**Paired Readings:**

1. **Who Needs a Better Mousetrap?**
2. **Building a Bridge**

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**Who Needs a Better Mousetrap?**

**by Readworks**

Have you ever heard this quote: “Build a better mousetrap, and the world will beat a path to your door?”

In the United States, these words are commonly credited to Ralph Waldo Emerson, one of the great American thinkers of the 19th century. The quote is often used to describe how one should become a successful inventor. The idea is that brand new solutions to unsolved problems aren’t necessary for success. Most inventors can simply come up with slightly better solutions and find success by staying ahead of the game.

However, the quote is inaccurate. Emerson never actually said these words, and when people recite this quote, they’re continuing one of the greatest misinterpretations of our time. Originally, Emerson described people’s desire to have the best product—for example, corn, pigs, chairs or knives. Over the years, the words “better mousetrap” found their way into the quote, and the effect has been so strong that the mousetrap is now the most reinvented device in United States history.

What exactly makes for a “better mousetrap”? A quick look at the market for mousetraps reveals a great variety of solutions. T-Rex traps, glue traps, catch traps, and bait-less traps are just a few examples. But what makes any of these mousetraps better than the others? Is there such a thing as a best mousetrap?

The trick to answering these questions is to understand a basic truth about solving problems in the real world: There is never one best solution to a problem. Whenever people are faced with a problem to overcome, there are a number of ways to arrive at a solution. And when deciding what solution is
best, you are choosing the right balance between two things: criteria and constraints.

Criteria are the ways that you know your solution is working. People don’t always agree on the same criteria, so if you’re setting out to build (or buy) a better mousetrap, it’s important to decide what you want the mousetrap to do for you.

Possible Criteria for a Better Mousetrap

- The trap should kill the mouse.
- The trap should catch the mouse, but not harm it. Don’t hurt the mouse!
- The trap has to be very, very light.
- The trap can be as big as a shoebox, but it must fit under your kitchen sink.
- The trap shouldn’t hurt any human who accidentally touches it.

Let’s say that your goal is to catch the mouse, but you don’t want to kill the mouse or hurt it in anyway. Instead, you want to put the mouse in a cage and bring it to school to show your classmates. It’s easier to spot your ideal mousetrap, but you can’t start building until you’ve considered all of your constraints.

Constraints are the things that stop you from doing whatever you want to meet your criteria. The most common constraint is cost. For example, some people would love to have a mousetrap that instantly puts the mouse to sleep, so they can safely move the mouse to another location without harming it. Unfortunately, this kind of technology is too expensive for the typical person to afford.

Possible Constraints on Building a Better Mousetrap

It’s very expensive to capture a mouse without harming it. The only materials that are available to build the trap are not as light as you would like. The only traps that can fit under your kitchen sink also kill the mouse. Traps that only harm mice and never harm humans cost at least $10 to build.

Another possible constraint is building materials. Maybe one of your criteria is that the mousetrap should be very light. However, if light materials like plastic are not available, then it might be very difficult to meet that criterion. The next best solution might be a mousetrap made of wood or metal.

When you’re deciding which mousetrap is the best, you will always have to keep track of your constraints. You’ll often find several different solutions,
and each solution will fit a different combination of constraints and criteria. As a problem solver, your job is to decide which one is the best fit.

According to the United States Patent Office, over 4,000 people have tried to invent a better mousetrap. The misquoted words of Ralph Waldo Emerson are also used to describe the efforts of thousands of businesses, all of which are trying to write a smarter computer program, build a faster airplane, or make a better ice cream flavor to bring more customers to their doors. The promise of a better solution is something that many people try to fulfill every single day.

Think, though, about the last time you saw a mousetrap. Even if a hundred new mousetraps are invented every year, they’re not always better than the ones that came before. At the end of the day, the criteria for a better mousetrap might be so simple there is no better solution out there. And the constraints of building a new mousetrap might outweigh any of the criteria you can think of for a better solution.

Build a better mousetrap, and the world might never notice

Building a Bridge

Summer vacation had just begun, and Alex and Maria were ready to spend all day outside. They decided to walk to the neighborhood park, where there was a river that they liked to swim in when it was particularly hot. Alex and Maria began to sweat as they walked, even though their house was only ten minutes away from the park’s entrance.

When they got to the river, they saw that it was too shallow to swim in. The rocks that made up the bed of the river were even poking out of the water in some places, glistening in the sun. Alex and Maria were frustrated. On the other side of the river, about fifty yards away, and in a welcoming courtyard, there was a fountain spewing water in beautiful arcs.

