TEST REVIEW VOLUME (Mod 18)

1.) How can we use volume in the real world?
- **IN OUR DAILY LIVES:**
  - Warehouse space
  - Truck space
  - Recipes
  - Gas tanks
  - Drink cans/bottles
  - Cleaners for Washing Machines, Pools etc.
- **IN SCIENCE**
  - Measuring Liquids, Solids or Gas
  - Density

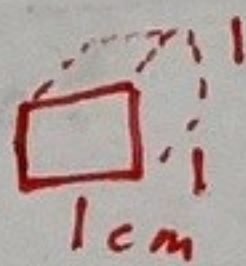2.) How do we find the volume of composite figures?
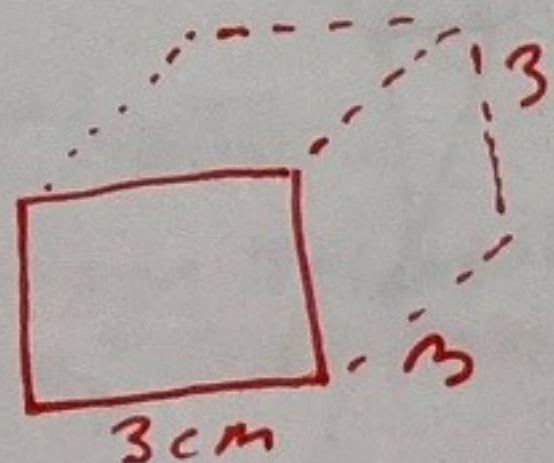- Divide the figures into cubes, pyramids, cones, cylinders, spheres.
- Add or subtract

3.) Your ice cubes are really small, 1cm for each side. What happens with the volume if you make the sides 3 times as long? Explain.
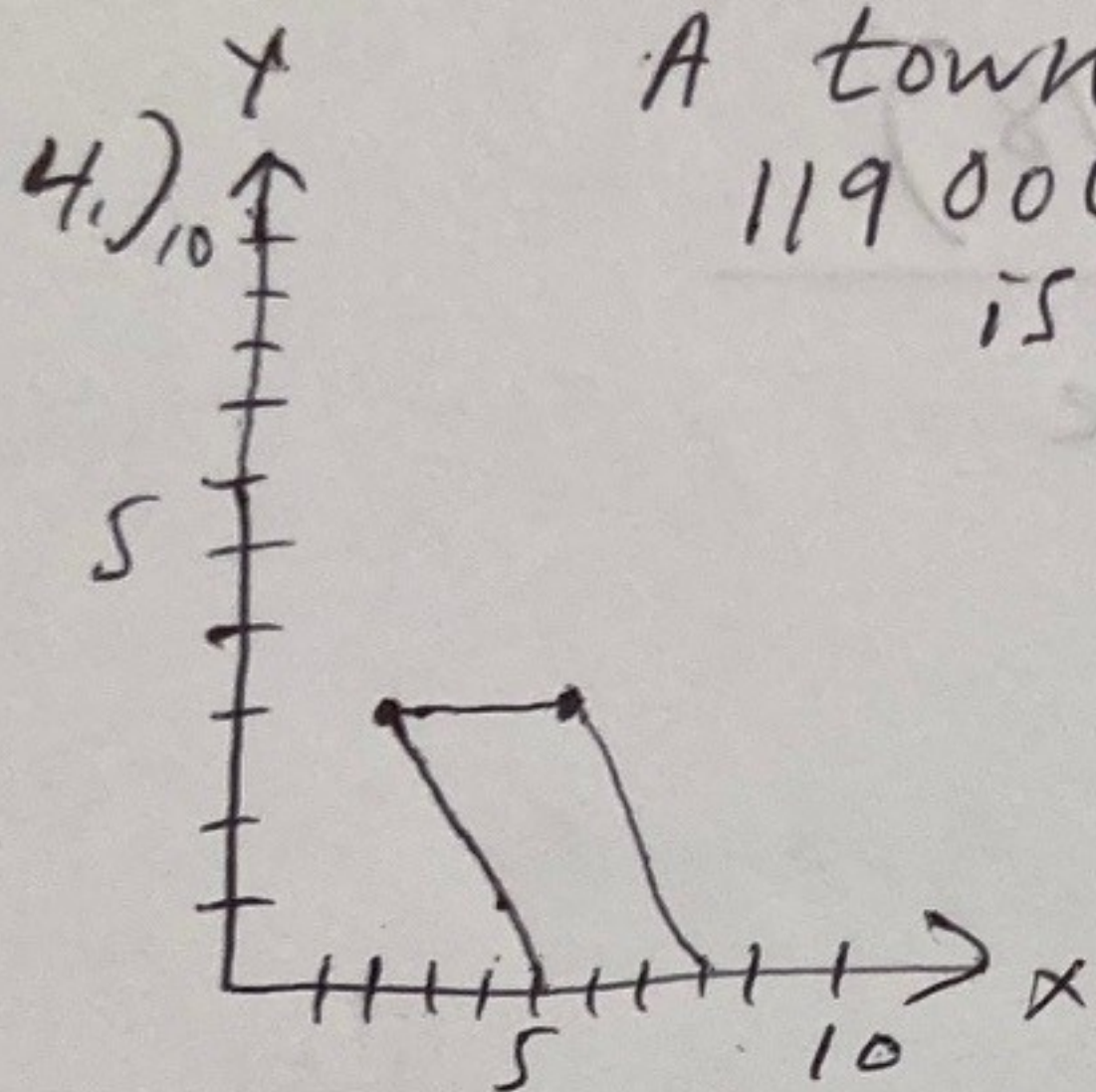
$1 \cdot 1 \cdot 1 = 1 cm^3$

