

BE MY VALENTINE

Geometry Project Based Learning

4th Grade Print & Google Slides

QUADRILATERAL CARDS

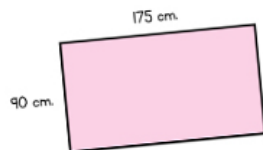
Your first step in making your valentines is cutting out the cards. You want to make a variety of different shaped cards. Answer the questions below.

You want to make 5 cards for your parents, brother, sister, and grandmother. You want each card to be in the shape of a different quadrilateral. The table below describes the quadrilateral you want to make for each person. Name the quadrilaterals. Then, use the shape  or line  tool to draw the quadrilateral.

PERSON	QUADRILA
Mom	Opposit No
Dad	One pair No
Sheila	Four Four
Jayden	Four No r

CHALLENGE #1: WORD PROBLEMS

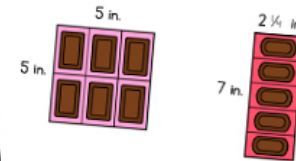
5. The tables for your class Valentine's Day party have the following dimensions. Find the perimeter and area of each table.



VALENTINE CHOCOLATES

You go to the store to buy a box of chocolates to give to your friend Taylor for Valentine's Day. Answer the questions below.

display of Valentine's Day chocolates, you knock some boxes to the floor and the length and width of each box and the area of each lid. Drag each lid to the box it belongs to. Use the textboxes to show that the boxes and lids have the same area.



SWEET TREATS

After you and your classmates exchange valentines, it's time for the class Valentine's Day party! You and your classmates have brought yummy treats to share. Answer the questions below.

1. Your classmate Ines brought in a giant chocolate chip cookie. The cookie is in a rectangular baking tray that is 12 inches long and 9 inches wide. What is the area of the cookie?



CLASSROOM VALENTINES

Your teacher gives you time in class to make valentines for each of your classmates. You want to use a variety of shapes for your valentines. Answer the questions below.

You cut out the following shapes from construction paper to make your valentines.

CHALLENGE #2: CREATE A VALENTINE

Use the line tool , protractor, and ruler to create a valentine.

TABLE OF CONTENTS

1. Teacher Directions & Standards Addressed
2. Student Directions
3. Classroom Valentines (Identifying Polygons, Perimeter)
4. Sweet Treats (Partitioning Shapes, Area)
5. Quadrilateral Cards (Quadrilaterals, Area & Perimeter)
6. Valentine's Day Chocolates (Area & Perimeter, Measuring Angles)
7. Challenge #1: Word Problems
8. Challenge #2: Create a Valentine
9. Self-Reflection & Evaluation
10. Answer Key



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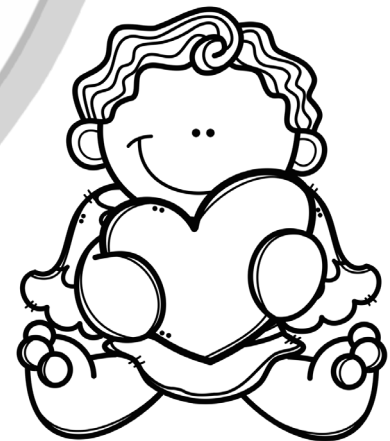
FOR THE TEACHER

BE MY VALENTINE is a project-based learning task that involves using fourth-grade math standards to celebrate Valentine's Day. It was created for students in fourth grade. The following standards are addressed:

- 4.NF.B.A Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.
- 4.MD.C.5 Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint and understand concepts of angle measurement.
- 4.MD.C.6 Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.
- 4.G.A.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.
- 4.G.A.2 Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines or the presence or absence of angles of a specified size. Recognize right triangles as a category and identify right triangles.
- 4.G.A.3 Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

DIRECTIONS:

1. Assign students to work alone or in small groups.
2. Preview the activity with your students.
3. Allow students class time to complete the activity. This can span several days.
4. Allow students an opportunity to complete extra challenge activities. (Optional)
5. Allow students to complete the self-reflection and evaluation rubric.
6. Allow students an opportunity to share their completed projects.



