



## 1. THE POWER OF STORY

In *The Mechanical Mind of John Coggin* the hero John uses the power of story to make the best of tough moments. For example, before they ran away from Great-Aunt Beauregard, at the end of a long, sad, hard day of building coffins, John liked to tell his sister Page stories about their lives before their mother and father died:

Page was eager for details. What did their mother smell like? Lillies of the valley. What did their father say? Pull up a pew. Where did they live? In an old yellow house on the edge of the sky-blue sea.

At the end, Page always had the same request: "Tell me one of Dad's stories."

This wasn't tough. Their father had been a poor businessman but a great storyteller. When John was young, there had been new tales every night. Tales about journeys, about danger and daring, about sisters and brothers and love.

"Building a story is like any other invention, John my lad," he would say. "Guts and gung-ho at the beginning, struggles and surprises in the middle, and the glorious moment when everything comes right." [page 11]

Stories like these are based on memories that help John navigate through his current troubles by remembering better days.

### YOUR TURN:

Recall and write about one of your memories, such as your best day ever or your worst day ever. Be sure to include lots of details. What made this day so bad or good? How can you learn from the memory to help you in the future?

## 2. ALL KINDS OF FAMILIES

*The Mechanical Mind of John Coggin* is a story about friendship. But it is also very much a story about families and siblings. At the beginning of the book, John and Page live with their only surviving relative—Great-Aunt Beauregard—and work for the family business. But they feel a strong need to break away from this "family" situation and find another way to live.

Who are John and Page with at the end of the book? Would you describe this group as a family? Why or why not?

Create John and Page's family tree as described in the beginning of the book. Then, create a second family tree to reflect the new view of family at the end of the book.

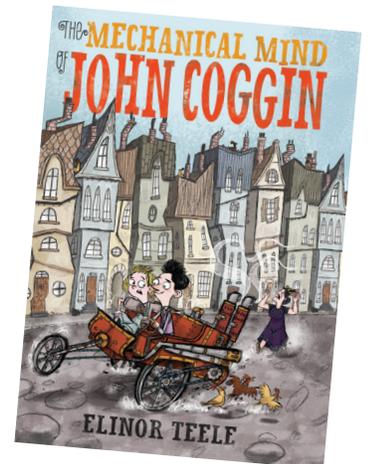
## 3. PAGE'S POINT OF VIEW

*The Mechanical Mind of John Coggin* is mainly a story about John Coggin, yet his sister Page is much a part of the adventure. In fact, many times she has to remind John of that exact fact.

Pick a scene you enjoyed or remembered well from the book. Rewrite the scene from Page's point of view. How does Page feel? What does Page think? How would Page do things differently?

## 4. THE SEQUEL

Write a description of a possible sequel to *The Mechanical Mind of John Coggin*. What happens after this story is done? Does Boz return? What becomes of Great-Aunt Beauregard? Be sure to include a problem and a solution.





## 1. RESEARCH PROJECT

The Steam Engine is one of history's most important inventions. Take a trip to the library to research the following:

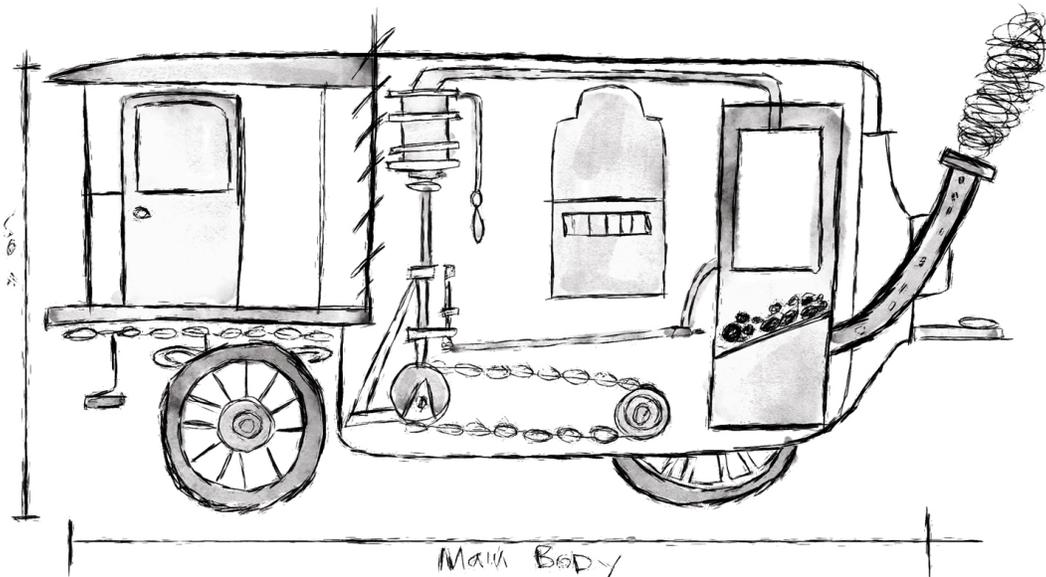
- How the steam engine works;
- Who invented the early steam engine?
- How steam engines changed the way people and goods were transported;
- Why steam engines have been mostly replaced in modern times;
- In what ways is steam still being used today.

