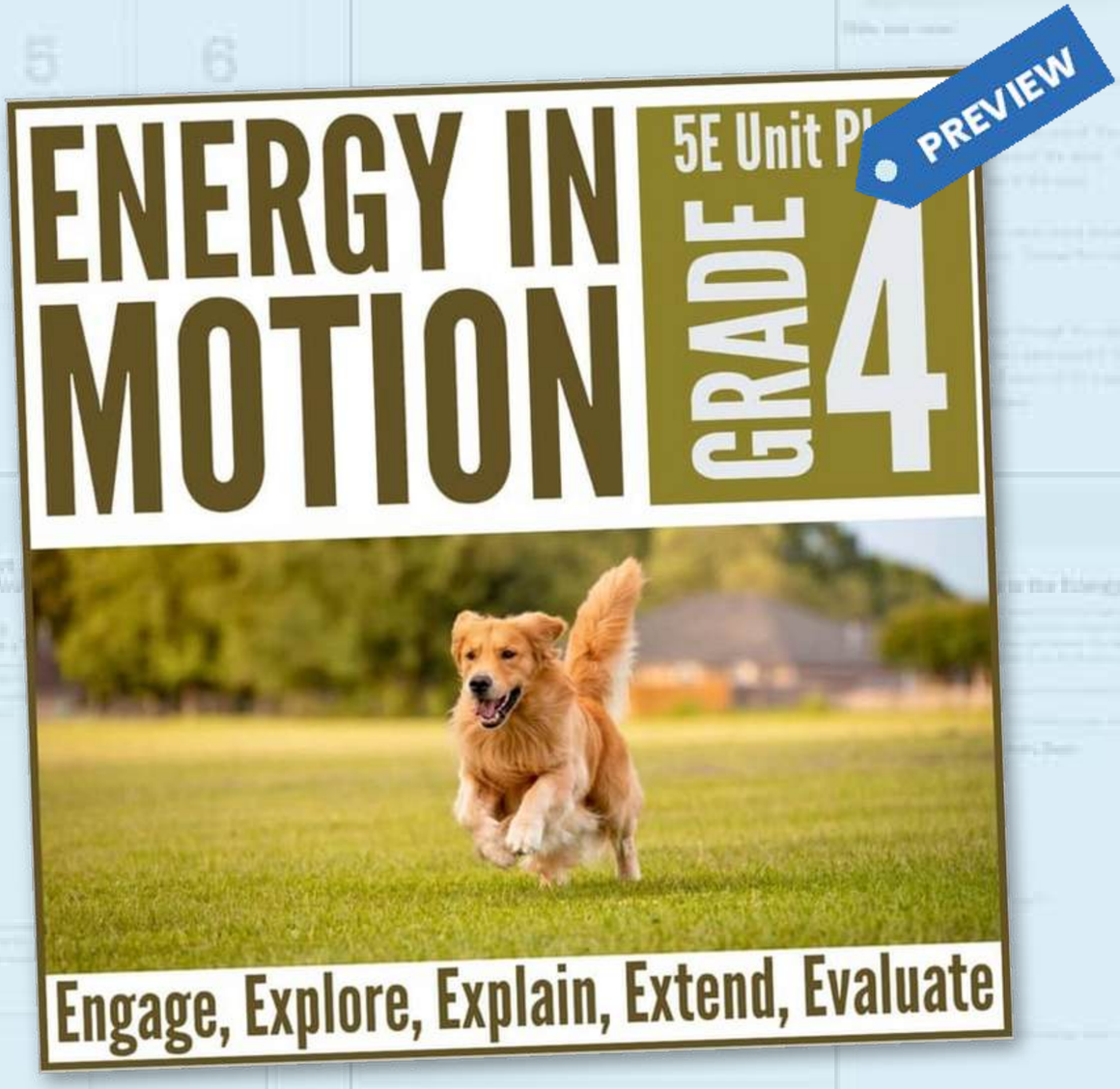


A Complete 5E Science Unit with Lesson Plans

4TH GRADE

ENERGY IN MOTION

Engage, Explore, Explain, Extend, Evaluate

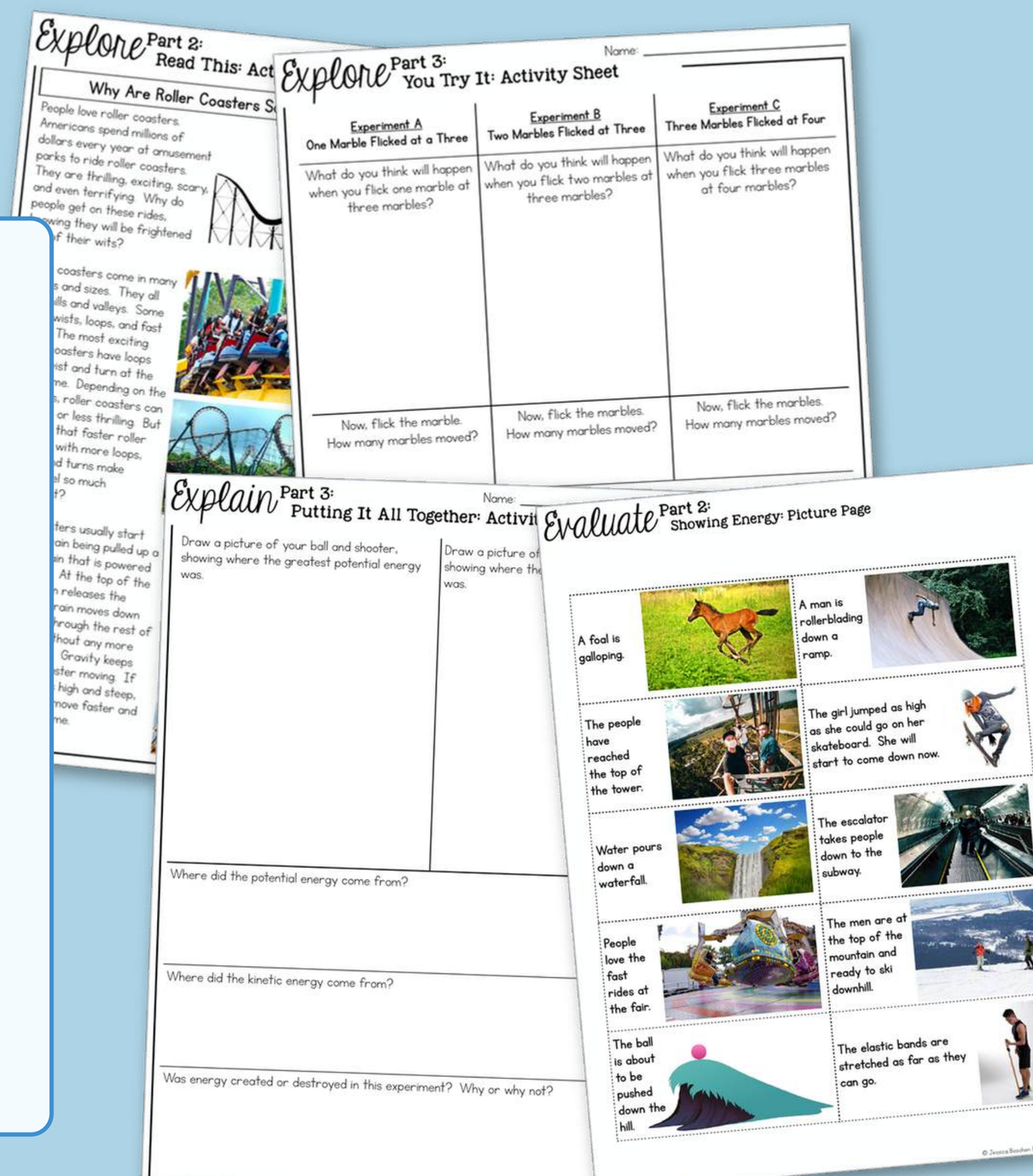
NGSS 4-PS3-1

KEEP SCROLLING TO SEE WHAT'S INSIDE!

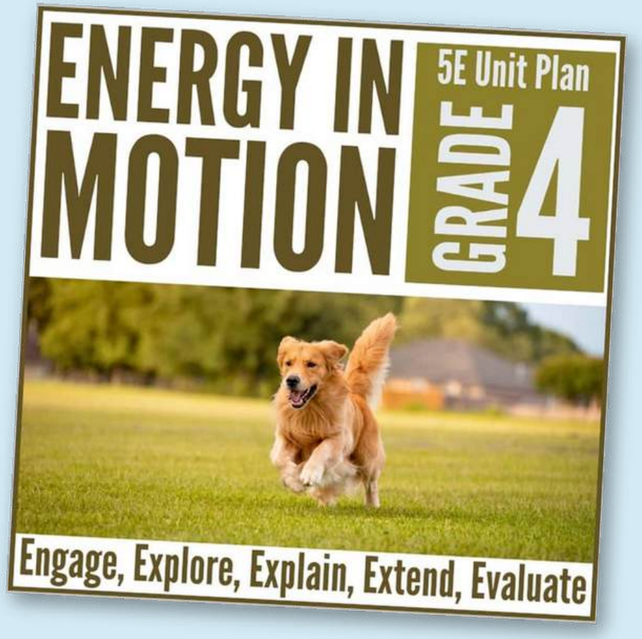
WHAT'S INCLUDED

5E ENERGY IN MOTION UNIT

- 190+ Page 5E Unit Plan
- Lesson Plans for All 5 Phases
- Teacher Notes and Misconceptions
- Materials Checklist and 4 Timelines
- Hands-On Energy Investigations
- Reading Passages on Energy of Motion
- Vocabulary Cards and Big Idea Posters
- Exit Tickets in 3 Formats
- Performance Assessment
- Answer Keys for Student Pages
- Google Slides and Google Forms Versions



UNIT AT A GLANCE



- Students race spool racers, flick marbles into flour, and build a ball shooter.
- Teacher background, lesson plans, and student pages in every phase.
- Aligned to NGSS 4-PS3-1.