“We should go play in the fountain,” Maria said.

“How will we get there?” asked Alex.

They thought for a moment. They knew if they walked upriver, they would eventually come to a walkway that crossed the river, but it was so hot, and they were eager to get to the fountain.

Maria looked around the grassy riverbank and noticed a few logs and branches lying close to the water. “We could build a bridge!” she said. She ran over to a thick tree branch that looked long enough to be placed across the river. Together, she and Alex hefted the branch onto their shoulders and
walked it to the water. Here, they stopped. How would they get the branch across?

Maria suggested throwing it down into the water and seeing if it reached the other side. That seemed imprecise to Alex – what if the branch did not reach the other side of the river, and got stuck or swept away by the water? Then they would be unable to walk all the way across the river.

Maria wondered if they could measure the distance from the riverbank they stood on to the other shore. They put the log carefully down and decided to test the distance with lighter, thinner branches. They found a few wispy branches by the spot where they had first found the log, and they tied the branches together using their hair bands.

On their first attempt, they tied two branches together and went back to the river to test the length. The branches barely reached the center of the swirling water. After tying two more branches together to the initial branches, Alex and Maria were able to get the thin makeshift model bridge to touch the far bank.

“Hooray!” Maria said. “Now we know how long the log needs to be.”

They set the tied branches on the ground next to the log. The log was luckily the exact length of the tied branches. Now Alex and Maria had to figure out how to make sure the log was secure on both sides of the bank before they walked across it to reach the other side of the river.

“I know!” Alex said. She began to gather thinner branches, like the ones they had tied together, which were pliable and easy to bend. She twisted them together into a tight bundle, then laid them horizontally across the edges of the log. Then she and Maria hauled some of the stones out of the river and placed them on the branches on either side of the log. In this way, they were able to stabilize the log—at least on one side—in order to run across.

When Alex and Maria got to the other side of the river, they secured the other side of the log with more branches and rocks, and looked back at their handiwork. It had been a good day’s work, but now they were free to enjoy the cool water in the fountain.
Use the article "Building a Bridge" to answer questions 1 to 2.

1. What do Alex and Maria want to achieve by building a bridge?
   _____________________________________________________________________
   _____________________________________________________________________
   _____________________________________________________________________
   _____________________________________________________________________

2. What is one problem Alex and Maria face while they are trying to build their bridge?
   _____________________________________________________________________
   _____________________________________________________________________
   _____________________________________________________________________
   _____________________________________________________________________

Use the article "Who Needs a Better Mousetrap?" to answer questions 3 to 4.

3. There are a number of ways to solve most problems. When deciding which solution is best, what two things do you need to balance?
   _____________________________________________________________________
   _____________________________________________________________________
   _____________________________________________________________________
   _____________________________________________________________________

4. What is the difference between a piece of criteria and a constraint? Use information from the text to support your answer.
   _____________________________________________________________________
   _____________________________________________________________________
   _____________________________________________________________________
   _____________________________________________________________________

Use the articles "Who Needs a Better Mousetrap?" and "Building a Bridge" to answer questions 5 to 6.

5. What was one piece of criteria that Alex and Maria required for their bridge? Use information from both texts to support your answer.
   _____________________________________________________________________
   _____________________________________________________________________
   _____________________________________________________________________
   _____________________________________________________________________
6. What was one constraint that Alex and Maria had to consider while building their bridge? Use information from both texts to support your answer.

___________________________________________________________________
___________________________________________________________________
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7. What is the connection between these two articles? How are they similar?

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Vocabulary Practice

<table>
<thead>
<tr>
<th>Perilous</th>
<th>Plush</th>
<th>Vary</th>
<th>Jumbled</th>
<th>Mirage</th>
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</thead>
<tbody>
<tr>
<td>Cluttered</td>
<td>Luxurious</td>
<td>Peculiar</td>
<td>Ragged</td>
<td>Oar</td>
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</tbody>
</table>

1. Practice the spelling of each word on a separate piece of paper.

2. Fill in the blank with the word that best completes the sentence:

a. I thought it was very ______________________ when the cat started talking to me.
b. People had to make a ___________________ journey across America by wagon to settle the West.
c. The colors in a Skittles pack ___________________.
d. His new car is very ____________________.
e. The Tuck’s house was _________________ with all kinds of things.
f. My brain felt so _________________ after I took the test.
g. Her shirt became _________________ after she wore it 100 times.
h. I sleep with a _________________ toy at night.
i. Paddle faster with the _________________ to move the boat downstream.
j. He thought he saw a dinosaur but it was just a _________________ in the desert.