

The cover art features a white background with a dense pattern of small, light gray icons representing various STEM fields, including lightbulbs, gears, musical notes, and mathematical symbols. On the left side, several stylized hands in vibrant colors (green, yellow, pink, orange) are shown reaching towards the center. The title 'STEM TROOPERS' is prominently displayed in the middle-right area, with 'STEM' in green and 'TROOPERS' in black. Below the title, a black rounded rectangle contains the text 'Level 2' in white. In the bottom right corner, the publisher's name 'STEM ADVANCEMENT INC. G. GRANT' is listed above a decorative line of green dots, followed by the text 'STEM TROOPERS LEVEL 2' in green.

STEM TROOPERS

Level 2

**STEM ADVANCEMENT INC.
G. GRANT**

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STEM TROOPERS LEVEL 2



ISBN: 9781078195317

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The Little Engineer

A STEM LITERARY COMPANION

STEM TROOPERS LEVEL 2



ACCOMPANIES A TASTE OF ENGINEERING II
A PROJECT OF ADVANCESTEM.COM
BY: G. GRANT, N. GRANT, & S. GRANT



The Engineering Design Process

THROUGHOUT THIS BOOK YOU WILL COME ACROSS SOME OPEN-ENDED STEM CHALLENGES WHICH ALLOW YOU TO PROBLEM-SOLVE AND FIND SOLUTIONS TO REAL WORLD PROBLEMS USING YOUR SCIENCE, MATH, ENGINEERING, AND TECHNOLOGY SKILLS. THE ENGINEERING DESIGN PROCESS SHOWN BELOW HAS 5 STEPS WHICH WILL HELP GUIDE YOUR THINKING AND ABILITY TO EXPERIMENT.



How To Use This Book

THROUGHOUT THIS BOOK YOU WILL COME ACROSS SOME OPEN-ENDED STEM CHALLENGES WHICH ALLOW YOU TO PROBLEM-SOLVE AND FIND SOLUTIONS TO REAL WORLD PROBLEMS USING YOUR SCIENCE, MATH, ENGINEERING, AND TECHNOLOGY SKILLS. THE ENGINEERING DESIGN PROCESS SHOWN BELOW HAS 5 STEPS WHICH WILL HELP GUIDE YOUR THINKING AND ABILITY TO EXPERIMENT.

This book is divided into 8 units. Each unit has 3 lessons.

Lesson 1:

- **Reading** - students will read a story about an engineer who needs to solve a real-life problem.
- **Group Worksheet** - students will answer questions based on the reading in preparation for the activity in Lesson 2.

Lesson 2:

- **Lab activity** - students will collect materials from their teacher and complete a lab activity. Students will use the worksheet as they go along.

Lesson 3:

- **Extension Activity** - students will collect materials from their teacher and complete a STEM challenge on the unit topic.

THE SYMBOLS ON THE BOTTOM OF THE PAGES WILL TELL YOU WHEN A SESSION CONTINUES AND WHEN A SESSION ENDS.



The green arrow means keep working and go to the next page.



The red stop sign means stop working and do not move on to the next page



The book icon means keep reading.





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The Little Engineer and the Hidden Treasure

STEM TROOPERS LEVEL 2

A TASTE OF ENGINEERING II
UNIT 1: CIVIL ENGINEERING



This is Jeremy. He's an engineer.



UNIT 1: LESSON 1: READING



STEM TROOPERS LEVEL 2



Jeremy also catches hawks in his spare time.



UNIT 1: LESSON 1: READING



STEM TROOPERS LEVEL 2



Jeremy also loves to search for lost treasure.



UNIT 1: LESSON 1: READING



STEM TROOPERS LEVEL 2



One day, Jeremy was sailing in his boat,
in a very good mood.



UNIT 1: LESSON 1: READING



STEM TROOPERS LEVEL 2



Jeremy was in a good mood because on his boat was the lost treasure!



UNIT 1: LESSON 1: READING



STEM TROOPERS LEVEL 2



Jeremy had found it!



