

**3RD
GRADE**

**A Complete 5E Science
Unit with Lesson Plans**

PREVIEW

MAGNETIC FORCES

5E Unit Plan
GRADE 3



Engage, Explore, Explain, Extend, Evaluate

MAGNETIC FORCES

& DESIGN CHALLENGE

**Engage, Explore, Explain,
Extend, Evaluate**

NGSS 3-PS2-3 & 3-PS2-4

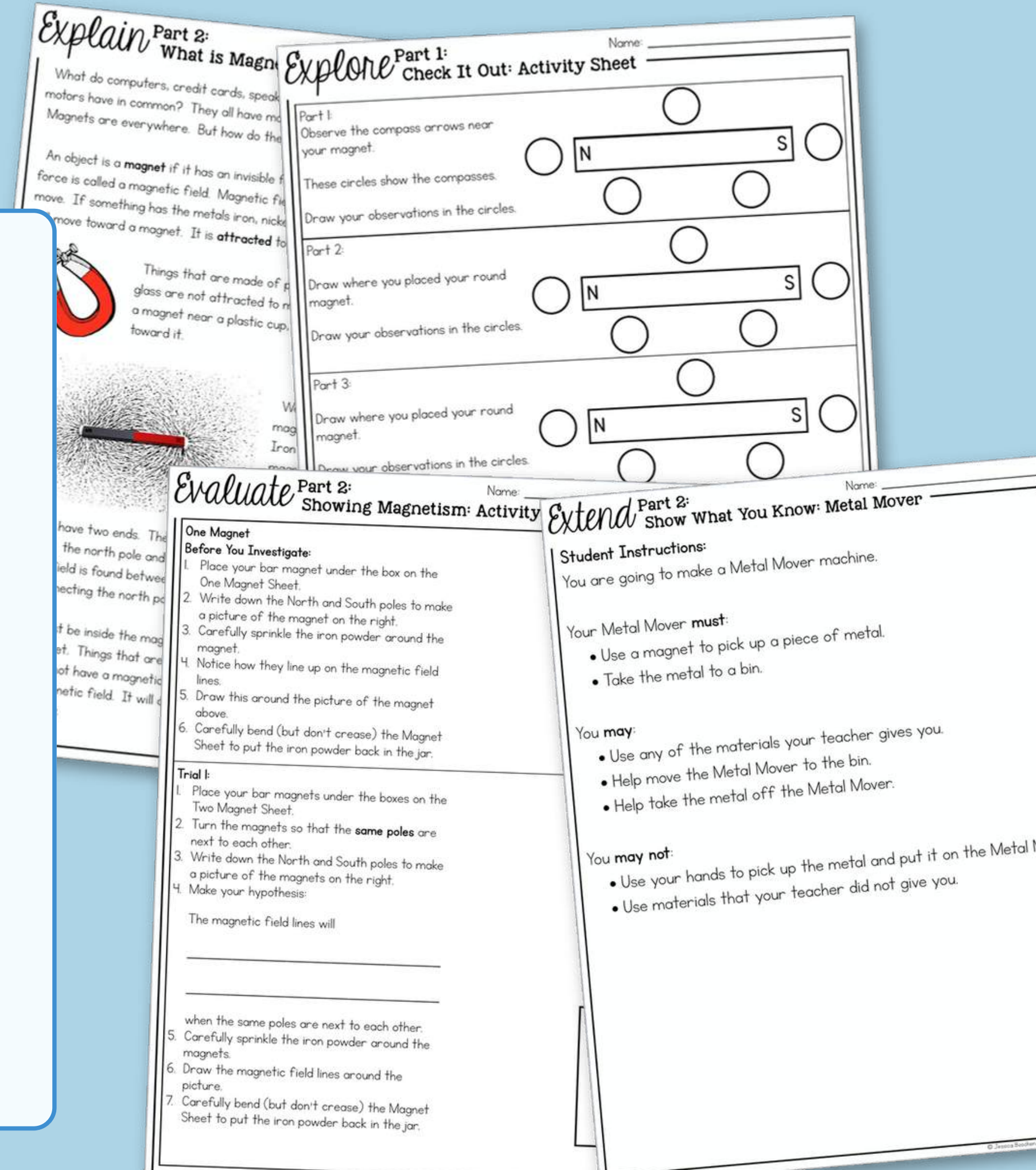


KEEP SCROLLING TO SEE WHAT'S INSIDE!

