Grade 4 | Unit 4

Eureka! Student Inventor

Answer Key

ACTIVITY 3.3

EDISON'S INVENTION EVIDENCE

Invention: Paper

1. What this invention does:

It provides a writing surface that's light, cheap, and easy to make.

2. What came before this invention:

Knowledge was communicated through spoken words.

3. How did this invention change things? Give two examples and include quotes from the article as evidence:

    1. Allows knowledge to be spread all around. "People could now spread knowledge ... over great distances by carrying paper documents with them when they traveled."

    2. Preserves art, knowledge, and writing across time. "Stories, poems, artwork, and history could now be recorded, stored, and copied over generations."

4. Imagine the world if this invention had never existed.
   Answers will vary. They might include: a world where only the rich have access to the news (when it's only available electronically); a world where museums are full of electronic art...

ACTIVITY 3.3

EDISON'S INVENTION EVIDENCE

Invention: Airplane

1. What this invention does:

   It flies!

2. What came before this invention:

   People flew in hot-air balloons and gliders.

3. How did this invention change things? Give two examples and include quotes from the article as evidence:

    1. Mail can be more quickly delivered around the world. "Planes began carrying mail in 1911."

    2. People can travel more easily and come to "appreciate and value different cultures."

4. Imagine the world if this invention had never existed. Describe one situation in modern life that would be very different.

    Answers will vary. They might include: a world where no one travels great distances; a world where it takes a long time to help people in an emergency...

ACTIVITY 3.3

EDISON'S INVENTION EVIDENCE

Invention: Clock

1. What this invention does:

It tells time. It divides the day into hours and keeps track of those hours.

2. What came before this invention:

Observing sunrise and sunset, locations of stars and planets, weather patterns, and cycle of the moon; sundials; ...

3. How did this invention change things? Give two examples and include quotes from the article as evidence:

   1. Makes businesses run more smoothly because "bosses could plan...knowing exactly when their employees would be arriving and leaving."

   2. Enables railroads and airlines to "operate according to schedules."

4. Imagine the world if this invention had never existed. Describe one situation in modern life that would be very different.

   Answers will vary. They might include: a world where no one meets up at a specific time, so there's a lot of waiting around; a world where the natural rhythms of the day dictate things so school might be over when the sun goes down, etc.

ACTIVITY 3.3

EDISON'S INVENTION EVIDENCE

Invention: Microscope

1. What this invention does:

   It allows people to see things that aren't visible to the naked eye. It led to the discovery of how disease truly spread.

2. What came before this invention:

   People believed in the theory that bad air caused disease.

3. How did this invention change things? Give two examples and include quotes from the article as evidence:

   1. People can have surgeries that would be impossible without the microscope: "surgery on the eyes and blood vessels."

   2. Microscopes led to the creation of vaccines that wiped out many diseases. "Once these bacteria had been identified, scientists invented vaccines that saved millions of lives by preventing these diseases."

4. Imagine the world if this invention had never existed. Describe one situation in modern life that would be very different.

   Answers will vary. They might include: a world where disease runs rampant and no one knows where it comes from; a world where scientists are limited to understanding only what they can see with their own eyes.

ACTIVITY 3.3

EDISON'S INVENTION EVIDENCE

Invention: Radio

1. What this invention does:

   It communicates across long distances and connects people to ideas and cultures far away.

2. What came before this invention:

   People were unable to communicate with people far away except by mail or by traveling long distances. Americans lived isolated lives and entertained themselves.

3. How did this invention change things? Give two examples and include quotes from the article as evidence:

   1. The radio brought "news, music, comedies, adventure shows, game shows, soap operas, talent contests" into people's homes.

   2. The radio "created national celebrities."

4. Imagine the world if this invention had never existed. Describe one situation in modern life that would be very different.

   Answers will vary. They might include: a world where people have no idea what's happening even one town over; a world without national celebrities.

