Third Grade Independent Projects

Hello Students, Families and Caregivers,

This resource packet includes multiple projects that students can work on at home independently or with family members or other adults. Each project can be completed over multiple days, and the projects can be completed in any order.

Additional enrichment activities are also available and organized into Read, Write, Move, Design, and Solve categories to engage students in learning in many different ways while at home. Please be sure to also pick up an enrichment packet for access to these activities.

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Read  Write  Move  Design  Solve
Third Grade Literacy Project: Folktales: Communities Near and Far

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<tr>
<th>Estimated Time</th>
<th>Total Time 70-80 minutes</th>
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| Grade Level Standard(s) | RL.3.2 Recount stories, including fables, folktales, and myths from diverse cultures; determine the central message, lesson, or moral and explain how it is conveyed through key details in the text.  
W.3.4 With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose.  
SS.IS.3.3-5: Engage with sources representing multiple points of view |
| Caregiver Support Option | Check out Chicago Public Library online for some folktales to read with your scholar. |
| Materials Needed | Paper, pencil/pen, markers, crayons |
| Question to Explore | 1. What are folktales?  
2. How do folktales compare and contrast across cultures? |
| Student Directions | Follow the directions for each activity. |

Activity 1: What are folktales?

A. Read this excerpt from Newsela.

**What are folktales?**

By Encyclopedia Britannica, adapted by Newsele staff on 09.21.17

Word Count 528

Level 460L

*Snow White* is a German fairy tale from the Brothers Grimm. It was published in 1812 and has become very popular. Fairy tales are one kind of folktale. Photo from: Wikimedia.
A folktale is a kind of story. These tales have been told over and over for hundreds of years. Real folktales were not written by one person. Many people shared the tales. They changed a little each time. That is why they are called "folk" tales. "Folk" is another word for people. So folktales are stories created by the people.

Many folktales are very old. For years and years, they were told out loud. They were not written down. Storytellers had to remember them.

Later, some folktales were put into books. "The Arabian Nights" stories are an example. This is a collection of stories. It stars characters such as Aladdin and Sinbad the Sailor. People loved hearing these stories. After a long time, they started writing them down. That was more than 1,000 years ago.

Just For Fun Or To Explain Ideas

Folktales can be happy or sad. They can be scary or funny. They might have animals or magic beings in them. Some folktales tell the stories of heroes and villains.

Some folktales are just for fun. They entertain the reader. They make the reader smile or laugh. Other tales teach hard lessons. Some also try to explain a big idea. Folktales are like myths in this way. Myths are another kind of old story. They try to explain how the world works.

People all over the world told folktales. Different parts of the world have their own stories. Sometimes the stories are similar, though. They share an idea, even though they come from different places. "Trickster" stories are told by people in many countries. The hero of these stories is a small or weak animal. It outwits, or tricks, a stronger animal.

Folktales about heroes are popular, too. These tales help people remember their history. One example is tales about King Arthur and the Knights of the Round Table. These heroes show up in many English and French tales.

"The Three Little Pigs" And Other Fables

A fable is a kind of folktale. It teaches a lesson. Many fables have animal characters. The animals act like people. They might be wise or foolish.

"The Three Little Pigs" is a famous fable. It shows the reader that hard work is important. The pig that works the hardest builds the best house. The wolf cannot blow it down.
Witches And Fairies

Fairy tales are another kind of folktale. These stories are magical. Witches and fairies might appear in them. Some of these tales have dragons or giants, too.

Many popular fairy tales began as folk tales. "Cinderella" was one. "Little Red Riding Hood" and "Sleeping Beauty" were two more. In the 1800s, two brothers started collecting fairy tales. They lived in Germany. The brothers wrote the fairy tales into a big book. Today, we know these brothers as the Brothers Grimm.

B. On a separate sheet of paper, answer these questions regarding folktales.
   1. How have folktales changed over time?
   2. Name and describe the different types of folktales.
   3. What are some folktales you know?

Activity 2: Tokoyo and the Sea Monster

A. Read this folktale from Japan.

むかしむかし, there was a young lady name Tokoyo who grew up with her father, who was a samurai. The two of them lived very happily, and the samurai raised his daughter well and taught her to be strong.

One fateful day, the samurai (who was the envy of many because of his skills) was framed into making the Emperor ill and weak, thus he was banished to a faraway island.

Tokoyo became miserable, because she loved her father so much. She was very determined to be reunited with the only family she had left, so she set out on a journey to find and rescue him.

First, she sold all of their possessions to a merchant to gain money for the journey. She journeyed long and far towards the coastline, where in the light of day, the faraway island can be seen very dimly.

She tried to persuade the fishermen to bring her to the island, but she was running low on money so they refused her. Still, she never gave up. That night, she found a small, old boat on the bay, and she set sail for the island.

It was a hard journey with the small boat, but it was nothing for the valiant Tokoyo. It was still dark when she arrived at shore, and she spent all day looking for her father on that island, but failed.

Night came, and a very tired and sad Tokoyo decided to rest under a tree. After a few hours, she was awakened by the sound of a sobbing girl.

