

BE MY VALENTINE

Geometry Project Based Learning

5th Grade Print & Google Slides

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 project.
- Identify characteristics of Valentine's Day party.
- Decorate your valentine.
- Calculate area and perimeter.
- Partition sweet treats.
- Identify and describe angles.
- Use volume to choose boxes.
- Complete the challenge project.
- Complete the self-reflection.

SWEET TREATS

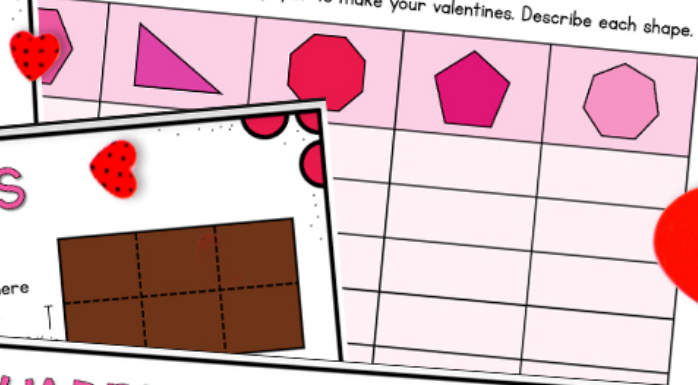
5. Your teacher, Ms. O'Connell, brought in bars of chocolate for the students. She gives one bar of chocolate to each table to share. There are six students at your table, and you have to share the chocolate bar equally as shown. What is the area of the chocolate bar?

6. What is the total area of the chocolate bar?

CLASSROOM VALENTINES

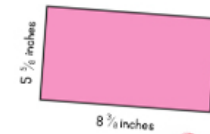
Your teacher gives you time in class to make valentines for each of your classmates. You want to use a variety of shapes from construction paper to make your valentines. Describe each shape.

Describe each shape.



QUADRILATERAL CARDS

5. You want to cover the rectangular card with glitter. The bottle of glitter says there is enough to cover 50 square inches. Do you have enough glitter for the rectangular card? Explain.



VALENTINE CHOCOLATES

You are going to the store to buy a box of chocolates to give to your friend Taylor for Valentine's Day. Below are 6 boxes of chocolates. You want to buy the biggest box for Taylor. Calculate the volume of each box.



CHALLENGE #2: CREATE A VALENTINE

Follow your friend's directions to create a valentine.



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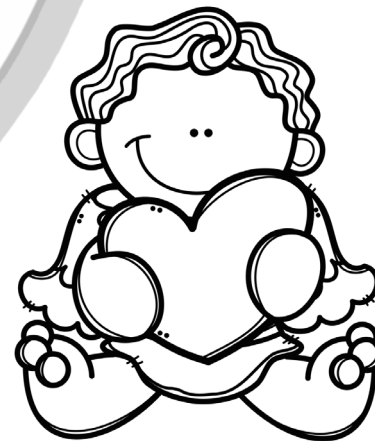
FOR THE TEACHER

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

- 5.NBT.B.7 Add, subtract, multiply, and divide decimals to hundredths.
- 5.NF.B.4.B Multiply fractional side lengths to find areas of rectangles.
- 5.NF.B.6 Solve real-world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
- 5.MD.A.1 Convert among different-sized standard measurement units within a given measurement system.
- 5.MD.C.3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement.
- 5.MD.C.4 Measure volume by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
- 5.MD.C.5 Relate volume to the operations of multiplication and addition and solve real-world and mathematical problems involving volume.
- 5.G.B.4 Classify two-dimensional figures in a hierarchy based on properties.

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 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 volume to choose boxes of chocolates for your loved ones
- Complete the challenge pages. (Optional)
- Complete the self-reflection and evaluation rubric.