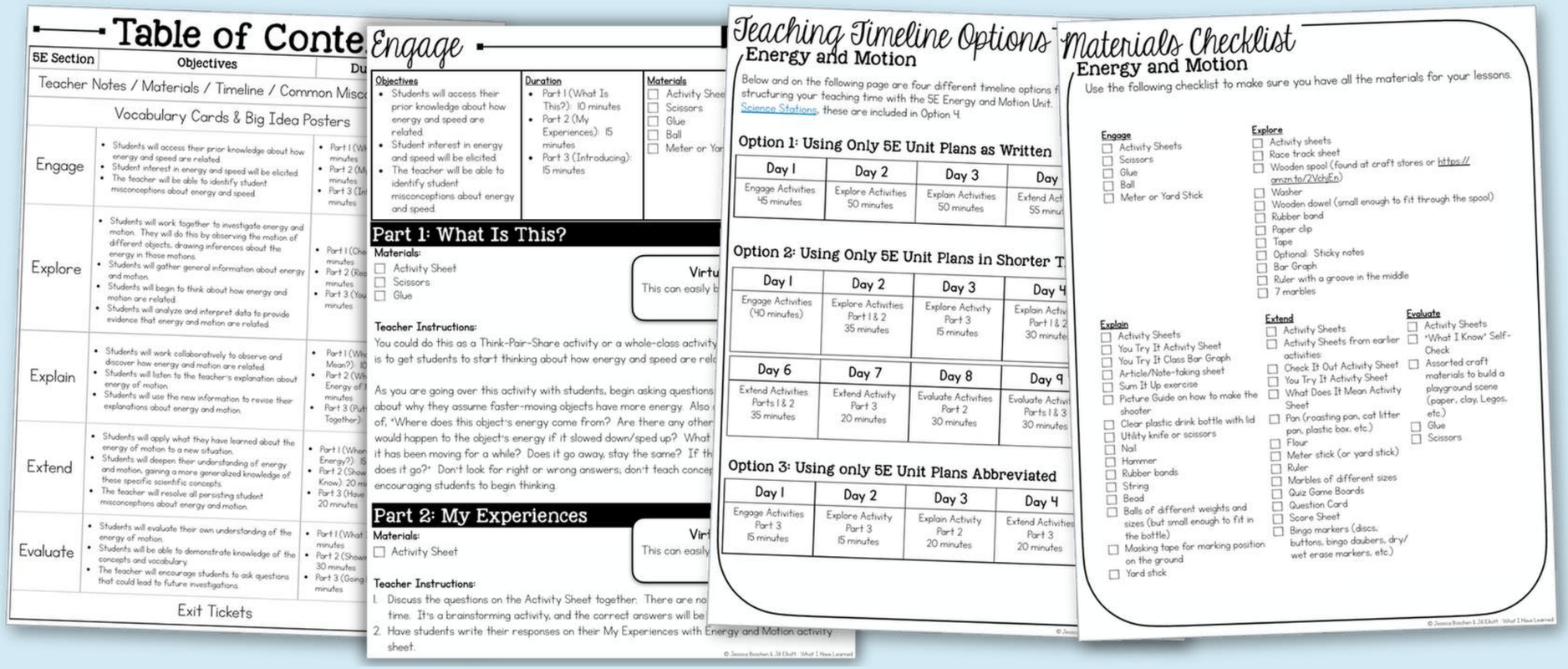
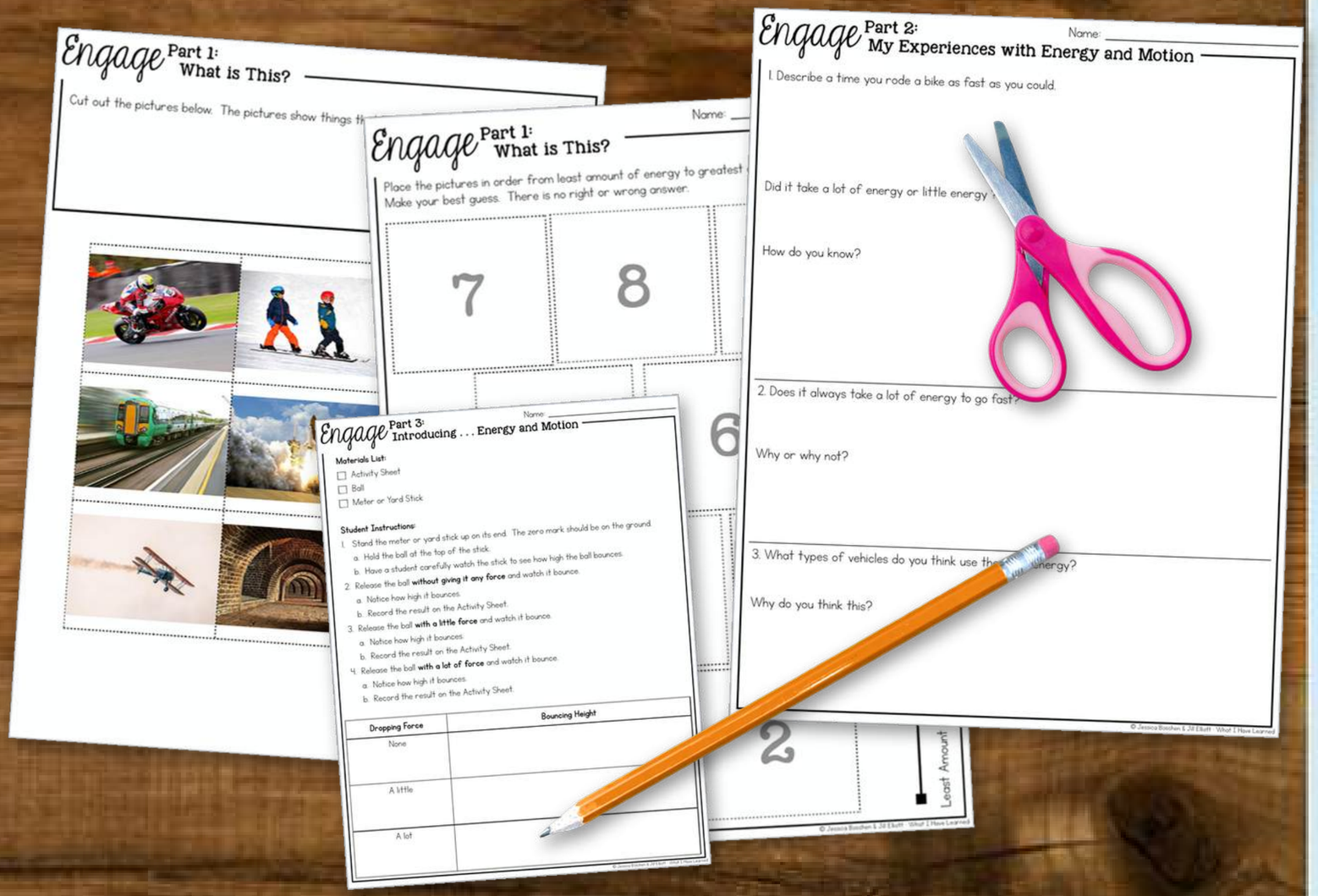


Table of Contents **Teacher Notes** **Timeline Options** **Materials Checklist**

ENGAGE



Teacher background, lesson plans, student pages, and answer key

E E E E E

Spark curiosity with a bouncing ball

1 What Is This?

Students sort pictures of moving things from the least to the greatest amount of energy.