Tokoyo hid behind a bush, and saw a girl dressed in a white robe and a priest. They were standing on the edge of a cliff, and the priest was in the act of pushing the girl off of it.

Tokoyo came out from the bushes to rescue the girl. The priest paused and explained to Tokoyo what he was doing.

Apparently, an ancient serpent-dragon called Yofune-Nushi inhabited the seas around the island. Yofune-Nushi threatened to terrorize the people on the island and destroy the fishing industry (the island-people’s only source of income), unless they sacrifice a girl to him every year. It was said that as long as they kept their end of the bargain, the dragon would leave the town alone.
Partially feeling that this was very unjust and partially feeling hopeless in saving her father, Tokoyo offered to take the girl’s place. She wore the girl’s white offering dress and jumped down from the cliff, diving into the ocean with a dagger in her teeth, much to the priest’s and the girl’s amazement.

Tokoyo dived deeper and deeper, until she found a cave. On the mouth of the cave was a small statue of the Emperor. Out of her anger towards the Emperor, she took the statue to destroy it, but then decided it would be better to take it up on the shore first, so she tied it to her belt.

Suddenly, Yofune-Nushi came out from the cave. He assumed that Tokoyo was the offering, so he attacked her. Tokoyo quickly put up her defenses and blocked the attack, then she plunged her dagger onto his eye.

Blinded, the dragon made his way back into the cave, but Tokoyo chased after him. Again, the dragon put up a fight, but the brave Tokoyo continued to attack him!

At last, when the vile Yofune-Nushi was killed, Tokoyo dragged him up on the shore, where she slumped on the sand weak and tired.

The priest and the girl ran towards her, and they couldn’t believe she beat the dragon. The priest carried Tokoyo back to the village, and the news of her heroism spread like wildfire.

The news reached the Emperor, who was now well and healthy. It was found that the dragon Yofune-Nushi cursed his statue under the ocean, and when Tokoyo killed the dragon and retrieved the statue, the curse was lifted.

Realizing that Tokoyo’s father was innocent, the Emperor released him from banishment and brought him back to Tokoyo. The Emperor regretted banishing his best samurai, so he gave Tokoyo and his father a huge sum of rewards and treasures.

Tokoyo was also given the privilege to serve at the palace as a samurai warrior alongside her father, and they lived happily ever after.

From japanlover.me

B. On a separate sheet of paper, write a summary of this folktale.

C. On a separate sheet of paper, answer these questions.
   ● Why did Tokoyo sell all her possessions?
   ● What was the deal made between the serpent-dragon and the village?
   ● Describe Tokoyo. Give evidence from the story to support your answer.
   ● How did Tokoyo get reunited with her father?

Activity 3: How Water Lilies Began

A. Read the passage.

A Long time ago, there lived a poor farmer with his wife. They had a son named Huw. He was a good boy. He was diligent and obedient to his parents.

Every day, Huw always herded his cows to eat some grass. Huw had a favorite place. There was a place full with grass and it was next to a lake. He often watched his cows while playing his harp under a big tree.

Huw loved playing his harp and he was so good at it. He played it beautifully and anyone who heard how he played the harp would love it very much.
One day, Huw was playing his harp and suddenly six beautiful cows rose out of the lake! Huw could not believe what he saw. Six cows really came from the water and then approached Huw.

The six cows here are so beautiful. They loved to hear Huw played the harp. After it was almost dark, Huw stopped playing and guided his cows to go home. The six cows from the lake followed him.

At home, Huw immediately told his parents about the new six cows. "You won’t believe what happened to me this afternoon. While I was playing my harp, suddenly six cows came from the lake," said Huw.

"Where are the cows now?" asked his father.

"Follow me," said Huw.

"Wow ... They look wonderful," said Huw’s mother. She looked so happy. Huw’s mother was so happy when the six new cows gave her more milk than other cows. She asked Huw to really take good care of the new six cows.

The new six cows always followed Huw. They always listened attentively when Huw played his harp.

The family started to have a better life. They had more than enough milk and started to make some money from selling it. Huw’s mother never got bored reminding Huw to pay attention to their new six cows.

"Listen, those six new cows give us lots of milk. You have to make sure they are always in good condition," said the mother.

Unfortunately the new six cows suddenly stopped giving them milk. The mother was so upset but she did not know what to do.

"If they cannot give us milk, we have to do something. We have to sell them," said the mother.

Huw was so sad to hear that. He loved those six cows because they always listened to him playing the harp.

"Please, Mother ... don’t sell those six cows," begged Huw.

Sadly, Huw’s Mother had already made her mind. She still wanted to sell those six cows.

Huw ran to the lake and brought his harp. The six cows followed him. He played it so melancholically. It was a very sad song. Huw could not hold his tears any longer. He could not control his emotions and he threw the harp to the lake.

After he threw his harp to the lake, strangely the six cows also jumped into the water. Huw was screaming, asking them to get out of the water. However, it was useless. The cows disappeared. Amazingly, he saw flowers grow in the lake. They were so beautiful. People named them Water Lilies.

Source Media Indonesia, 09/02/2014
B. Write a summary of this folktale.