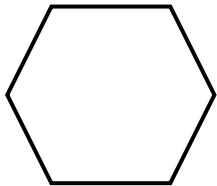
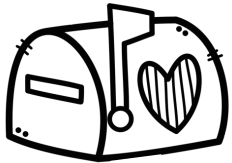


CLASSROOM VALENTINES

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



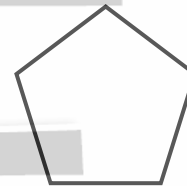
KYLIE

Heptagon



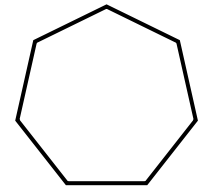
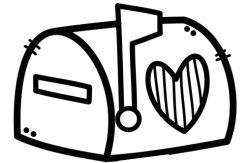
TYSON

Triangle



AGATA

Octagon



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

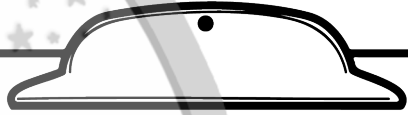
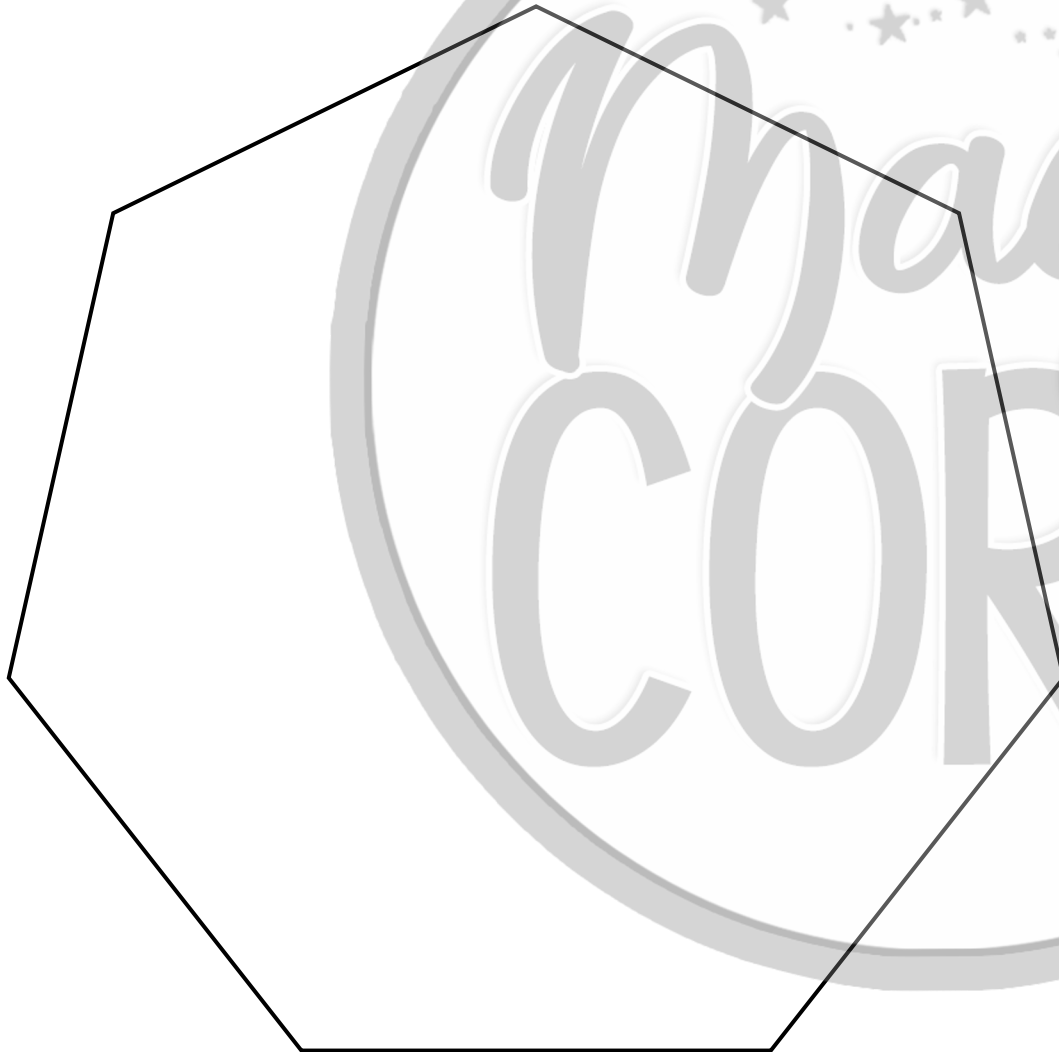
IRREGULAR OCTAGON

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.

