

Grit Makerspace Challenges

10 Story-Based Halloween Challenges

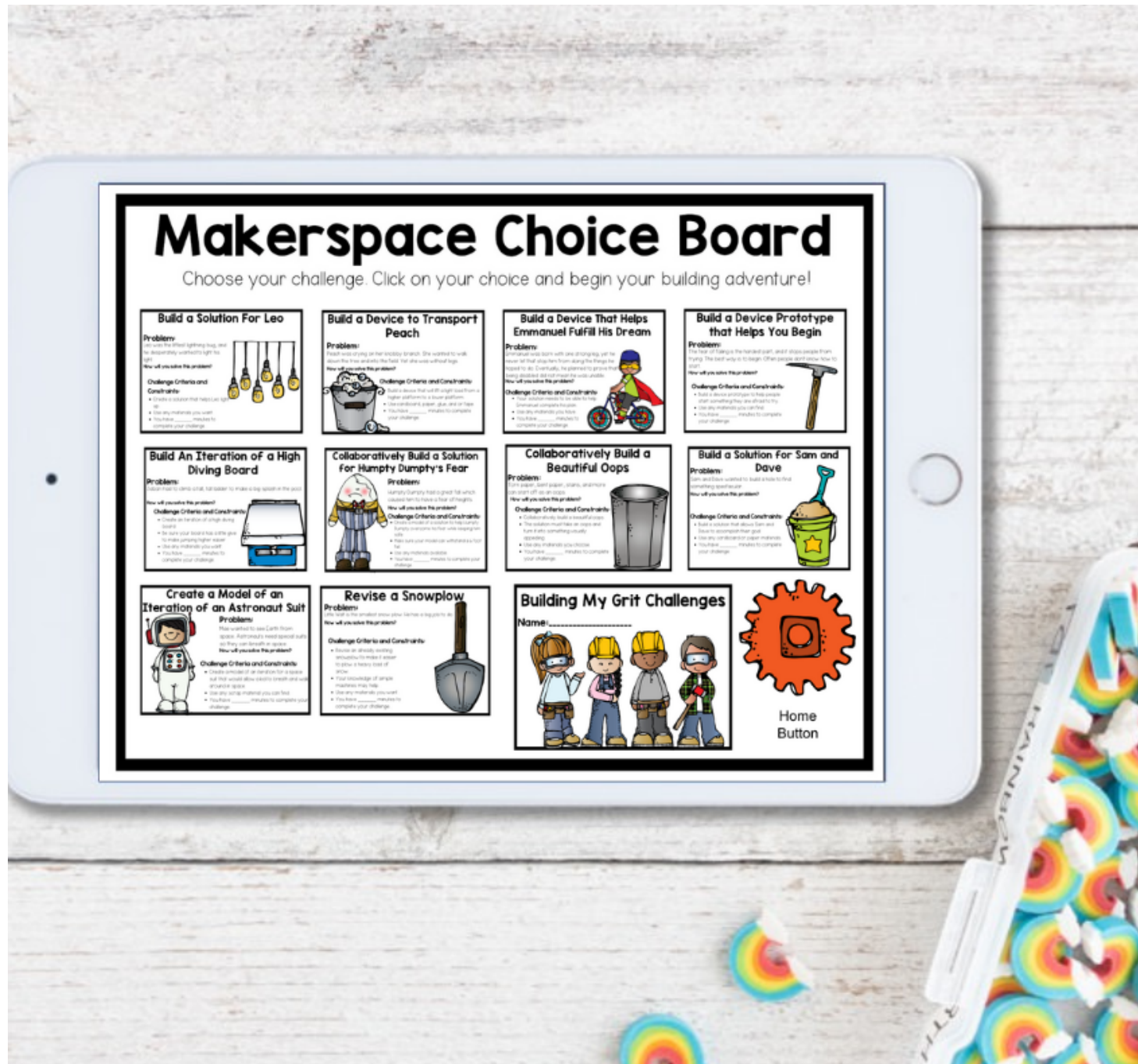
- Lesson Plans
- 10 Makerspace Challenges
- Digital Version Included
- Digital Choice Board
- Tied to 10 Stories Focusing on Grit



Keep Scrolling for a Closer Look!