C. On a separate sheet of paper, answer these questions.
   - Describe Huw. Give evidence from the story to support your answer.
   - Why do you think the cows followed Huw?
   - What happened after the cows stopped giving milk?
   - How does this folktale explain water lilies?

Activity 4: Act it Out
With another person, act out one of the folktales. Have him/her guess which folktale you are portraying. Take turns acting out folktales and guessing the correct one.

Activity 5: Reflection - Create and Write
   A. With another person, discuss the characteristics you noticed in each folktale. What similarities and differences do you see in each folktale?
   B. Choose one folktale. How would you change the ending? On a separate sheet of paper, write another ending to that folktale. Share your new ending with another person.

Cross Content Connection:
   - Social Science: The folktales above are from Japan and Indonesia. Spend some time doing research about these countries. What did you learn? Did you find any other folktales?
   - Writing: Think about the characteristics of a folktale you learned about above. Now use those characteristics to try writing your own folktale.
**Third Grade Math Project: Multiplication and Division in My World**

<table>
<thead>
<tr>
<th>Estimated Time</th>
<th>Total Time 70-80 minutes</th>
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</thead>
</table>
| Grade Level Standard(s) | 3.OA.A: Represent and solve problems involving multiplication and division.  
3.OA.B: Understand properties of multiplication and the relationship between multiplication and division.  
3.OA.C: Multiply and divide within 100.  
3.OA.D: Solve problems involving the four operations, and identify and explain patterns in arithmetic. |
| Caregiver Support Option | Support is optional, but recommended for gathering items to be used to create arrays and practice multiplication facts.  
Also, there are some mathematical games included in this project. Consider how you might be able to play these games with your students. |
| Materials Needed | Pencil, ruler, scissors, and deck of cards. Not all materials are needed for every activity. |
| Question to Explore | How can the same array represent both multiplication and division?  
How can different strategies be helpful when solving a problem? |
| Student Directions | There are real-world examples of multiplication and division everywhere you look. Look at the pictures of apartment buildings in the city. Each activity has directions for you to follow. |

**Activity 1: Multiplication and Division in my Neighborhood**

A. Look at the picture of the building below. What do you notice and what do you wonder?  
What multiplication array patterns do you notice when looking at the windows?

Example - The windows on the buildings are arranged in columns and rows. This building has 6 rows and 3 columns or six rows of 3 windows.
Use the picture of the buildings below to answer the questions. What do you Notice and what do you wonder?

1. What do you notice about the windows when you look at the picture?

2. What is the total number of windows on each of the buildings? Explain how you figured out the total for each different building.

3. There are five different buildings. Write an equation that represents the number of windows on each building. Can you write more than one equation for each building? What other equations can you write?

4. Look at the picture of the building below. If you turn the building below on its side, how many equal rows are in the array? Did the number of windows change? Explain why or why not?
B. 

<table>
<thead>
<tr>
<th>Word Bank</th>
</tr>
</thead>
<tbody>
<tr>
<td>factors</td>
</tr>
<tr>
<td>multiply</td>
</tr>
<tr>
<td>operation</td>
</tr>
</tbody>
</table>

Fill in each blank space with the correct vocabulary word. The word bank above will help you explain your answers to other questions in the packet.

Challenge: How many times can you use each of the words in the Word Bank above when you answer questions in Activity 2 and Activity 3?

1. _______________ horizontal or across arrangement of items
2. _______________ vertical, or up and down arrangement of items
3. _______________ set of objects or numbers arranged in order often in rows and columns
4. _______________ number that is divided by another number in a division operation;
5. _______________ number that will divide the dividend
6. _______________ result of two numbers being multiplied together
7. _______________ when two numbers are multiplied, the product is the same regardless of the order of the factors (i.e. 4x2=8 and 2x4=8)
8. _______________ whole numbers that multiply with another number to make a product
9. _______________ opposite, reverse operations that undo each other (e.i. addition and subtraction or multiplication and division)
10. _______________ to find the product of an equation by using multiplication
11. _______________ answer to a division problem
12. _______________ split into equal parts or group
13. _______________ the number being divided

C. Let’s play Multiplication Array Top-It
Materials: Deck of cards, counters for arrays (counter ideas- beads, blocks, paper clips, buttons, popcorn kernels, rice, rocks, pennies, or beans)

How to Play:
1. Face cards worth 10, Ace worth 1 or 11
2. Each player turns over two cards and multiplies to get a product.
3. The player with the largest product wins all the cards.
4. Continue until all the cards are gone
5. Build array models for the given cards.
6. Use the picture to the right to help you.
**Activity 2: Build Multiplication and Division Arrays**

A. In each box below there is a description of an array.  
   Draw an array in each of the boxes that matches the description.  
   Then, write a multiplication equation that matches the array that you drew.  
   Finally, write a division equation that matches the array.  

Can you write more than one Multiplication and Division Equation?