ACTIVITY 3.3

EDISON'S INVENTION EVIDENCE

Invention: Telephone

1. What this invention does:

   It sends the human voice across a wire by turning it into electrical signals.

2. What came before this invention:

   People could stay in touch only through the mail. The telegraph was starting to change long-distance communication, but couldn't transmit sound.

3. How did this invention change things? Give two examples and include quotes from the article as evidence:

   1. "The world ... became much more connected because people were able to pick up their phones and speak to anyone anywhere.

   2. "People who lived in isolated areas were now able to call for help in an emergency."

4. Imagine the world if this invention had never existed. Describe one situation in modern life that would be very different.

   Answers will vary. They might include: a world where you struggle to stay in touch with someone who doesn't live near you; a world where businesses can't be national or global.

ACTIVITY 4.1

HEDY LAMARR'S PITCH PLANNER

Using the evidence you pulled for "Edison's Invention Evidence," plan the pitch your lab will present for your invention. This pitch will explain why your invention deserves to be on the back cover of Edison's new book! All members of your lab should participate in the pitch.

Introduction (15–30 sec.):

1. The name of your invention:

   Lightbulb

2. The date (approximate is OK) of your invention:

   1879

3. A sentence briefly explaining how it was invented:

   It took Thomas Edison two years to find the key to his invention: using charred bamboo for the filament made an electric lightbulb that was long-lasting and bright.

4. A sentence explaining how it improved life:

   By allowing cheap, clean, safe light, the lightbulb improved safety and made our lives much more interesting.

5. Your slogan—a catchy sentence that will grab your audience's attention (the slogan can be the one you created in Episode 1, or you can revise it):

   Remember the lightbulb: it illuminates!

Skit (1–2 min.):

1. Create a skit to demonstrate the importance of your invention. Choose one of the following ideas for your skit:
   - Demonstrate how people lived before and after your invention was invented.

     OR

   - Interview the inventor.

Characters:

Brainstorm with the students.

Setting:

Brainstorm with the students.

Summary (what happens in your skit):

You could write a skit in which we first see an evening at home pre-lightbulb–trying to read but having trouble, being told to blow out candles because they are too expensive, and going to bed at 7:00 p.m.; then post-lightbulb–playing games, reading aloud, and saying, "Thank goodness for the lightbulb!"

OR

You could write a skit in which one character injures himself. In a world without the lightbulb, the doctor has trouble treating him, but with the lightbulb it's easy to see the wound and stitch it up.

Conclusion (15 sec.):

1. Sign off with your slogan.

Remember the lightbulb: it illuminates!

ACTIVITY 5.1

SIMPLE MACHINE DANCE PARTY CHALLENGE

Simple Machine: Inclined Plane

1. List an invention from the article that uses this simple machine:

   Wheelchair ramp.

2. List another invention, not in the article, that uses this simple machine:

   Answers will vary.

3. Find three descriptions of action or movement from the article that refer to the simple machine:

   "Roll the barrel"; "hauled stones"; "sliding"

4. In your own words, simply describe how this simple machine works:

Answers will vary.

Now, with your group, prepare a short dance or movement that demonstrates how this simple machine works.

- ☐ **Your dance must last 30 seconds.**
- ☐ **All members of your lab must participate!**
- ☐ **You can all do the same movement, or you can do different movements.**
- ☐ **Feel free to create musical or rhythmic accompaniment.**

ACTIVITY 5.1

SIMPLE MACHINE DANCE PARTY CHALLENGE

Simple Machine: Lever

1. List an invention from the article that uses this simple machine:

   Playground seesaw.

2. List another invention, not in the article, that uses this simple machine:

   Answers will vary.

3. Find three descriptions of action or movement from the article that refer to the simple machine:

   "lift up"; "push down"; "move the earth"

4. In your own words, simply describe how this simple machine works:

Answers will vary.

Now, with your group, prepare a short dance or movement that demonstrates how this simple machine works.

