HOLIDAY HELPING HANDS

Math Project Based Learning

Crafting - 2

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thought that a good start to th

Caroling - 2

Every year the Bradford family goes caroling at a local hospital. They sing Christ
carols to patients who will not be home for Christmas
this year.

Hanukkah

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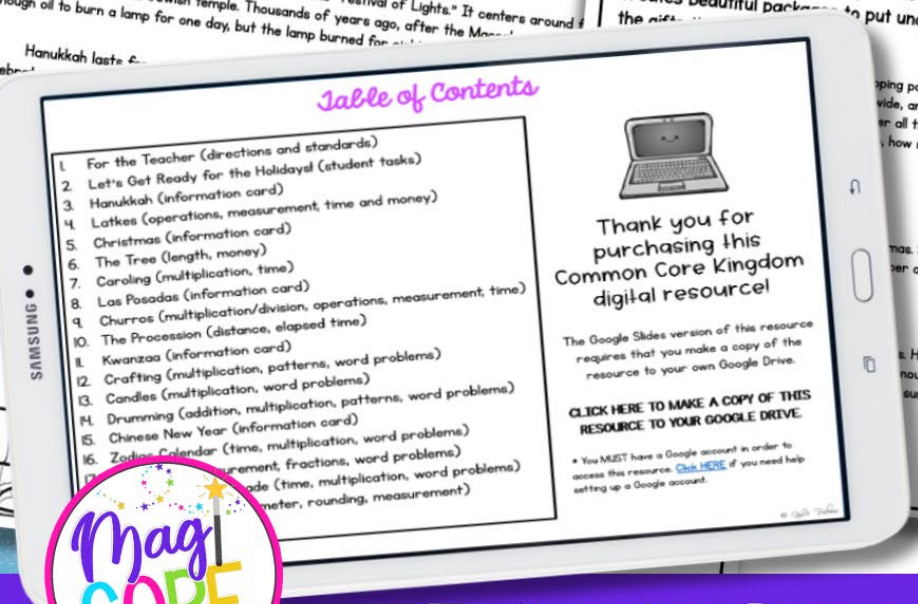

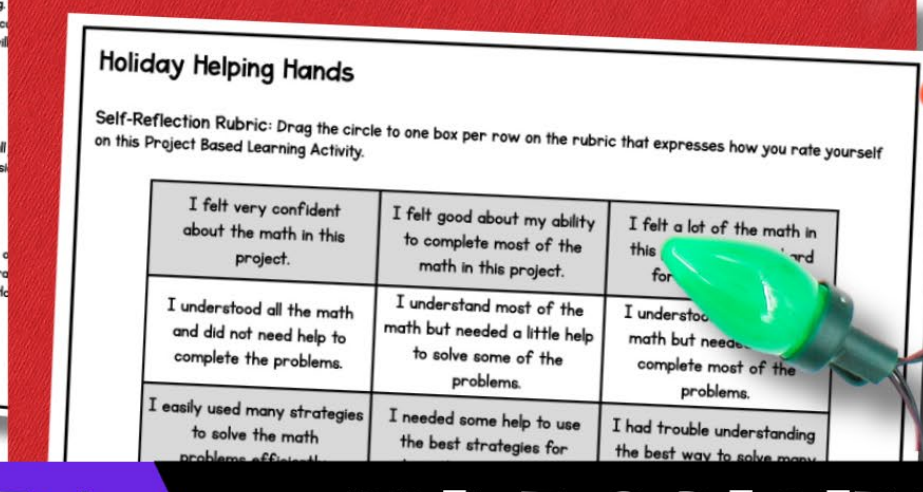

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5TH GRADE MATH

PRINT & DIGITAL

For the Teacher

Celebrating Winter Holidays is a Project Based Learning activity that provides students with a variety of engaging and fun math challenges as they help different families prepare for their special winter holidays. Your students will practice the following math standards:

- 5.NBT.A.1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to the right and 1/10 of what it represents in the place to its left.
- 5.NBT.A.4 Use place value understanding to round decimals to any place.
- 5.NBT.B.5 Fluently multiply multi-digit whole numbers using the standard algorithm.
- 5.NBT.B.6 Find whole number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, properties of operations, and/or the relationship between multiplication and division.
- 5.NBT.B.7 Perform all operations with decimals to hundredths using concrete models, drawings, and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction, relate to a written method and explain reasoning.
- 5.NF.B.4.B Multiply fractional side lengths to find areas of rectangles and represent fraction products as rectangular areas.
- 5.NF.A.2 Solve word problems with addition and subtraction of fractions referring to the same whole by using visual models or equations.
- 5.NF.B.6 Solve real world problems with multiplication of fractions and mixed numbers by using visual fraction models or equations.
- 5.MD.A.1 Convert among different sized standard measurement units within a given measurement system. Use in solving multistep real-world problems.

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. Challenge activities can be assigned or can be optional.
6. Students will complete the self-evaluation reflection rubric.
7. Allow students an opportunity to share their completed projects.



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17. Dumplings (measurement, fractions, word problems)
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20. Self-Reflection



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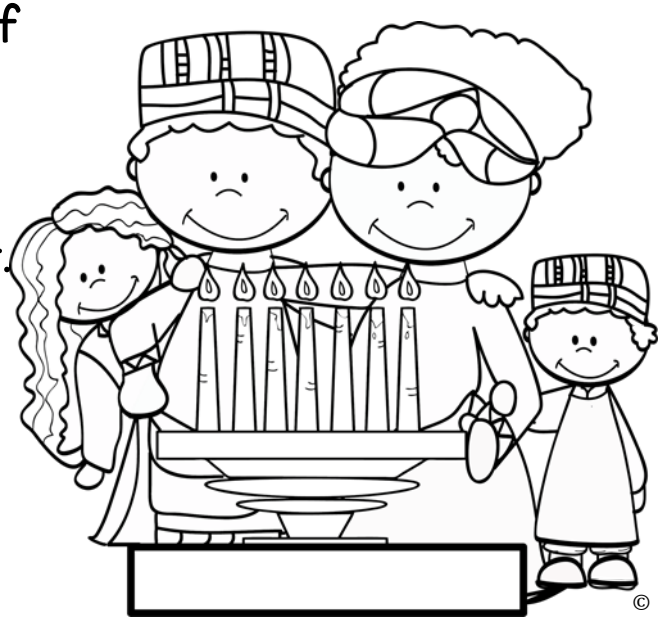
Let's Get Ready for the Holidays!

Who doesn't love celebrating holidays? All the fun and excitement we experience takes a lot of time and energy to plan. Usually, it is the parents of the family who do the planning. In this project, you will meet five families who celebrate different winter holidays. They all need your help to prepare to celebrate. So, let's get started!

Here are your tasks:

- Read through the entire packet before beginning.
- Read the holiday informational slides one at a time.
- Read the questions to become familiar with types of math problems you will be solving.
- Complete each section before moving on to the next.
- (Optional) Complete the challenge pages.
- Complete the self-reflection and evaluation rubric.



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Hanukkah

Hanukkah is a Jewish holiday also known as the "Festival of Lights." It centers around family and commemorates the rededication of the Jewish temple. Thousands of years ago, after the Maccabean Revolt, the Jewish people had just enough oil to burn for one day, but the lamp burned for eight days. This is known as the "Miracle of Hanukkah."



The holiday lasts for eight days and usually occurs sometime in December. Jewish families celebrate many traditions and rituals during the eight days of Hanukkah. Lighting the menorah is a very big part of the celebration. A menorah is a candelabrum with nine candles. Each day after sunset, a candle is lit using only the middle candle, called the "shammash," or helper candle. By the final night of Hanukkah, all nine candles are lit.



Children play the Dreidel game. They spin the top and follow the directions as they pass gold coins called Gelt. Families also enjoy singing songs each evening and exchanging small gifts.

Families share traditional foods during Hanukkah. They eat foods that are fried in oil to represent the miracle of the burning oil lamp. Some favorites are potato latkes, doughnuts, and fritters.