<table>
<thead>
<tr>
<th>2 by 2</th>
<th>6 by 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 by 3</td>
<td>4 by 10</td>
</tr>
<tr>
<td>12 by 4</td>
<td>3 by 5</td>
</tr>
</tbody>
</table>

B. Write an array story problem featuring an original superhero! Include the mathematical vocabulary from your Word Bank. Take photographs of examples of arrays seen in the real-world. Label arrays using multiplication and division number sentences.
C. Multiplication War Card Game
Materials Needed: Deck of Cards

How to Play:
1. Remove the Jacks, Kings, and Queens from a regular deck of cards.
2. Shuffle the deck of cards.
3. Each player places their cards face down in a pile.
4. At the count of three, each player flips over their first card.
5. The first person to say the product of the 2 cards receives both cards and puts them in a separate pile.
6. If both players say the answer at the same time, the cards are put in the middle of the table.
7. The next player to win the "flip" gets the cards in the middle of the table in addition to the cards just played.
8. The winner is the person with the most cards at the end.
9. Use the multiplication table below to check your answers.

![Multiplication Table](image)

Activity 3: Create Your Own City

1. Use the graph paper on page 15 to create your own buildings. Create a picture with at least three buildings and use rulers to draw straight lines. Use the graph paper to draw squares and rectangles to be used as buildings. Construct your windows into arrays. The total number of windows will vary depending on the product.

2. Once you create your buildings on the graph paper, write multiplication and division equations that match the arrays in your illustration. Find the products and quotients.
3. Play the Finger Multiplication Game

a. Two players face each other, hands behind their backs.
b. On the count of 3, both players show their hands with the fingers extended.
c. Players multiply the fingers on both of the hands.
   Whoever calls out the correct product first wins.
d. Move to another player in the room

Optional Additional Activities:

Problem Solving with Multiplication

There are 24 windows in a Downtown Chicago building.
Draw as many different buildings as you can with 24 windows with different arrays.
How many different ways can you arrange the windows in the building?

Write a multiplication and division equation on each of your different buildings.

Remember, show your work in as many ways as possible!
# Third Grade Science Project: Solving Problems with Magnets!

<table>
<thead>
<tr>
<th>Estimated Time</th>
<th>Total Time 70-80 minutes</th>
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<tbody>
<tr>
<td>Grade Level Standard(s)</td>
<td>3-PS2-4. Engineering: Define a simple design problem that can be solved by applying scientific ideas about magnets.</td>
</tr>
</tbody>
</table>

## Caregiver Support Option
Support is optional, but recommended for the following:
- Reviewing activity directions
- Engaging in discussions with the students around the questions embedded in this project (siblings and other members of the household can be engaged in the dialogue as well)
- Listening to their presentation and ask questions like the sharks do on the television show, SHARK TANK. Examples:
  - What is your invention?
  - What problem does it solve?
  - How does it work?
  - Who will be using it?
  - What materials will you be using?
  - How much does it cost to build? How much are you selling it for?
  - If a recording device is available, help the child record their invention idea.

## Materials Needed
- **Needed:**
  - Pen/pencil, packet, blank paper (or journal)
- **Optional:**
  - Magnet(s)
  - Materials to build your invention (e.g., cardboard, tape, scissors, cotton balls, plastic bag, or anything else you find around the home)
  - Markers, colored pencils, crayons
  - Device/internet to watch optional YouTube video (extension activity)

## Question to Explore
- What is a magnet?
- How do magnets work?
- How can magnets be used to solve problems?

## Student Directions
- Complete Activity 1, 2, and 4 on any available paper or a journal.
- Complete Activity 3 on any available paper or poster. You can be creative with how you want to present your invention.
- Each activity has directions for you to follow.

### Activity 1: Magnets & Magnetism (10 minutes)

#### A. Initial Ideas About Magnets:
- Answer the questions below on a sheet of paper (or in a journal).
  - What is a magnet?
  - What do you already know about magnets?
B. Magnetic Forces Reading: After reading, answer the following questions on a piece of paper.

- How many poles are there? What are they called?
- Where can you find the poles on a magnet?
- Which poles repel? Which poles attract?

![Magnetic Forces]

A magnet is a rock or a piece of metal. It can pull certain types of metal toward itself. Magnets also attract other magnets. They can repel, or push away, other magnets, too. Every magnet has two “poles.” The poles are found at opposite ends of the magnet. They are called the north pole and south pole. Different poles attract each other. So, north poles attract the south poles of other magnets. In the same way, south poles attract north poles. Similar, or “like poles,” repel each other. North poles push away other north poles. South poles push away other south poles.

C. Attract or Repel? Look at the examples below. Circle whether each set of magnets will either attract (come together) or repel (move/push away from each other).

Activity 2: What My Sister Taught Me About Magnets (20 minutes)

A. Read the story below. Then, answer the following questions below in your journal:

- What determines the distance (how far away) a magnet can work, size or strength? Explain
- Do magnets attract all types of metal? (Hint: Look at the table of data in the story)
My Sister
My little sister is crazy about magnets! She is always playing with them and investigating something magnetic. Last week, I went into our room. There she was, playing with her magnets.

She heard me coming in. Without looking up, she said, “Let’s play with magnets. Which one do you want?”

“It doesn’t matter. Magnets are all the same,” I answered.

“They are not the same!” she said.

I smiled. My sister likes to explain things. She knows a lot for a little sister. Her explanations help people understand how things work. It was easy to predict what her explanation would be about this time: magnets!

