

Time Capsule

A STEAM Project

This project was created during COVID19 as a way to have children remember the moment during these historic times.

Link to video version of the lesson plan that goes into detail on each of the steps:
bit.ly/35QU3NB

Materials Needed

- Centimeter grid paper (print in actual size)
- Cardstock or old file folder (not needed if grid paper is printed on cardstock)
- Net of a rectangular prism (ex: flattened cereal box with 6 faces)
- Transparent tape
- Scissors
- Glue (white or glue stick)
- Object smaller than 6cm x 6cm x 6cm*
- Coloring pens, pencils

* This project can be done with a larger object by taping the centimeter grid paper together to make a larger sheet. Adapt the lesson as necessary.

Vocabulary

area : the measure of the number of square units needed to cover the surface of a plane figure

cube : a prism made up of six squares

edge : a line segment where two faces of a space figure meet

face : a flat surface of a space figure

net : a 2-dimensional representation of a 3-dimensional object

perimeter : the total distance around the edge of a figure

polygon : a closed plane (2-dimensional) figure made up of three or more line segments

polyhedron : a space (3-dimensional) figure with faces that are polygons

prism : a solid made up of two congruent bases and polygonal sides

rectangle : a parallelogram with four right angles and two sets of parallel sides

rectangular prism : a solid that is made up of six rectangular faces

solid figure : a shape having volume and surface area; a 3-dimensional object (the 3 dimensions are length, width, height)

square : a rectangle with all sides the same length

surface area : the number of square units needed to cover the surface of a 3-dimensional object

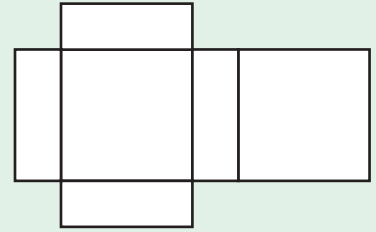
volume : the amount of space something takes up

The Project

1 Tell your child(ren) that they will be designing a box that will become a time capsule for a special item.

2 Have them help you find a box (such as a cereal box). Discuss that in math we call this box a rectangular prism. A rectangular prism is a solid made up of six rectangular faces.

See if you can find other rectangular prisms in your house.
Note: A cube is a rectangular prism with all faces made up of squares. A square is a special rectangle.



3 Have an adult cut the box on the edges so that it has 6 faces and can lay flat. We call this a *net* - a 2-dimensional representation of a 3-dimensional object. This will be the pattern you use when you design your own net.

4 Choose (or make) an object that reflects our time in history. This is the object that will be placed inside the time capsule.

5 Using the centimeter graph paper, design the net for the box of your object. Be sure to take into consideration if there will be any “packing material” included in the box. Use the net of the box in step 2 as a guide to make sure you end up with six faces.

Cut out your net.

6 **Grades 2 - 5:**
What is the total area of your net?
How can you figure out the answer without counting each square?

7 Glue the net onto cardstock keeping the grid squares face-up then cut out again. Gluing onto cardstock will make the box more durable. (**Note:** If the centimeter paper was printed on cardstock, skip this step.)

8

Decorate the “blank” side of your net using colored pencils/pens. If you like, you can include the date when the time capsule can be opened.

9

Fold the net into a rectangular prism and tape the edges, leaving the lid untaped.

Grades 4-5:

How can you determine the volume of your rectangular prism?
Can the grid squares inside your box be helpful?

Challenge!

Can you come up with a formula for the volume of a rectangular prism?

10

Fill out the time capsule slip.

11

Place your object, time capsule slip and any packing material in your box.

12

Seal the lid with clear tape.

13

Wait 5, 10...years. :-)