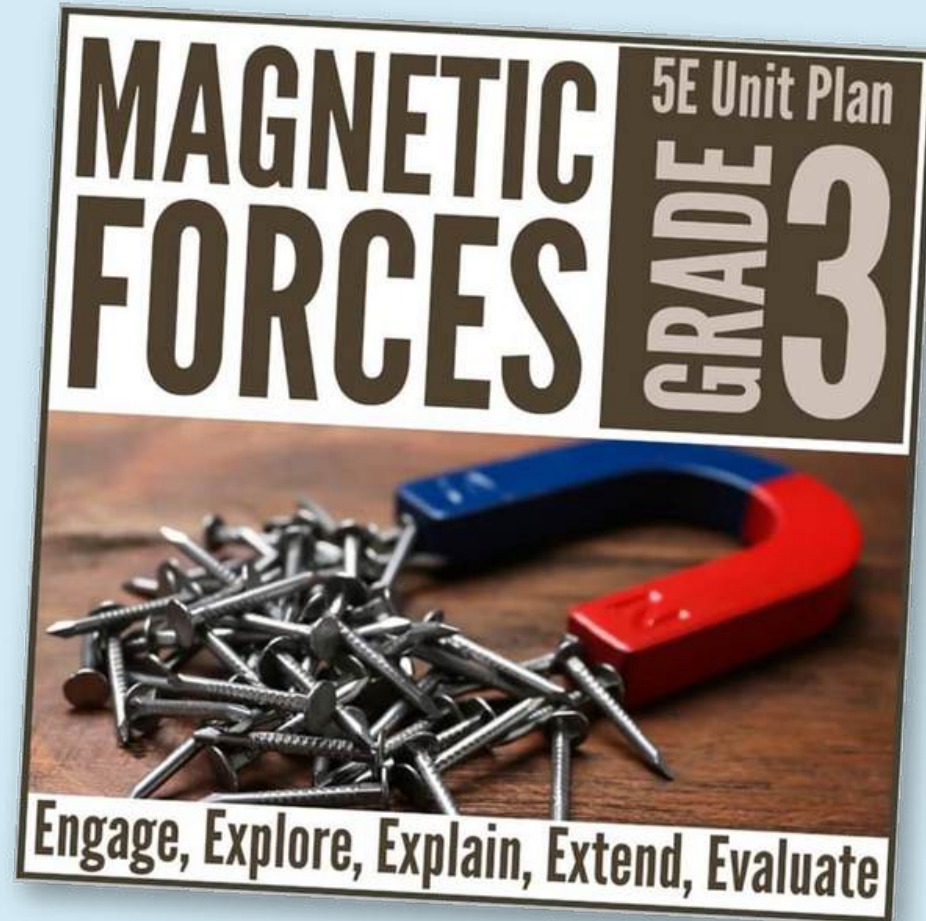
WHAT'S INCLUDED

5E MAGNETIC FORCES UNIT

- ✓ 160+ Page 5E Unit Plan
- ✓ Lesson Plans for All 5 Phases
- ✓ Teacher Notes and Misconceptions
- ✓ Materials Checklist and 4 Timelines
- ✓ Compass and Magnetic Field Activities
- ✓ Engineering Design Challenge
- ✓ 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 investigate magnets, test magnetic fields, and solve a design challenge.
- Teacher background, lesson plans, and student pages in every phase.
- Aligned to NGSS 3-PS2-3 and 3-PS2-4.

Table of Contents	
5E Section	Objectives
Teacher Notes / Common Misconceptions / Materials	
Vocabulary Cards & Big Idea Posters	
Engage	<ul style="list-style-type: none">Students will access their prior knowledge about magnetism.Student interest in magnetism will be elicited.The teacher will be able to identify student misconceptions about magnetism. <ul style="list-style-type: none">Part 1 (V): 5 minutesPart 2 (W): 10 minutesPart 3 (I): 15 minutes
Explore	<ul style="list-style-type: none">Students will work together to investigate magnetism. They will do this by observing how a compass behaves around a magnet, as well as how magnetism changes when another magnet is brought near.Students will gather very general information about factors that affect magnetism. <ul style="list-style-type: none">Part 1 (Ch): 15 minutesPart 2 (W): 15 minutesPart 3 (V): 20 minutes
Explain	<ul style="list-style-type: none">Students will work collaboratively to determine what affects the magnetic field of magnets.Students will listen to the teacher's explanation about magnetism.Students will use the new information to revise their explanations about the factors that affect the magnetic field of magnets.Students will draw diagrams to show the magnetic field of magnets. <ul style="list-style-type: none">Part 1 (Why Mean?): 15 minutesPart 2 (Why Magnetism?): 15 minutesPart 3 (Put Together): 30 minutes (extension act added)
Extend	<ul style="list-style-type: none">Students will apply what they have learned about magnetism to a new situation.Students will deepen their understanding of magnetism, gaining a more generalized knowledge of this specific scientific concept.Students will engage in an engineering design challenge to solve a problem using what they know about magnetism as part of the solution.The teacher will resolve all persisting student misconceptions about magnetism. <ul style="list-style-type: none">Part 1 (Where Magnetism?): 15 minutesPart 2 (Show What You Know): 30 minutesPart 3 (Have Fun): 15 minutes
Evaluate	<ul style="list-style-type: none">Students will evaluate their own understanding of magnetism.Students will be able to demonstrate knowledge of the concepts and vocabulary.The teacher will encourage students to ask questions that could lead to future investigations. <ul style="list-style-type: none">Part 1 (What I Know): 15 minutesPart 2 (Showing Magnetism): 20 minutesPart 3 (Going For It): 15 minutes
Exit Tickets	