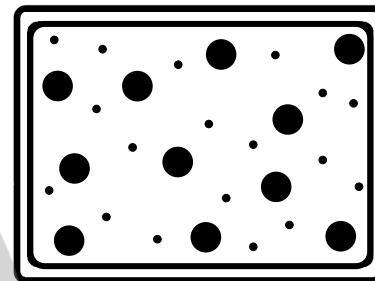


- ☐ 3 points
- ☐ 4 line segments
- ☐ 1 line
- ☐ 1 ray
- ☐ 2 acute angles
- ☐ 2 obtuse angles
- ☐ 2 right angles
- ☐ 1 set of perpendicular lines
- ☐ 1 set of parallel lines

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 $12\frac{1}{2}$ inches long and $9\frac{3}{4}$ inches wide. What is the area of the cookie?



2. Ines cuts out the first serving of cookie that measures $2\frac{1}{2}$ inches by $3\frac{1}{4}$ 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 $2\frac{1}{2}$ by $3\frac{1}{4}$ 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.

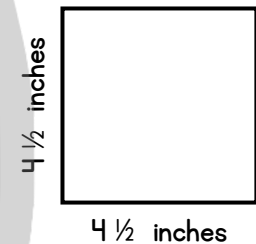
PERSON	QUADRILATERAL DESCRIPTION	QUADRILATERAL NAME	QUADRILATERAL PICTURE
Mom	Opposite sides are equal. No right angles.		
Dad	One pair of parallel sides. No right angles.		
Sheila	Four equal sides. Four right angles.		
Jayden	Four equal sides. No right angles.		
Grandma	Opposite side are equal. Four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

QUADRILATERAL CARDS

5. You want to cover the rectangular card with glitter. The bottle of glitter says there is enough to cover 50 square inches. Do you have enough glitter for the rectangular card? Explain.



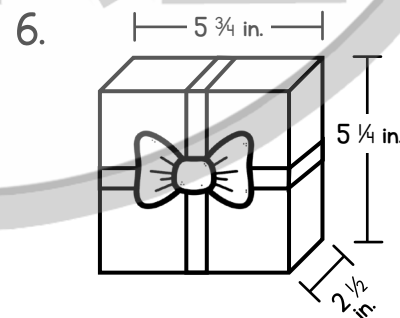
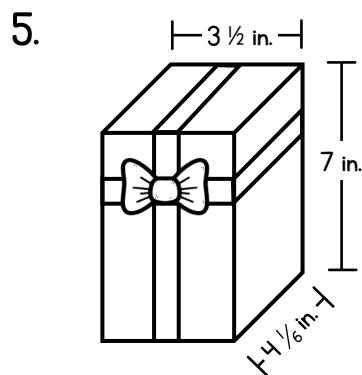
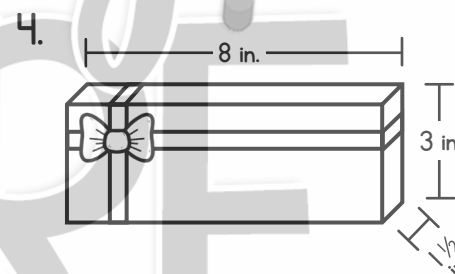
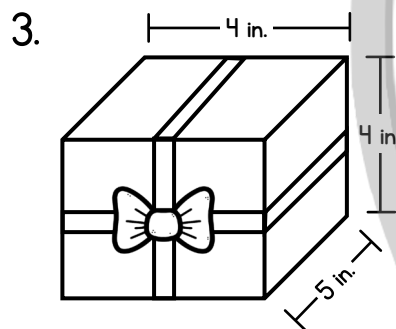
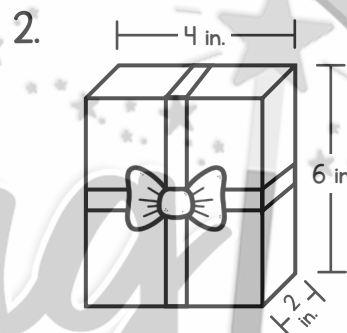
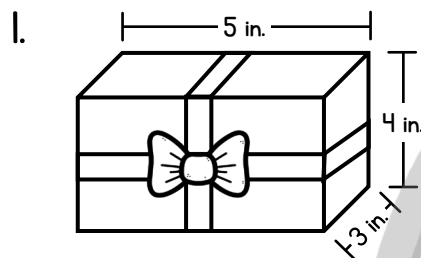
6. You want to cover the square card with some fancy lace. You know you have 125 square centimeters of lace, but the dimensions of the square card are in inches. Since you also know that one inch is equal to 2 $\frac{1}{2}$ centimeters, find the dimensions of the square in centimeters. Then, determine if you have enough lace to completely cover the card.