$3 \cdot 3 \cdot 3 = 27 cm^3$

So volume increase $3^3 = 27$ times

4.)

A town has a population of 119 000. Each unit of the grid is one mile. What is the population density?
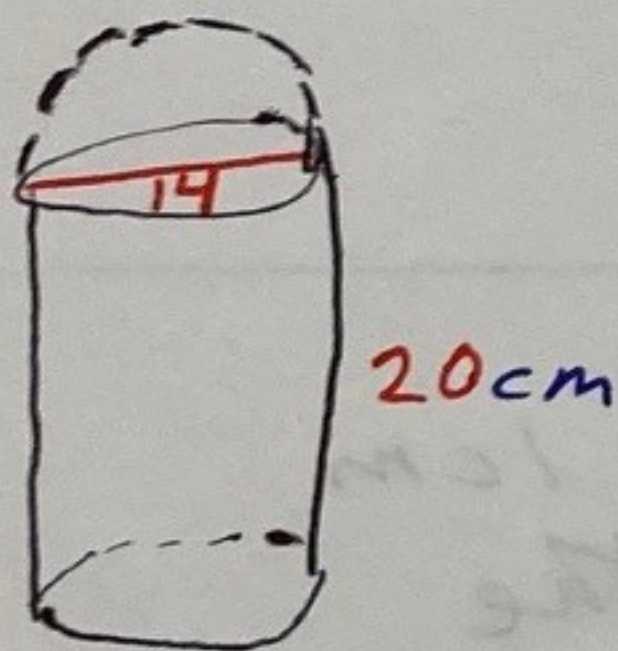
Height · Base

$3 \cdot 3 = 9\ mi^2$

(9 square miles)

Population Density:

$$\frac{119\ 000}{9} = 13\ 222/mi^2$$

5.) What is the volume of the figure?