Teacher Notes

Magnetic Forces & Design

5E Instructional Model

This Magnetic Forces & Design Lesson Plan is an inquiry-based unit using the 5E Model. The 5E Model is student-led, with the teacher acting mainly as the Model. Through open-ended questions, real-life experiences, guided investigations, students gain a deep understanding of the scientific topics that are covered. Each stage of the model serves as a foundation to the next, creating a cohesive framework for lessons, activities, and units.

The 5 E's of this method are as follows:

Engagement: Student interest is engaged. They ponder everything they see and reflect more with their classmates on what they know and experience.

Exploration: Students explore the topic through hands-on activities. They and reflect more with their classmates on what they know and experience.

Explanation: Students connect prior knowledge to experience they had phase. The teacher explains the concepts, and students draw conclusions from investigations.

Extension: Students take their new knowledge and apply it to novel situations. They pose new questions and provides opportunities for students to investigate. This is when a student's knowledge about a specific topic begins to grow.

Evaluation: Students evaluate their learning process. They are able to by performance, informal, and formal assessment. The teacher uses assessment to evaluate the students.

For more information on the 5 E's, read the blog post series on 5E. This is why we chose to use the 5E method of instruction and provide an inquiry-based approach to each stage of the model.

Google Sheets Resources

Click the link below to access the FREE DIGITAL UPGRADE. Available Teacher Presentation, Student Sheets, and Exit Cards.

[Click here to upgrade to the FREE Digital Upgrade](#)

Teaching Timeline Options

Magnetic Forces & Design

Below and on the following page are four different timeline options for structuring your teaching time with the 5E Force and Motion Science Stations. Static Electricity and Magnetism Science Stations, these are included.

Option 1: Using Only 5E Unit Plans a

Day 1	Day 2	Day 3	Day 4
Engage Activities 30 minutes	Explore Activities 50 minutes	Explain Activities 55 minutes	Extend Activities 65 minutes

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

Day 1	Day 2	Day 3	Day 4
5E Unit Engage Activities 5 or 15 minutes	5E Unit Explore Activities Parts 1 & 2 30 minutes	5E Unit Plan Explore Activity Part 3 20 minutes	5E Unit Plan Explain Activities Parts 1 & 2 35 minutes
Day 6	Day 7	Day 8	Day 9
5E Unit Plan Extend Activities Parts 1 & 3 35 minutes	5E Unit Plan Extend Activity Part 2 30 minutes	5E Unit Plan Evaluate Activities Parts 1 & 2 30 minutes	5E Unit Plan Evaluate Activities Parts 3 20 minutes

Materials Checklist

5E Magnetic Forces & Design

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

Engage	Explore	Explain
☐ Activity Sheets	☐ Activity Sheets	☐ Activity Sheets
☐ Paper clip (metal, needs to be magnetic)	☐ 2 Bar magnets (with N and S poles labeled)	☐ Sticky notes
☐ Jar with lid	☐ 2 1-inch round craft magnets (like http://amazon.to/2yNWD4N)	☐ "What Is Magnetism?" Activity Sheet
☐ Magnet (small enough to be hidden inside the lid of the jar)	☐ 5 mini compasses (like http://amazon.to/2yNWD4N)	☐ Magnet Sheets
☐ String—about 1/2 inch shorter than jar	☐ 10 small steel paper clips	☐ 2 Bar magnets (with north pole clearly labeled)
☐ Tape		☐ Large sewing or darning needle (blunt ends are safer)
☐ Assorted magnetic materials (paper clips, staples, screws, nuts, bolts, nails, bottle lids, safety pins, tin cans, tweezers, batteries, sharpened pencil (the graphite is magnetic), etc.)		☐ 1- to 2-inch circle of craft foam or slice of cork with a glue dot placed in the middle
☐ Assorted nonmagnetic materials (things made out of paper, rubber, plastic, aluminum, wood)		☐ Bowl of water
		☐ Magnetic compass
		☐ "Putting It All Together" Activity Sheet
Extend	Evaluate	
☐ Activity Sheets	☐ Activity Sheets	
☐ Toilet paper tube	☐ "What I Know" Self-Check	
☐ Hot glue	☐ Magnet Sheet	
☐ Variety of magnets (round, bar, horseshoe)	☐ 6 Hot Wheels® car tracks and connectors	
☐ 5 steel paper clips	☐ Small toy car	
☐ Various long, non-magnetic materials (plastic knives, wooden stir sticks, strip of aluminum foil, strip of cardboard, etc.)	☐ Assorted magnets	
☐ Various long, magnetic materials (steel butter knife, bar magnet, etc.)	☐ Hot glue	
☐ Variety of building materials (straws, cardstock, stir sticks, plastic utensils, blocks, string, tape, paper clips, wheels, Lego® bricks, Tinker Toys®)	☐ Sheet of white paper	
☐ Scissors	☐ Iron filings or iron powder in shaker jar (you can use a spice jar, if needed)	
☐ Small plastic bin	☐ Tray (to help contain the mess)	
☐ Liquid Starch, like http://amazon.to/2C4zIKf		
☐ Iron powder (not iron filings) http://amazon.to/2sFG8CT		
☐ Disposable spoon or stir stick		
☐ Disposable bowl		
☐ White glue		
☐ Disposable gloves (optional)		
☐ Quart-sized zip top bag		