Perfect for STEM or Makerspace

- **Makerspace & STEM**
- **Encourages Reluctant Learners**
- **Centers or Stations**
- **Classrooms or Media Centers**
- **Hands-On, Outside-the-Box Thinkers**
- **Collaborative Work**
- **Problem Solving**

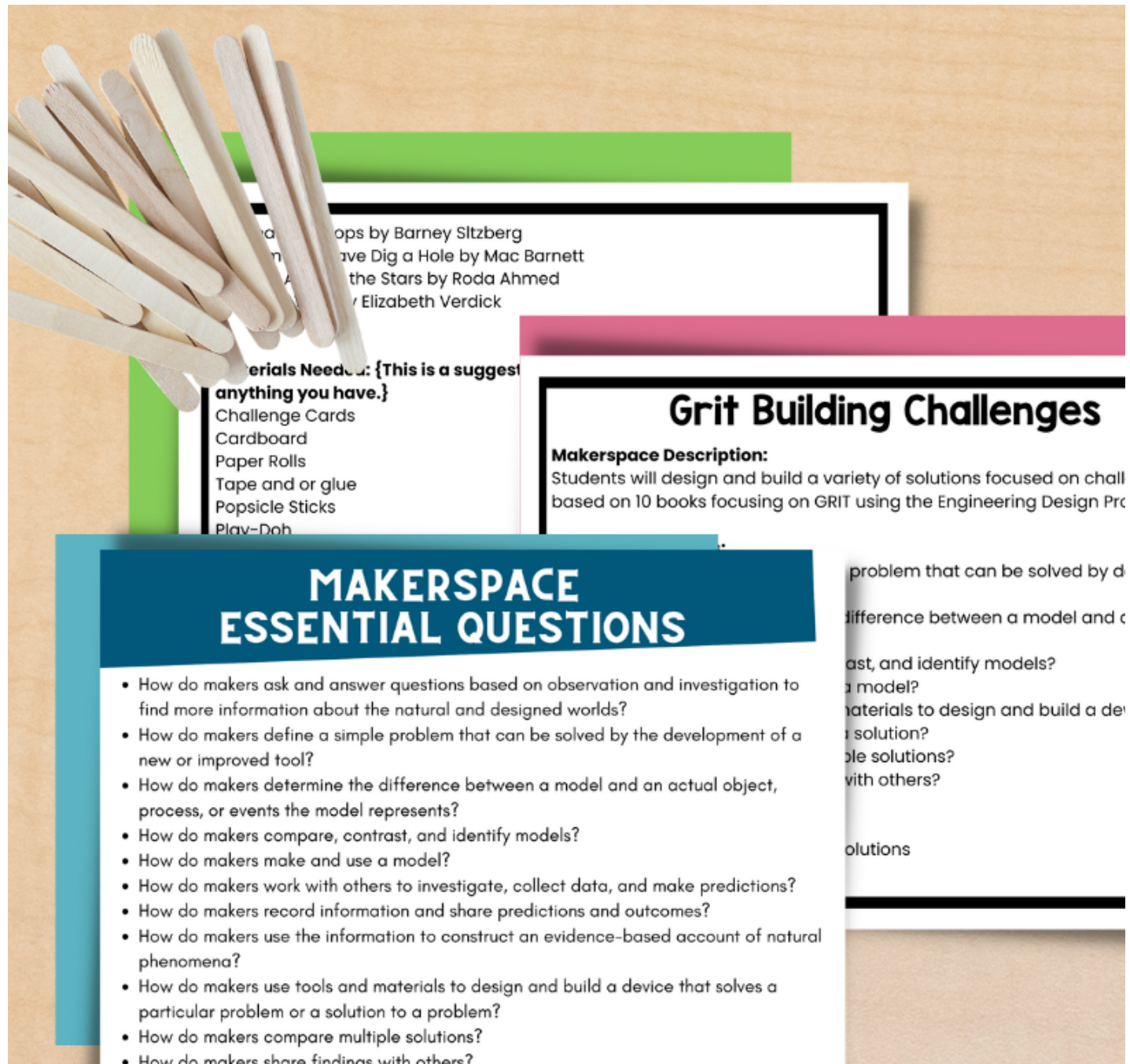


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Complete Lesson Plans

One complete **Makerspace lesson plan** is done for teachers that can be used again and again with **10 different stories**. The lesson focuses on deeper comprehension, critical thinking, the engineering design process, and solving problems.