Now, let's meet the Abrams family. Mr. Abrams is a single dad who will be celebrating Hanukkah with his two children, 7-year-old Naomi and 10-year-old Micah. They are a Jewish family living in New York City and they love celebrating Hanukkah. You will be helping them prepare latkes for this year's holiday.

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Latkes - 1

The Abrams will make latkes each night of Hanukkah. The first six nights they will make 4 servings, but on the 7th and 8th nights they will celebrate with relatives so they will make more. The Abrams will make 8 servings on the 7th night and 16 servings on the 8th night. Use the table to answer the questions below.

Ingredients	4 servings	8 servings	16 servings
potatoes	3	6	12
eggs	2	4	8
chopped onions	¼ cup	½ cup	1 cup
flour	1 tablespoon	2 tablespoons	4 tablespoons
oil	1 ¼ cup	2 ½ cups	5 cups

1. How many latkes will the Abrams make during the eight nights of Hannukah? Show how you know.

2. How many potatoes will the Abrams need to buy to make enough latkes for the 8 nights of Hanukkah? Show your thinking using the number line.

3. Micah thinks that in order to make 24 servings they would need 15 eggs. Is he correct? Explain.



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Christmas

Christmas is a holiday celebrated by Christians all around the world. It celebrates the birth of Jesus Christ. No one really knows the exact day Jesus was born, but it is believed to be sometime in December or January. Often, the celebration takes place from the beginning of December until after New Year's Day on January 1st.



Traditional decorations and festivities can be observed around the globe. Many people decorate a Christmas tree in their home with lights and ornaments. Some decorate the outside of their homes with lights or place lights in their windows. Families often go caroling and children participate in Christmas pageants. They display nativity sets and hang stockings in their homes. It is customary to send Christmas cards to friends and family, especially to those who live far away.

Baking cookies, stringing popcorn garland, and hanging evergreen wreaths on front doors are Christmas traditions loved by many people during the Christmas season. Singing Christmas carols is a favorite pastime of families. Christmas music can be heard in homes, schools, and on the radio during the holiday season and many families watch Christmas movies together.



On Christmas Eve or Christmas Day, families wake early to open gifts. Some families attend church services. Later, they get together with extended family and exchange gifts and eat a festive meal.

Let's meet the Bradford family. Mr. and Mrs. Bradford live in a small town in central Indiana with their daughters, Mia, who is 13, Ana, who is 10, and Kira, who is 7. They love celebrating Christmas with family and friends. You will be helping the Bradford family prepare for the busy Christmas holiday.

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The Tree - 1

The Bradford family loves to cut down their own Christmas Tree. Each year they go to their local tree farm and pick out their favorite tree. Help the Bradford family pick the best tree this year.

	5 - 5.5 feet tall	5.5 - 6 feet tall	6 - 6.5 feet tall	6.5 - 7 feet tall	Above 7 feet
Blue Spruce	$41.77	$49.59	$57.33	$64.12	Add 45 cents Per additional inch

1. The ceiling in the living room is 8.5 feet from the floor. The tree will sit 4.25 inches off the floor in a tree stand. Mrs. Bradford wants to be sure that they buy a tree that will allow her to use the new star topper she purchased. The star is 7.75 inches tall. What is the largest tree the Bradfords can purchase? Draw a model to show your work.

2. Mia found a tree she loves that is 9 feet tall. What is the least number of inches Mr. Bradford can cut off the bottom of the tree so that it will fit in their living room? Draw a model to show your work.