Table of Contents

Teacher Notes

Timeline Options

Materials Checklist

ENGAGE



Spark curiosity with a floating paper clip

1 What Is This?

Students watch a paper clip float in a jar and predict what is holding it up.

2 My Experiences

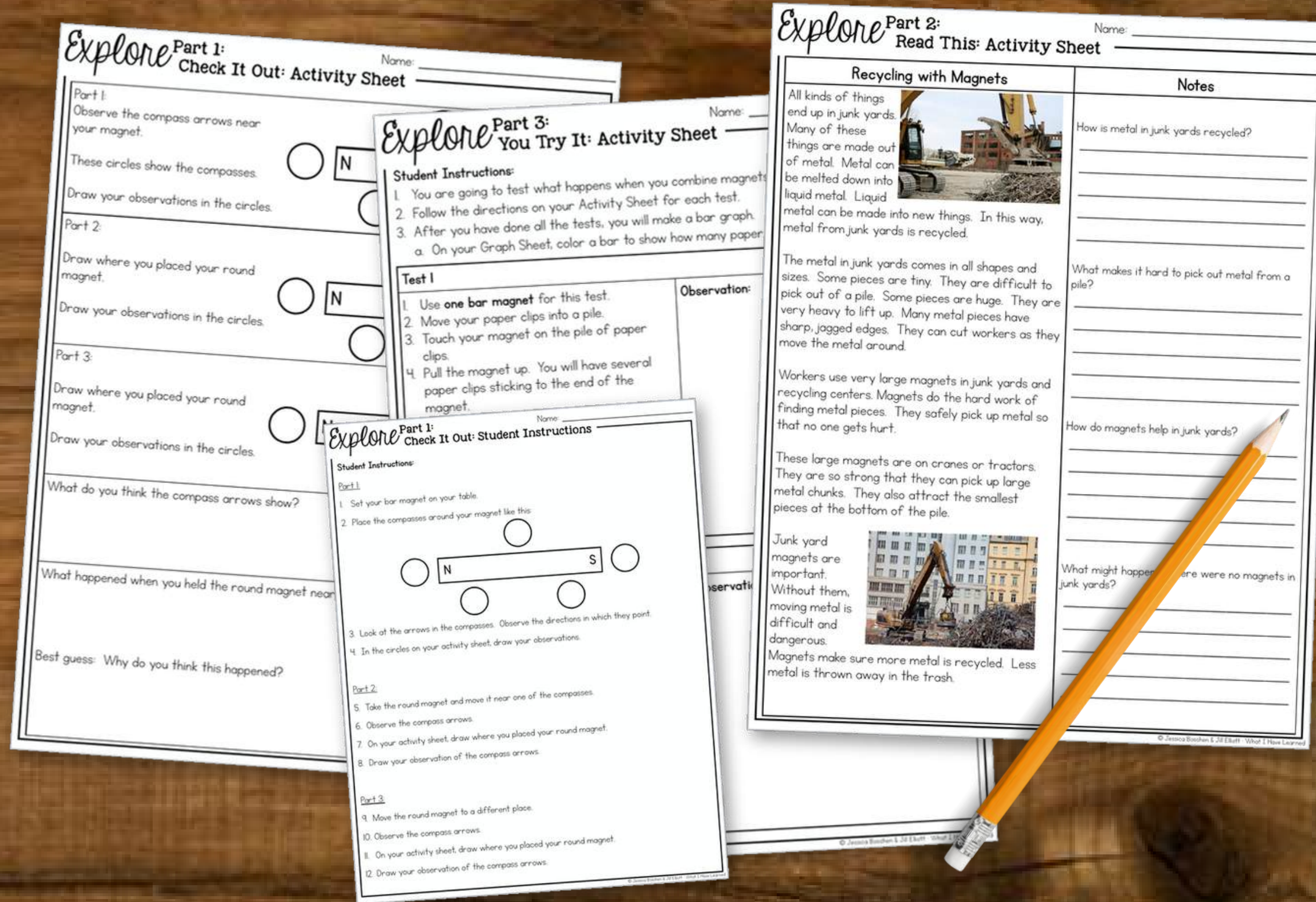
Students look at a picture of a magnet and nails and write about what they know.