Volume of hemisphere:

$V = \frac{2}{3} \cdot 3.14 \cdot 7^3 \leftarrow \left(\frac{2}{3} \cdot \pi \cdot r^3\right)$

$V \approx 722\ cm^3$

14

20cm

Volume of cylinder:

$V = \pi \cdot r^2 \cdot h$

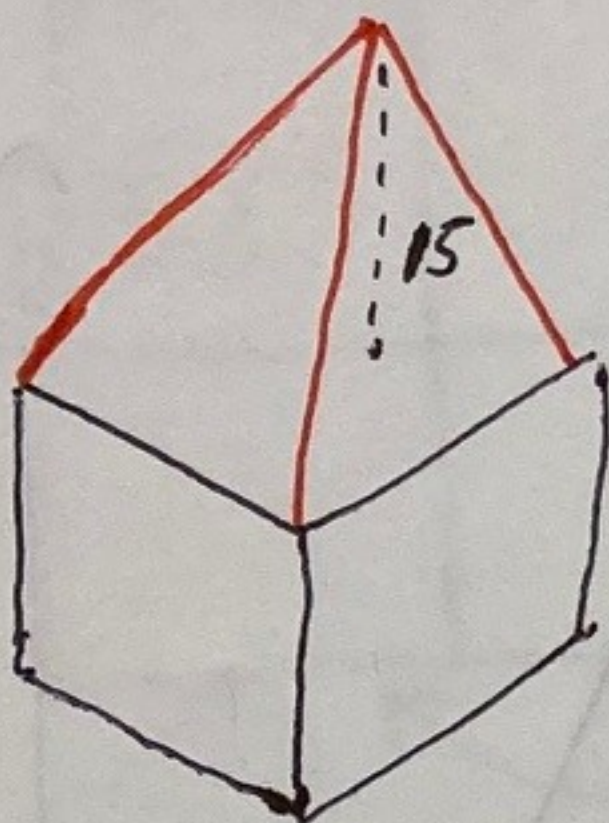$V = 3.14 \cdot 49 \cdot 20$

$V \approx 3077$

Total volume:

$722 + 3077 = 3799\ cm^3$

6.) What is the volume of the composite figure? (Pyramid on top of a cube)

The base area of both the cube and the pyramid is 100 cm^2.

15

If the area is 100, then the cube sides must all be 10.
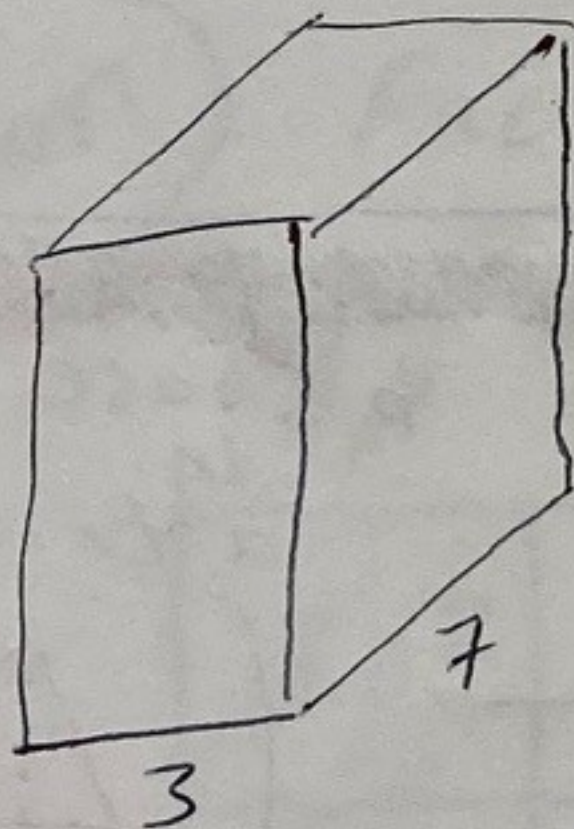
Cube: $V = s^3 = 10 \cdot 10 \cdot 10 = 1000 \text{ cm}^3$