This Makerspace lesson plan can be used with any piece of literature.



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Closer Look At Lesson Plans

Grit Building Challenges

Large Lesson:

Start by telling students that they will be engineering a solution for a problem faced by the characters in the stories. They will be working in small groups to develop their solution, create a model of their solution and share their solution with others. (Sharing could be done with a video, PowerPoint, or presentation depending upon time and available technology and resources.)

Provide essential questions and possible vocabulary (this may be a review of terms) on a challenge card with students. Give kids a few minutes to make a list of questions they have about building a solution. {This may take some time as formulating questions can be difficult for some students. Allow students to think quietly on their own for a minute or two and then open it up to a whole class or team sharing to encourage conversation and stimulate ideas. Record a question in Makerspace Challenge Notebook. Students will then be able to create a construction plan. Students will then be able to construct the solution to the problem.



- ★ Objective
- ★ Essential Questions
- ★ Vocabulary
- ★ Standards
- ★ Book Titles
- ★ Lesson



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10 Open-Ended Challenges

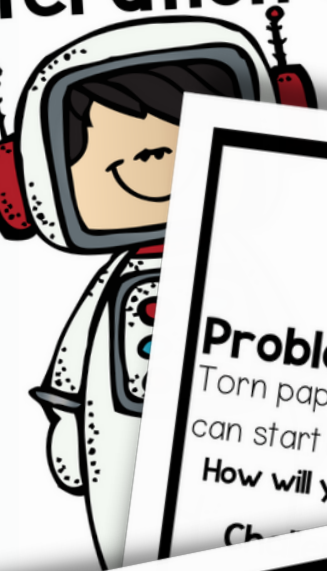
Each challenge is left open-ended and focused on solving a problem from the story allowing students to problem-solve, work collaboratively, and inspire creativity.



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Challenge Samples

Create a Model
Iteration of an As



Build a Solution

Problem:
Mae wanted to help
Leo was the littlest lightning bug,
he desperately wanted to light h

How will you solve this problem?

**Build An Iteration of
Diving Board**

Problem:
Jabari had to climb a tall, tall ladder to make a big splash.
How will you solve this problem?

Challenge Criteria

**Collaboratively Build a
Beautiful Oops**

Problem:
Torn paper, bent paper, stains, and
can start off as an oops.
How will you solve this problem?

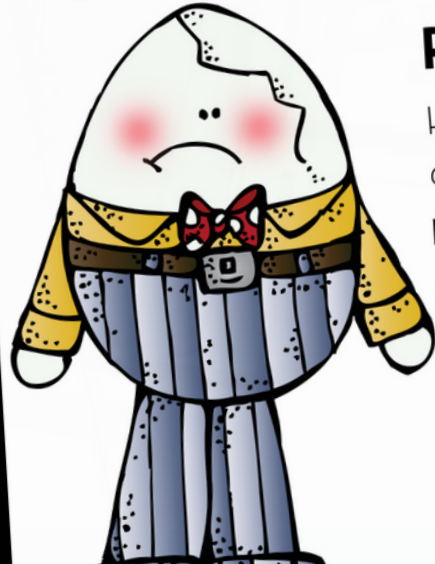
**Build a Solution for Sam and
Dave**

Problem:
Sam and Dave wanted to build a hole to find
something spectacular.
How will you solve this problem?

Challenge Criteria and Constraints:
Build a solution that allows Sam and
Dave to accomplish their goal.
Use any cardboard or paper materials.
You have 15 minutes to complete



**Collaboratively Build a Solution
for Humpty Dumpty's Fear**



Problem:
Humpty Dumpty had a great fall which
caused him to have a fear of heights.
How will you solve this problem?

Challenge Criteria and Constraints:

- Create a model of a solution to help Humpty Dumpty overcome his fear while keeping him safe.
- Make sure the solution is safe.
- Use any materials.

