

"No? Then what do you like thinking in my dear son?" asks Pauline.

"I think in pictures and music," he says, "I live my daydreams in our music. Does that mean I'm different?"

Pauline's eyes crinkle and she ruffles his shaggy hair, tickling him with the violin bow. **(Violin bow prompt, tickle Albert!)** "Then dream in music, my dear. It's not bad to be different at all."

Uncle Jakob, Hermann's brother, also helps Albert fall in love with Math. He comes, armed with tricky math problems, and Albert loves shouting victoriously when he gets them right. To teach Albert algebra, Uncle Jakob describes it as "a merry science in which we go hunting for a little animal whose name we don't know. So we call it X. When we bag the game we give it the right name."

These are some of Albert's happiest days, surrounded by math, love, music, dreaming, and his family. With time, however, his family has to move to Italy, leaving Albert behind to finish school with the scowliest headmaster in the world.

"Terrible. Despicable. Slow. Worthless," the headmaster peers over his monocle and tells Albert with disdain, scrunching his nose up so high Albert thinks it will poke through his forehead. **(Monocle prompt, scowl and frown).**

So naturally, while Albert loves the joy of *learning*, he isn't always happy in his strict school. He has to follow strict routines. He has to prepare to serve in the military. He isn't supposed to ask questions.

But all Albert can think is: why?



**Questions/Reading discussion: 1-5 sand dollars**

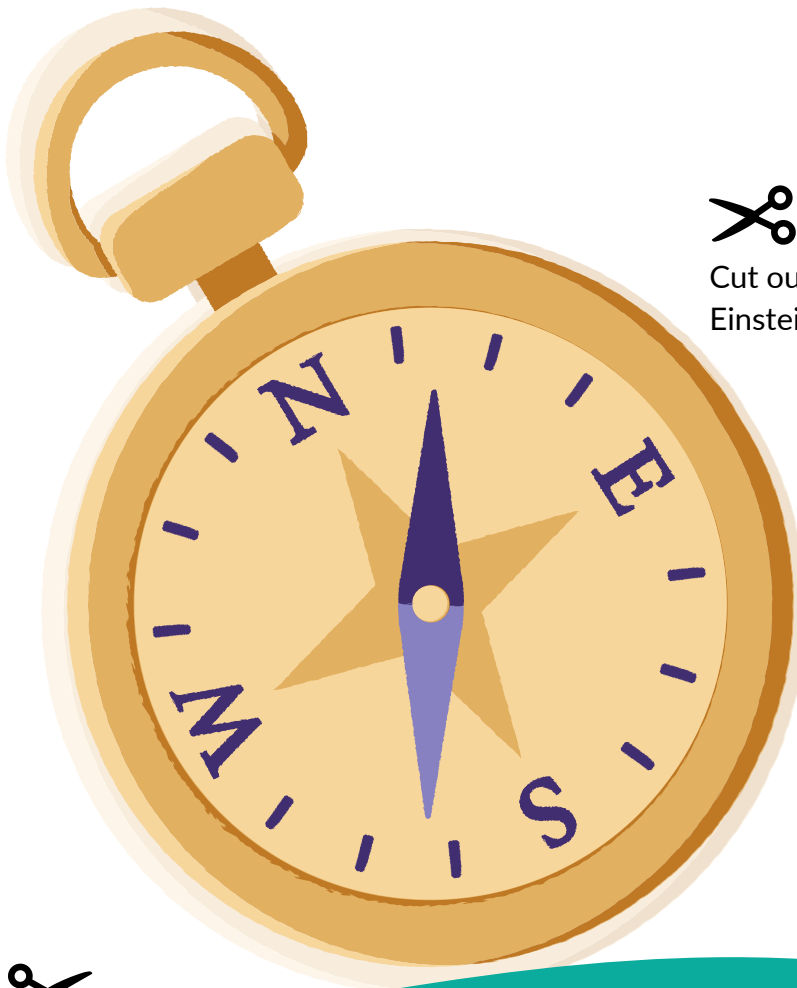
**(Students can earn a sand dollar for discussion participation)**

**Ask:** What are some things Albert enjoyed doing?

Example: **Listening to fairytales, building puzzles and card towers, asking questions, reading his geometry book.**

