



## Flexible Thinking

### Materials:

- Worksheet

### Brainstorm

What does the phrase “think outside the box” mean to you?

### Discuss

As student volunteers share their responses, clarify or confirm responses, including: Being able to think of alternative solutions for a problem, thinking differently from everyone else, adaptive thinking, critical thinking, problem solving, or being innovative. Continue to facilitate the class discussion as long as it remains productive and on topic, such as by asking for examples of when students have used thinking outside of the box to solve a problem.

### Dive in!

As high school students, you’ll learn a lot of information to help you become successful in life. But there are also a number of skills you’ll need to be successful as well. Today we’re going to talk about one of those skills: Flexible thinking. **Flexible thinking** is sometimes also called divergent or elastic thinking and it includes the ability to think and adapt or adjust to new situations easily. It also means being able to use logic, reasoning, and imagination to come up with new ideas in new situations. One way to practice flexible thinking is by thinking outside the box. When you think outside the box, you look at something with a unique or different perspective. This kind of thinking can help you come up with unconventional solutions to conventional problems. Let’s consider an example. Many of you probably have read the book or seen the movie *Hidden Figures*. It details the story of black female scientists at NASA in the 1950s. One of those women was Katherine Johnson. During her 33-year career at NASA, Katherine is known for her ability to think outside the box when it came to figuring out complex calculations for space flights. She was even able to ignore the racism and sexism she faced being one of the first black female NASA scientists. Her flexible thinking about the space program earned her many accolades, but the most important of which may be her ability to get the first man on the moon. For this, she received the Presidential Medal of Freedom.



## High School

### Activity

Distribute copies of the worksheet to students. Have students work in pairs or small groups to identify a problem in the school or community that needs to be solved. Then, have them think outside the box to come up with a possible solution. Next, have students outline steps to achieve the solution. When students have completed the activity, call on groups to share their ideas.

### Reflect

Have students respond to the prompt at the bottom of the worksheet. Is your solution an example of thinking outside the box? If not, what other ideas can you generate?

### Extend and Enrich

Project based learning (PBL) activities often give students the opportunity to practice flexible thinking skills. The Bucks Institute for Education has free lesson plan ideas teachers can use to integrate PBL into their classroom. To find activities, visit: [www.pblworks.org/what-is-pbl](http://www.pblworks.org/what-is-pbl).

### For Further Study

- NASA, Katherine Johnson Interview: <https://www.nasa.gov/modernfigures/videos>
- NASA, Katherine Johnson Biography: [www.nasa.gov/content/katherine-johnson-biography](http://www.nasa.gov/content/katherine-johnson-biography)
- Scientific American, The Power of Flexible Thinking: [www.scientificamerican.com/article/the-power-of-flexible-thinking/](http://www.scientificamerican.com/article/the-power-of-flexible-thinking/)

### Professional Development

Are there ways you can integrate more flexible thinking activities into your classroom?