

WORD PROBLEMS

project based learning

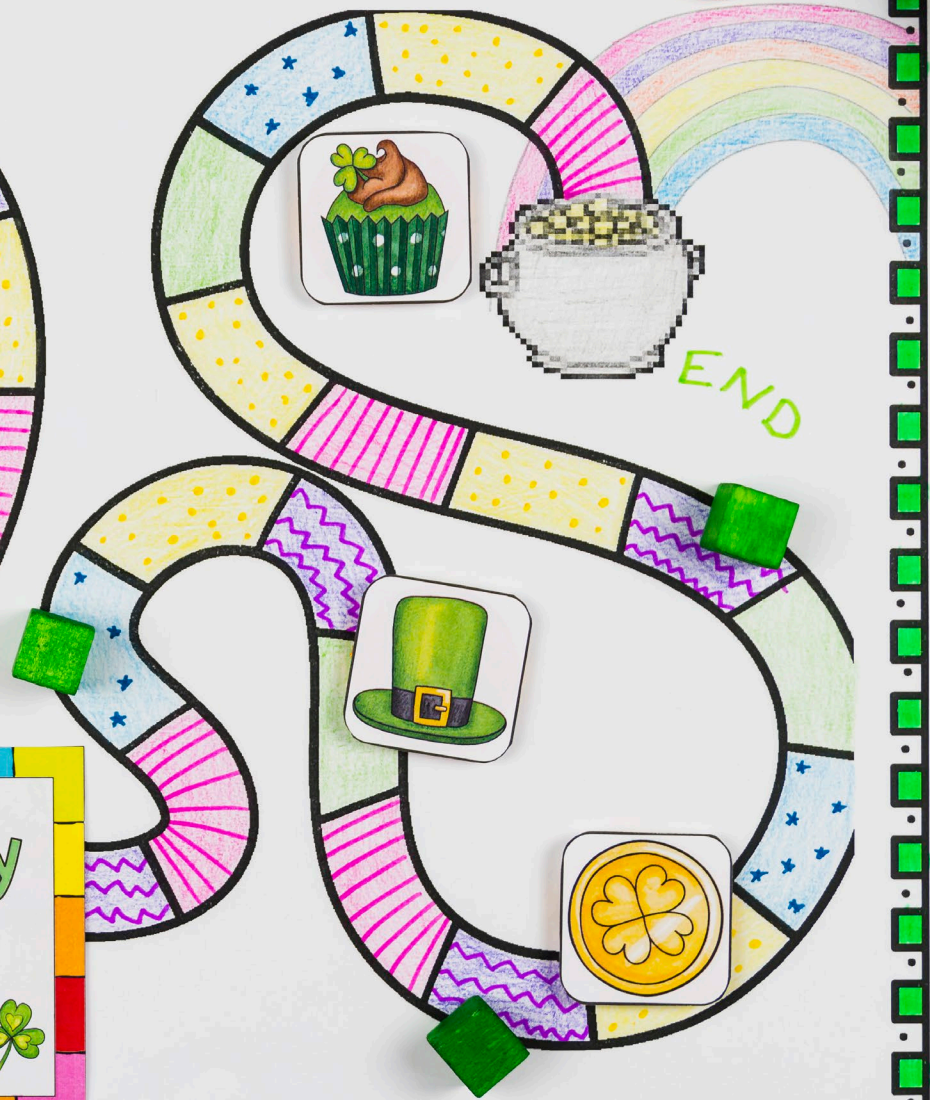
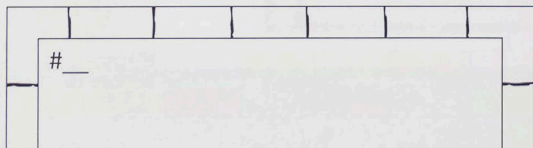
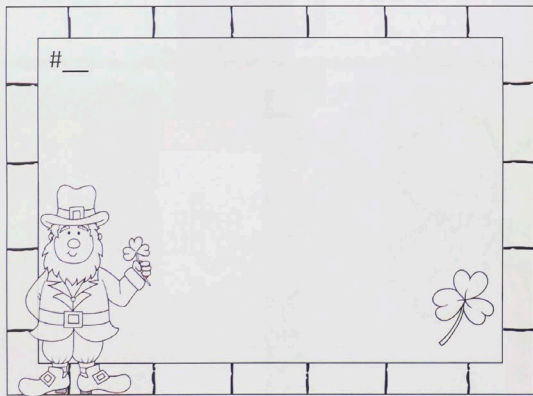
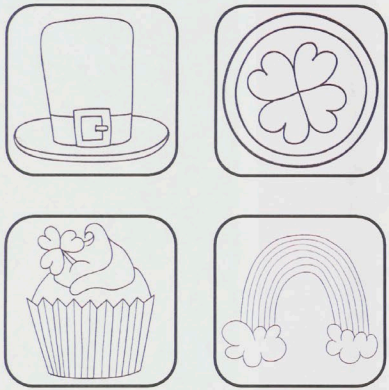
3rd Grade