3 Introducing Magnetism

Students sort everyday objects into magnetic and non-magnetic groups.

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

EXPLORE



Investigate magnets with compasses

- 1 Check It Out**
Students move a compass around a magnet and draw which way the needle points.
- 2 Watch and Read This**
Students read about how magnets help recycle metal and take notes.
- 3 You Try It**
Students combine magnets, count the paper clips each one holds, and graph the results.

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

EXPLAIN



Build explanations from evidence

1 What Does It Mean?
Students think, pair, and share to revise their ideas from Explore.

2 What Is Magnetism?
Students read an article about magnetic poles and fields, then sum it up.

3 Putting It All Together
Students magnetize a needle, build a compass, and draw magnetic fields.

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

EXTEND

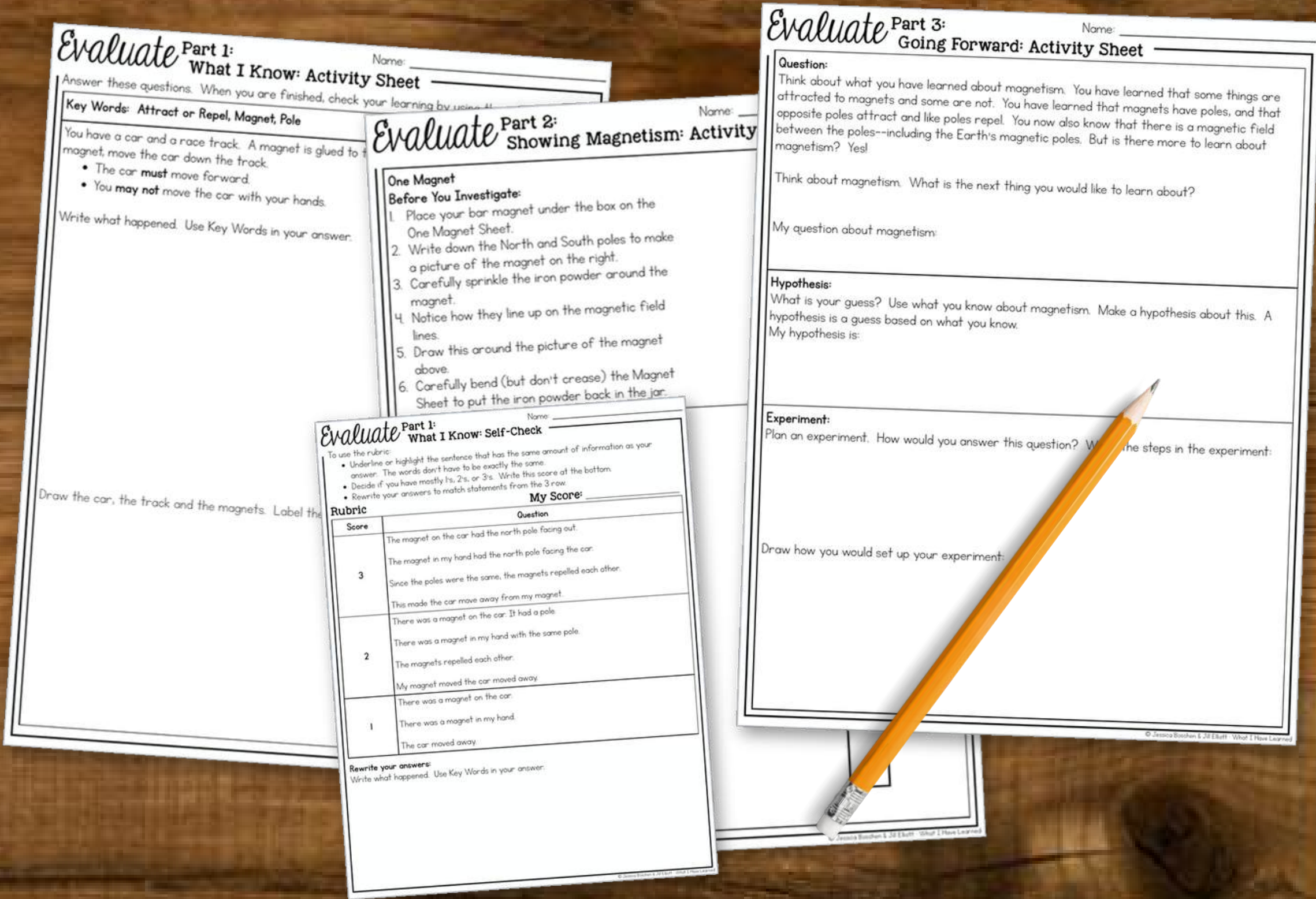


Apply magnets to a design challenge

- 1 Where Is the Magnetism?**
Students test which materials can block a magnetic field.
- 2 Show What You Know**
Students design and build a Metal Mover machine that uses magnets.
- 3 Have Fun With It**
Students play with magnetic putty and describe how it behaves near magnets.