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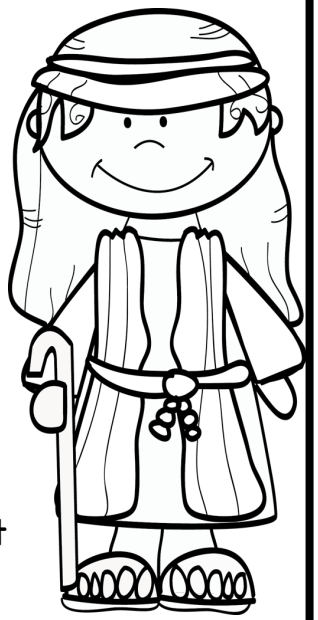
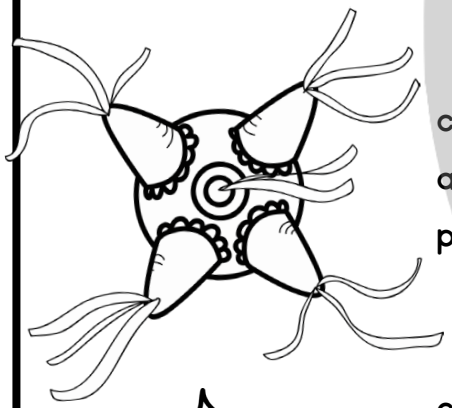
Las Posadas

Las Posadas is an important Mexican tradition celebrated during the Christmas holidays. It lasts for nine nights, from December 16th through the 24th. The nine nights represent the nine months that Mary is pregnant before Jesus is born. Each night families go to different homes and commemorate the long search for shelter by Mary and Joseph.

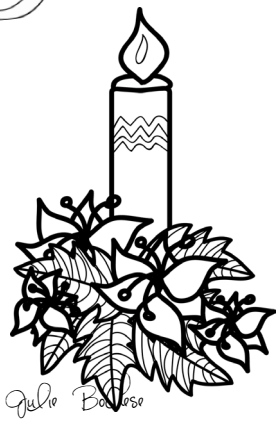


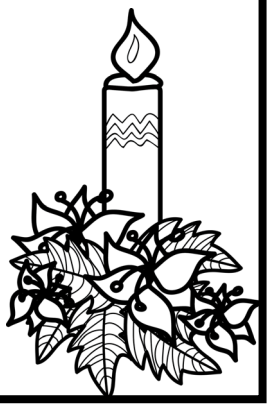
Starting at dusk, families form processions and walk together to each evening's location. Children dress as shepherds or angels and adults carry candles and religious figures. When they arrive at the home, they ask the owner if they can have shelter. The owner of the home says yes and lets everyone inside. Together, they celebrate with prayers, festive songs, and traditional food. The evening ends with the breaking of a piñata, which is in the shape of a star. Children put on blindfolds and take turns hitting the piñata until it breaks and spills out goodies!



This nine-night tradition ends on Christmas Eve. On this evening, the celebration continues with a Christmas church service. The processions represent a pilgrimage, which is a journey to find meaning or a religious devotion. All participants share their love for Christmas.

Let's meet the Garcia family. Mr. and Mrs. Garcia live with their three children in southern New Mexico. Pedro is 12, Luis is 9, and Maria is 6. Also, living with the family is Abuela and Abuelo, or grandmother and grandfather. The family has deep faith and loves celebrating Las Posadas more than any other holiday. You will be helping the Garcias prepare to host the last evening of Las Posadas.





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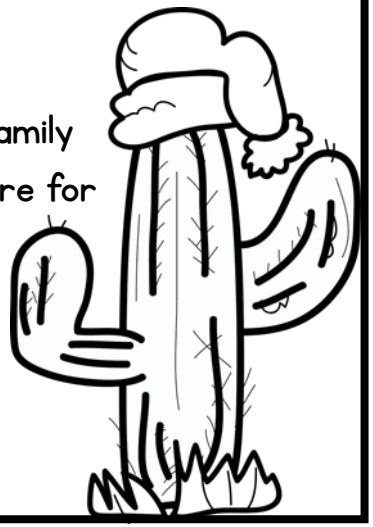
Churros - 1

The Garcias are hosting the last night of Las Posadas. Mrs. Garcia and Abuela are known for making the best churros in the neighborhood. Churros are deep-fried pastries coated in cinnamon-sugar or chocolate. You will be helping the family make enough churros to feed the neighbors.

1. They need to make enough churros for 46 people to have four each. How many churros do Mrs. Garcia and Abuela need to make? Show how you know.

2. The recipe makes 32 churros. Luis says he knows that they need to make 5 batches of churros. What mistake did Luis make? What is the correct number of batches? Explain.