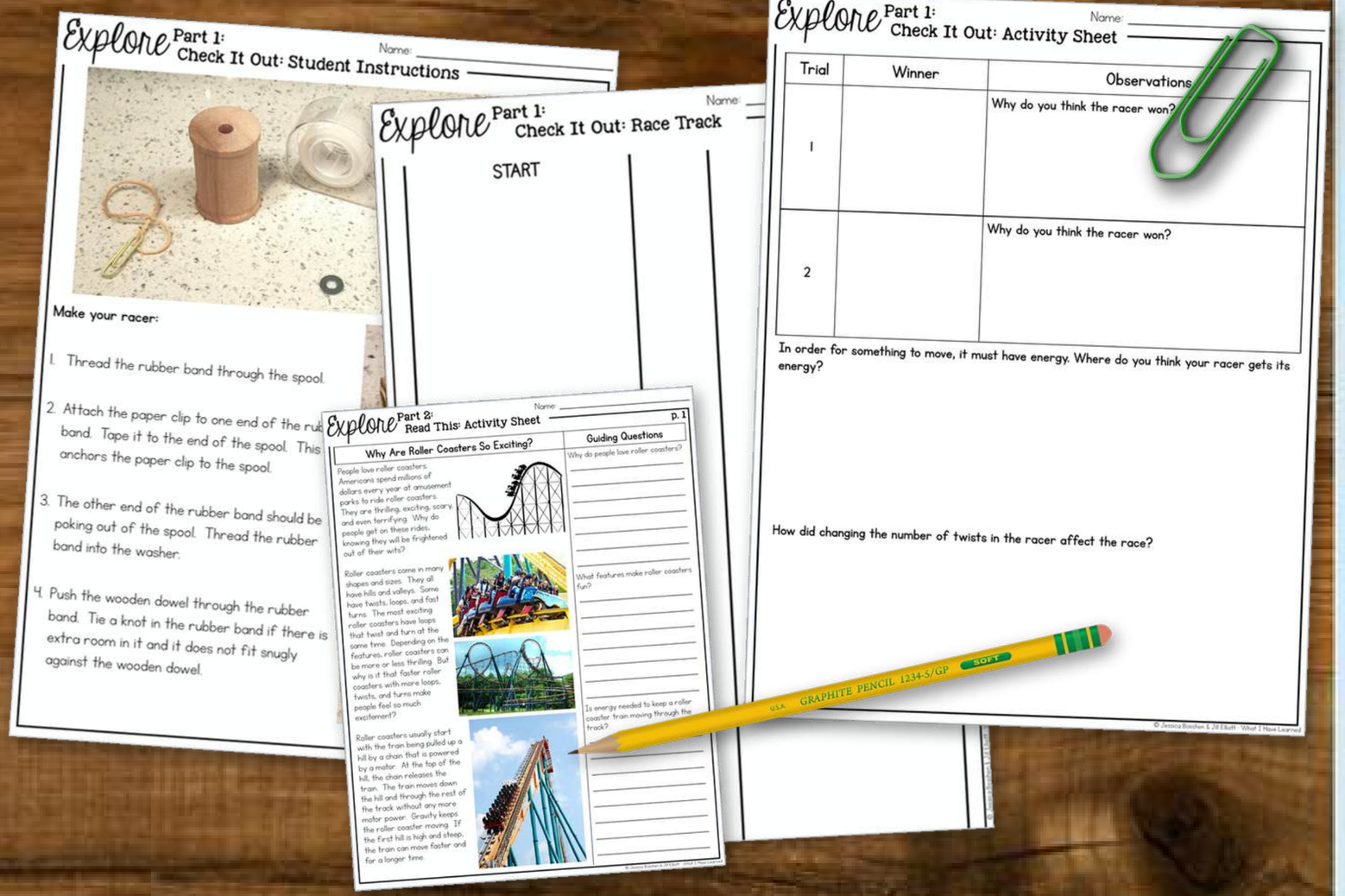
2 My Experiences

Students describe a time they went fast and tell if it took a lot of energy.

3 Introducing Energy and Motion

Students drop a ball with different amounts of force and measure how high it bounces.

EXPLORE



Teacher background, lesson plans, student pages, and answer key

E E E E E

Investigate energy and speed

1 Check It Out

Students build a spool racer, race it down a track, and test how twists change the race.

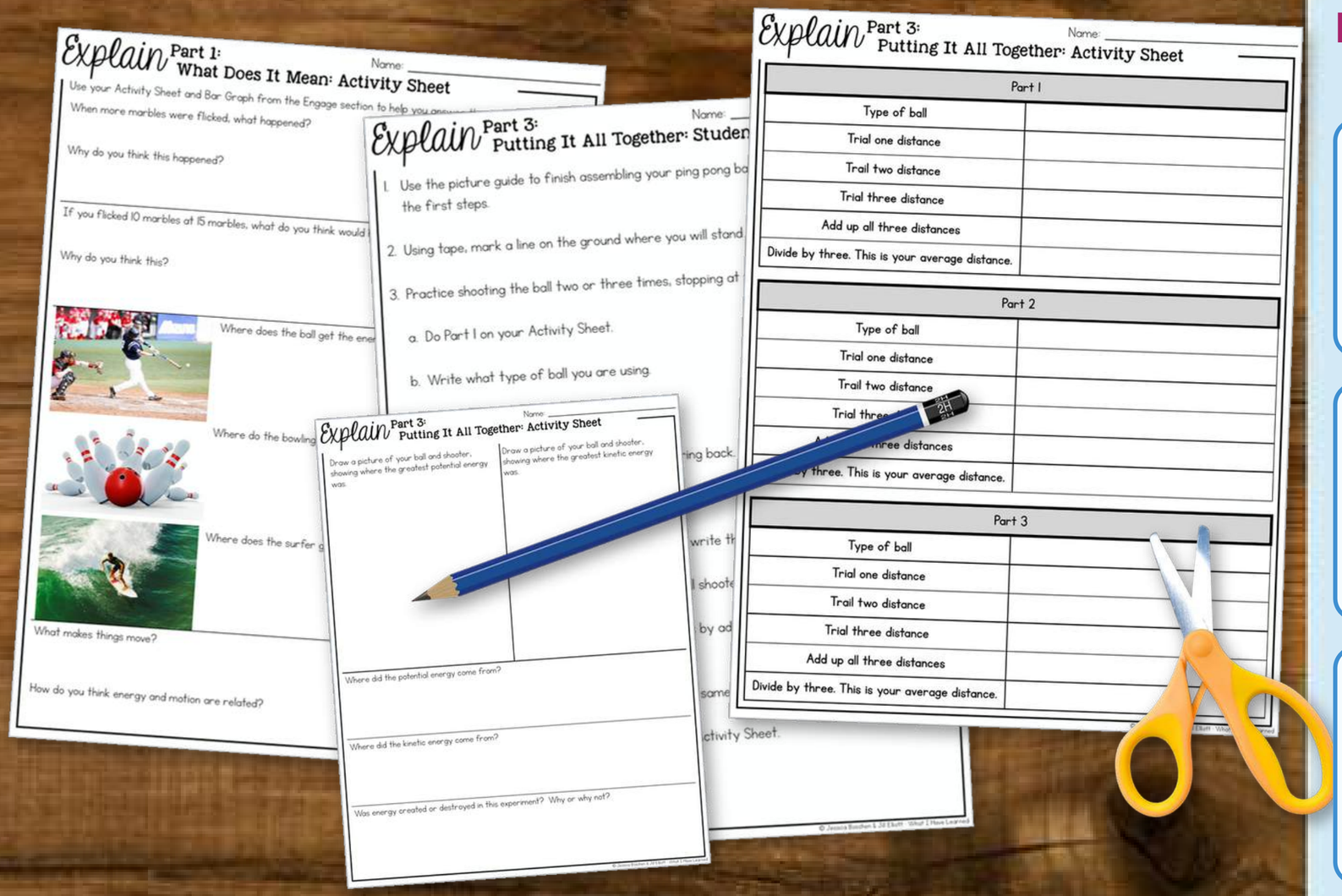
2 Read This

Students read why roller coasters are so exciting and answer guiding questions.

