Name:

Exam Style Questions

Surface Area of a Frustum

Corbettmaths

Equipment needed: Calculator, Pen

Guidance

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

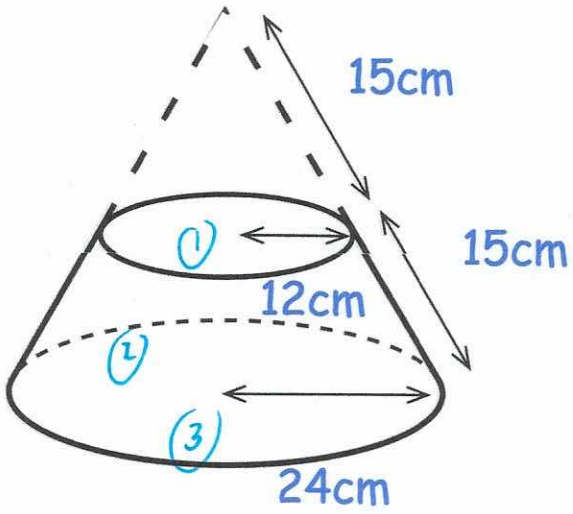
Video Tutorial

www.corbettmaths.com/contents

Video 314a

Answers and Video Solutions

1. A frustum is made by removing a small cone from a larger cone.



Calculate the surface area of the frustum.

(1) (circle at top)

$\pi \times 12^2 = 144\pi$ cm^2 (or 452.389...)

(2) Curved face:

$(\pi \times 24 \times 30) - (\pi \times 12 \times 15) = 540\pi$ cm^2

(1696.46...)

(3) Circle at bottom:

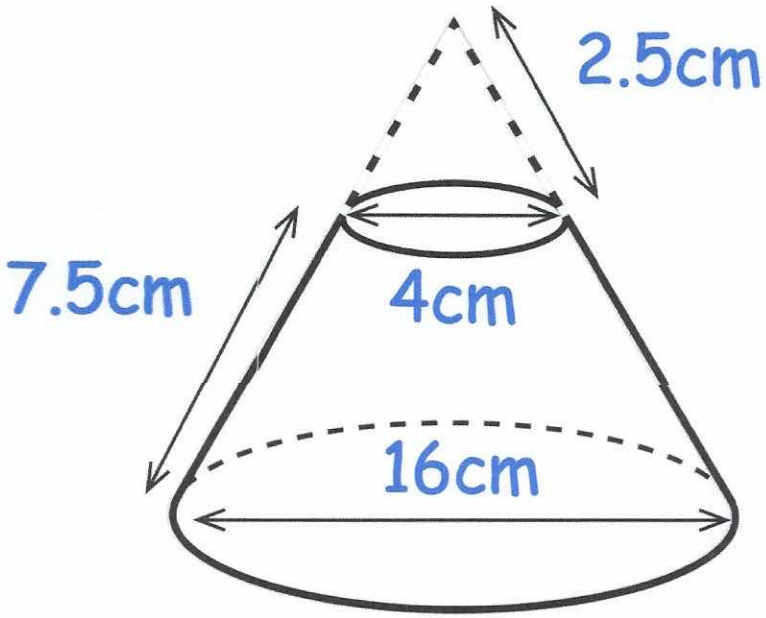
$\pi \times 24^2 = 576\pi$ (1809.557368)

$144\pi + 540\pi + 576\pi = 1260\pi$

3958.4 ..... cm^2 **(4)**

3958.401744

2. A frustum is made by removing a small cone from a larger cone.



Find the surface area of the frustum.

Circle at top: $\pi \times 2^2 = 4\pi$ cm^2

Circle at bottom: $\pi \times 8^2 = 64\pi$ cm^2

Curved face: $(\pi \times 8 \times 10) - (\pi \times 2 \times 2.5) = 75\pi$ cm^2

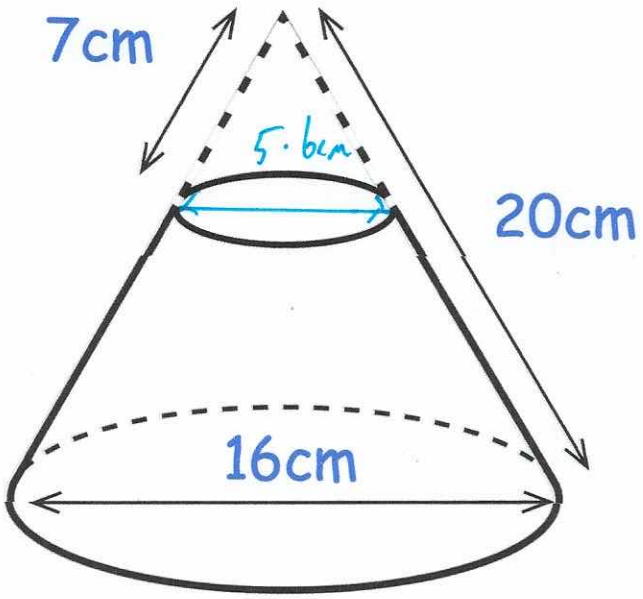
$4\pi + 64\pi + 75\pi = 143\pi$

449.25

.....cm^2

(4)