CREATE A
GAMEBOARD

with leprechauns!





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Truly Tricky
Card
#6



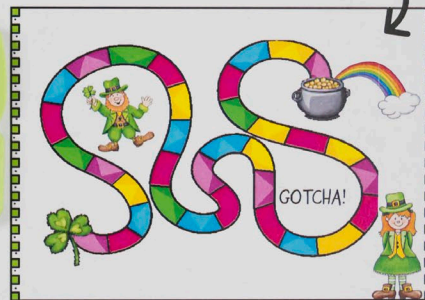
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CREATE A BOARD GAME!

It's time to create your own board game to review one-step and two-step word problems! Here are the elements of your game:

GAMEBOARD

Game board has a trail for the player to follow. There is a starting point and an ending point of course.



GAME PIECES



Each player gets a coin, a cupcake, and a rainbow. For 2, 3, or 4 players. Each player gets to choose their own pieces to keep track of where they are on the trail.

Answer Key

You need to know the answers to the word problems you created! Use the answer key to check your work.

Card #

- 1
- 2
- 3

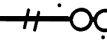
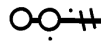
Game Rules

Use the space below to write your game rules.

- There must be 2, 3 or 4 players to play the game. The players must take turns in order.
- Each player gets one spin. If the player lands on a color, they must jump forward to the next spot of that color. If the player lands on a command, they must follow it.
- If a player lands on a spot with a leprechaun, they must pick a "Truly Tricky Card" and solve the word problem.



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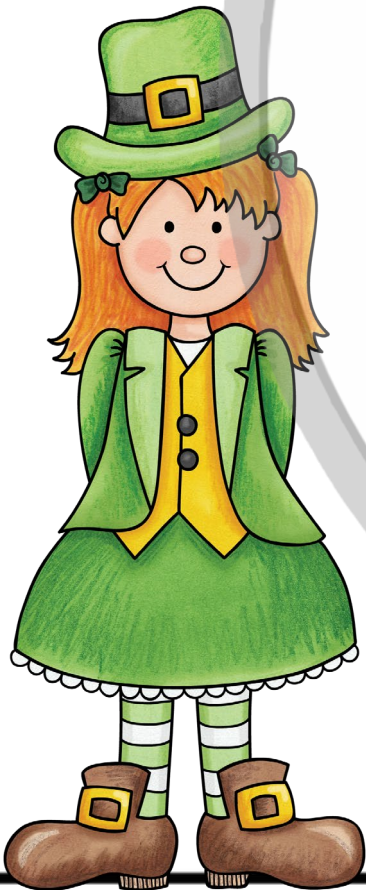


1. Teacher Directions & Standards Addressed
2. Student Directions
3. Background Information (one-step and two-step word problem anchor charts, key words anchor charts)
4. Practice Solving Word Problems
5. Create a Board Game! (using a given board and game rules)
6. Design Your Own Board Game (using a blank template for the entire game)
7. Self-Reflection & Evaluation
8. Answer Key

For The Teacher

This **Create a Board Game** Project Based Learning packet was created for 3rd grade students. The activities included will provide your students with math practice in an engaging way. The standards addressed in this packet include:

- 3.OA.A.3 Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
- 3.OA.D.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.