3 You Try It

Students flick marbles at other marbles and graph how many move.

EXPLAIN



Teacher background, lesson plans, student pages, and answer key

E E E E E

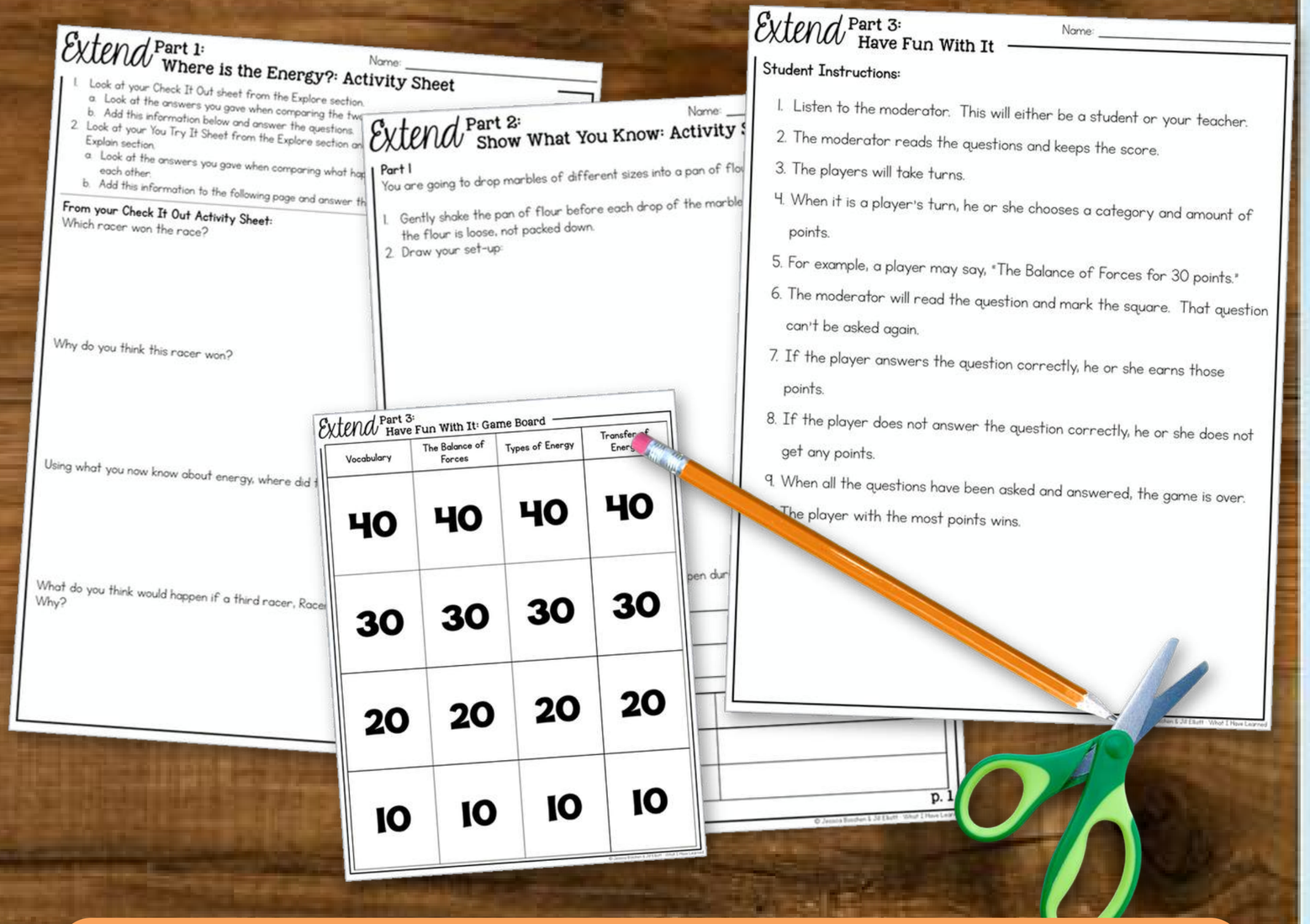
Build explanations from evidence

1 What Does It Mean?
Students use their race and marble data to explain how energy and motion are related.

2 What Is the Energy of Motion?
Students read about kinetic and potential energy, then sum up what they learned.

3 Putting It All Together
Students build a ping pong ball shooter and measure how far it launches.

EXTEND



Teacher background, lesson plans, student pages, and answer key

E E E E E

Apply energy of motion to new situations

1 Where Is the Energy?

Students use their racer data to explain where a racer gets its energy.

2 Show What You Know

Students drop marbles of different sizes into flour and compare the craters.

3 Have Fun With It

Students play a quiz game board with vocabulary, forces, and types of energy.

EVALUATE



Teacher background, lesson plans, student pages, and answer key

E E E E E

Check understanding with evidence

1 What I Know

Students draw a roller coaster at its highest potential and kinetic energy and score themselves with a rubric.

2 Showing Energy

Students build a playground scene to show where energy is greatest.

3 Going Forward

Students write a new question and hypothesis about energy and motion.