**Ask:** How was Albert wonderfully unique?

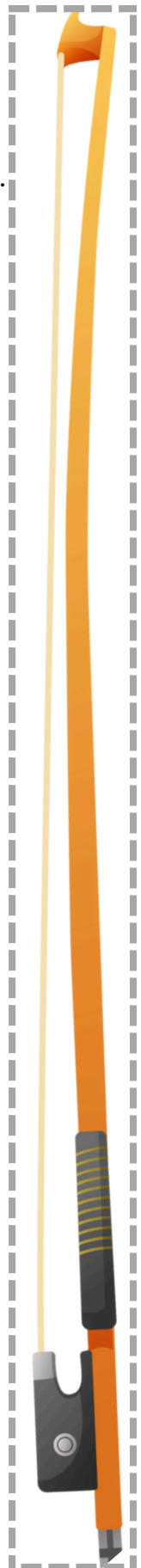
Example: **Without all the trouble of talking, he was able to spend more time thinking at first. He liked daydreaming in music. He loved asking why. He didn't want to just follow orders.**



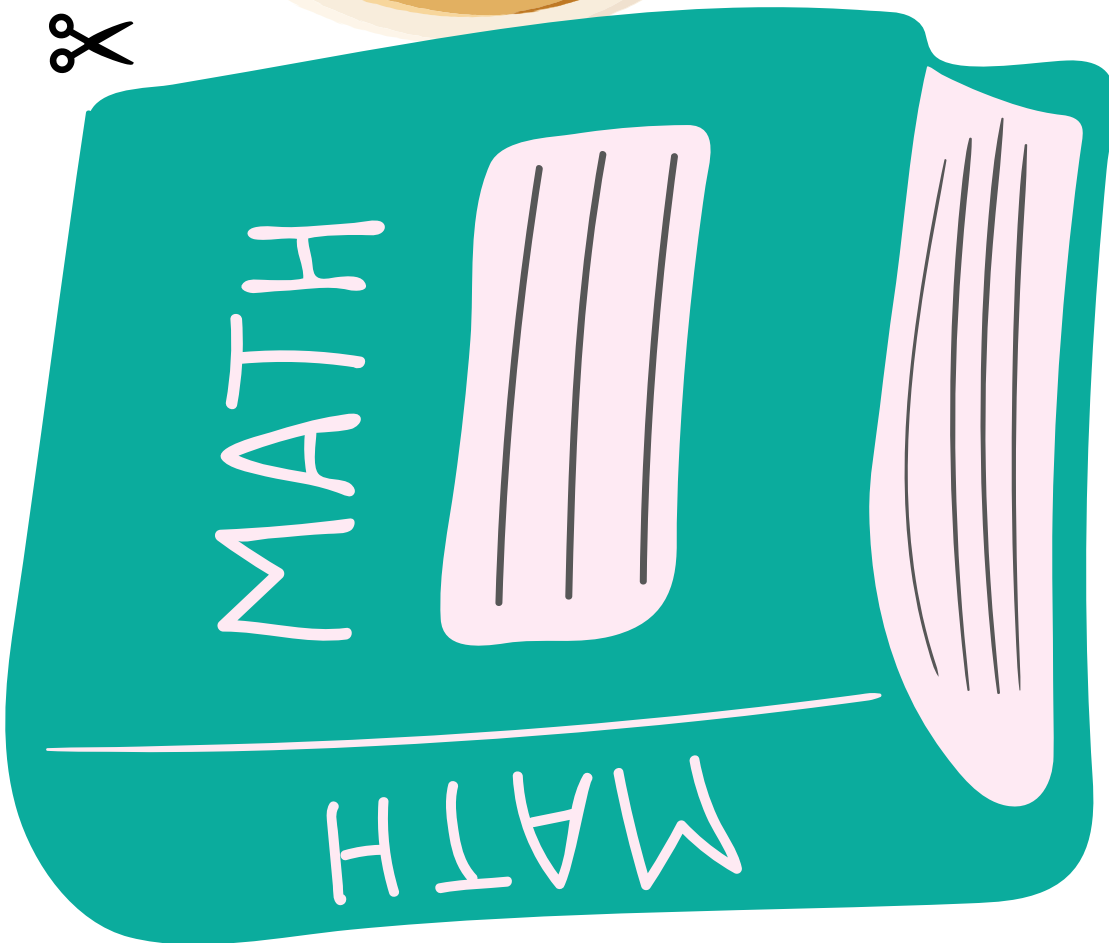
Cut out this compass for Einstein's father to give to him.



Cut out this violin bow for Albert to practice with and his mother to use to tickle him.



Cut out this book for Albert to solve Math equations.

