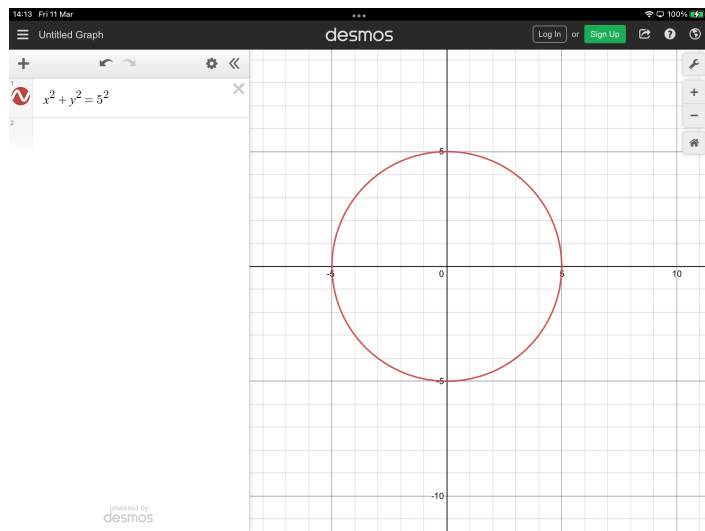


11CMN Cramming Lesson

Eqn of Circle

Equation of circle radius r centred on the origin is $x^2 + y^2 = r^2$



Example $x^2 + y^2 = 5^2$

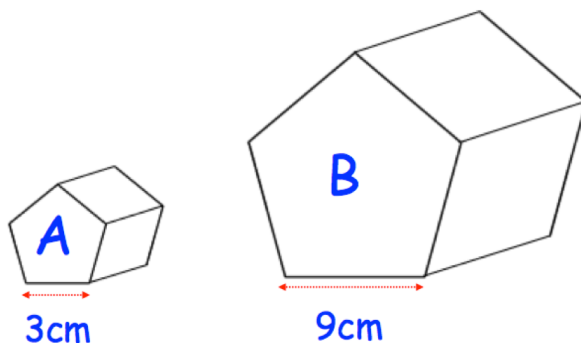
or $x^2 + y^2 = 25$

Ex 2 $x^2 + y^2 = 13$

would be circle centre $(0,0)$ radius $\sqrt{13}$

Similar Area and Volume

2. Below are two similar pentagonal prisms.



The volume of prism A is 15cm^3
Work out the volume of prism B.

Length $3:9$

$= 1:3$

Vol $= 1^3:3^3$

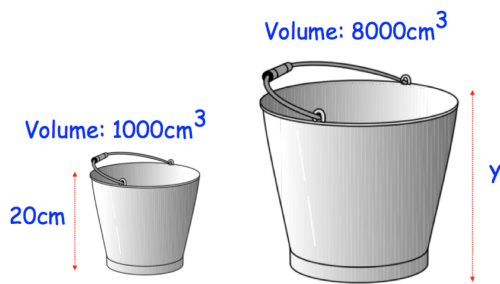
$= 1:27$

If Length is $a:b$
Area is $a^2:b^2$
Volume is $a^3:b^3$

Vol A $= 15$

Vol B $= 15 \times \frac{27}{1}$
 $= 405\text{cm}^3$

10. The two buckets below are similar.



Find y

$$\text{Vol } 1000 : 8000$$

$$= 1 : 8$$

$$\text{Length} = \sqrt[3]{1} : \sqrt[3]{8}$$

$$= 1 : 2$$

.....cm
(2)

$$y = 20 \times 2 = 40 \text{ cm}$$

Density

70g of compound A has a volume of 100cm^3

Use 50g of compound B which has a density of 8g/cm^3

Use 50cm^3 of compound C which has a density of 4g/cm^3

What is the density of these 3 mixed together.

$$\text{Average Density} = \frac{\text{Total Mass}}{\text{Total Volume}}$$

	Density	Mass	Vol
A		70g	100 cm ³
B	8 g/cm ³	50g	6.25 cm ³
C	4 g/cm ³	200g	50 cm ³
<hr/>			
Total		320g	156.25 cm ³

$$D = \frac{m}{V}$$

$$DV = m$$

$$V = \frac{m}{D}$$



For B $V = \frac{m}{D} = \frac{50}{8} = 6.25$

For C $m = D \times V = 4 \times 50 = 200g$

$$\text{Average Density} = \frac{\text{Total Mass}}{\text{Total Vol}}$$

$$= \frac{320}{156.25} = 2.048 \text{ g/cm}^3$$

If we mix 80g of C with density 5 g/cm³
with 100 cm³ of D with density 10 g/cm³

What is the average density of the compound

	Density	Mass	Vol
C	5 g/cm ³	80g	16 cm ³
D	10 g/cm ³	1000g	100 cm ³
<hr/>			
		1080g	116 cm ³

$$\text{Avg Density} = \frac{\text{Tot mass}}{\text{Tot Vol}} = \frac{1080}{116}$$

$$= 9.31 \text{ g/cm}^3$$

Estimation

Find and estimate for

$$\frac{38.3 \times 19.2}{18.4} = \frac{40 \times 20}{20}$$

$$= 40$$

The catch question

$$\text{Ex 2} \quad \frac{39.2 \times 9.9}{0.4} \approx \frac{40 \times 10}{0.4}$$

$$\sim \frac{400}{0.4} = \frac{4000}{4}$$

$$6 \div 3 = 2$$

$$60 \div 30 = 2$$

$$600 \div 300 = 2$$

$$\text{Ans} = 1000$$

Round All numbers to 1 sig fig