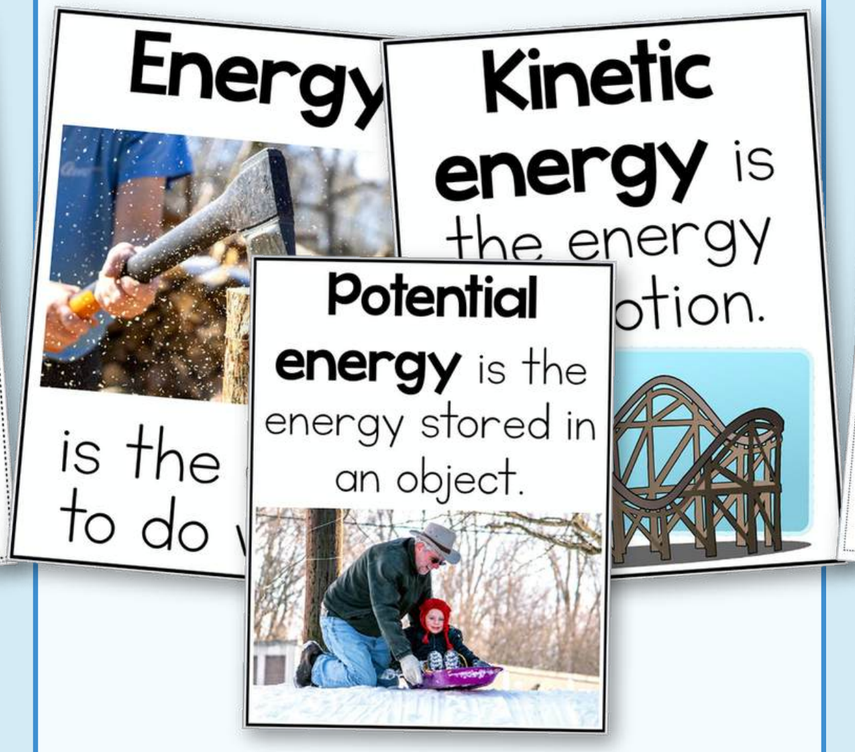
VOCABULARY, POSTERS & EXIT TICKETS

VOCABULARY CARDS



Picture cards and word cards for energy, force, friction, kinetic energy, and more.

BIG IDEA POSTERS



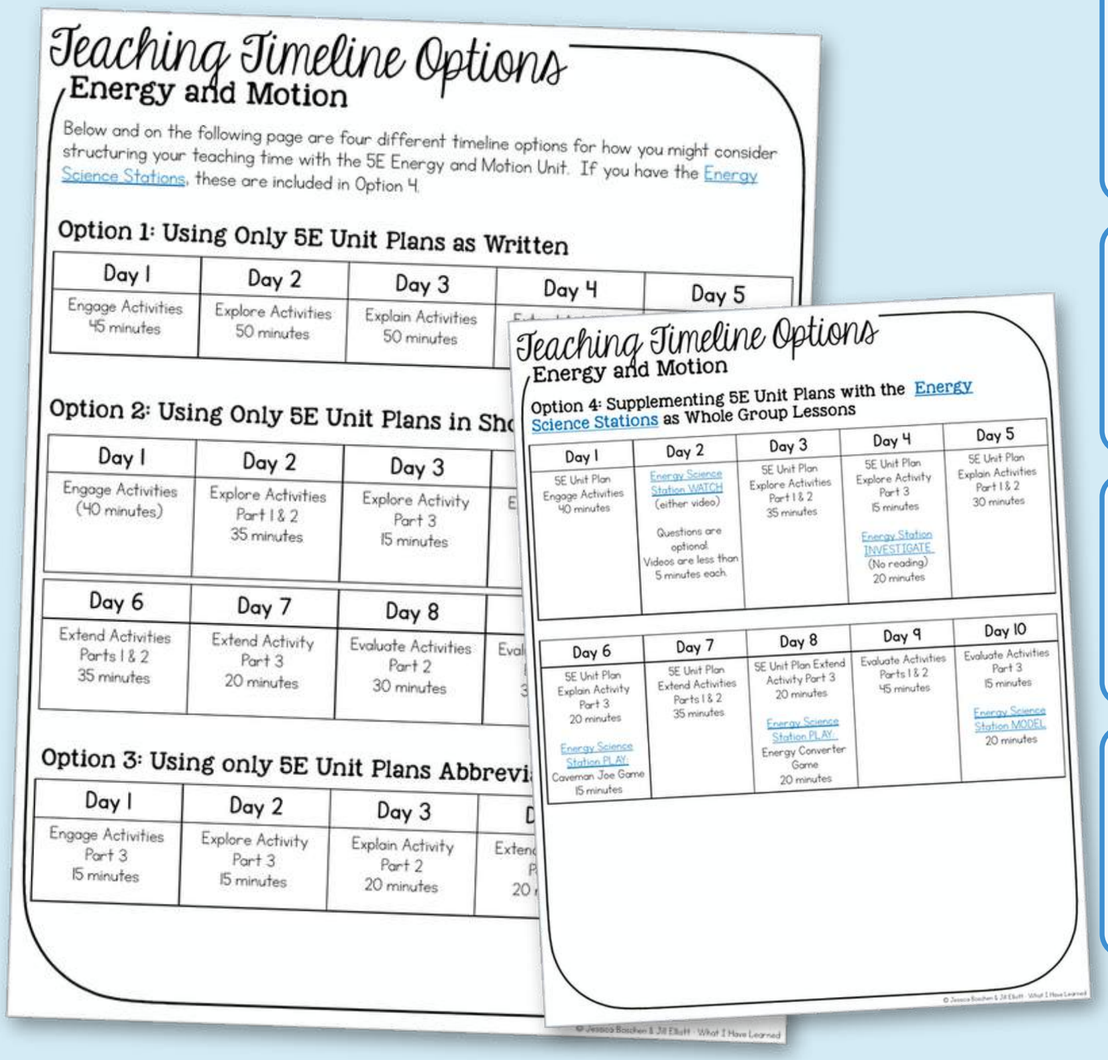
Six posters on energy, kinetic energy, potential energy, and balanced and unbalanced forces.

EXIT TICKETS



10 exit tickets, each in short answer, fill-in-the-blank, and multiple choice formats.

WAYS TO USE IN YOUR CLASSROOM



Teaching Timeline Options

Energy and Motion

Below and on the following page are four different timeline options for how you might consider structuring your teaching time with the 5E Energy and Motion Unit. If you have the Energy Science Stations, these are included in Option 4.