Directions:

1. Decide if your class will complete the project as a whole group, in small groups, or independently.
2. Copy packets and provide students with materials necessary to complete the packet.
3. Students should complete the project over several days.
4. Preview the activity with your students.
5. Students will complete the self-evaluation reflection rubric.
6. Allow students an opportunity to share their completed projects.

Suggested Challenge Order & Teaching Notes:

1. Explain the project to students: They will be reviewing one and two-step word problems and create their own to complete a game board!
 - NOTE: There are two versions of this PBL activity included in this packet. You can choose to have students use our designed game board, spinner, game pieces, and game rules. This option allows students to focus solely on the word problems they will create for the game cards to go with the game board. The second option is to use the blackline game board and related game components to have students create the entire game from scratch. Choose the option that is best for your students and the time you have allotted for this PBL activity.
2. Review the anchor charts and word problem examples provided. These can be printed for students, projected for the class to see, or displayed in your classroom for reference.
3. Allow students to practice solving word problems. Go over answers with the class and address any misconceptions before students work on creating their own word problems.
4. Explain the game board and the game rules (if you are using the pre-designed option). Allow students to work through the practice of creating their own word problems.
5. Give students time to create their word problems on their Truly Tricky Cards. Students should work on their answer keys simultaneously.
6. Allow students to play their games! Students can even swap games with each other and play their classmates' game board creations. 😊

Word Problems Can Be Tricky!

Word problems can be tricky – that is why leprechauns love them!

Practice solving and creating one-step and two-step word problems by making your very own board game.



Let's get started!

- Review word problems and key words.
- Solve some practice word problems.
- Review the game parts and rules.
- Make your own word problems for the game.
- Create an answer key for your word problems.
- Play your game! Have fun!



ONE-STEP WORD PROBLEMS

Johnny is the character in the word problem.

The numbers used in the word problem are important! They are used to write the equation and find the answer.

Johnny made a batch of cookies! He organized them into 5 rows of 6. How many total cookies are there?

SHOW YOUR WORK:

$$5 \times 6 = 30$$

rows



answer: 30

"Rows" and "total" are two key words that indicate what operation is needed to solve the word problem.

There are many key words that indicate whether to use addition, subtraction, multiplication, or division when solving a word problem.

The show your work box is a space for you to find the answer. This example shows how to use an equation and a picture to find the answer. It's okay if your show your work box looks different!

The answer to the equation is the answer to the word problem. Johnny made 30 cookies!



TWO-STEP WORD PROBLEMS

Johnny made a batch of cookies! He organized them into 5 rows of 6. Unfortunately, he dropped 4 of them on the ground. How many cookies were left over?

STEP 1:

$$5 \times 6 = 30$$



The key words "rows of" indicate multiplication is needed to complete the 1st step. This is because rows or columns are equal groups.



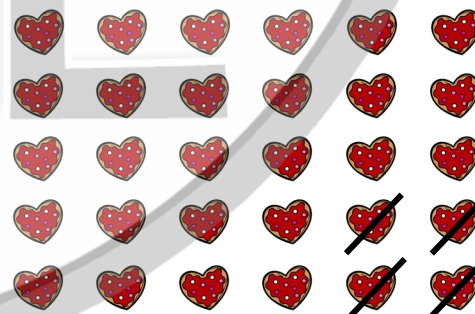
STEP 2:

$$30 - 4 = 26$$



answer

The key words "left over" indicate subtraction is needed to complete the 2nd step.



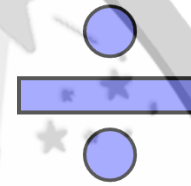
MULTIPLICATION AND DIVISION

key words



- times
- each
- in all
- multiple
- equal groups
- multiplied by
- per
- twice
- area
- total

If you see any of these key words, use **multiplication** to solve the problem!



- half
- split
- dividend
- difference
- how many more
- take away
- separate
- same

If you see any of these key words, use **division** to solve the problem!

Practice Solving Word Problems!

Let's practice solving word problems! You'll get to create your own next. Be sure to show your work for each problem. Remember to work carefully... word problems can be tricky!

1. Tasha and her 5 best friends each have 4 kittens. How many kittens do they have in total?

2. Every day, Avery brings 6 packets of olives to school. Each packet contains 7 olives. How many olives does Avery bring to school?