BE MY VALENTINE

Valentine's Day is here! On this day meant to celebrate those you love, you want to make valentines to give to your classmates, friends, and family!

Here are your tasks:

- Read through the entire packet before beginning.
- Identify characteristics of 2D figures to make valentines for your classmates for your class Valentine's Day party
- Decorate your valentines using points, lines, rays, line segments, parallel and perpendicular lines, and acute, obtuse, and right angles
- Calculate the area and perimeter of your polygon valentines
- Partition sweet treats to share with your classmates at the Valentine's Day party
- Identify and describe quadrilaterals to make valentine cards for your family
- Use geometry, area, and perimeter to choose boxes of chocolates for your loved ones
- Complete the challenge pages. (Optional)
- Complete the self-reflection and evaluation rubric.

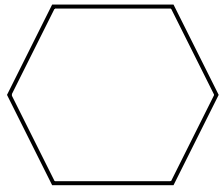
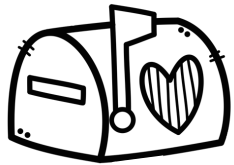


CLASSROOM VALENTINES

3. You want to give certain valentines to specific classmates. Below is the name of each classmate and the polygon you want them to receive. Draw a line to between each classmate's mailbox and the correct polygon.

JOSH

Pentagon



CLARA

Hexagon



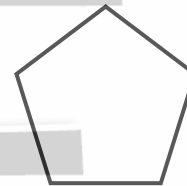
KYLIE

Heptagon



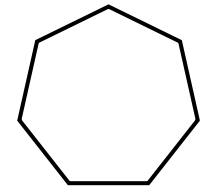
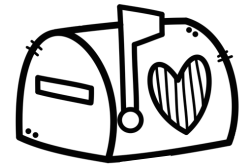
TYSON