Explanation 1: Magnetic Force

“Watch!” my sister said. She put a paper clip on the floor. Slowly, she lowered a bar magnet over it. When the magnet got really close, the paper clip jumped up and stuck to it.

“And watch this.” She did the same thing, but this time she used a horseshoe magnet.

Just like the last time, the paper clip jumped. But this time it jumped when the magnet was much farther away.

“So?” I said. “What’s your explanation?”

She said, “I think the paper clip jumped farther because the horseshoe magnet is stronger than the bar magnet. Stronger magnets can pull with more magnetic force. A stronger magnet will pull the paper clip up from farther away.”

Then she showed me a little magnet called a mighty magnet. She held it over the paper clip. The paper clip jumped almost two inches in the air to reach the strong mighty magnet!

“Check this out!” she said. “Compared to the other magnets, the mighty magnet is really small. But the mighty magnet is the strongest of all!”
Explanation 2: Magnetic Poles
The next day, I saw my sister touching magnets to each other in different ways. Two magnets were
pushing each other away instead of pulling together.

“I guess those magnets don’t work,” I said.

That did it. Before I knew it, she had started another explanation about magnets.

My sister said, “Those two magnets pushed each other away because of how the poles were
coming together.”

“What are poles?” I asked.

“The poles are the two different ends of a magnet,” she said. “Every magnet has two poles, north
and south. That’s one way that magnets are all alike.”

“See? I told you magnets are all alike,” I teased.

My sister laughed and said, “If you touch the north pole of one magnet to the south pole of
another, the magnets pull together. That’s called attracting. But if you try to touch the north pole of
one magnet to the north pole of another, the magnets push each other away. The same thing
happens if you try to push two south poles together: they push apart. Pushing apart is called
repelling.”

“Are the poles always at the ends, like the poles on this thin bar magnet?” I asked.

“No,” she said. “Different magnets have poles in different places.”

“Just like the thin bar magnet, the horseshoe magnet has poles at the ends,” she said. “But the
bend in the horseshoe magnet makes it different. The two poles are next to each other.”

She picked up two more magnets. “This fat bar magnet and the ring magnet are alike. They both
have poles on their big, flat sides.”

“Ahh,” I said. My sister was busy trying to find the poles on the mighty magnet.
Explanation 3: What Magnets Attract

Yesterday, I knew my sister was up to something. She was doing something in our room, but she kept coming out and asking me questions.

First she asked, “What are juice cans made of?”

I answered, “Metal.”

“I know that!” she said. “What kind of metal?”

“That kind of can is made of aluminum,” I said. “It’s the same kind of metal as the foil you use to wrap food.”

All day, my sister kept asking me questions about what kind of metal different things are made of. She asked me about paper clips and nails and even the pipes under the sink! Finally, I asked her a question: “What are you doing?”

“I’m investigating,” she said. “I know magnets only attract metal objects. But none of my magnets would stick to the metal juice can.”

“Why do you think that is?” I asked. I wanted to hear her explanation.

“I think it’s because magnets only attract certain kinds of metal. So the juice can must be made out of a kind of metal that magnets don’t attract,” she said. “Now I’m testing metal objects. I want to see which kinds of metal magnets attract.”

We talked about different kinds of metal. We talked about mines where people find metal underground.

“Do people dig up steel in steel mines?” my sister asked.

“No,” I said. “I think people mix different kinds of metal together to make steel.”

I turned on the computer and looked for information about steel. “Steel is made mostly of iron,” I told her.
“Hmm,” she said. “I’ll write that down.” She recorded the information in a notebook.

Here is the table my sister made to record what we found out. We looked at it together to try to figure out which metals magnets attract. We have some ideas, but we still have questions. We’ll use the table to predict which other objects will be attracted to magnets.

<table>
<thead>
<tr>
<th>Object</th>
<th>Kind of metal</th>
<th>Does a magnet attract it?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Juice can</td>
<td>aluminum</td>
<td>no</td>
</tr>
<tr>
<td>Paper clip</td>
<td>steel (mostly made of iron)</td>
<td>yes</td>
</tr>
<tr>
<td>Penny</td>
<td>copper and zinc</td>
<td>no</td>
</tr>
<tr>
<td>Foil</td>
<td>aluminum</td>
<td>no</td>
</tr>
<tr>
<td>Nail</td>
<td>iron</td>
<td>yes</td>
</tr>
<tr>
<td>Nail</td>
<td>zinc and iron</td>
<td>yes</td>
</tr>
<tr>
<td>Mom’s necklace</td>
<td>silver</td>
<td>no</td>
</tr>
<tr>
<td>Dad’s ring</td>
<td>gold</td>
<td>no</td>
</tr>
<tr>
<td>Steel wool</td>
<td>steel (mostly made of iron)</td>
<td>yes</td>
</tr>
<tr>
<td>Sink in kitchen</td>
<td>steel (mostly made of iron)</td>
<td>no</td>
</tr>
<tr>
<td>Pipe under sink</td>
<td>copper</td>
<td>no</td>
</tr>
<tr>
<td>Frying pan</td>
<td>iron</td>
<td>yes</td>
</tr>
<tr>
<td>Tall lamp</td>
<td>brass (made of copper and zinc)</td>
<td>no</td>
</tr>
</tbody>
</table>

My Sister’s Notebook Most little sisters keep a diary or a notebook sometime in their lives. And they hide their diaries from their big sisters. But my little sister is different. She is proud to show me her notebook. It’s different from a regular diary. It’s more like a scientist’s notebook! She uses it to record the stuff she investigates. Can you predict what will be in her notebook? Turn the page to see.

