

Subject (grade): Workplace and Apprenticeship Math 20 (WA 20)

Lesson Title: Finding Surface Area & Volume of your Place.

Teacher: Nicholas Ciarciaglini (Mr. Ciarciaglini)

Desired Results:

Objectives/Outcome(s)/Indicator(s):

20.3: Extend and apply understanding of surface area, volume, and capacity using concrete and pictorial models and symbolic representations (SI or imperial units of measurement).

(a) Observe, analyze, generalize, and explain using examples including nets, the relationships between area, surface area, and volume.

(f) Justify and apply strategies including use of personal referents to estimate the surface area and volume of 3-D objects, and the capacity of containers.

(m) Solve using a variety of strategies, including the manipulation of formulae, situational questions that involve:

- the surface area of 3-D objects, including spheres
- the volume of 3-D objects, including composite 3-D objects
- the capacity of containers.

Key Understanding ('I can' Statements):

1. I can see what shapes the structure uses.
2. I can use the formulas:
 - a. To find the area, and surface area.
 - b. To find the volume
3. I can work in my group to find the first two things.

Assessments:

In this lesson I will be assessing:

1. Assessment of Learning (*Formative*): I will be assessing the students (if they are in groups/partners) involvement in this project. Assessing teamwork, by how involve they are in doing the project (**See rubric section 6.1**). If students are by themselves, I will be assessing their focus on their own project and if they ask for help from others (**See rubric section 6.2**).
2. Assessment of Learning (*Summative*): This will be on the presentation, at the end. I will be assessing the student's ability to use Surface Area and Volume of their actual structures, and Minecraft structure, if they did find them with no mistakes or they did not attempt at finding it (**See rubric section 2**).

Procedures:

1. Now students need to find for your **Actual Structure**:
 - a. Area:
 - i. Total surface area
 - b. Volume:
 - i. Total volume
2. Now students need to find for your **Minecraft Structure**:
 - a. Area:
 - i. Total surface area
 - b. Volume:
 - i. Total volume
3. This should take one class to do.

Additional Procedures:

If students finish the first two steps for this lesson, and still have time they can recheck their calculations. If they finished that they could start researching materials the actual structure uses. Please continue to the lesson two, “Research the cost and material of your place.”

Materials:

Students will need:

- Minecraft Plans (**they should have this**)
- Laptop (if students want to do it online)
- Workbook

Yourself (teacher) will need:

- Nothing.
- Listing (if students didn’t choose a place)

Resources:

Chapter Three of the textbook: Surface Area, Volume, and Capacity.

3.1: Surface Area of Prisms

3.2: Surface Area of Pyramids, Cylinders, Spheres & Cones

3.3: Volume and Capacity of Prisms and Cylinders

3.4: Volume and Capacity of Spheres

How to go about using Microsoft Word or Google Docs to insert equations:

[Recreation in Minecraft](#)

Adaptions/ Differentiations:

Some adaptations/differentiations for this lesson:

- Allowing students to type up their plans inside Word or Docs.
- If students need more time to finish their plan give them that extra time to work on it.
- Look at examples from the textbook about finding Surface Area & Volume.

Management Strategies:

Here are some management strategies for this lesson:

- If groups are fooling around and not focusing on their plans:
 - Tell them they will need to do it individually, or
 - You can start working.