Option 1: Using Only 5E Unit Plans as Written

Day 1	Day 2	Day 3	Day 4	Day 5
Engage Activities 45 minutes	Explore Activities 50 minutes	Explain Activities 50 minutes		

Option 2: Using Only 5E Unit Plans in Sh

Day 1	Day 2	Day 3	
Engage Activities (40 minutes)	Explore Activities Part 1 & 2 35 minutes	Explore Activity Part 3 15 minutes	E

Day 6	Day 7	Day 8	
Extend Activities Parts 1 & 2 35 minutes	Extend Activity Part 3 20 minutes	Evaluate Activities Part 2 30 minutes	Eval

Option 3: Using only 5E Unit Plans Abbrevi

Day 1	Day 2	Day 3	
Engage Activities Part 3 15 minutes	Explore Activity Part 3 15 minutes	Explain Activity Part 2 20 minutes	Extend P 20

Teaching Timeline Options

Energy and Motion

Option 4: Supplementing 5E Unit Plans with the Energy Science Stations as Whole Group Lessons

Day 1	Day 2	Day 3	Day 4	Day 5
5E Unit Plan Engage Activities 40 minutes	Energy Science Station WATCH (either video) Questions are optional. Videos are less than 5 minutes each.	5E Unit Plan Explore Activities Part 1 & 2 35 minutes	5E Unit Plan Explore Activity Part 3 15 minutes Energy Station INVESTIGATE (No reading) 20 minutes	5E Unit Plan Explain Activities Part 1 & 2 30 minutes

Day 6	Day 7	Day 8	Day 9	Day 10
5E Unit Plan Explain Activity Part 3 20 minutes Energy Science Station PLAY Caveman Joe Game 15 minutes	5E Unit Plan Extend Activities Parts 1 & 2 35 minutes	5E Unit Plan Extend Activity Part 3 20 minutes Energy Science Station PLAY Energy Converter Game 20 minutes	Evaluate Activities Parts 1 & 2 45 minutes	Evaluate Activities Part 3 15 minutes Energy Science Station MODEL 20 minutes

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1 **Whole-Class 5E Unit**

Teach one phase a day over 5 days as written, with 45 to 55 minutes per phase.

2 **Shorter Science Blocks**

Spread the unit across 9 days in shorter time blocks when science minutes are limited.

3 **Alongside Science Stations**

Add the Energy Science Stations for a 10-day plan.

4 **Formative Checks**

Use the exit tickets throughout the unit to see who needs reteaching before the performance activity.

TEACHING TIMELINE OPTIONS

Option 1 — 5 days
As Written

Day 1	Day 2	Day 3	Day 4	Day 5
Engage	**Explore**	**Explain**	**Extend**	**Evaluate**
45 min	50 min	50 min	55 min	55 min

Option 2 — 9 days
Shorter Time Blocks

Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9
Engage	**Explore 1-2**	**Explore 3**	**Explain 1-2**	**Explain 3**	**Extend 1-2**	**Extend 3**	**Evaluate 2**	**Evaluate 1 & 3**
40 min	35 min	15 min	30 min	20 min	35 min	20 min	30 min	30 min

Option 3 — 5 days
Abbreviated

Day 1	Day 2	Day 3	Day 4	Day 5
Engage 3	**Explore 3**	**Explain 2**	**Extend 3**	**Evaluate 1**
15 min	15 min	20 min	20 min	15 min

Option 4 — 10 days
With Science Stations

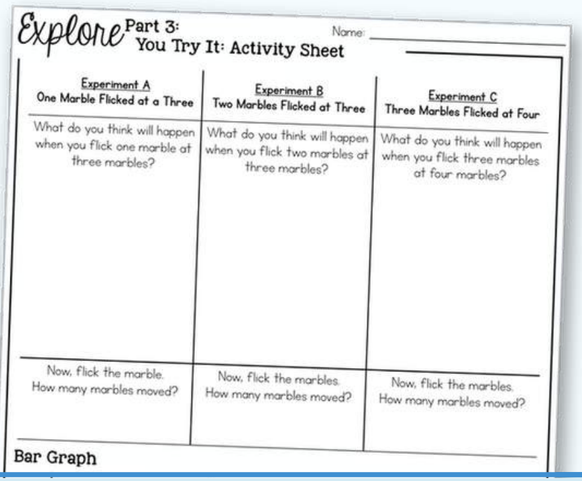
Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10
Engage	**Watch**	**Explore 1-2**	**Explore 3**	**Explain 1-2**	**Explain 3**	**Extend 1-2**	**Extend 3**	**Evaluate 1-2**	**Evaluate 3**
40 min	5 min	35 min	15 min +20 station	30 min	20 min +15 station	35 min	20 min +20 station	45 min	15 min +20 station

Orange days are Science Station lessons. Magenta notes are extra station activities you can add that day.

YOU WILL LOVE THIS BECAUSE

Hands-On From Day One

Students race spool racers, flick marbles, and build a ball shooter, so energy of motion makes sense.



Explore Part 3: You Try It: Activity Sheet

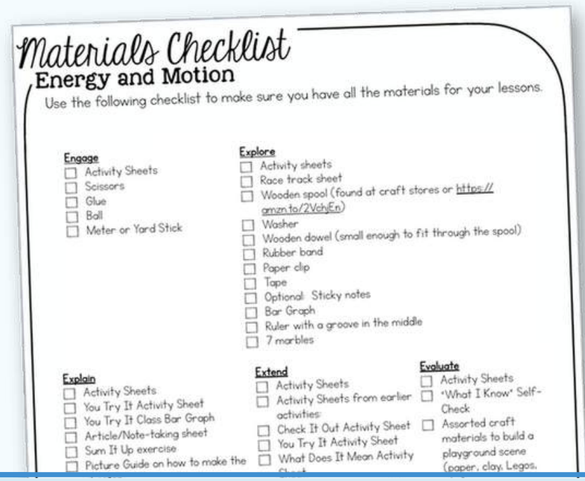
Name: _____

Experiment A One Marble Flicked at a Three	Experiment B Two Marbles Flicked at Three	Experiment C Three Marbles Flicked at Four
What do you think will happen when you flick one marble at three marbles?	What do you think will happen when you flick two marbles at three marbles?	What do you think will happen when you flick three marbles at four marbles?
Now, flick the marble. How many marbles moved?	Now, flick the marbles. How many marbles moved?	Now, flick the marbles. How many marbles moved?

Bar Graph

Planned and Ready to Teach

Teacher notes, a misconceptions guide, a materials checklist, and answer keys are done for you.



Materials Checklist

Energy and Motion

Use the following checklist to make sure you have all the materials for your lessons.