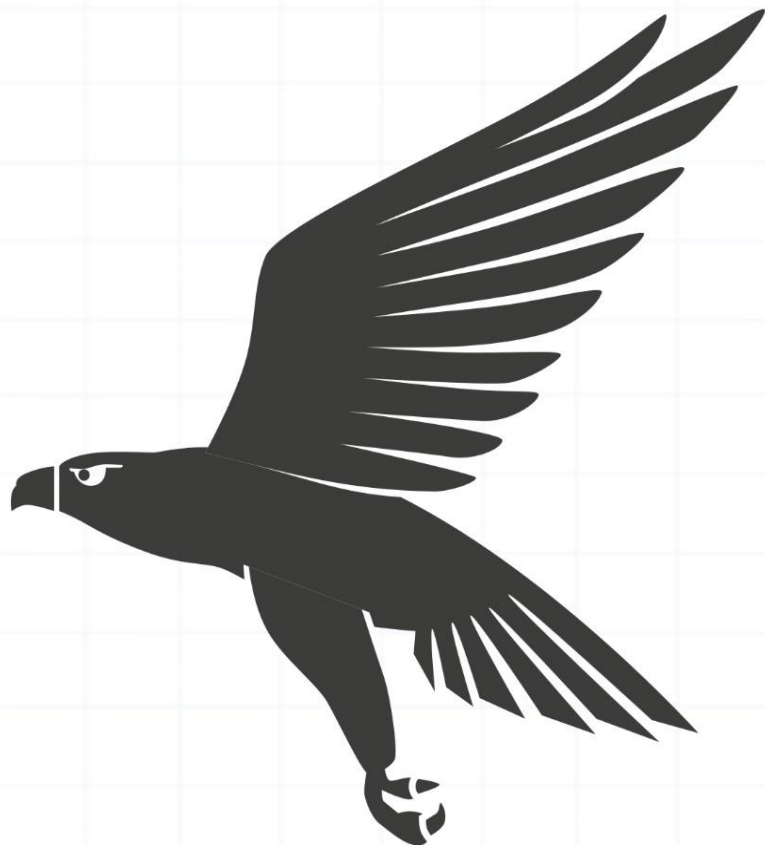
UNIT 1: LESSON 1: READING



STEM TROOPERS LEVEL 2



Suddenly! A shadow appeared.



UNIT 1: LESSON 1: READING



STEM TROOPERS LEVEL 2



The hawks were trying to get the treasure!



UNIT 1: LESSON 1: READING



STEM TROOPERS LEVEL 2



Hawks love shiny things.



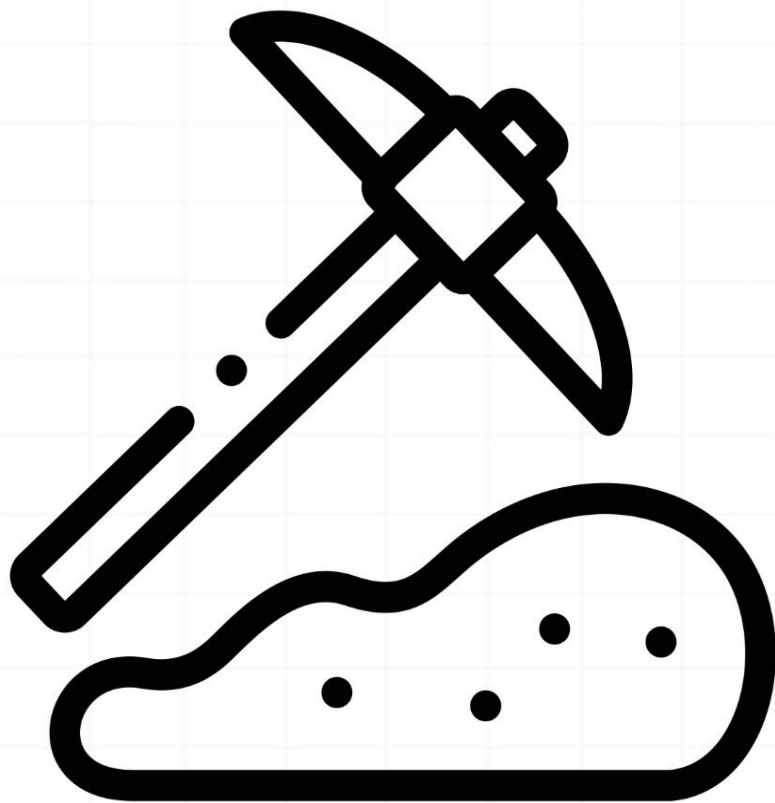
UNIT 1: LESSON 1: READING



STEM TROOPERS LEVEL 2



Jeremy thought hard....