Pyramid: $V = \frac{1}{3} Bh$

$$V = \frac{1}{3} \cdot 100 \cdot 15$$

$$V = 500 \text{ cm}^3$$

Total volume: $1000 + 500 = 1500 \text{ cm}^3$

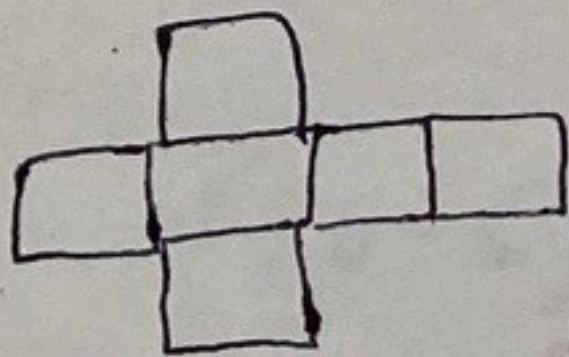**7.)** The volume of a rectangular prism is 252 cm^3. What is the height?
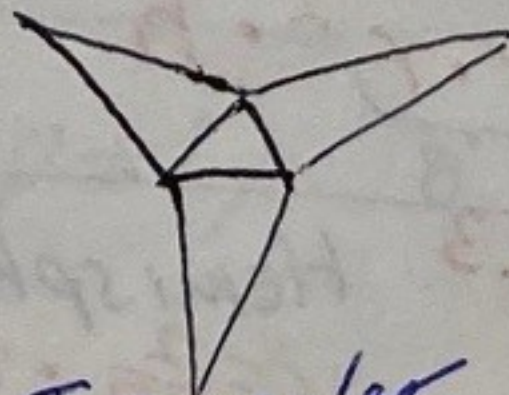
$$V = Bh$$