3. Abuela says it is always best to make two extra batches so that they can have some for their family to eat over the Christmas holidays. What is the total number of churros they will make to prepare for Las Posadas? Show how you know.



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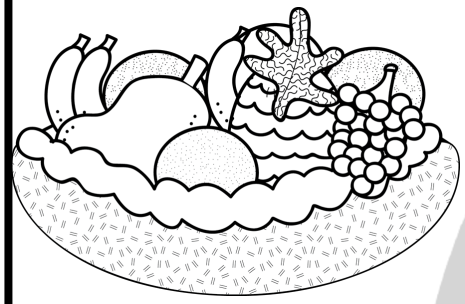
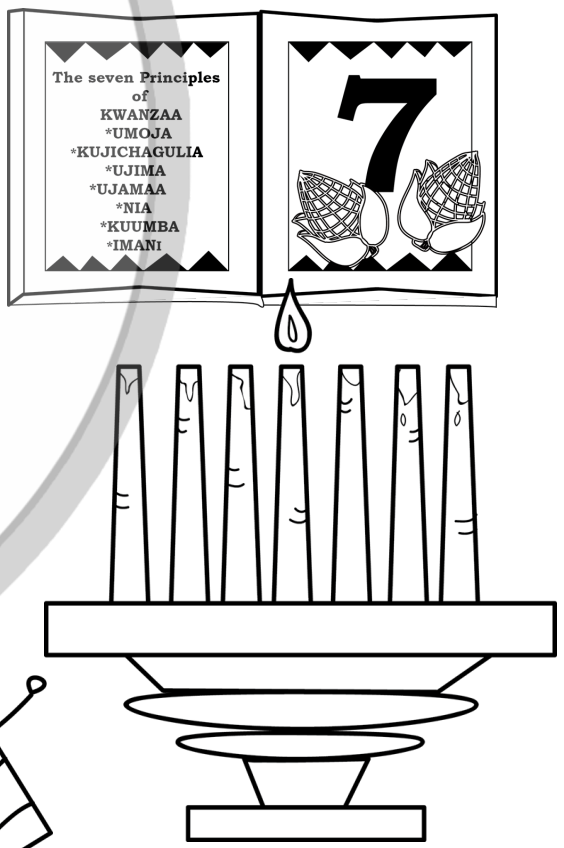
Kwanzaa

Kwanzaa is a celebration that honors African-American beliefs and traditions. It begins the day after Christmas and lasts until January 1st. After a week of celebrations, the holiday ends with a big feast and and exchanging of gifts.

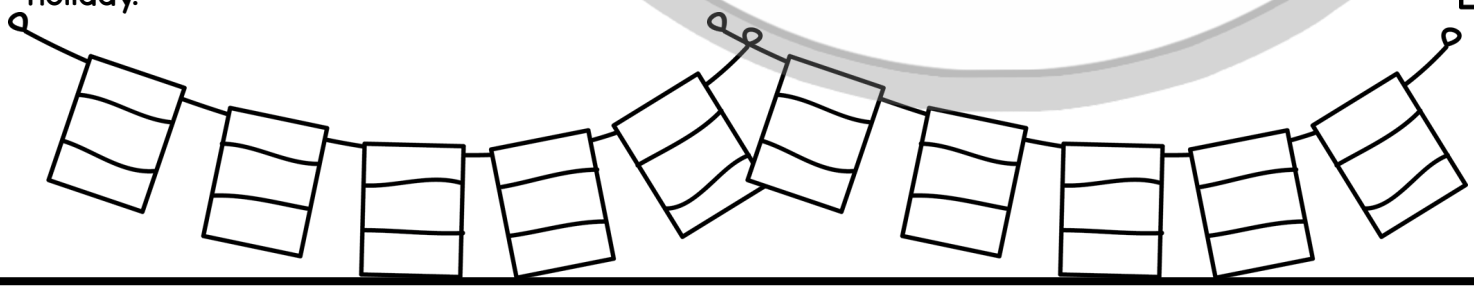


Dr. Karenga, a college professor of African studies, introduced the holiday in California around 1965. His idea was to create a celebration that unites the African-American community. The word Kwanzaa means "first fruits" or "harvest." People enjoy the holiday with singing, drumming, dancing, storytelling, crafting, and feasting. One common tradition of Kwanzaa is gift giving. Families focus less on spending money on gifts in order to avoid making the holiday mostly about gifts. Instead, people often make presents for loved ones.