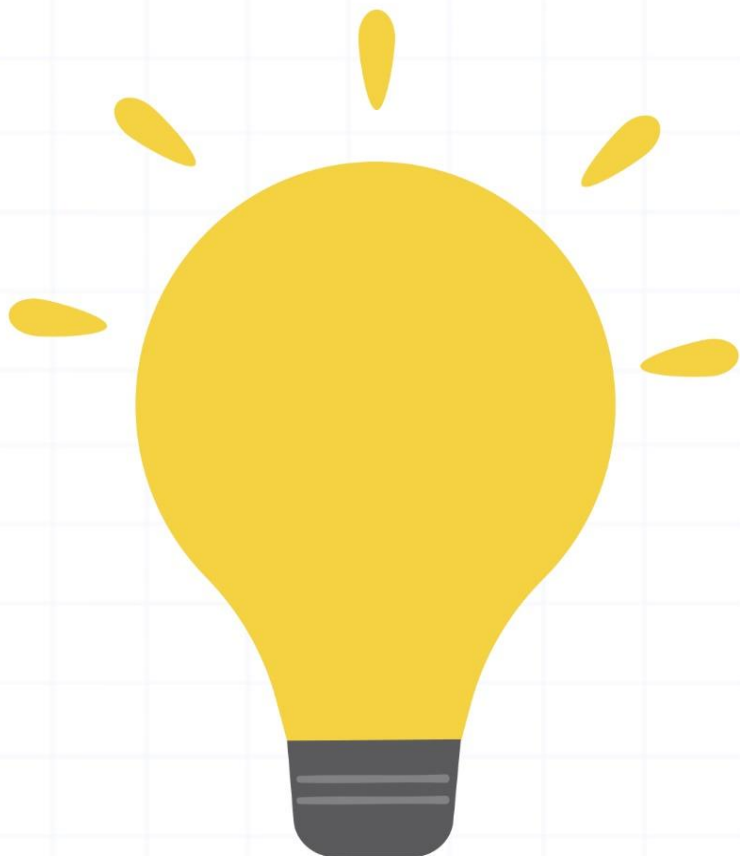
UNIT 1: LESSON 1: READING



STEM TROOPERS LEVEL 2



"I've got it!", He yelled



UNIT 1: LESSON 1: READING



STEM TROOPERS LEVEL 2



Jeremy grabbed the treasure, tied a rope around it, and began lowering it into the water.



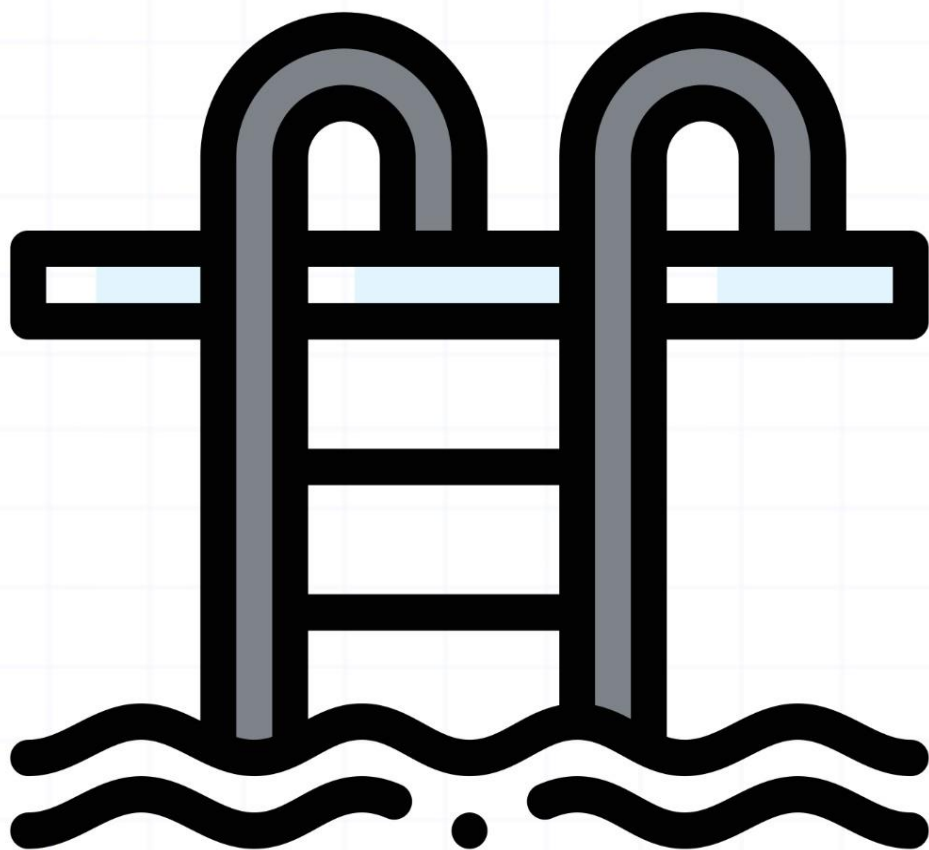
UNIT 1: LESSON 1: READING



STEM TROOPERS LEVEL 2



Everyone knows that hawks can't swim!