7. You have 48 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.

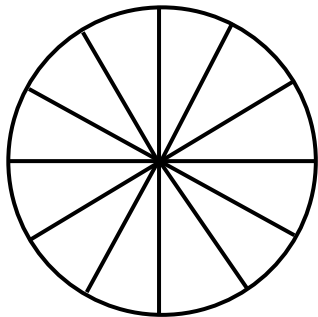
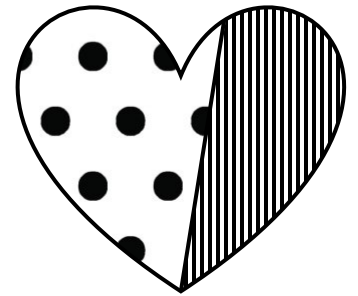
VALENTINE CHOCOLATES

You go to the store to buy a box of chocolates to give to your friend Taylor for Valentine's Day. Below are 6 boxes of chocolates. You want to buy the biggest box for Taylor. Calculate the volume of each box.



CHALLENGE #1: WORD PROBLEMS

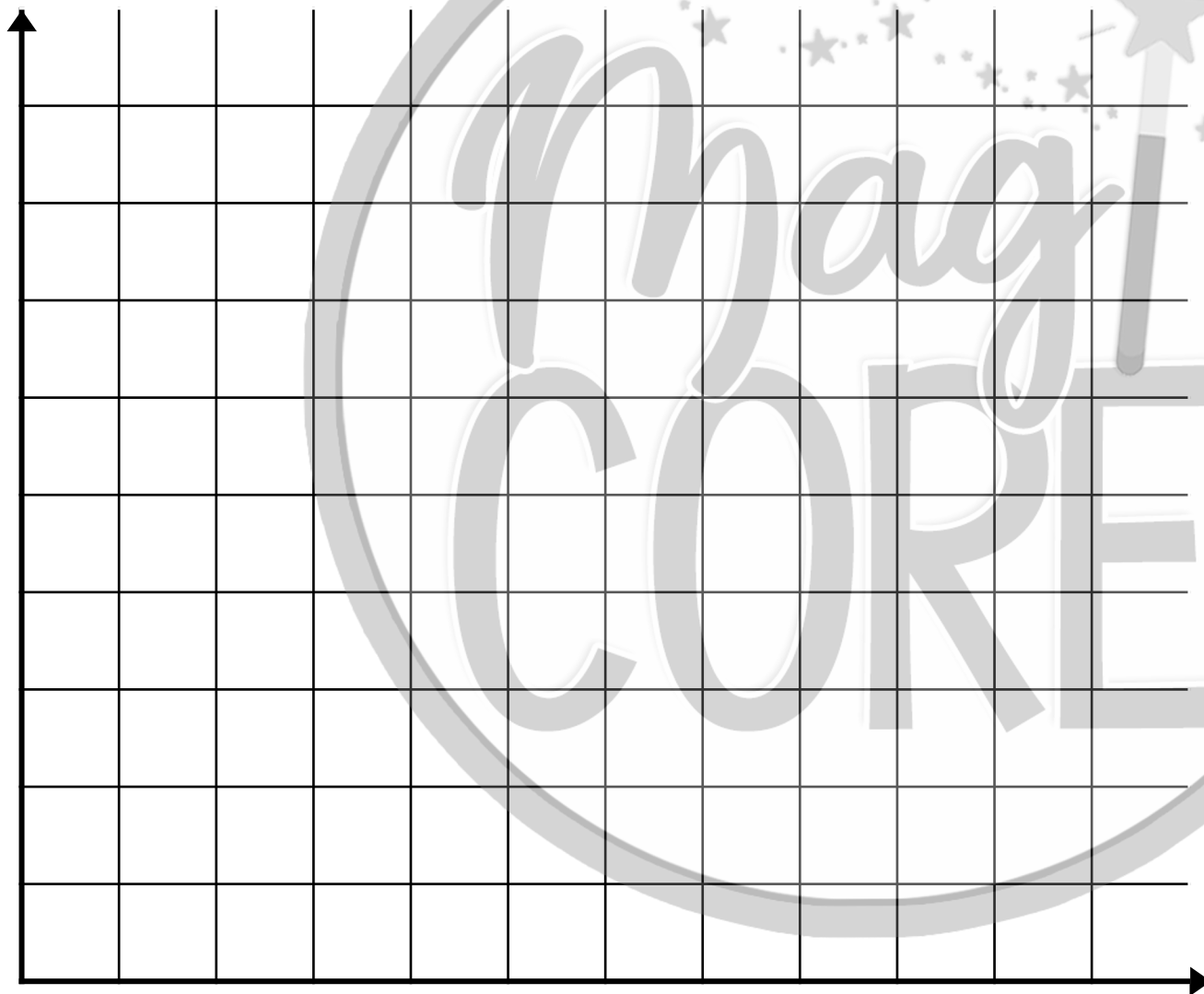
1. Your mom gave you a Valentine's Day card with an area of 24 square inches. The card is a rectangle that is 2 inches longer than it is wide. What are the dimensions of the card?
2. The card your mom gave you was inside an envelope. The envelope is one inch longer and one inch wider than the card. What is the approximate perimeter of the envelope in centimeters? One inch is about 2.5 centimeters.
3. The card you got from your brother, Jayden, is in the shape of a heart as shown. The bottom point of the heart is a 96° angle. The striped angle within the point of the heart is 35° . What is the measurement of the polka dot angle within the point? Explain.



