

1. A mold to create a chocolate sphere has a radius of 11.94 cm.
- (a) Jennifer was making a solid chocolate ball with this mold. (3 marks)
Find the volume of the ball, expressing your answer in the form of $a * 10^k$, $1 \leq a < 10$ and $k \in \mathbb{Z}$.
- (b) Jennifer gave the chocolate ball to her friend Amy. She (3 marks)
decided to melt it down and turn it into a cone. The height of the cone would be 12.5 cm. Find the radius of the base of the cone, correct to 2 significant figures.

Mark scheme:

(a) $V = \frac{4}{3}\pi(11.94)^3$ (M1)

$V = 7130.198 \dots$ (A1)

$V = 7.13 * 10^3 \text{ cm}^3$ (A1)

(b) Recognizing that the volume of the cone equals the volume of the ball (M1)

$\frac{1}{3}\pi r^2 * (12.5) = 7130.198$ (A1)

$r = 23.339$

$r = 23 \text{ cm}$ (A1)

** This question could also be used in Topic 3 Geometry and Trigonometry.