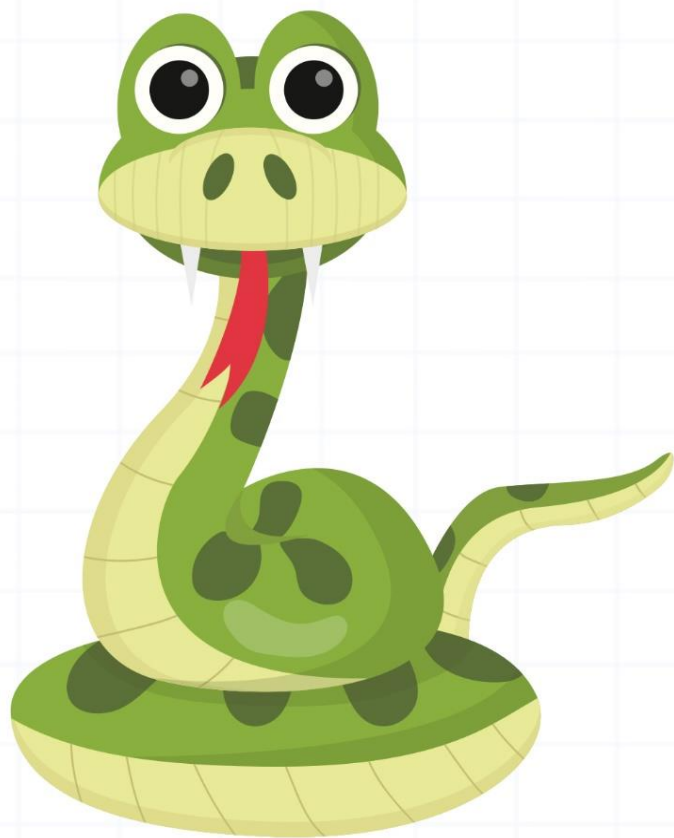
UNIT 1: LESSON 1: READING



STEM TROOPERS LEVEL 2



As Jeremy looked into the water, he saw a new problem. Water snakes!



UNIT 1: LESSON 1: READING



STEM TROOPERS LEVEL 2



Jeremy knew the snakes would grab the treasure if it touched the bottom of the ocean.



UNIT 1: LESSON 1: READING

STEM TROOPERS LEVEL 2

Jeremy also knew that the hawks would grab the treasure if it was out of the water.



UNIT 1: LESSON 1: READING



STEM TROOPERS LEVEL 2



Jeremy needs a way to keep the treasure under the water, but not touching the bottom of the ocean. Can you help the little engineer?



UNIT 1: LESSON 1: READING



STEM TROOPERS LEVEL 2



The Little Engineer and the Hidden Treasure

1. Why couldn't Jeremy let the treasure sink to the bottom of the ocean?
2. Why couldn't Jeremy keep the treasure on his boat?
3. What problem does Jeremy need to solve?
4. Why is this something a Civil Engineer would solve?

Fill-ins:

1. Jeremy catches _____.
2. Jeremy also searches for _____.
3. Jeremy was _____ because he had found treasure.
4. Jeremy needed to make his treasure _____.
5. Civil Engineers study how forces make things move.
Jeremy needs to use the force of _____ to stop his treasure from _____.

Word Box:



Happy



Buoyancy



Sinking



Float



Treasure



Hawks



UNIT 1: LESSON 1: WORKSHEET



STEM TROOPERS LEVEL 2



The Little Engineer and the Hidden Treasure



Ask

How can we make a gem float under the surface of the water?



Imagine

Think of how you can make the gem sink or float.



Plan

Draw a picture of what you will attach to the gem.



Create

Use the materials to try to get the gem to float under water.



Improve

Look at everyone's ideas. Are there any ways you could work together to make an even better solution?



UNIT 1: LESSON 2: ACTIVITY

STEM TROOPERS LEVEL 2



Can You Float a Boat?



Ask

How can we build a boat that can carry a lot of weight without sinking?



Imagine

Think about the concepts your teacher has explained. How can you use what you know about density and volume to make sure your "boat" floats? How will you distribute the weight on your boat so that it will not sink?



Plan

Draw a picture of the boat you will build and which materials you will use to build it..



Create

Build your boat and test it out!



Improve

Did your boat float? What changes did you make to it as you went along? Was there a boat that never sunk? If yes, what did that group do differently?



UNIT 1: LESSON 3: EXTENSION

STEM TROOPERS LEVEL 2