SHOW YOUR WORK:

SHOW YOUR WORK:

Word problems can be tricky!



Circle the key words in the word problems!

ANSWER: _____

ANSWER: _____

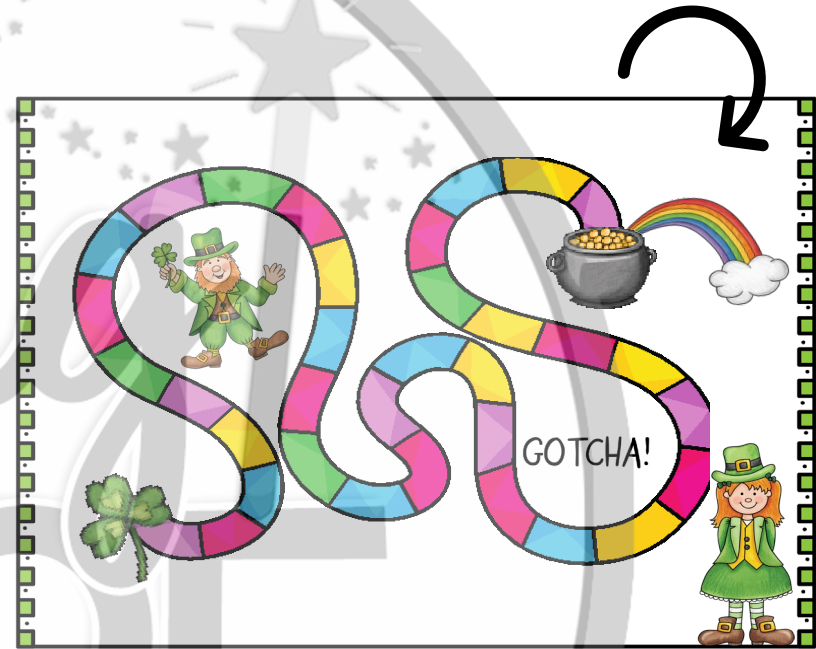
CREATE A BOARD GAME!

It's time to create your own board game to review one-step and two-step word problems!

Here are the elements of your game:

GAMEBOARD

The game board has a trail for the players to follow. There is a starting place and an ending place. Whoever reaches the pot of gold first wins the game. The game should continue until everyone finishes!



GAME PIECES

There are four game pieces: a leprechaun hat, a gold coin, a cupcake, and a rainbow.

This game can be played with 2, 3, or 4 players. Each player gets to choose their own game piece. They will use the game pieces to keep track of where they are on the trail.

TRULY TRICKY!

game rules

- There must be 2, 3, or 4 players to play the game. The players must take turns in order.



- Each player gets one spin. If the player lands on a color, they must jump forward to the next spot of that color. If the player lands on a command, they must follow it.



- If a player lands on a spot with a leprechaun, they must pick a “Truly Tricky Card” and solve the word problem. If the word problem is too tricky for a player to solve by themselves, they can ask for help from the other players.

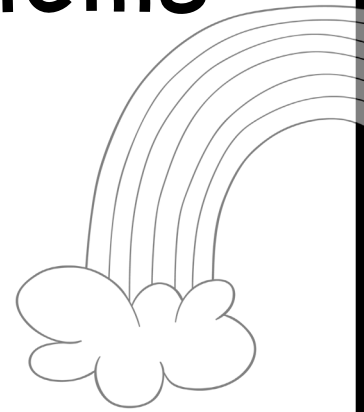


- The first person to reach the pot of gold wins the game!
The game should continue until all players reach the pot of gold.



Practice Completing Word Problems

The first part of the word problems is given. Your task is to think of a question that will complete the word problem. Remember to use key words to indicate what operation to use.