Possible sources for information:

- Nonfiction books;
- Encyclopedias;
- The Internet.

Take notes and gather as much information as possible.

Once the information is gathered, create an illustrated poster defining and explaining the steam engine's place in history.



## 2. THE SCIENTIFIC METHOD

The Scientific Method is an eight-step thought process that engineers, scientists and inventors use to solve problems.

**STEP 1:** Ask a Question

**STEP 2:** Do Research

**STEP 3:** Create a Hypothesis (an Educated Guess)

**STEP 4:** Test Your Hypothesis

**STEP 5:** Did it Work? Could it Be Better? Try Again

**STEP 6:** Draw a Conclusion

**STEP 7:** Write a Written Report of Your Results

**STEP 8:** Retest

- Describe how these eight steps help with problem-solving.
- What do you think would happen if you skipped a step?
- Why do you think step 8 is important?
- Can you find evidence that John Coggin used these steps when he created his inventions in *The Mechanical Mind of John Coggin*? How so?

Use examples from the text.

- Elinor Teele writes on page 283, "His previous failures now spurred him forward." In what way is this quote an example of the Scientific Method?



### 3. BUILD A CATAPULT CHALLENGE

This challenge allows you to test the Scientific Method as you problem-solve a way to build a catapult that really works! (Of course, a little imagination goes a long way here, too.)

- ✋ Work in groups of 2-3.
- ✋ Each group needs several craft items (magazines/newspapers, popsicle sticks, masking tape, scissors, plastic cups, soda and soup cans, paper towel rolls, rubber bands, plastic spoons, etc.) Check the recycling bin for other kinds of materials. For the final test, six small plastic cups will be needed for each team.
- ✋ Each group creates an eight-part Scientific Notebook to describe their process for designing their catapult, carefully documenting their use of the Scientific Method as described above.

Once all catapults have been built, test them out one by one as a class.

- ✋ **TEST FOR ACCURACY:** Place a bowl on the floor. Then, from a set distance of 2-3 feet, teams will launch cotton balls from their catapults. Record how many make it into the bowl. Each team has five chances.
- ✋ **TEST FOR DISTANCE:** Determine a “launch line” for all catapults. Then, using mini marshmallows, each team launches three times, recording the distance each marshmallow travels with measuring tape.
- ✋ **TEST FOR POWER:** Each team builds a three-story tower out of stacked plastic cups (three on the bottom, two on top, and one on the very top). Each team launches a dry bean from a distance of three feet away and attempts to knock over their tower. Each team receives five attempts.

Did the catapult work? Retest? If the catapult didn't work, it's back to the drawing board—just like real inventors.

Awards could be offered to increase the competition.

<b>MOST ACCURATE</b>	<b>MOST MATERIALS</b>
<b>MOST DISTANCE</b>	<b>LEAST MATERIALS</b>
<b>MOST POWER</b>	<b>MOST CREATIVE</b>

### 4. NECESSITY IS THE MOTHER OF INVENTION

Today, inventions do so many things we take for granted.

1. Create a list of some of the machines or inventions that make our daily lives easier. Who invented these machines? When?
2. If you could invent something, what would it be?
3. Design your invention and create an infomercial or PowerPoint presentation demonstrating what it can do and convincing others to buy it.
4. Show your commercial or presentation to the class.

### 5. “EVEN THE SMALLEST NAIL COULD HAVE A KEY ROLE TO PLAY” \*

In the end, John Coggin realized that he couldn't rescue Page alone. Sometimes it's just easier for people to get things done when they work together as a team. Try this Rubber Band Trail with groups of 4-5.

- ✋ Each group needs several plastic cups, one rubber band and four or five ribbons or string. Each group will make a grabber, using the rubber band and pieces of string tied to the rubber band, spaced as evenly apart as possible. The grabber should look like a drawing of the sun, with “rays” going out in all directions.
- ✋ Each member of the team holds on to one of the strings that is attached to the rubber band.
- ✋ Using just the grabber, each group stacks each plastic cup, one on top of another by pulling the rubber band apart and then bringing it back together over each cup.
- ✋ Teams should work to increase speed and accuracy.