Inventing with Magnets
I predict that my sister will be a scientist one day. My mom says my sister already thinks like a scientist. Someday I think my sister will invent something great. Maybe she’ll invent a car that uses magnets to float above the road. Maybe she’ll find a way to cure sick people with magnets. Or maybe she’ll make magnetic roller skates! Whatever she does, we will be really proud of her. But don’t tell her I said that.
B. Respond to the following questions in your journal:
- How is making a table of data useful?
- Are bigger magnets always going to be stronger than magnets smaller than it?

C. Take a look around your house. Are there objects that are smaller but heavier (or stronger) than objects that are bigger than it? Fill in the data table below.

<table>
<thead>
<tr>
<th>Bigger Object</th>
<th>Smaller Object That is Heavier (or stronger)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper bag</td>
<td>Can of soup (heavier and I can’t rip or tear it)</td>
</tr>
</tbody>
</table>

Activity 3: Saving the Planet with Magnets!? (30-40 minutes)

A. Magnets have been used in many inventions.
   - Look at the inventions below. On a piece of paper, write about which invention you think is best and why. If you know of a different invention (that uses magnets) that you like better, you can write about that invention instead.

<table>
<thead>
<tr>
<th>Invention</th>
<th>What the Invention is Used For</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRI Machine</td>
<td>These machines use strong magnets and radio waves to help doctors take a closer look at the inside of your body. Doctors can even examine your brain and spine!</td>
</tr>
<tr>
<td>Maglev Train</td>
<td>Some trains are designed to float! This allows the train to move quicker. They can also safely move up, down, and forward. This is all thanks to magnets and electricity.</td>
</tr>
<tr>
<td>Refrigerator Magnet</td>
<td>Simple! This is used in many homes to stick things to the outside door of a refrigerator like letters, schedules, and pictures.</td>
</tr>
<tr>
<td>Compass</td>
<td>With the help of a magnet, this tool can help people figure out which direction they are facing (North, South, East, or West). Pilots and sailors use compasses to navigate.</td>
</tr>
</tbody>
</table>
B. Design your own magnet invention! Think of a problem that exists on the planet or in your school/home/neighborhood. Can a magnet help be part of the solution? Great! Let’s create an invention that uses magnets. Follow the steps below and write your ideas on a blank sheet of paper (or in a journal).

**Steps:**

1. **Identify the Problem:**
   - What is the **problem** your invention will solve?

2. **Brainstorm Solutions:**
   - Come up with a few different ideas for your invention. Be creative!
   - Think about these questions as you brainstorm:
     - What will your magnet invention do? Who will be using it? How much will it cost? How much will you sell it for? Are there some things it won’t be able to do? Will only certain people be able to use it?

3. **Design:**
   - Pick one idea and draw a diagram of your invention on a piece of paper.
   - Make sure to include labels of the different parts of your invention.
   - What materials will you need to build your invention?

4. **Create** (optional):
   - Build your design out of cardboard or any safe materials you can find at home.

5. **Improve:**
   - If you could go back and change anything about your solution or your design, what changes would you make? Why?

6. **Present:**
   - You can create a poster, advertisement, video, brochure, or whatever you can use at home to present your invention.
   - Present your idea to a family member (optional: have someone in your home record a video of you presenting!)

**Activity 4: Reflection (5-10 minutes)**

- What is something new you learned about magnets and magnetism?
- How do magnets affect our lives?
- What else would you like to know about magnets?

**Optional Extension Activities:**

**A. Exploring Magnetism**

- Do you have a magnet at home? **Hint: Check on your refrigerator!** Use it to see if the objects in your house are magnetic or not. Create a data table, like the one below, on a piece of paper or in a journal to record your findings (data).

**B. How Does a Compass Work?**

- If you are able to go onto YouTube, check out this video about how a compass works: [https://www.youtube.com/watch?v=LroX](https://www.youtube.com/watch?v=LroX)
Grade 3-5 Social Science Project: Together When Apart

Estimated Time
Total Time 70-80 minutes (average of 15-20 mins per activity)

Grade Level Standard(s)
SS.IS.3.3-5. Determine sources representing multiple points of view that will assist in answering essential questions.
SS.IS.4.3-5. Gather relevant information and distinguish among fact and opinion to determine credibility of multiple sources.
SS.IS.6.3-5. Construct and critique arguments and explanations using reasoning, examples, and details from multiple sources.

Caregiver Support Option
Notes on the structure:
- Activities are designed to be done in order - each on builds on the other so you should no skip activities
- Activities are an average of 10-20 mins each. More than one can be done in a day.