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A Closer Look at Challenges

✓ Problem presented

✓ Criteria

✓ Constraints

✓ Based on Real Literature

Build a Device That Helps Emmanuel Fulfill His Dream

Problem:

Emmanuel was born with one strong leg, yet he never let that stop him from doing the things he hoped to do. Eventually, he planned to prove that being disabled did not mean he was unable.

How will you solve this problem?

Challenge Criteria and Constraints:

- Your solution needs to be able to help Emmanuel complete his plan.
- Use any materials you have.
- You have _____ minutes to complete your challenge.



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Books Used

Books Referenced for the Challenges:

- Leo the Lightning Bug by Eric Drachman
- Peach and Blue by Sarah S. Kilborne
- Emmanuel's Dream: The True Story of Emmanuel Ofosu Yeboah by Laurie Ann Thompson
- Trying by Kobi Yamada
- Jabari Jumps by Gaia Cornwall
- After the Fall by Dan Santat
- Beautiful Oops by Barney Stizberg
- Sam and Dave Dig a Hole by Mac Barnett
- Mae Among the Stars by Roda Ahmed
- Small Walt by Elizabeth Verdick

Maker Stations or Centers

Maker Stations

focus on design thinking and allow students to work

through the

Engineering Design

Process as well as

focus on **building a**

classroom

community through

creativity,

collaboration, critical

thinking, community,

and curiosity **without**

taking up a ton of

space.



More

Students Work Through Engineering Design Process

- Ask Questions
- Imagine a Solution
- Plan Solution
- Create Solution
- Test Solution
- Revise
- Reflect

Reflect U



Imagine My Solution

My Plan For Making My Solution



Materials Needed:

How the Construction Will Work


My Creation

tion of your creation/sol
el the parts.

Building My Grit Challenges

Name: _____

Ask
Engineers and scientists ask lots of questions about your problem.



- 1
- 2
- 3



Blue Print Plan

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A Closer Look at EDP


- ✓ Ask Questions
- ✓ Imagine Solution
- ✓ Plan
- ✓ Build and Create
- ✓ Test/Revise
- ✓ Reflect and Share

Imagine My Solution

My Plan For Making My Solution

Materials Needed:

How the Construction Will Work



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Digital Version Included With Choice Board

Makerspace Choice Board

Choose your challenge. Click on your choice and begin your building adventure!

Build a Solution For Leo

Problem: Leo was hit by a lightning bug, and he desperately wanted to light his way home.

How will you solve this problem?




Challenge Criteria and Constraints:

- Create a solution that helps Leo light his way home.
- Use any materials you want.
- You have _____ minutes to complete your challenge.

Build a Device to Transport Peach

Problem: Peach was crying on her lonely branch. She wanted to walk down the tree and into the forest, but she was without legs.

How will you solve this problem?



Challenge Criteria and Constraints:

- Build a device that will lift a light load from a higher platform to a lower platform.
- Use cardboard, paper, glue, and/or tape.
- You have _____ minutes to complete your challenge.

Build a Device That Helps Emmanuel Fulfill His Dream

Problem: Emmanuel was born with one strong leg, yet he never let that stop him from doing the things he hoped to do. Eventually, he planned to prove that being disabled did not mean he was unable.

How will you solve this problem?



Challenge Criteria and Constraints:

- Your solution needs to be able to help Emmanuel complete his goal.
- Use any materials you have.
- You have _____ minutes to complete your challenge.

Build a Device Prototype that Helps You Begin

Problem: The fear of falling is the hardest part, and it stops people from trying. The best way is to begin. Other people don't know how to start.

How will you solve this problem?



Challenge Criteria and Constraints:

- Build a device prototype to help people start something they are afraid to try.
- Use any materials you can find.
- You have _____ minutes to complete your challenge.

Build An Iteration of a High Diving Board

Problem: Jason had to climb a tall, tall ladder to make a big splash in the pool.

How will you solve this problem?



Challenge Criteria and Constraints:

- Create an iteration of a high-diving board.
- Be sure your board has a little give to make jumping higher easier.
- Use any materials you want.
- You have _____ minutes to complete your challenge.

Collaboratively Build a Solution For Humpty Dumpty's Fear

Problem: Humpty Dumpty had a great fall which caused him to have a fear of heights.

How will you solve this problem?