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

EVALUATE



Check understanding with evidence

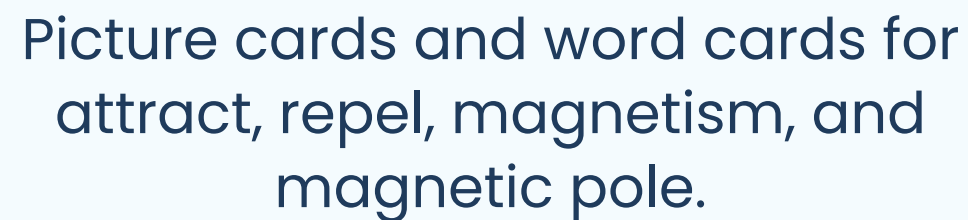
1 What I Know
Students answer questions about magnets and score themselves with a rubric.

2 Showing Magnetism
Students use iron powder to show how magnetic field lines change.

3 Going Forward
Students write a new question and hypothesis to investigate next.

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

VOCABULARY CARDS



Posters on opposite poles, like poles,
magnetic fields, Earth as a magnet,
and compasses.

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

WAYS TO USE IN YOUR CLASSROOM

1 Whole-Class 5E Unit

Teach one phase a day over 5 days as written, with 30 to 65 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 Static Electricity and Magnetism 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 assessment.

Teaching Timeline Options

Magnetic Forces & Design

Below and on the following page are four different timeline options for how you might consider structuring your teaching time with the 5E Force and Motion Science Lessons. If you have the Static Electricity and Magnetism 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 30 minutes	Explore Activities 50 minutes	Explain Activities 55 minutes	Extend Activities 30 minutes	Evaluate Activities 15 minutes

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

Day 1	Day 2	Day 3	Day 4	Day 5
5E Unit Engage Activities 5 or 15 minutes	5E Unit Explore Activities Parts 1 & 2 30 minutes	5E Unit Plan Explore Activity Part 3 20 minutes	5E Unit Plan Explain Activities Parts 1 & 2 35 minutes	5E Unit Plan Evaluate Activities Parts 1 & 2 30 minutes

Option 3: Using only 5E Unit Plans Abbreviated

Day 1	Day 2	Day 3	Day 4	Day 5
Engage Activity Part 3 5 or 15 minutes	Explore Activity Part 1 15 minutes	Explain Activity Part 2 20 minutes	Extend Activity Parts 2 30 minutes	Evaluate Activity Parts 1 15 minutes

Option 4: Supplementing 5E Unit Plans with the Static Electricity & Magnetism Science Stations as Whole Group Lessons

Day 1	Day 2	Day 3	Day 4	Day 5
5E Unit Plan Engage Activities 30 minutes	Static Electricity and Magnetism Science Station: Play a Video Game 15 minutes (game only, not the questions)	5E Unit Explore Activities Parts 1 & 2 30 minutes	5E Unit Plan Explore Activity Part 3 20 minutes	5E Unit Plan Explain Activities Parts 1 & 2 35 minutes

Day 6	Day 7	Day 8	Day 9	Day 10
5E Unit Plan Explain Activities Part 3 20 minutes	5E Unit Plan Extend Activities Parts 1 & 3 35 minutes	5E Unit Plan Extend Activity Part 2 30 minutes	Evaluate Activities Parts 1 & 3 30 minutes	Static Electricity and Magnetism Science Station: Model 20 minutes

