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| Math 8 Unit Overview – 3D Net Scene |
| Unit Name: | 3D Net Scene |
| Duration:  | 2.5- 3 Weeks |
| Project Idea: | Students, in groups of 2 or 3, will be assembling nets to create 3D objects, then build a ‘picture’ or scene. See Appendix A |
| IRP Standards: | Draw and construct nets for 3-D objectsDetermine the surface area of - right rectangular prisms - right triangular prisms - right cylinders to solve problems Develop and apply formulas for determining the volume of right prisms and right cylindersDraw and interpret top, front, and side views of 3-D objects composed of right rectangular prisms |
| 21st Centuary Skills Assessed and taught(will be used for effort assessment) | - Creating art by use analyzing design and mathematics- Critical Thinking- Possible use of computers to generate mathematical art- Collaboration |
| Driving Question: | How is math aesthetically beautiful?  |
| Major Products and Performances | Group: | Creating a 3D scene using paper nets (See Appendix A)Students will present their 3D scene during the science fair |
| Individual: | A booklet containing drawn nets of all the 3D objects and calculated surface area and volume |
| Entry Events/Lessons | Day 1 | Bring in photocopied nets that students will cut and assemble. Students will play around with the different shapes that they can make |
| Day 2 | Reveal the new assignment Show examples from years pastSplit students into groups |
|  | Day 3 -12 | Students work on the projectTeacher will work with groups to ensure that groups are working collaboratively, help with the math and will finish on time |
| Science Fair Day | Display all projects |
| Assessment | See Appendix B |

# Appendix A - The Assignment as Posted on the Wikipage

In groups of 2 or 3 you will be assembling nets to create 3D objects, then build a ‘picture’ or scene. Some example scenes could be Disneyland, Medieval castle, Downtown Hong Kong etc. Your project must include the following components…

- Minimum of 6 composite solids
- All necessary measurements on nets
- Volume and surface area calculations for each composite solid
- A copy of each net (hand drawn or drawn on computer, not an internet printed copy!)
- Fully constructed scene in 3D
- Written explanation: describe your scene & the 3D shapes you used to construct it. Detail the formulas you used to find the calculations for your solids.

Your project will be due in two and a half weeks. You need to include the following things…
1. Group planning sheet
2. Drawn nets (for each solid)
3. Calculations for Volume and Surface Area
4. Constructed scene
5. Presentation to class about your scene

You are not restricted to paper for this assignment! You must show your nets on paper but your 3D shapes could be constructed out of other materials. Check your group-planning sheet with Mr. Arca before you begin your building. Be creative! Have fun!

Helpful websites!
<http://www.mathsnet.net/geometry/solid/index.html>
<http://www.senteacher.org/wk/3dshape.php>

# Appendix B - Net’ Assignment Marking

Drawn nets (Math) /1

Does your group have a completed net for each 3D solid in your composite figures?

Do you include the measurements (actual or ‘to scale’)

Are they neat and drawn with a ruler?

Are they labeled? (What composite figure are they a part of and what is the name of the 3D solid?)

Calculations for Surface Area and Volume (Math) /3

Do you show all of your work?

Do you accurately calculate Surface Area and Volume?

Do you include a written explanation describing your 3D shapes and the formulas you used?

Is your work neat and organized?

Has your group challenged themselves in calculating new 3D figures?

In a separate booklet?

Added Bonus Features (Math) /1

What features of your project make it “Amazing”?

Does your overall project look professional

Did each member contribute their fair share of the work

Did you challenge yourself Mathematically and Artistically?

Constructed scene (Art Mark and Partially Math) /2

Is your scene fully constructed?

Is it original and creative?

Have you made your 3D shapes into composite figures?

Does it make sense? Is it interesting to look at?

Aesthetically pleasing? Looks Beautiful