Triangle



AGATA

Octagon



4. Draw an example of each of the irregular polygons named below.

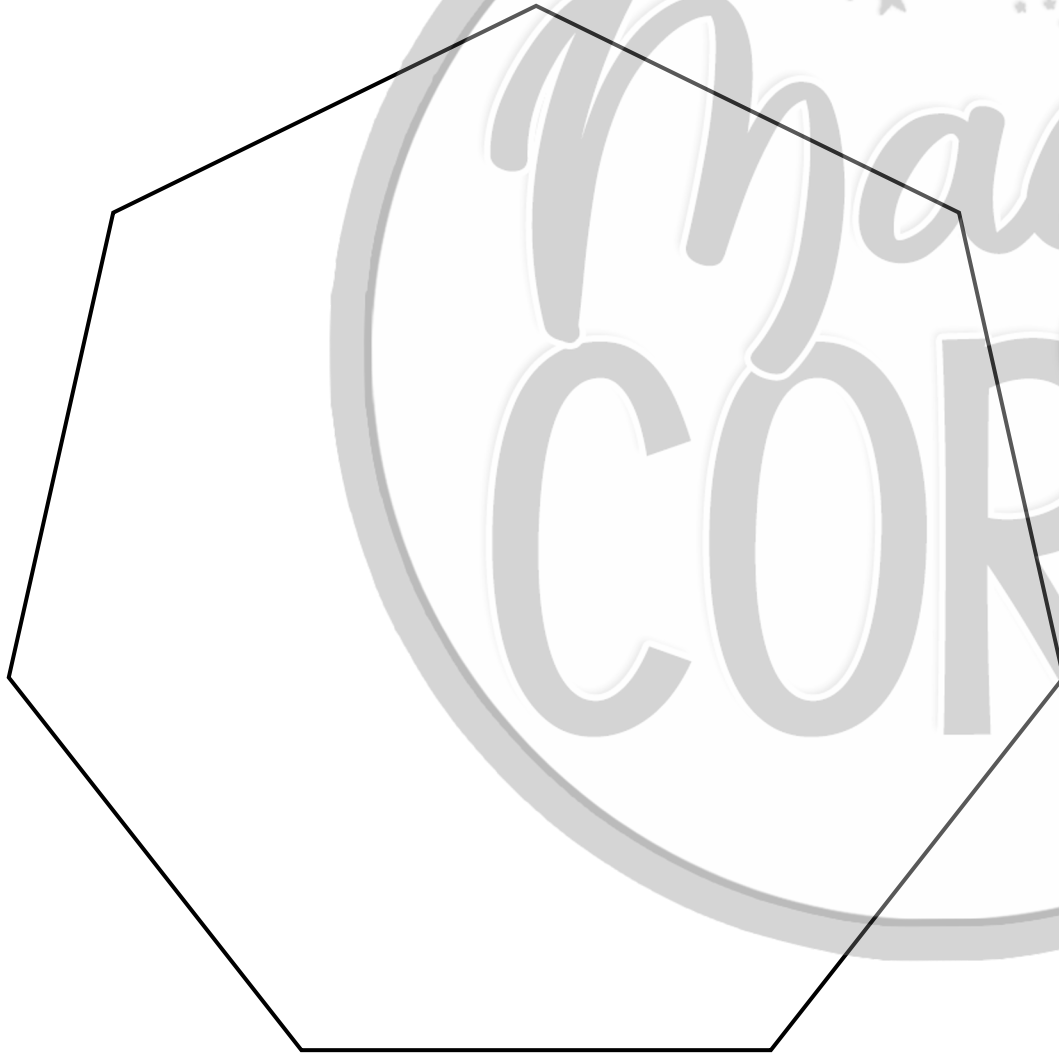
IRREGULAR OCTAGON

IRREGULAR PENTAGON

IRREGULAR HEXAGON

CLASSROOM VALENTINES

5. You are making the valentine below for your classmate Kylie and you want to decorate it by drawing a design on it. Create a design on the card. Be sure to include all the elements listed in the checklist.

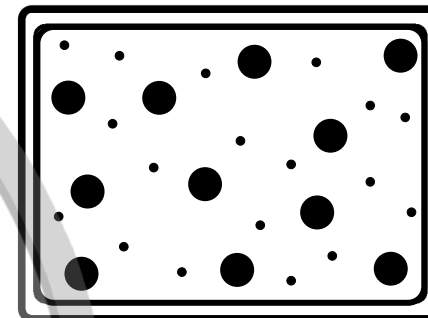
A clipboard with a checklist of geometric elements to be included in the valentine design. The clipboard has a black border and a silver clip at the top. The checklist is as follows:

- ☐ 3 points
- ☐ 4 line segments
- ☐ 1 line
- ☐ 1 ray
- ☐ 2 acute angles
- ☐ 2 obtuse angles
- ☐ 2 right angles
- ☐ 1 set of perpendicular lines
- ☐ 1 set of parallel lines

SWEET TREATS

After you and your classmates exchange valentines, it's time for the class Valentine's Day party! You and your classmates have brought yummy treats to share. Answer the questions below.

1. Your classmate Ines brought in a giant chocolate chip cookie. The cookie is baked in a rectangular baking tray that is 12 inches long and 9 inches wide. What is the area of the cookie?



2. Ines cuts out the first serving of cookie that measures 2 inches by 3 inches and gives it to Jason. What is the area of the remaining cookie?
3. There are 11 students in the class. If every student receives a cookie that is 2 inches by 3 inches, what is the area of the cookie that is left over?
4. How many students could have a second cookie from the leftovers?

QUADRILATERAL CARDS

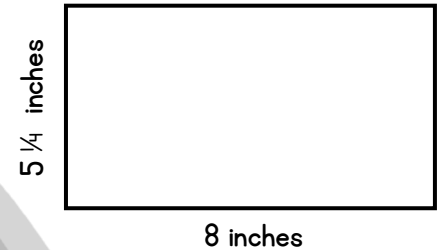
Your first step in making your valentines is cutting out the cards. You want to make a variety of different shaped cards. Answer the questions below.

- I. You want to make 5 cards for your parents, brother, sister, and grandmother. You want each card to be in the shape of a different quadrilateral. The table below describes the quadrilateral you want to make for each person. Name the quadrilaterals. Then, draw them.