- ☐ **Your dance must last 30 seconds.**
- ☐ **All members of your lab must participate!**
- ☐ **You can all do the same movement, or you can do different movements.**
- ☐ **Feel free to create musical or rhythmic accompaniment.**

ACTIVITY 5.1

SIMPLE MACHINE DANCE PARTY CHALLENGE

Simple Machine: Pulley

1. List an invention from the article that uses this simple machine:

   An elevator.

2. List another invention, not in the article, that uses this simple machine:

   Answers will vary.

3. Find three descriptions of action or movement from the article that refer to the simple machine:

   "Flown a flag up a flagpole"; "pulled on the other end"; "hanging a second pulley"

4. In your own words, simply describe how this simple machine works:

Answers will vary.

Now, with your group, prepare a short dance or movement that demonstrates how this simple machine works.

- ☐ **Your dance must last 30 seconds.**
- ☐ **All members of your lab must participate!**
- ☐ **You can all do the same movement, or you can do different movements.**
- ☐ **Feel free to create musical or rhythmic accompaniment.**

ACTIVITY 5.1

SIMPLE MACHINE DANCE PARTY CHALLENGE

Simple Machine: Screw

1. List an invention from the article that uses this simple machine:

   Lightbulb.

2. List another invention, not in the article, that uses this simple machine:

   Answers will vary.

3. Find three descriptions of action or movement from the article that refer to the simple machine:

   "Fasten together"; "turn a screw"; "drives it through the wood"

4. In your own words, simply describe how this simple machine works:

Answers will vary.

Now, with your group, prepare a short dance or movement that demonstrates how this simple machine works.

- ☐ **Your dance must last 30 seconds.**
- ☐ **All members of your lab must participate!**
- ☐ **You can all do the same movement, or you can do different movements.**
- ☐ **Feel free to create musical or rhythmic accompaniment.**

ACTIVITY 5.1

SIMPLE MACHINE DANCE PARTY CHALLENGE

Simple Machine: Wedge

1. List an invention from the article that uses this simple machine:

   Ax.

2. List another invention, not in the article, that uses this simple machine:

   Answers will vary.

3. Find three descriptions of action or movement from the article that refer to the simple machine:

   "Pound a wedge"; "splitting a tree stump"; "force of your swing"

4. In your own words, simply describe how this simple machine works:

Answers will vary.

Now, with your group, prepare a short dance or movement that demonstrates how this simple machine works.

- ☐ **Your dance must last 30 seconds.**
- ☐ **All members of your lab must participate!**
- ☐ **You can all do the same movement, or you can do different movements.**
- ☐ **Feel free to create musical or rhythmic accompaniment.**

ACTIVITY 5.1

SIMPLE MACHINE DANCE PARTY CHALLENGE

Simple Machine: Wheel and axle

1. List an invention from the article that uses this simple machine:

   Ship's steering wheel.

2. List another invention, not in the article, that uses this simple machine:

   Answers will vary.

3. Find three descriptions of action or movement from the article that refer to the simple machine:

   "Pulling a bucket full of water up"; "hoisting the bucket"; "turning the crank"

4. In your own words, simply describe how this simple machine works:

Answers will vary.

Now, with your group, prepare a short dance or movement that demonstrates how this simple machine works.

- ☐ **Your dance must last 30 seconds.**
- ☐ **All members of your lab must participate!**
- ☐ **You can all do the same movement, or you can do different movements.**
- ☐ **Feel free to create musical or rhythmic accompaniment.**

ACTIVITY 6.2

PROFESSOR CARVER'S GUIDE TO DOCUMENTING MATERIALS

Name of object: Pencil

Description of object
Sight: Yellow, silver, pink, six inches long, narrow, cylindrical, pointy
Touch: Pointy, smooth, not heavy
Smell: Wood
Sound: Tapping, quiet

What is the object usually used for?

Writing

What else can you do with it?

Roll it

Brace other things with it

Prop things up with it