Challenge Criteria and Constraints:

- Build a solution to help Humpty overcome his fear while keeping him safe.
- Make sure your solution withstands a 1-foot fall.
- Use any materials available.
- You have _____ minutes to complete your challenge.

Collaboratively Build a Beautiful Oops

Problem: Tom, paper, bent paper, atoms, and more can start off as an oops.

How will you solve this problem?



Challenge Criteria and Constraints:

- Collaboratively build a beautiful oops.
- The solution must take an oops and turn it into something visually appealing.
- Use any materials you choose.
- You have _____ minutes to complete your challenge.

Build a Solution For Sam and Dave

Problem: Sam and Dave wanted to build a nose to find something spectacular.

How will you solve this problem?




Challenge Criteria and Constraints:

- Build a solution that allows Sam and Dave to accomplish their goal.
- Use any cardboard or paper materials.
- You have _____ minutes to complete your challenge.

Create a Model of an Iteration of an Astronaut Suit

Problem: Mia wanted to see Earth from space. Astronauts need special suits so they can breathe in space.

How will you solve this problem?



Challenge Criteria and Constraints:

- Create a model of an iteration for a space suit that would allow Mia to breathe and walk around in space.
- Use any simple materials you can find.
- You have _____ minutes to complete your challenge.

Revise a Snowplow

Problem: Tim had the smallest snowplow he has a big job to do.

How will you solve this problem?



Challenge Criteria and Constraints:

- Revise an already existing snowplow to make it easier to plow a heavy load of snow.
- Your knowledge of simple machines may help.
- Use any materials you want.
- You have _____ minutes to complete your challenge.

Building My Grit Challenges

Name: _____



Home Button

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Each Choice Takes Students to Read Aloud On YouTube

Watch the Video Below

Think about the problems that exist in the story. Allow yourself to notice where characters struggle. Formulate a question about the problem in the story and or a question about a possible solution.

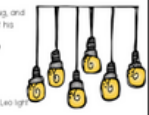


Build a Solution For Leo

Problem:
Leo was the latest lightning bug, and he desperately wanted to light his light.
How will you solve this problem?

Challenge Criteria and Constraints

- Create a solution that helps Leo light up.
- Use any materials you want.
- You have _____ minutes to complete your challenge.



Students click the challenge to go to the challenge slide.

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Solution Slide

Build a Solution For Leo

Problem:

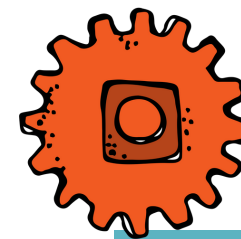
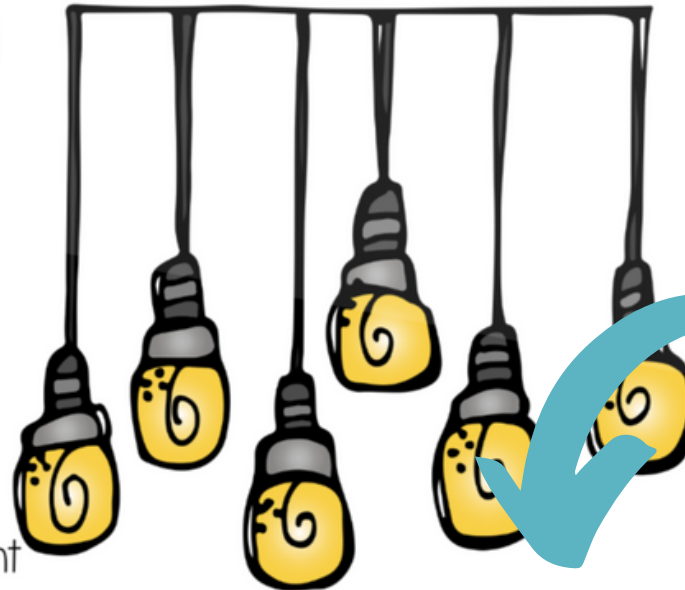
Leo was the littlest lightning bug, and he desperately wanted to light his light.

How will you solve this problem?

Challenge Criteria and

Constraints:

- Create a solution that helps Leo light up.
- Use any materials you want.
- You have _____ minutes to complete your challenge.



Students click the bear to go back Home.



More

**Let me know if you have
any questions.**



TRINA DEBOREE