Before giving the activities to students, caregivers might:
- spend time reading and discussing the “student directions” together. Encourage them to ask any clarifying questions.
- When reading the texts, students should circle or underline any unfamiliar words so you both can define them together

In this particular lesson, it’s important to note that:
- student(s) are developing coded messages, you might want to review the directions and the “Coding Code of Conduct” on p. 10
- Consider making your own coded message for them and ask your student to decipher
- Ask them to share and explain their codes to you - on p. 9 students will review and revise their message. Consider using the examples provided to discuss and reflect on what can be better.

Materials Needed
Writing tool, paper

Question to Explore
How can we communicate with others to share our thoughts and ideas?

Student Directions
When we are separate, we have to find ways to communicate ideas, thoughts, and feelings. During certain periods of history, people have wanted to communicate with each other in ways that only friends and allies would understand. So they developed codes! In this weekly inquiry, students examine codes used in history, from the Culper Spy Ring to the use of Morse code. Throughout the week, they’ll use their learning to develop their own code to communicate with friends near and far.
Day 1 (Activity 1): Examining Historical Codes (15-20 min)

This week we’re thinking about the question: "How can we communicate with others to share our thoughts and ideas?"

Your challenge this week: Connect to someone using a “Coded Message.”

Today you will:
- Examine historical codes
- Decode a message

You will need:
- Paper or notebook
- Writing tool

Let’s Get Started!

A. THINK  Do you know what these mean?

Guess what? You just cracked a code!

B. EXPLORE

Many amazing codes have been used throughout history.

Code: a system of signals, letters, numbers, or symbols used to send messages, sometimes secretly.
### Culper Spy Ring Code from the American Revolution

It may be hard for us to read this writing, but in 1778 this code was used to send secret messages to George Washington during the Revolutionary War. It has 763 numbers that are code for different words, names, and places.

---

### Morse Code

This code was created to send messages by telegraph, which is a way to send sound messages far away through a wire. It uses short and long sounds (called dots and dashes) to represent letters, numbers, and punctuation. It was used more often in the 1800s and 1900s, including in World Wars I and II. It is not commonly used anymore.

---

### Binary Code

This is a way for computers and electronics to communicate. It is made up of two numbers: “1” and “0.” Using these numbers in different combinations, computers can talk to each other and represent data. Ever heard of a bit or a byte? A single “0” or “1” is a bit, and a group of eight “0s” and “1s” together make a byte!

---

### C. DO

Your challenge this week: Connect to someone using a “Coded Message.”

Today, you will read some coded messages!
Use this key...  ...and try to solve these codes!

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
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<tr>
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<td>X</td>
<td>Y</td>
<td>Z</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DIG DEEPER

Want to learn more about codes? You can read about the pigpen cipher, which turns a tic-tac-toe board into an easy-to-use and memorable code! [https://en.wikipedia.org/wiki/Pigpen_cipher](https://en.wikipedia.org/wiki/Pigpen_cipher)

Day 2 (Activity 2): Developing Your Code (15-20 min)

This week we’re thinking about the question: “How can we communicate with others to share our thoughts and ideas?”

Your challenge this week: Connect to someone using a “Coded Message.”

Today you will:
- Learn about Morse code
- Create your “Coded Message”

You will need:
- Paper or notebook
- Writing tool

Let’s Get Started!

A. THINK
Before telephone, television, or internet, how do you think people might have sent messages across a great distance?
B. EXPLORE

Read on to learn more about Morse code...

Morse code is a system of sending messages that uses combinations of short (the dot) and long (the dash) sound signals to spell out messages.

- a "dot" is a short signal
  - a "dash" is a long signal

Morse code is named after artist and inventor Samuel Morse, who helped invent the code more than 200 years ago.

A telegraph is a machine that turns Morse code into electrical signals and sends them across a wire. The machine on the receiving end turns these signals back into messages.

Morse code is used across languages and around the world. Anyone can use it by simply writing symbols, flashing a light, or making sounds to represent dots and dashes. Modern technology has largely replaced Morse code, but it is still used for remote or emergency situations, radio communication, and in the military.
Optional: Read the “Creation of Morse Code Helped Open Communications Around Globe” article to learn even more about it!

Optional: If you have internet access, check out this video about Morse code

C. DO

Keep in mind your challenge this week: Connect to someone using a “Coded Message.”

Today, you will create your first draft of your “Coded Message.”

Your “Coded Message” should:
- Tell who you would like to communicate with
- Explain why it’s important to communicate with this person at this moment in time
- Include a message that can be decoded using the suggested code below, Morse code (pictured above), or by making up your own code! (If you like, you may use the “Drafting Template” handout to write out your idea.)

Be sure to save the draft of your “Coded Message” so you can work on it next time!

Drafting Template

I want to say “Hi” to: __________________________________________________________

Because:  ____________________________________________________________________

Be sure to save the draft of your “Coded Message” so you can work on it next time!
Day 3 (Activity 3): Evaluating the Work (15-20 min)

This week we’re thinking about the question: "How can we communicate with others to share our thoughts and ideas?"

Your challenge this week: Connect to someone using a “Coded Message.”

