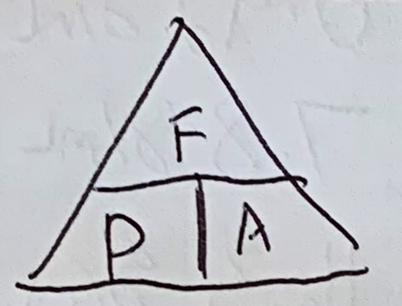
13. What is the pressure exerted on the inside of a can if the surface area of the can is 0.2 m2 and the force is 10 N?

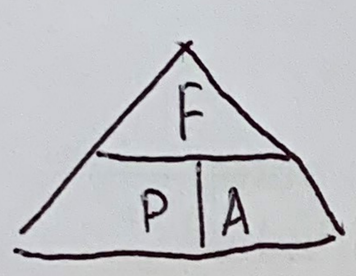
$$P = \frac{F}{A} = \frac{10N}{0.2m^2} = 50\frac{N}{m^2} = 50Pa$$

14. Find the area, in square centimetres, of a high heel where an 800N force is applied with a pressure of 200 Newtons per square centimeter.



$$A = \frac{F}{P} = \frac{800N}{200\frac{N}{cm^2}} = 4\,cm^2$$

15. Find the force a car crusher exerts at a pressure of 35000 N/m^2 over an area of 75m^2



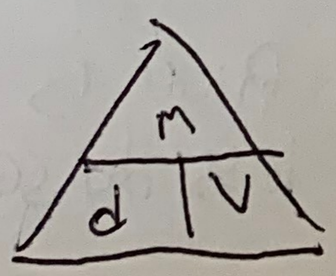
$$F = P \times A = 35000\frac{N}{m^2} \times 75m^2 = 2625000\,N$$

16. Calculate the density of 85.00 grams of mercury with a volume of 6.27 mL

$$d = \frac{m}{V} = \frac{85.00g}{6.27mL} = 13.6\,g/mL$$

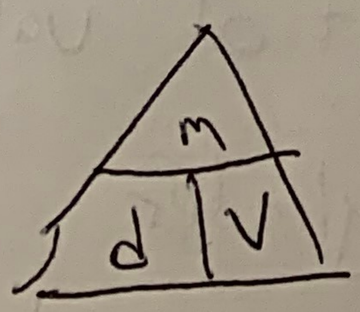
17. Calculate the mass of 1.85 L of gasoline, with a density of 0.75 grams per millilitre

$$= 1850\,mL$$



$$m = d \times v = 0.75\frac{g}{mL} \times 1850mL = 1387.5g$$

18. Calculate the volume of 650 grams of solid silver, with a density of 10.49 grams per cubic centimeter



$$V = \frac{m}{d} = \frac{650g}{10.49\frac{g}{mL}} = 61.96 = 62.0mL$$

19. Why is hot water less dense than cold water?

Molecules are further apart

20. Complete the following chart, then rank each from least dense to most dense:

Substance	Mass (g)	Volume (mL)	Density
vegetable oil	92	100	0.92 g/mL
iron	39	5	7.8 g/mL
gold	326	20	16.3 g/mL

$d = \frac{m}{v}$

$d = \frac{92g}{100mL}$

Least Dense V. Oil, iron, gold Most Dense

21. Use the particle model of matter to explain how a hydraulic pump can transmit force from one place to another. Why would a hydraulic pump be a better choice than an air pump?

Liquid Molecules cannot be compressed, so force is transferred equally and undiminished in all directions. Air not as good because it can be compressed.

22. On the coast of British Columbia, a fishing boat loaded with fish sank when it entered the Fraser River from the Strait of Georgia. The strait is part of the Pacific Ocean. Why do you think this happened?

Straight of Georgia is more dense, so the boat floated higher-up in the water. Fraser River is freshwater so it is less dense.

23. How can a 2000 kg vehicle be easily lifted?

Hydraulic Jack

24. List two types of water pumps and explain how they move water

- diaphragm: diaphragm (flexible) and a set of values
- Screw: Screw spins inside a hollow cylinder
- rotary: flexible tipped rotars move water like a fan