$$252 = 3 \cdot 7 \cdot h$$

$$252 = 21h$$

$$\frac{252}{21} = \frac{21h}{21}$$ wait

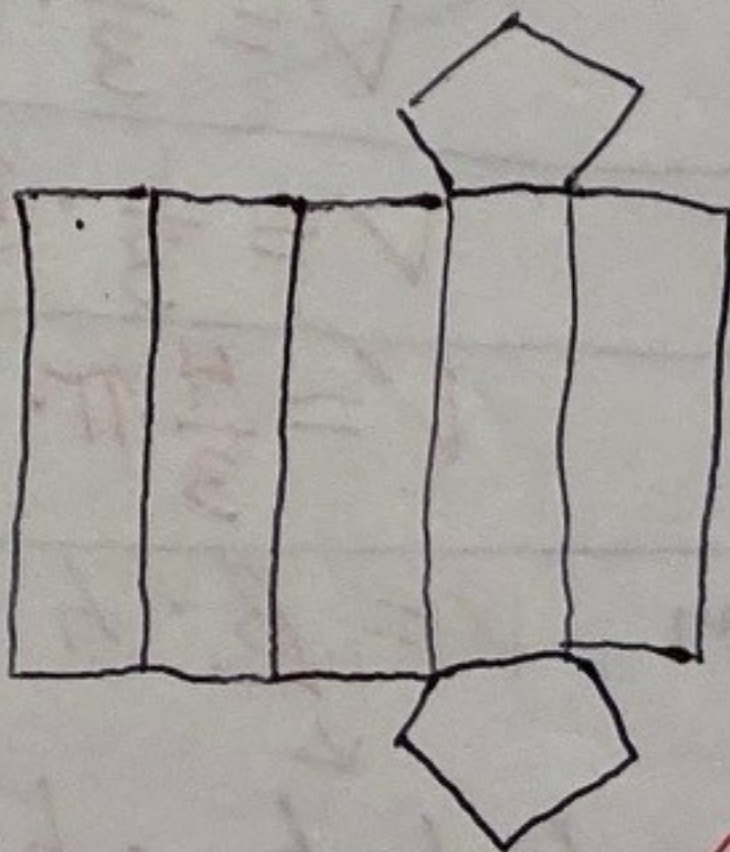$$\overline{21} \qquad \overline{21}$$

$$12 = h$$

7

3

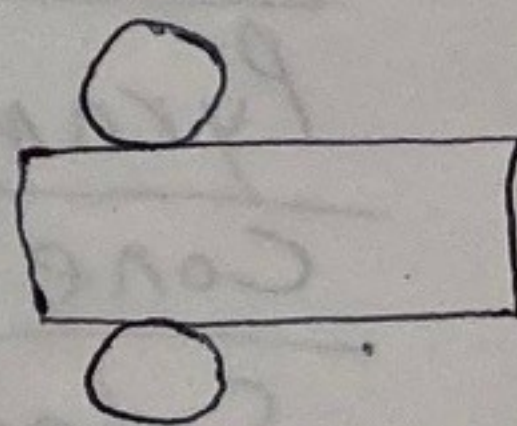**8.)** What figures are these nets:

Prism

Triangular Pyramid

Cylinder

Pentagon Prism (5 sides)

(Hexagon, Septagon, Octagon, Nonagon, Decagon)
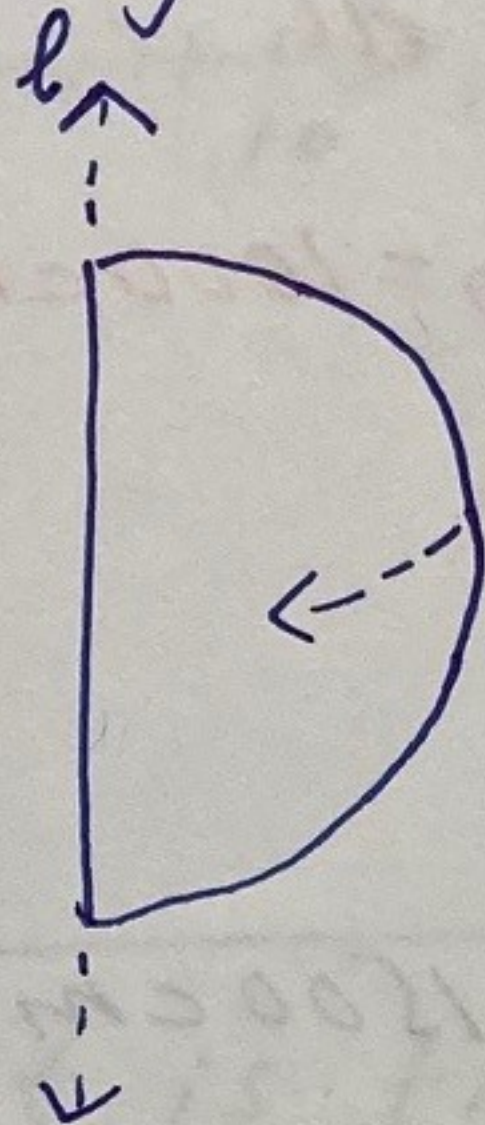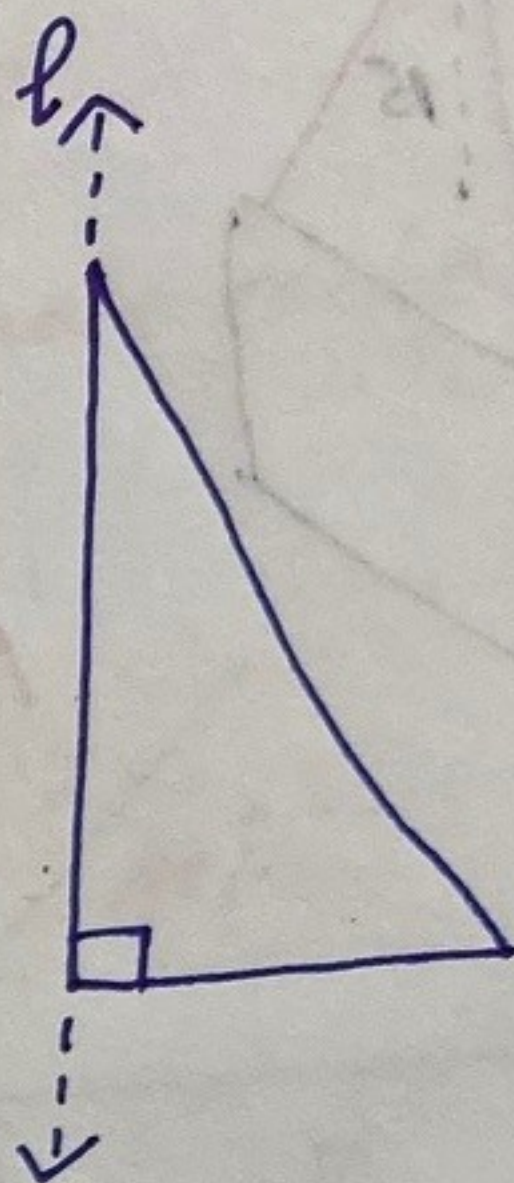
9.) What figure is generated?