Today you will:
- Reflect on your progress
- Make a plan to improve your work

You will need:
- Your work from previous activities
- Paper or notebook
- Writing tool

Let’s Get Started!
A. THINK You’ve already created the first draft of a “Coded Message.”

Pause to look at your work because you are going to reflect and revise next.

B. EXPLORE

Look at this student’s “Coded Message” and ask:

- Is it clear who the message is for?
- Does the plan explain why it is important to communicate with that person at this moment?
- Is the coded message accurate?

C. DO

Keep in mind your challenge this week: Connect to someone using a “Coded Message.”

You already have a first draft, and today you will complete the next step of the challenge!

1. Pencils down! This is a thinking exercise!
2. Look at your work and ask:
   - Is it clear who my message is for?
   - Did I explain why it is important to communicate with this person at this moment?
   - Is my coded message accurate?

3. Wait, still don’t touch your work! First, make a work plan! Complete one of these sentences:
   - I will add...
   - I will try...
   - I will adjust...
DIG DEEPER
Test Your Code!

Share your message and key with someone else. Can they decode your message? Why or why not? Would you change anything?

<table>
<thead>
<tr>
<th>Day 4 (Activity 4): Finalizing the Work (15-20 min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>This week we’re thinking about the question: &quot;How can we communicate with others to share our thoughts and ideas?&quot;</td>
</tr>
<tr>
<td>Your challenge this week: Connect to someone using a “Coded Message.”</td>
</tr>
<tr>
<td>Today you will:</td>
</tr>
<tr>
<td>● Finalize your “Coded Message”</td>
</tr>
<tr>
<td>You will need:</td>
</tr>
<tr>
<td>● Your work from previous activities</td>
</tr>
<tr>
<td>● Writing tool</td>
</tr>
</tbody>
</table>

Let’s Get Started! ____________________________________________

A. THINK

It’s time to take steps to finalize your work based on your work plan. Remember your work plan? That’s when you said:

● I will add…
● I will try…
● I will adjust…

Decide or discuss: What will you do next to finalize your work?

B. EXPLORE

Check out some “Coded Messages” by other students.

● What changes did this person make to their work?
● How do these changes help to make the message clearer?
● Today, you will work to finalize your “Here and Now Snapshot” to best represent your setting.
Today, you will work to finalize your "Here and Now Snapshot" to best represent your setting.

1. Get out your first draft and any other materials from previous activities.
2. Think about your work plan.
3. Decide: Do you need a fresh piece of paper to start over? Or will you just edit your first draft to make your final draft?
4. Get to work finalizing your "Coded Message"!

Be sure to save your "Coded Message" so you can share it later!
Day 5 (Activity 5): Reflecting and Sharing (15-20 min)

This week we’re thinking about the question: “How can we communicate with others to share our thoughts and ideas?”

Your challenge this week: Connect to someone using a “Coded Message.”

Today you will:
- Reflect on your “Coded Message”
- Share your “Coded Message” and its code key

You will need:
- Your finished “Coded Message” and copy of its code key

Let’s Get Started!

A. THINK

Like spies of the past, could you and other people in your life communicate through more coded messages?

B. EXPLORE

Anytime we share messages, we need to be thoughtful about how they will be received. The Coding Code of Conduct:
- Be Responsible, Respectful, and Safe when sending and sharing messages.
- For more about mindful messaging, check out this important video.
  [https://www.commonsense.org/education/videos/mindful-messaging](https://www.commonsense.org/education/videos/mindful-messaging)

C. DO

Now that you’ve completed your “Coded Message” it’s time to share your work with others! Here are some ideas for connecting with others:
- Share your “Coded Message” and its code key with the person who it was intended for (or use the “Sharing” handout to get a written response)
- Share your code key with others and continue sending messages back and forth!
- Share your code key and a new message with your classroom community (if this is an option).
● Ask an adult to help you share your code key and a new message online with the #inquirEDtogether hashtag.
● Keep your “Coded Message” and its code key as a historical record that you and others can look back on later.

Sharing

Please take a look at my work and fill this out.

Thank you!

This work made me… (circle one)

think...

feel...

wonder...

_____________________________________________

_____________________________________________

_____________________________________________

_____________________________________________
Want to write a message back?
Use my code key to make your own message!

Additional Activities:
By examining codes used in history, from the Culper Spy Ring to the use of Morse code, and by developing your own code to communicate with friends near and far, you are using many social science skills, but also so much more! There are so many connections to language arts, math and science that you can continue to explore. Here a few ways to extend your learning and make connections to other subjects.

**Math:** As we’ve learned this week, coding is all about identifying patterns. “Patterns” are models and/or designs that help us identify things in common with one another. To get a better understanding of patterns try thinking about all the different patterns you notice in your home. Rugs and blankets often have different patterns that repeat. What about kitchen or bathroom tiles? Maybe the bricks on the outside of your home?

**Science:** Think about the world we live in and the different ways we can decode and find patterns in nature. Go for a walk around the block with your family and pick a couple of leaves from different types of trees on your way. Study the veins of the leaves? What do you notice among the different leaves? Similarities? Differences? Consider journaling your fin