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TEACHING TIMELINE OPTIONS

Option 1 5 days

As Written

Day 1
Engage

30 min

Day 2
Explore

50 min

Day 3
Explain

55 min

Day 4
Extend

65 min

Day 5
Evaluate

50 min

Option 2 9 days

Shorter Time Blocks

Day 1
Engage

5-15 min

Day 2
Explore
1-2

30 min

Day 3
Explore
3

20 min

Day 4
Explain
1-2

35 min

Day 5
Explain
3

20 min

Day 6
Extend
1, 3

35 min

Day 7
Extend
2

30 min

Day 8
Evaluate
1-2

30 min

Day 9
Evaluate
3

20 min

Option 3 5 days

Abbreviated

Day 1
Engage
3

5-15 min

Day 2
Explore
1

15 min

Day 3
Explain
2

20 min

Day 4
Extend
2

30 min

Day 5
Evaluate
1

15 min

Option 4 10 days

With Science Stations

Day 1
Engage

30 min

Day 2
Game

15 min

Day 3
Explore
1-2

30 min

Day 4
Explore
3

20 min

Day 5
Explain
1-2

35 min

Day 6
Explain
3

20 min

+20 station

Day 7
Extend
1, 3

35 min

Day 8
Extend
2

30 min

Day 9
Evaluate
1, 3

30 min

Day 10
Model

20 min

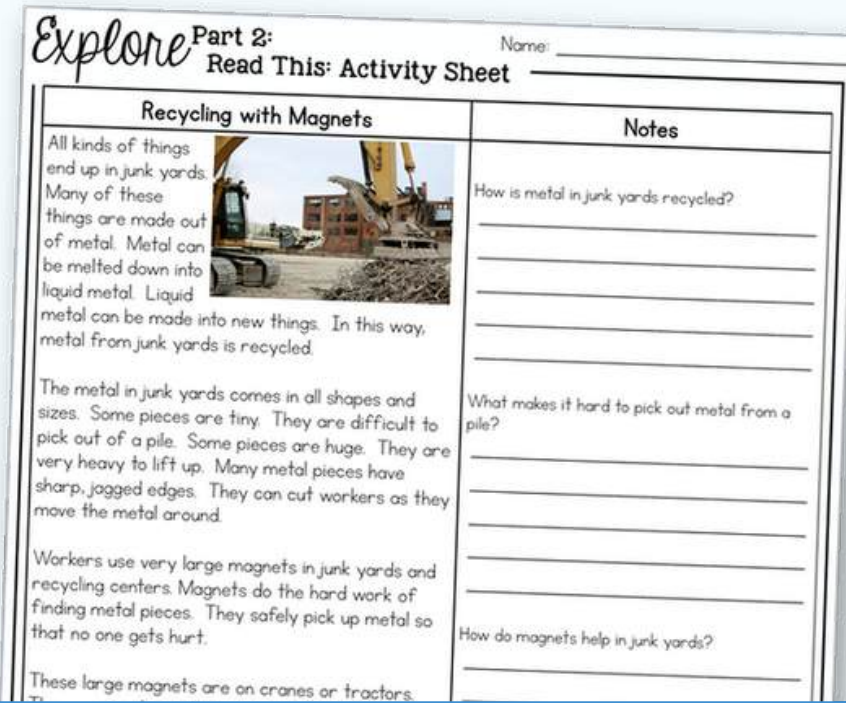
Orange days are Science Station lessons. Magenta notes are extra station activities you can add that day.

YOU WILL LOVE THIS BECAUSE



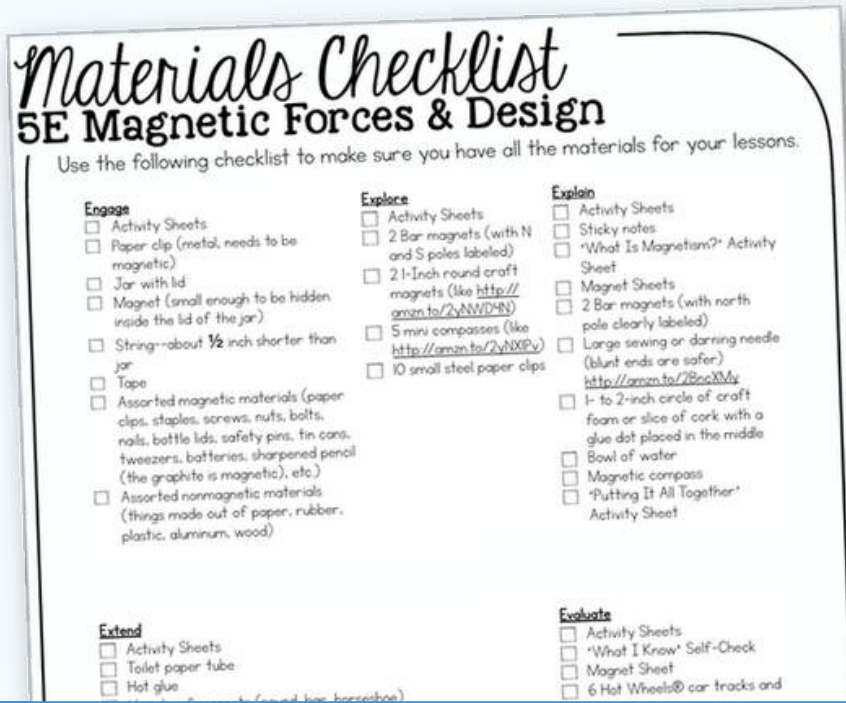
Students Build the Ideas Themselves

Students test magnets, compasses, and iron powder, so magnetic forces make sense through evidence.