a) A semicircle is rotated around a line containing its diameter.

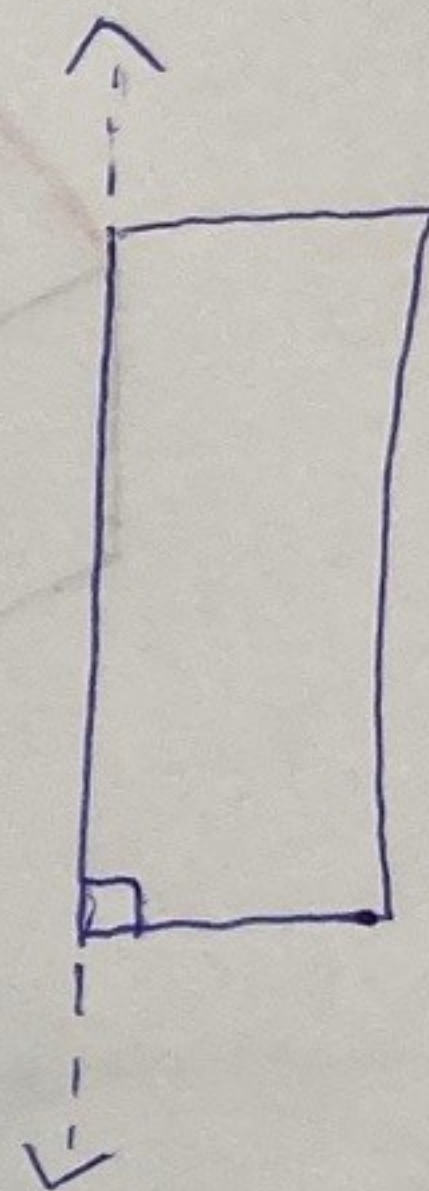b) A right triangle is rotated around a line.

Sphere

Cone   **Cylinder**

Volume Formulas

Rectangular Prism $V = B \cdot h$

Cube $V = s^3$

Cylinder $V = \pi \cdot r^2 \cdot h$ ($\underbrace{}_{B}$)

Pyramid $V = \frac{1}{3} \cdot B \cdot h$

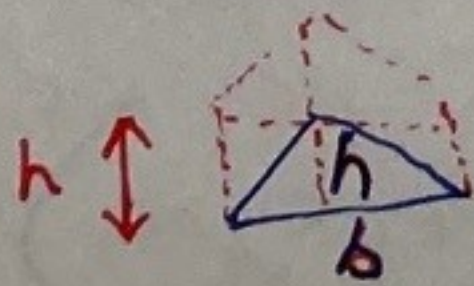Cone $V = \frac{1}{3} \cdot \underbrace{\pi \cdot r^2}_{B} \cdot h$

Sphere $V = \frac{4}{3} \cdot \pi \cdot r^3$ Hemisphere $V = \frac{2}{3} \cdot \pi \cdot r^3$

Triangular Prism $V = \underset{\downarrow}{B} \cdot h$

$\frac{1}{2} \cdot b \cdot h \cdot h$

$B = $ base area

$b = $ base in a triangle