3. A frustum is made by removing a small cone from a larger cone.



$\frac{7}{20}$ of 16 = 5.6

Calculate the surface area of the frustum.

top: $\pi \times 2.8^2 = 24.63008864\text{cm}^2$

bottom: $\pi \times 8^2 = 64\pi\ \text{cm}^2$ (or 201.0619298)

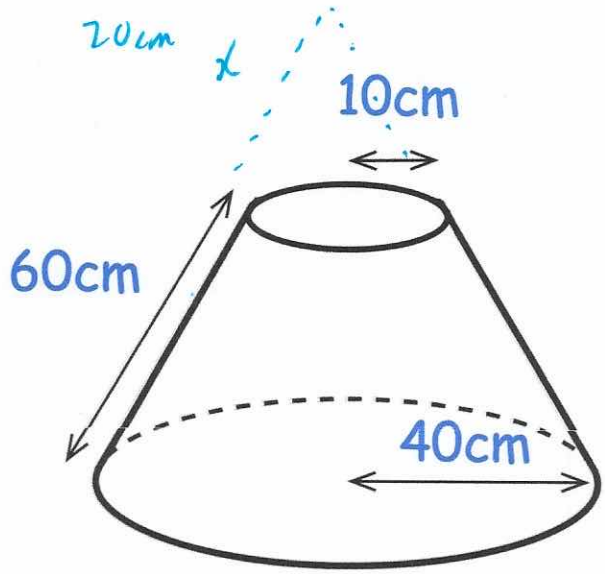
Curved face: $(\pi \times 8 \times 20) - (\pi \times 2.8 \times 7) = 441.0796086$

24.63... + 201.06... + 441.079... = 666.7716248

666.772 cm²

(5)

4. Shown below is a frustum of a cone.



$\frac{1}{4}$ of $(x+60) = x$

$\frac{1}{4}x + 15 = x$

$15 = \frac{3}{4}x$

$x = 20$

Find the surface area of the frustum.
Leave your answer in terms of π

Top: $\pi \times 10^2 = 100\pi$ cm^2

Bottom: $\pi \times 40^2 = 1600\pi$ cm^2

Curved face:

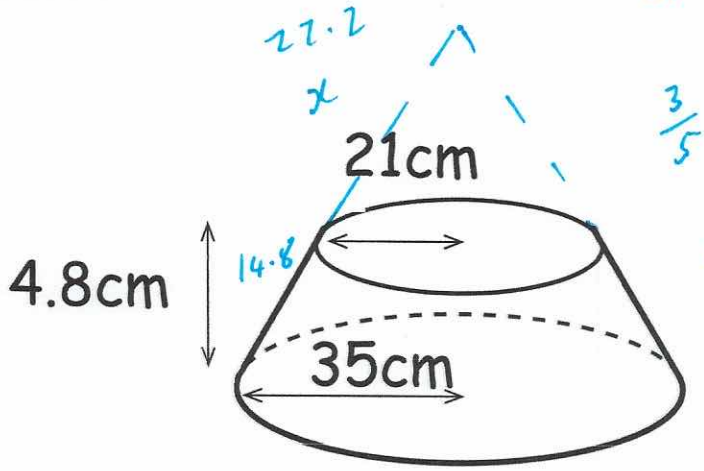
$(\pi \times 40 \times 80) - (\pi \times 10 \times 20) = 3000\pi$

$100\pi + 1600\pi + 3000\pi = 4700\pi$

4700π cm^3

(5)

5. Shown is a frustum of a cone.



$\frac{21}{35} = \frac{3}{5}$

22.2

x

$\frac{3}{5}(x + 14.8) = x$

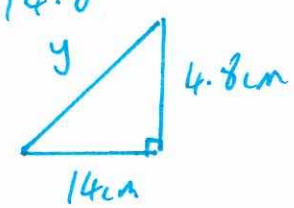
$\frac{3}{5}x + 8.88 = x$

$8.88 = \frac{2}{5}x$

$22.2 = x$

$22.2 + 14.8 = 37$

Find the surface area of the frustum.



$4.8^2 + 14^2 = y^2$

$219.04 = y^2$

$y = 14.8$

top : $\pi \times 21^2 = 441\pi$ cm^2

bottom : $\pi \times 35^2 = 1225\pi$ cm^2

curved face :

$(\pi \times 35 \times 37) - (\pi \times 21 \times 22.2)$

$= 2603.751991$

7837.65 .....cm^2

(5)

$441\pi + 1225\pi + 2603.75... = 7837.646...$