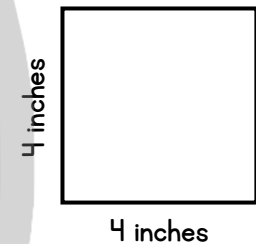
PERSON	QUADRILATERAL DESCRIPTION	QUADRILATERAL NAME	QUADRILATERAL PICTURE
Mom	Opposite sides are equal. No right angles.		
Dad	One pair of parallel sides. No right angles.		
Sheila	Four equal sides. Four right angles.		
Jayden	Four equal sides. No right angles.		
Grandma	Opposite side are equal. Four right angles.		

QUADRILATERAL CARDS

5. You want to cover the rectangle card with glitter. The bottle of glitter says there is enough to cover 45 square inches. Do you have enough glitter for the rectangle card? Explain.



6. You want to cover the square card with some fancy lace. You know you have 90 square centimeters of lace, but the dimensions of the square card are in inches. Since you also know that one inch is equal to $2\frac{1}{2}$ centimeters, find the dimensions of the square in centimeters. Then, determine if you have enough lace to completely cover the card.

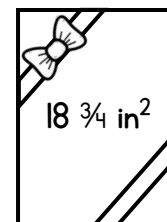
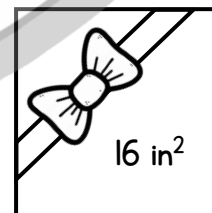
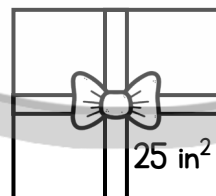
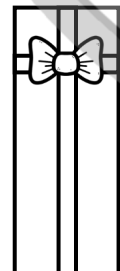
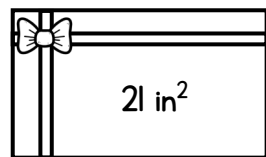
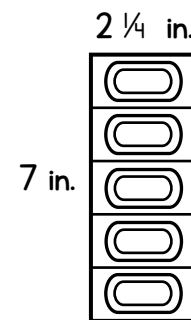
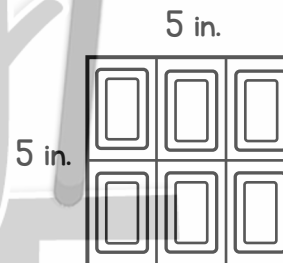
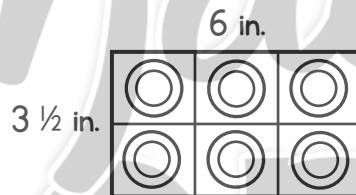
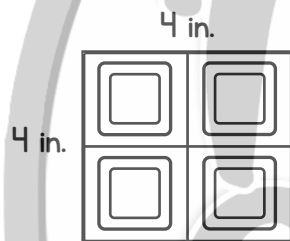
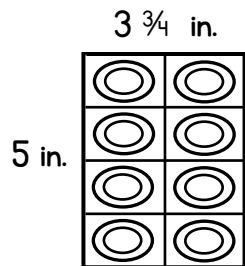


7. You have 50 inches of red ribbon. You want to run the ribbon around the edges of both the rectangle and the square card. Do you have enough ribbon? Explain.

VALENTINE CHOCOLATES

You go to the store to buy a box of chocolates to give to your friend Taylor for Valentine's Day. Answer the questions below.

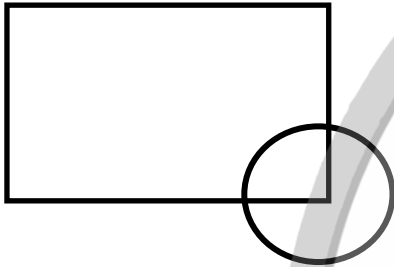
1. As you're browsing the display of Valentine's Day chocolates, you knock some boxes to the floor and the lids fall off. You know the length and width of each box and the area of each lid. Draw a line between each box of chocolates and the lid with the same area. Show your work to prove that the boxes and lids have the same area.



