Driving Question: *How do mechanical engineers calculate the heating or cooling requirements of a building?*

Your Task: Using the measurements from SketchUp for your composite footprint, determine the volume for each floor. Then calculate the total volume, multiplying the volume for one floor by the number of floors that you have decided for your section. Once all group members have calculated the volume for their sections, find the total volume (TV) of your skyscraper.

(Example)

***Draw an example of the shape.***

**20’**

***Copy the critical measurements from Height of floors:* 10’**

***Phase 2-b onto the figure.***

**30’**

***Include height of floors in the space indicated.***

|  |  |
| --- | --- |
| ***Name of Central geometric shape*** | **Regular Pentagon** |
| ***Volume of Shape******(include Volume formula)*** | $$V=\frac{1}{2}nas(h)$$$$V=\frac{1}{2}(5)(20)(30)(10)$$$$V=\frac{30,000}{2}=15,000 ft^{3}$$ |

***Shape #1***

***Draw an example of the shape.***

***Copy the critical measurements from Height of floors:***

***Phase 2-b onto the figure.***

***Include height of floors in the space indicated.***

|  |  |
| --- | --- |
| ***Name of Central geometric shape*** |  |
| ***Volume of Shape******(include Volume formula)*** |  |

***Shape #2***

***Draw an example of the shape.***

***Copy the critical measurements from Height of floors:***

***Phase 2-b onto the figure.***

***Include height of floors in the space indicated.***

|  |  |
| --- | --- |
| ***Name of geometric shape*** |  |
| ***Volume of Shape******(include Volume formula)*** |  |

***Shape #3***

***Draw an example of the shape.***

***Copy the critical measurements from Height of floors:***

***Phase 2-b onto the figure.***

***Include height of floors in the space indicated.***

|  |  |
| --- | --- |
| ***Name of geometric shape*** |  |
| ***Volume of Shape******(include Volume formula)*** |  |

***Total Volume***

|  |  |
| --- | --- |
| ***Add: Volume – Shape #1*** |  |
| ***Add: Volume – Shape #2*** |
| ***Add: Volume – Shape #3*** |
| ***Floor Volume for your Section*** |
| ***Multiply: Number of Floors in your Section*** |
| ***Total Volume (TV) for your Section*** |
| ***Add: TV for your group member’s Section*** |
| ***Add: TV for your group member’s Section*** |
| ***Add: TV for your group member’s Section*** |
| ***Total Volume (TV) of your Skyscraper*** |