ONE-STEP word problem practice:

TWO-STEP word problem practice:

Jonathan and Kaitlyn both had 7 cookies each. _____

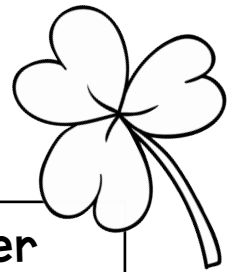
Mika had 9 flowers and Jamal had 12. They gave 3 to their friend Kristy. _____

Kendal wanted 53 crayons and Steph wanted 47. _____

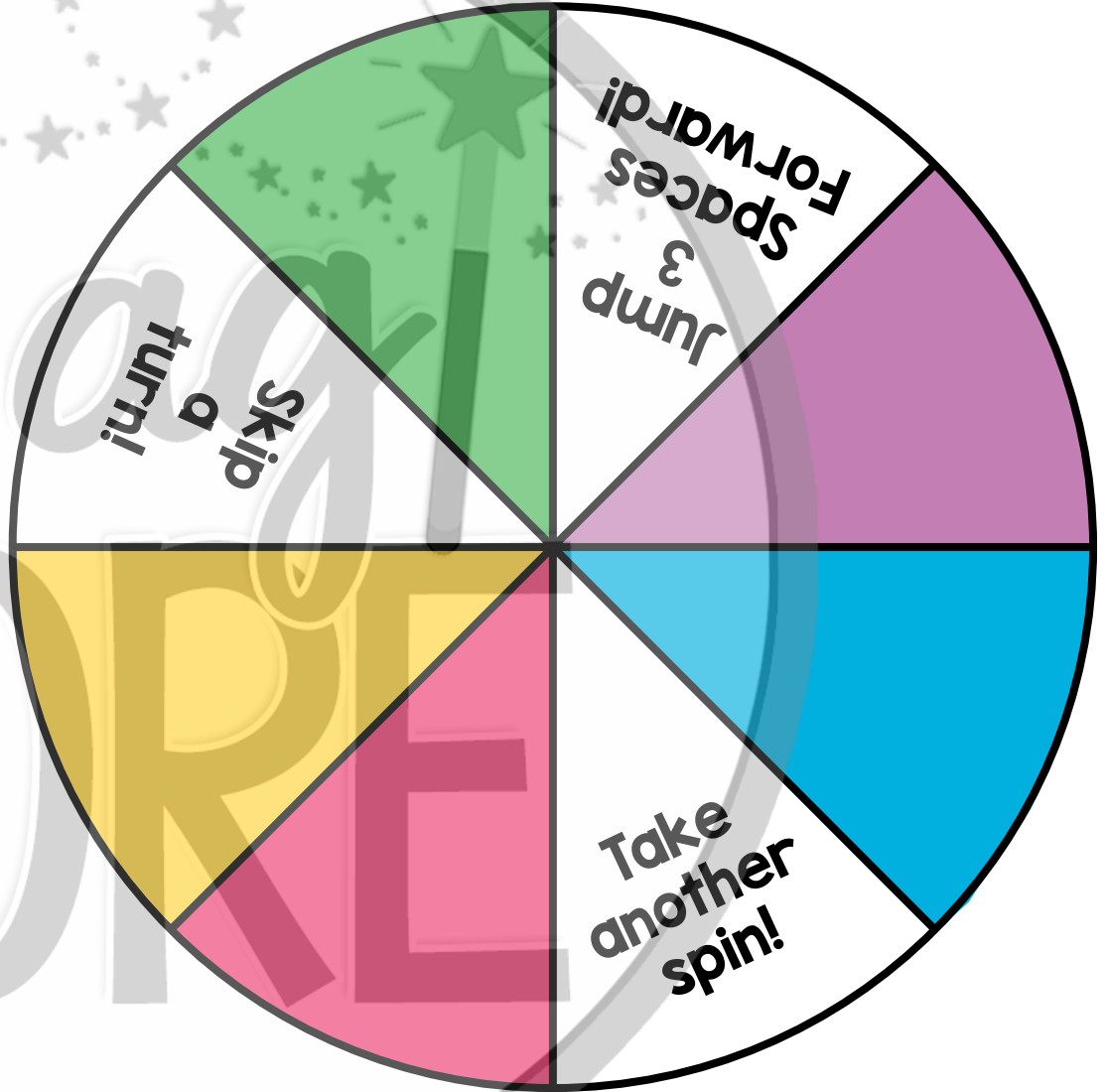
The dog had 14 tennis balls and the cat had 2. The dog lost 1 on a walk. _____

TRULY TRICKY ANSWER KEY

You need to know the answers to the problems you created. Use this chart as an answer key. Cut it out and use it while playing your game.