Additional Resources

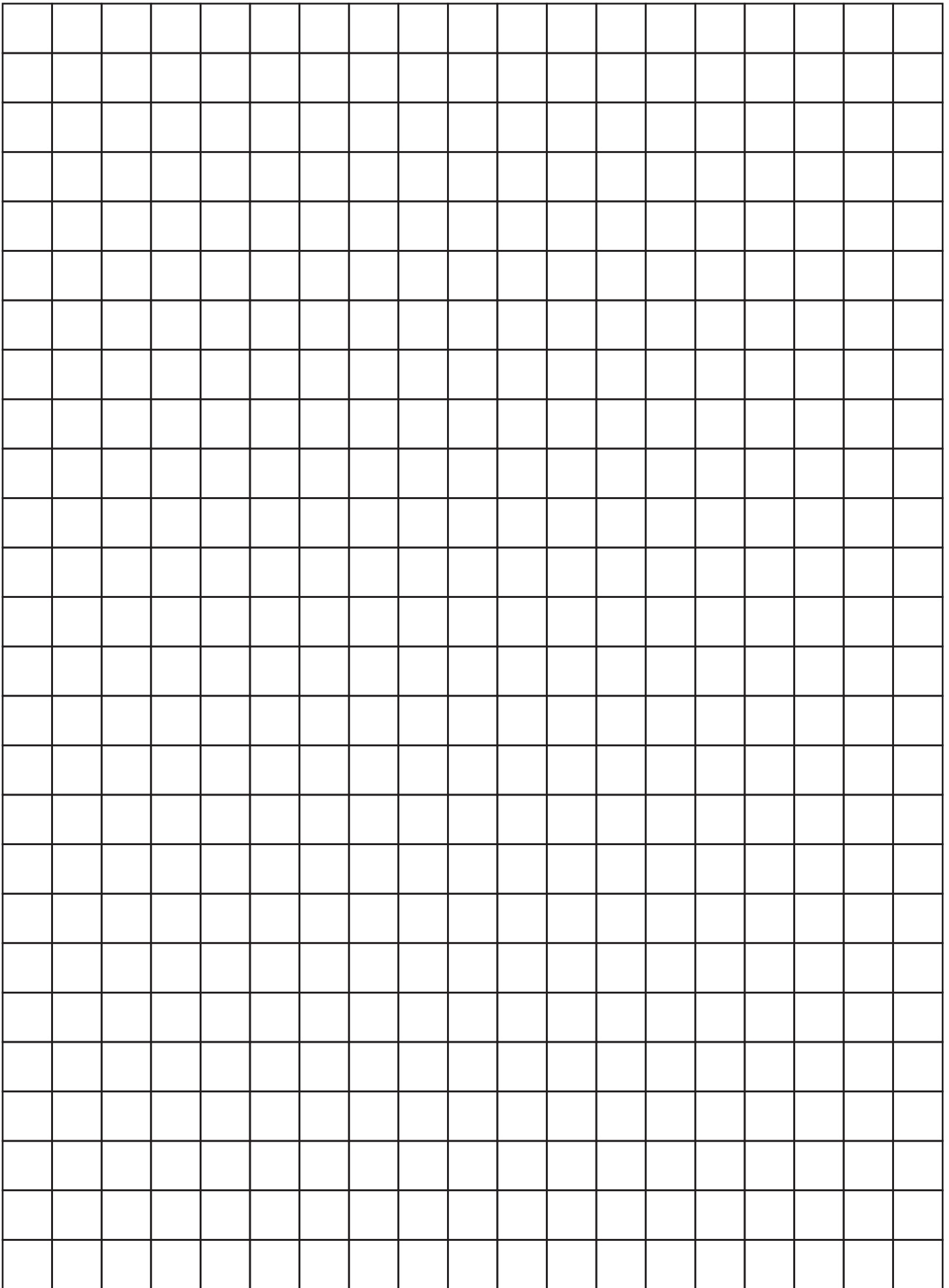
Surface Area and Volume Formulas for Rectangular Prisms Video:

<https://www.youtube.com/watch?v=ZIJYOejVuyM&t=982s>

Extension Activity: The Perfect Box.

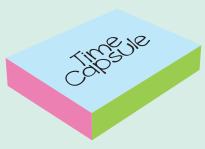
Includes section to conduct a cost-benefit analysis:

<https://familymathnight.com/projects/perfectbox.php>





Cut along the dashed lines.



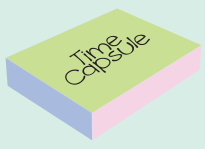
I chose this item for my time capsule because _____

Today's date is _____



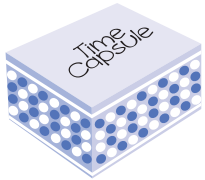
I chose this item for my time capsule because _____

Today's date is _____



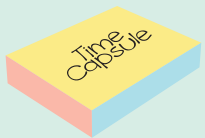
I chose this item for my time capsule because _____

Today's date is _____



I chose this item for my time capsule because _____

Today's date is _____



I chose this item for my time capsule because _____

Today's date is _____



I chose this item for my time capsule because _____

Today's date is _____