VALENTINE CHOCOLATES

The assortment of chocolates you purchased are shown below. Use protractor to measure the circled angle on each chocolate. Write the angle measurement for each.

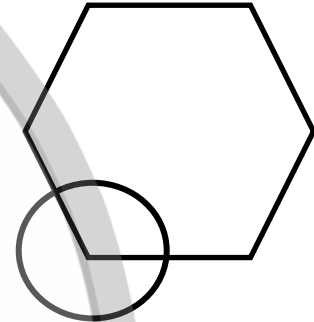
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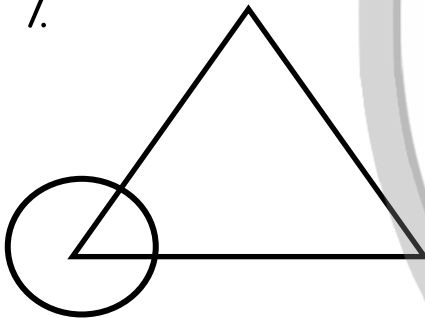
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6.



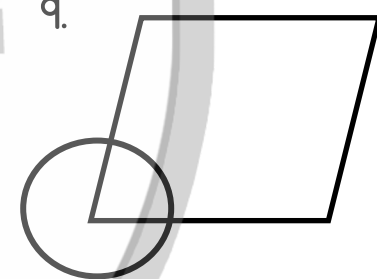
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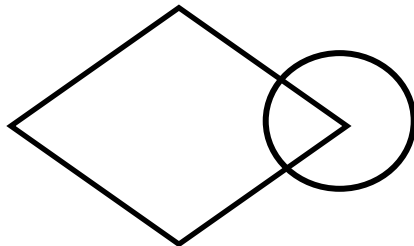
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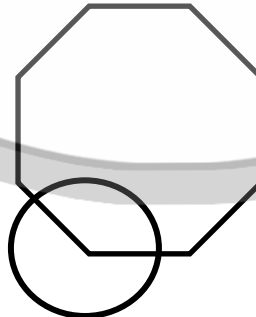
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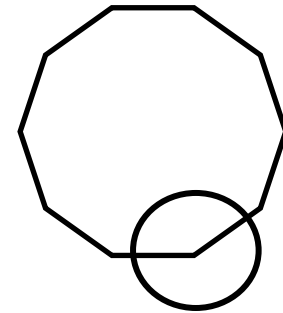
10.



11.



12.



CHALLENGE #1: WORD PROBLEMS

5. The tables for your class Valentine's Day party have the following dimensions. Find the perimeter and area of each table.



6. What is the perimeter of each table in meters? Remember that 1 meter = 100 centimeters.
7. Round the areas you found in question #5 to the nearest thousand. Use these numbers to find the area of each table in square meters. 1 square meter = 10,000 square centimeters.

CHALLENGE #2: CREATE A VALENTINE

Follow the directions to create a Valentine's Day card. The first line at the bottom is done for you. Use a ruler and a protractor to measure your angles and draw lines as needed. After you have finished the shape of your card, decorate it and add text to share with a friend.

Draw a 3-inch line segment extending off the left end of the bottom line segment at 115°

Perpendicular to the line segment you just drew, draw a $4\frac{1}{4}$ -inch line segment.

Draw a $1\frac{1}{2}$ -inch line segment upwards from the previous line segment at an angle of 150°

Connect this line segment with the right end of the bottom line segment.

How long is this final line segment? _____

What is the angle it forms with the bottom line segment? _____

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

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 or shade 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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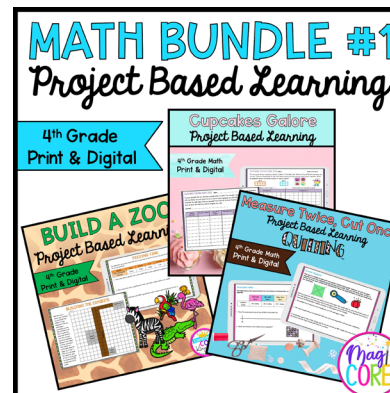
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