Card #	Show Your Work!	Answer
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		



Forward 3 Spaces

Skip a turn!

Take another spin!

DESIGN YOUR OWN BOARD GAME

GAME BOARD (make sure to give your game board a title!)

The game board has a trail for the players to follow. You will need a starting place and an ending place. What will you put on each of the spaces? You can use words, symbols, or colors. You need to think about how the players of this game will win the game. What is the main objective?

GAME PIECES

This game can be played with 2, 3, or 4 players. There are leprechaun-themed game pieces to choose from, or any small object can be used. You can also create your own game pieces! The game pieces are used to keep track of each player's spot along the trail.

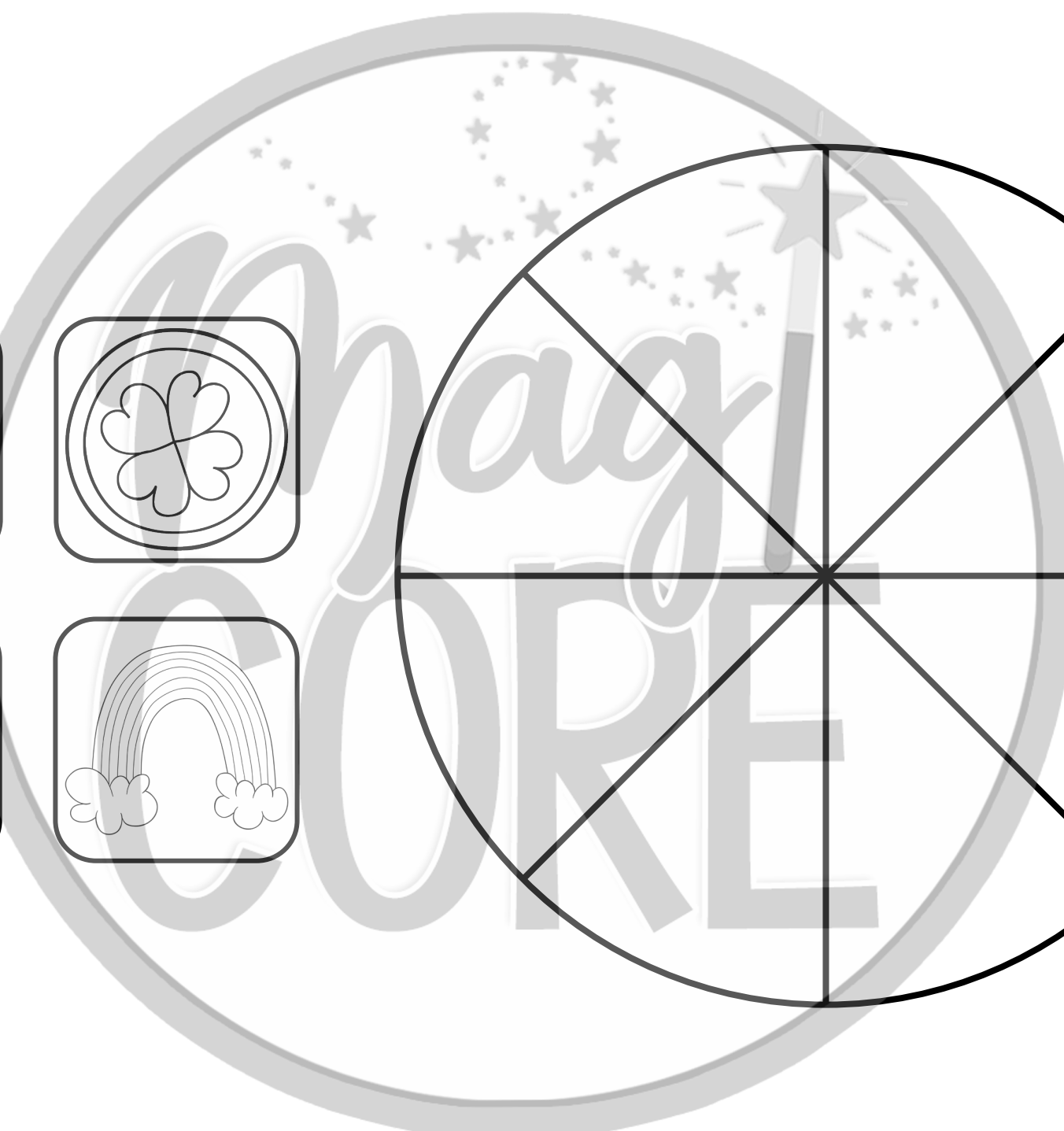
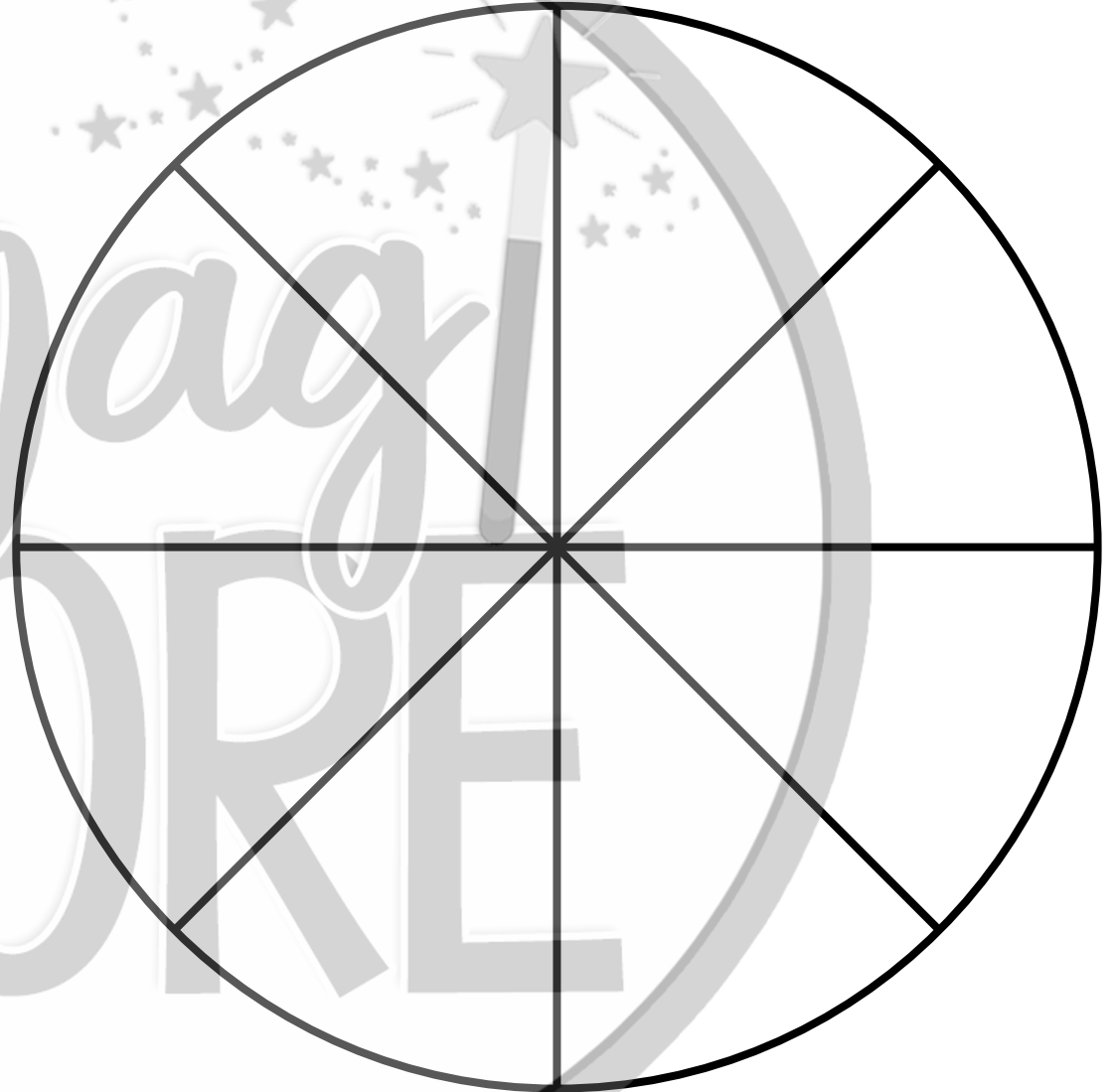
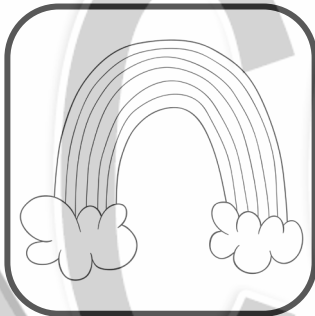
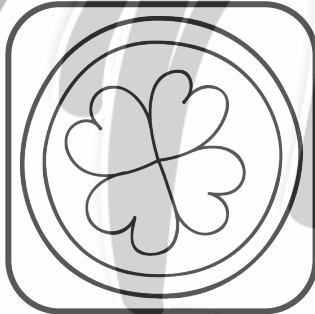
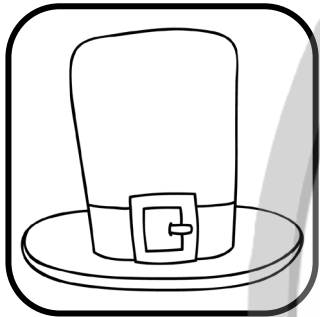
SPINNER