4. Your sister, Sheila, made you a circular card as shown. It is divided into twelfths. What is the measurement of the central angle of each part? How do you know?

CHALLENGE #2: CREATE A VALENTINE

Follow the directions to create a Valentine 's Day card. Draw dots to plot the points at the coordinates listed. Label each point with the correct letter. Then, use a ruler to draw line segments connecting the points in order.



POINT	COORDINATES
A	(0, 2)
B	(3, 7)
C	(6, 9)
D	(8, 5)
E	(10, 5)
F	(10, 1)
G	(4, 0)
H	(0, 2)

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

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 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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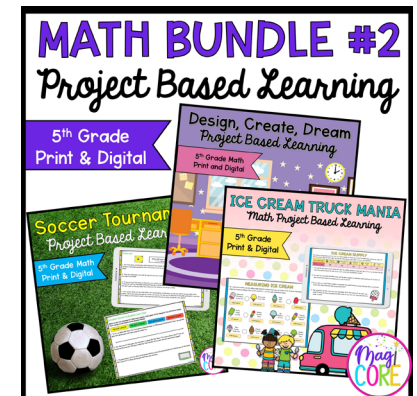
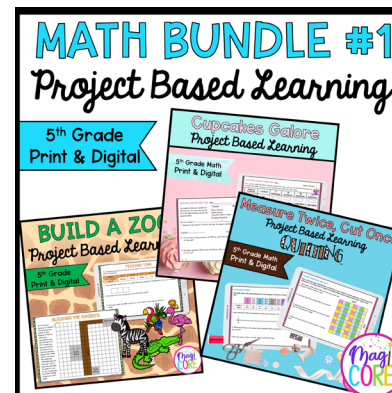
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