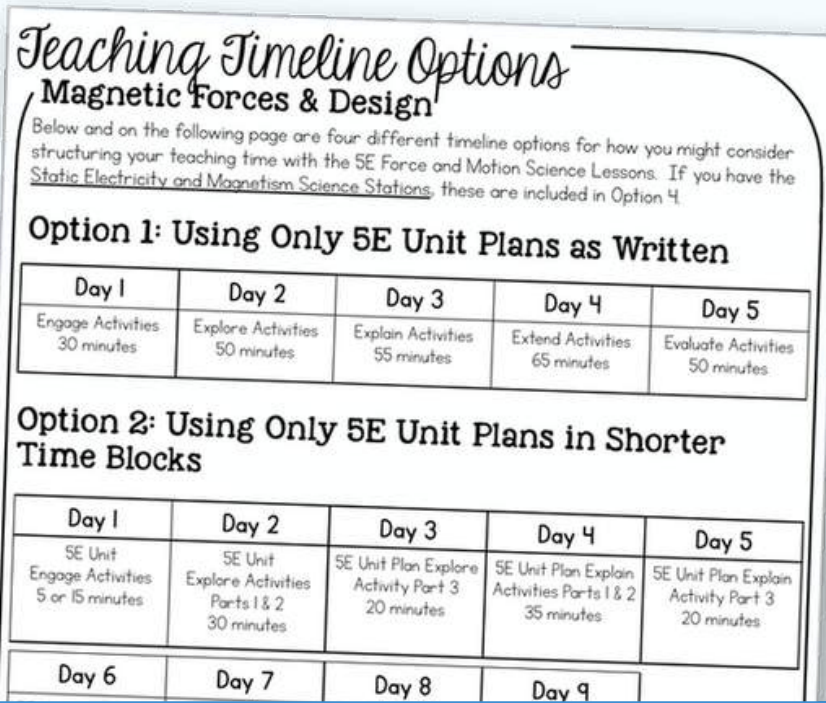
Planned and Ready to Teach

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



Fits Your Schedule

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



TEACHERS LOVE IT!



I love that it included several different options for using including pairing with the science stations!!

MrGintheClassroom



Lessons were laid out perfectly including engaging, easy to manage labs for students

Abbie Love



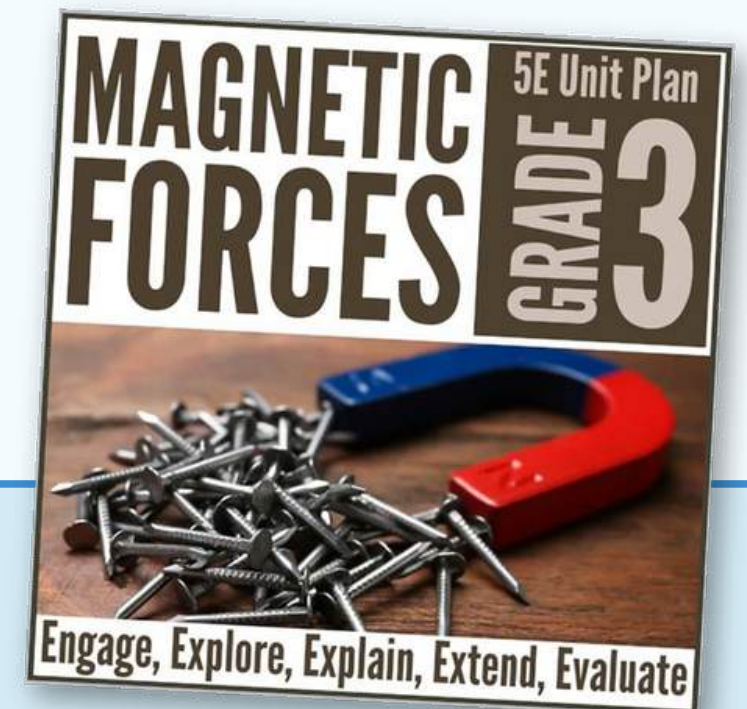
My kids loved this and it was so easy to use.

Shandis R.



READY FOR YOUR CLASSROOM

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



WANT MORE 3RD GRADE 5E UNITS?

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NATURAL SELECTION Hands-on Differentiated Lesson Plans Reading Passages Posters & more	ADAPTATIONS Hands-on Differentiated Lesson Plans Reading Passages Posters & more	WEATHER Hands-on Differentiated Lesson Plans Reading Passages Posters & more	CLIMATE Hands-on Differentiated Lesson Plans Reading Passages Posters & more	EXTREME WEATHER Hands-on Differentiated Lesson Plans Reading Passages Posters & more

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.



What I have **LEARNED**