The blank spinner should be completed. It can have colors, numbers, or other commands that align with the game board you create. Taking turns, each player spins the spinner. A pencil can be used to anchor a paperclip to the center of the spinner. Holding the pencil, flick the paperclip to "spin" and see what it lands on.

WORD PROBLEM CARDS

Upon completion, the word problems can be used to "trick" the players. Think of a way to indicate the use of the word problem cards on the board game and/or spinner somehow. Example idea: scatter leprechauns along the trail and every time a player lands on one, they need to pick a card. There should be at least 10 cards to make the game "tricky."





Answer Key

You need to know the answers to the word problems you created! Use the space to fill out the answers.



Card #	Answer

Game Rules

Use the space below to write your game rules.



SELF-REFLECTION

Write a reflection of your experience with this project. How did you feel about the math word problems and creating a game board? Explain what you found easy to do and any difficulties you had while working on this project. Did you enjoy this activity? Why or why not?

RATE THIS PROJECT

Circle the statement you most agree with.

I am ready for something harder.

This was just right.

I found this very challenging.

SELF-EVALUATION

Circle one box per row on the rubric that expresses how you rate yourself on this Project-Based Learning Activity.

+	✓	-
I felt very confident about the math in this project.	I felt pretty good about my ability to complete the math in this project.	I felt a lot of the math in this project was too hard for me to do alone.
I understood all of the math and did not need help to complete the problems.	I understood most of the math but needed a little help to solve some of the problems.	I understood some of the math but needed help to complete most of the problems.
I easily used many strategies to solve the math problems efficiently.	I needed some help to use the best strategies for solving the math problems.	I had trouble understanding the best way to solve many of the math problems.
I feel I am ready for a harder math project.	I feel I would like to spend more time practicing similar math problems.	I feel I need assistance to work on similar math problems.

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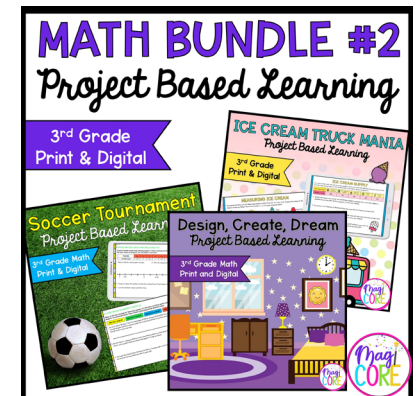
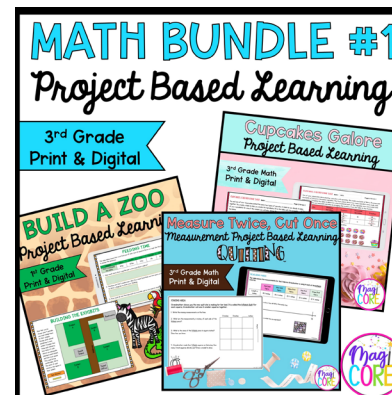
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