There are seven principles that represent African values and are central to the celebration of Kwanzaa. Each day the family focuses on a different value. A candle is lit on a holder called a kinara. It holds seven candles, one for each day, and is a lot like a Jewish menorah. On the first day, families enjoy a sense of unity which is discussed throughout the week. On the final day of Kwanzaa, people gather to share an African feast, called karamu.



Kenisha and Monique Williams live in Atlanta, Georgia with their adopted children, Arianna, age 8, and Cassie, age 9. They are proud to celebrate Kwanzaa with their friends and families. Your task is to help the family prepare for the holiday.



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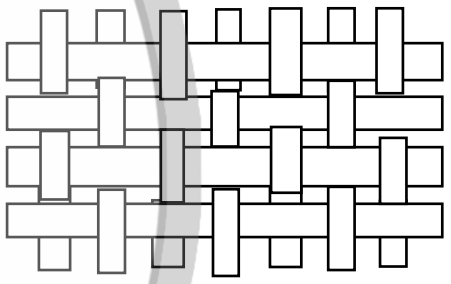
Crafting - 2

Kenisha loves doing crafts with her daughters. This year they will weave placemats for their table to use on the final night of Kwanzaa. Placemats represent the traditional foundation for people. It reminds them that they can stand tall to build their lives.

3. Ariana drew a sketch of a placemat she wants to make. She wants it to look like a kinara. Complete the table below to help her determine how many strips of each color she needs so she can make different quantities of placemats.

STRIPS	one	five	ten	fifteen	twenty
Gold	4	20			
Red	3		30		
Black	1			15	
Green	3				60



4. Use the completed table to calculate how many strips of each color Kenisha and Ariana will need to make the correct number of placemats for their Kwanzaa feast. Show with equations.

GOLD =

RED =

BLACK =

GREEN =

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Chinese New Year

Lunar New Year is the most important holiday celebrated in Asian countries including China, South Korea, Vietnam, and Singapore. The celebration is also known as the Chinese New Year. It is celebrated sometime in January or February and depends on the Chinese zodiac calendar. The zodiac calendar has a cycle of 12 years. Each year honors one of the 12 zodiac animals: rat, ox, tiger, rabbit, dragon, snake, horse, goat, monkey, rooster, dog, and pig.

The celebration is filled with many festivities and lasts for two weeks. The focus of the holiday is to celebrate a year of hard work and to look forward to a lucky and prosperous year ahead. It is thought that a good start to the lunar year will lead to a lucky year.

Gifts of money are exchanged during Chinese New Year in red envelopes. Red is a symbol of hope and luck. Eating fish is a must for the celebrations. It is believed that fish will bring a surplus of money and luck in the coming year. Other traditional foods eaten during this celebration include dumplings, spring rolls, and rice.

At midnight on New Year's Eve, it is tradition to set off firecrackers as a way of sending out the old year and bringing in the new one. Two traditional dances are performed on New Year's Day. One is the dragon dance, and the other is the lion dance. Families visit temples on New Year's Day and believe it will help smooth the way for a good year ahead.



Let's meet the Wei family. Mr. and Mrs. Wei live in Portland, Oregon and have two children, Kevin, who is 13, and Ruby, who is 8. You will help the Wei family plan for this year's Chinese New Year.

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Zodiac Calendar

The Chinese believe that each zodiac animal has specific personality traits, and that people will have similar personalities to the zodiac animal of their birth year. People do not celebrate their actual birthday, but instead, they celebrate the year they were born.

1. Ruby will turn 8 years old this year just before Chinese New Year. She was born in the Year of the Snake. How many years will it be before she celebrates the Year of the Snake for the third time since she was born? Show how you know.

2. Kevin was born in the Year of the Dragon. He will be thirteen years old when his family celebrates this new year. He thinks there are twenty-three years before he celebrates the Year of Dragon for the third time since his birth. Is he correct? Explain.