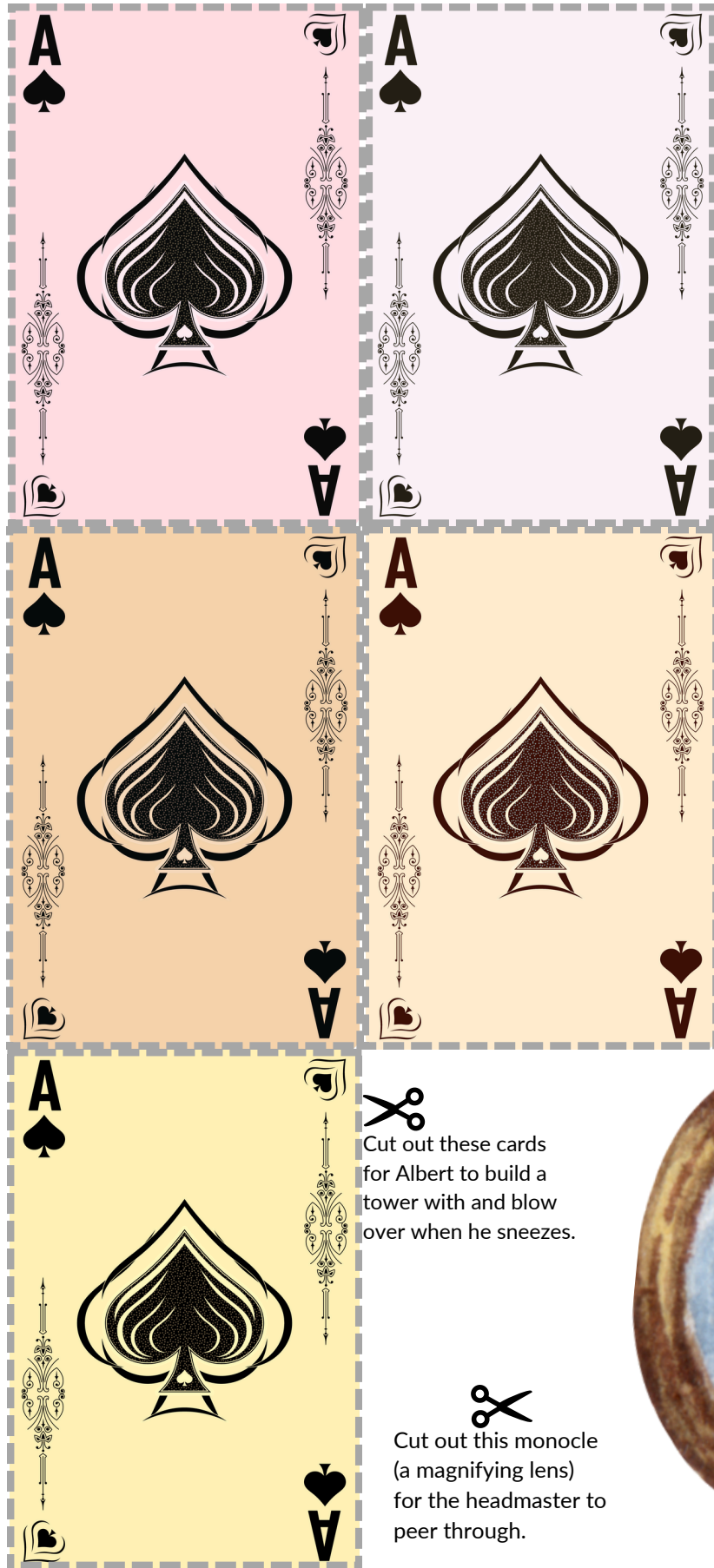




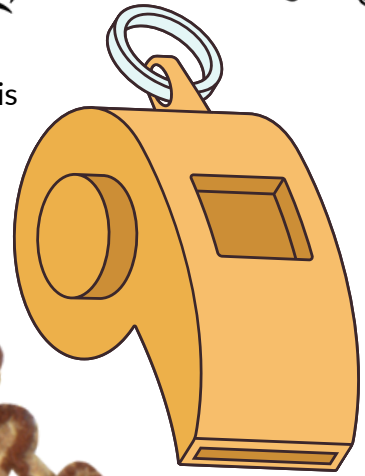
**Pauline:** Tickle Einstein with the bow

**Albert:** Explore the compass and turn it around. Test it out.

**Albert:** Study and explore, write equations.



✂  
Cut out this  
whistle



✂  
Cut out these cards  
for Albert to build a  
tower with and blow  
over when he sneezes.

✂  
Cut out this monocle  
(a magnifying lens)  
for the headmaster to  
peer through.



**Station master:**

Blow the whistle and shout, "All aboard!"

**Albert:** Build a tower with the cards, try bending them gently first. Sneeze and make them fall down!

**Albert:** Build a tower with the cards, try bending them gently first. Sneeze and make them fall down!

**Albert:** Build a tower with the cards, try bending them gently first. Sneeze and make them fall down!

**Albert:** Build a tower with the cards, try bending them gently first. Sneeze and make them fall down!

**Headmaster:**

Look through the monocle, scowl and huff and puff at Albert.

**Albert:** Build a tower with the cards, try bending them gently first. Sneeze and make them fall down!