Engage
- ☐ Activity Sheets
- ☐ Scissors
- ☐ Glue
- ☐ Ball
- ☐ Meter or Yard Stick

Explore
- ☐ Activity sheets
- ☐ Race track sheet
- ☐ Wooden spool (found at craft stores or https://amzn.to/2VchjEn)
- ☐ Washer
- ☐ Wooden dowel (small enough to fit through the spool)
- ☐ Rubber band
- ☐ Paper clip
- ☐ Tape
- ☐ Optional: Sticky notes
- ☐ Bar Graph
- ☐ Ruler with a groove in the middle
- ☐ 7 marbles

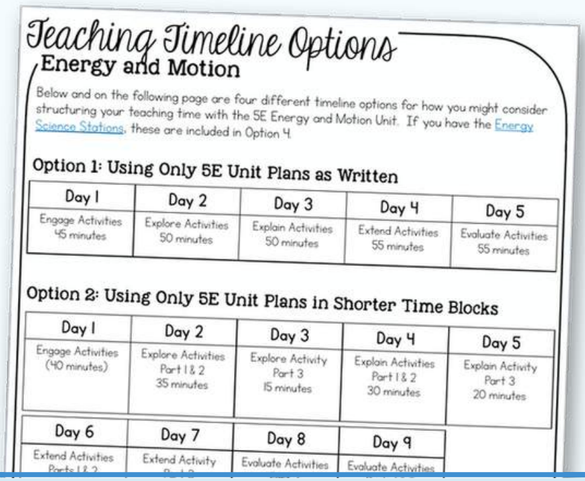
Explain
- ☐ Activity Sheets
- ☐ You Try It Activity Sheet
- ☐ You Try It Class Bar Graph
- ☐ Article/Note-taking sheet
- ☐ Sum It Up exercise
- ☐ Picture Guide on how to make the

Extend
- ☐ Activity Sheets
- ☐ Activity Sheets from earlier activities:
- ☐ Check It Out Activity Sheet
- ☐ You Try It Activity Sheet
- ☐ What Does It Mean Activity

Evaluate
- ☐ Activity Sheets
- ☐ "What I Know" Self-Check
- ☐ Assorted craft materials to build a playground scene (paper, clay, Legos,

Fits Your Schedule

Choose from 4 timeline options, and use the Google Slides and Google Forms versions for a print or digital classroom.



Teaching Timeline Options

Energy and Motion

Below and on the following page are four different timeline options for how you might consider structuring your teaching time with the 5E Energy and Motion Unit. If you have the Energy Science Stations, these are included in Option 4.

Option 1: Using Only 5E Unit Plans as Written

Day 1	Day 2	Day 3	Day 4	Day 5
Engage Activities 45 minutes	Explore Activities 50 minutes	Explain Activities 50 minutes	Extend Activities 55 minutes	Evaluate Activities 55 minutes

Option 2: Using Only 5E Unit Plans in Shorter Time Blocks

Day 1	Day 2	Day 3	Day 4	Day 5
Engage Activities (40 minutes)	Explore Activities Part 1 & 2 35 minutes	Explore Activity Part 3 15 minutes	Explain Activities Part 1 & 2 30 minutes	Explain Activity Part 3 20 minutes

Day 6	Day 7	Day 8	Day 9
Extend Activities Parts 1 & 2	Extend Activity	Evaluate Activities	Evaluate Activities

TEACHERS LOVE IT!

★★★★★

I loved this resource and all of the activities that came with it. Very engaging and relevant to the standard.

Payton I.

★★★★★

This is a very thorough and engaging unit. It is a great resource to go along with the science kit we use.

Teresa VanSant

★★★★★

Excellent resource, thank you for creating! Organized and just what I needed.

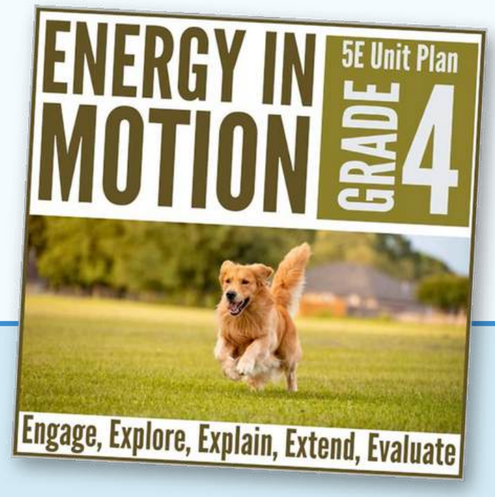
Siri Latina





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- **Instant digital download**
- **Print and use the activities**
- **Google Slides and Forms versions**



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Save with a topic bundle or the full-year bundle.

TOPIC BUNDLE

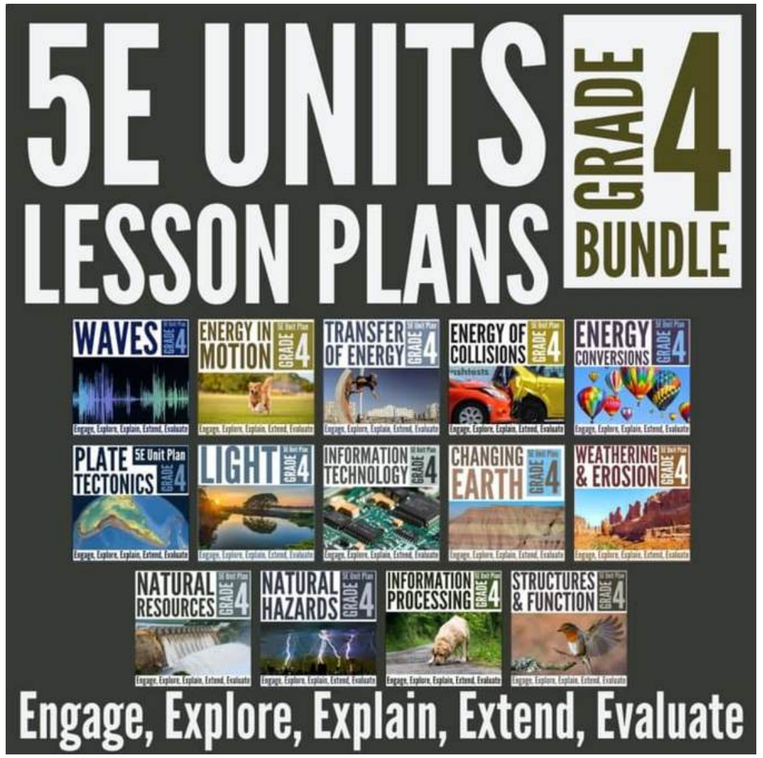
GOOD VALUE



SEE THE BUNDLE

FULL-YEAR BUNDLE

BEST VALUE



SEE THE BUNDLE

My passion is making learning accessible to all students.
I love scaffolding learning, breaking down the concepts and building them up so that students can see the connections.
I love figuring out the small components that build up to the big ideas and helping students see it all.



teach MATH | teach SCIENCE | teach READING | teach WRITING

What I have LEARNED