3. Mr. and Mrs. Wei were born in the same year, the Year of the Tiger. This year they will celebrate the Year of the Tiger again. Circle two possible ages Mr. and Mrs. Wei could be this year. How do you know?

a. 36 b. 44 c. 38 d. 48 e. 40 f. 42



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New Year's Day Parade - 1

The Wei family loves to go to downtown Portland for their annual Chinese New Year Parade. This year's parade is on a Sunday and begins at 2:30 pm. Help them plan their trip to the city.

1. Mrs. Wei wants to arrive downtown with enough time to park at her office and find a good spot for viewing the parade. It usually takes her two-thirds of an hour to drive downtown for work. She wants to arrive at the parking lot at 1:55 pm. What time should the family leave their house? Show all your steps for solving.

2. Mr. Wei thinks they should leave earlier because he knows there will be a lot of traffic. He wants to leave home at 12:55 pm. How much extra time will that give the family to drive to the parking lot at 1:55 pm? Show how you know.

3. The walk from Mrs. Wei's office usually takes about 27 minutes to get to Main Street where the parade can be seen. If they arrive at the parking lot at 1:48 pm, what time will they arrive on Main Street? Use the number line to solve.



© Julia Bachosa

Challenge 1 * Wrapping Gifts

Mr. Bradford loves to wrap gifts. He precisely measures the paper and ribbon and creates beautiful packages to put under the Christmas Tree. Help Mr. Bradford wrap the gifts this year.

1. Mr. Bradford bought a new roll of wrapping paper that is 25 feet long and 20 inches wide. He will wrap 5 clothing boxes that are 3.5 inches tall, 12 inches wide, and 23.75 inches long. He knows the paper will fit completely around each box in one direction in order to cover all the sides. If he precuts the paper for the 5 boxes and adds 1.5 inches to each length to allow for overlap, how many inches long will each piece be? Draw a sketch to illustrate your thinking.

2. Ana made her mother a bracelet for Christmas. She put it in a small jewelry box and wants to wrap it. Draw a sketch of the leftover piece of wrapping paper and label the dimensions with inches. What is the shape?

3. Mr. Bradford adds fabric ribbon to his packages. He needs 108 inches of ribbon for each box. He buys ribbon by the yard at the fabric store. He wants to buy enough ribbon to decorate the 5 boxes he wrapped, plus he wants to buy one extra yard of ribbon to be sure he has enough. How many yards of ribbon does he need to buy?



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Holiday Helping Hands

Self-Reflection: Write a reflection of your experience with this project. How did you feel about the math problems and activities? 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.

Drag the checkmark to the statement you most agree with.

I am ready for something harder | It was just right | I found this challenging

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Holiday Helping Hands

Self Reflection Rubric: Drag the circle to 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 good about my ability to complete most of 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 the math and did not need help to complete the problems.	I understand 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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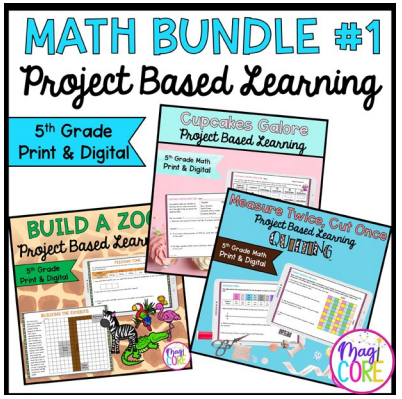

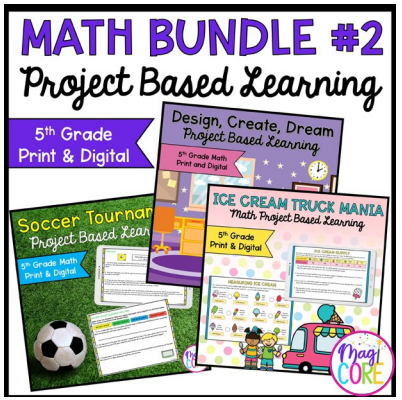

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