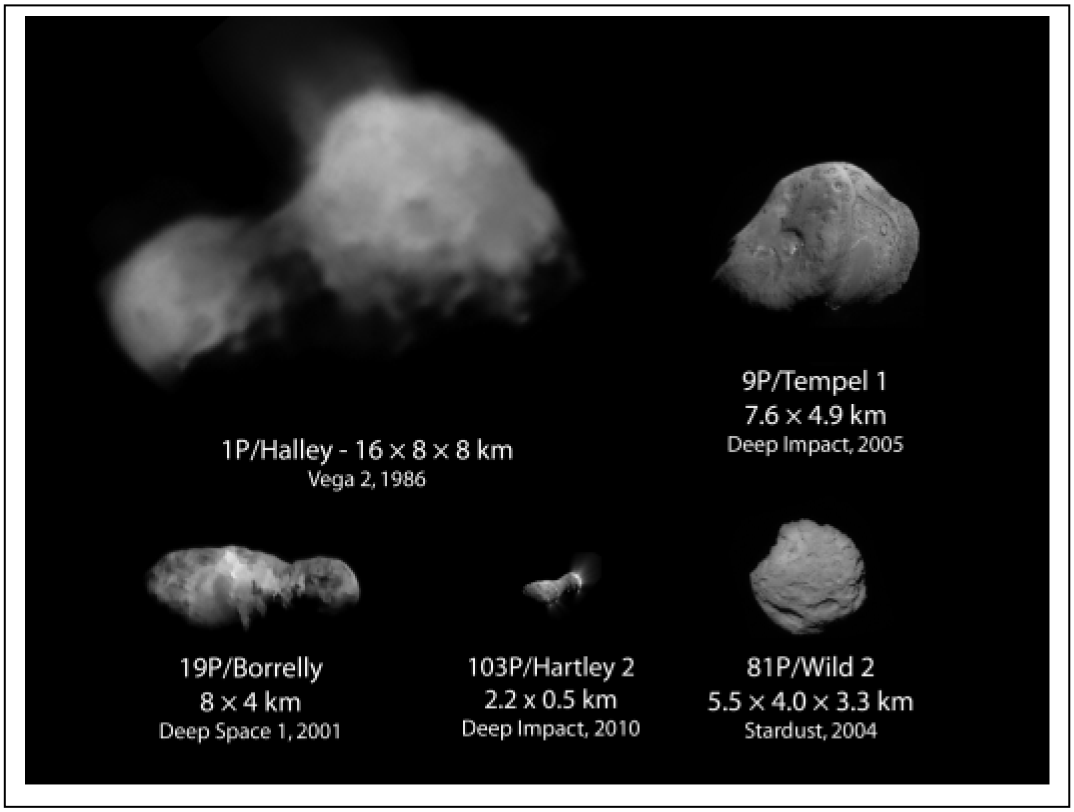

Spacecraft have flown-by five comets to study the dense object which produces the dramatic head and tails of these objects as seen from Earth. The figure above shows images of the nuclear objects to the same scale.

Problem 1 – What percentage of comet nuclei are:

A) round

B) potatoe-shaped?

Problem 2 - What is the range of size, in kilometers, for the dimensions of these nuclei?

Problem 3 – If the range in size represented one side of a cube, what is the range in volumes of the nuclei in cubic kilometers?

Answer Key

Problem 1 – What percentage of comet nuclei are:

A) Round - answer 100% x (2/5) = **40%**

B) potatoe-shaped? - answer 100% x (3/5) = **60%**

Problem 2 - What is the range of size, in kilometers, for the dimensions of these nuclei?

Answer: The smallest dimension is for Comet Hartley 2 at 0.5 km. The largest dimension is for Halleys Comet at 16 km. **So the range is from 0.5 to 16 kilometers.**

Problem 3 – If the range in size represented one side of a cube, what is the range in volumes of the nuclei in cubic kilometers?

Answer: S = 0.5 km so volume = 0.5 x 0.5 x 0.5 = 0.125 km^3
S = 16 km, so volume = 16 x 16 x 16 = 4096 km^3.

The range of volumes is 0.125 to 4096 km^3.