Sampling

Starter

1. **(Review of last lesson)**
Two similar solids, A and B, have volumes 15 cm³ and 960 cm³ respectively. Given that the surface area of cone B is 848 cm², find the surface area of cone A.

Working:

	Area	Volume
A (small)	?	15
B (big)	848	960

Go towards the unknown i.e. from big to small

Vf from 960 (big) to 15 (small) is $\frac{15}{960} = \frac{1}{64}$ ***small to big so > 1***

$$Lf = \sqrt[3]{Vf} = \sqrt[3]{\frac{1}{64}} = \frac{1}{4}$$

$$Af = Lf^2 = \left(\frac{1}{4}\right)^2 = \frac{1}{16}$$

Area of A $= 848 \times \frac{1}{16} = 53$ cm².

2. **(Review of last lesson)**
Two solid spheres have surface areas of 5 cm² and 45 cm² respectively and the mass of the smaller sphere is 2 kg. Find the mass of the larger sphere.

Working:

	Area	Mass
Small	5	2
Big	45	?

Go towards the unknown i.e. from small to big

Mass is connected to volume so we need the volume factor

Area factor from 5 (small) to 45 (big) is $\frac{45}{5} = 9$ ***small to big so > 1***

$$Lf = \sqrt{Af} = \sqrt{9} = 3$$

$$Vf = Lf^3 = 3^3 = 27$$

Mass of larger sphere $= 27 \times 2 = 54$ kg

E.g. 1 What is wrong with the following samples to find out how people will vote?

(a) Ask only your friends.
(b) Ask only women.
(c) Ask people in Ripon.

Working:

(a) Sample size is too small so it would be restricted sample

(b) 50% of population is male so this would be a restricted sample.

(c) Sample size is too small, small geographical location, restricted sample with respect to race.

Video: Random sampling

Solutions to Starter and E.g.s

Exercise

9-1 class textbook:	p365 M11.6 Qu 1-2 (discuss in pairs), 3
A*-G class textbook:	p330 E11.1 Qu 1-2 (discuss in pairs), 3
9-1 homework book:	p125 M11.6 Qu 1-2
A*-G homework book:	p93 E11.1 Qu 1-2

Homework book answers (only available during a lockdown)