REVISE THIS TOPIC

1 Here is a cylinder with a radius of 4 cm and a height of 10 cm.
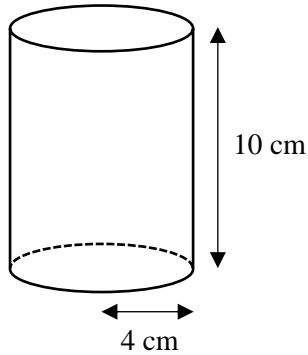
10 cm

4 cm

(a) Work out the volume of the cylinder.
Give your answer in terms of π.

$$\pi \times 4^2 \times 10$$

$$= \pi \times 16 \times 10$$

$$= 160\pi$$

................................160π................................ cm³

(2)

(b) Work out the surface area of the cylinder.
Give your answer in terms of π.

$$2 \times \pi \times 4^2 + \pi \times 8 \times 10$$

$$= 2 \times \pi \times 16 + \pi \times 8 \times 10$$
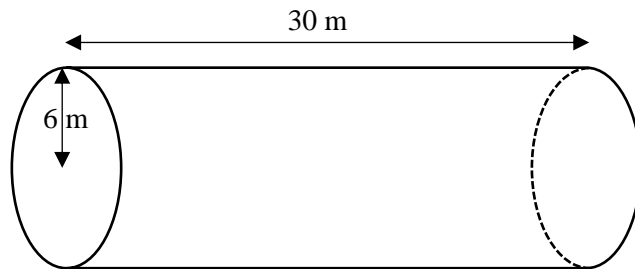
$$= 32\pi + 80\pi$$

$$= 112\pi$$

................................112π................................ cm²

(3)

(Total for Question 1 is 5 marks)

1

2 Here is a cylinder.

30 m

6 m

(a) Work out the volume of the cylinder.
Give your answer to 1 decimal place.

$$\pi \times 6^2 \times 30 = 3392.920066$$

3392.9 m³

(2)

(b) Work out the surface area of the cylinder.
Give your answer to 1 decimal place.

$$2 \times \pi \times 6^2 = 226.1946711$$
$$\pi \times 12 \times 30 = 1130.973355$$

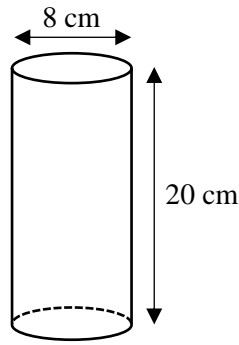$$226.19... + 1130.97... = 1357.168026$$

1357.2 m²

(3)

(Total for Question 2 is 5 marks)

1st

2

3 Here is a cylinder.

8 cm

20 cm

(a) Work out the volume of the cylinder.
Give your answer to 1 decimal place.

$$\pi \times 4^2 \times 20 = 1005.309649$$

.................1005.3................. cm³

(2)

(b) Work out the surface area of the cylinder.
Give your answer to 1 decimal place.

$$2 \times \pi \times 4^2 = 100.5309649$$
$$\pi \times 8 \times 20 = 502.6548246$$
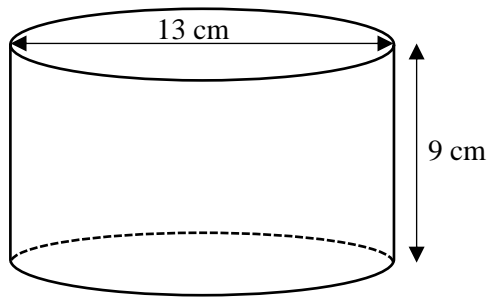
$$100.53... + 502.65... = 603.1857895$$

.................603.2................. cm²

(3)

(Total for Question 3 is 5 marks)

1st

3

4 Here is a cylinder.

13 cm

9 cm

(a) Work out the volume of the cylinder.
Give your answer to 4 significant figures.

$$\pi \times 6.5^2 \times 9 = 1194.590607$$

1195 .... cm³

(2)

(b) Work out the surface area of the cylinder.
Give your answer to 3 significant figures.

$$2 \times \pi \times 6.5^2 = 265.4645792$$
$$\pi \times 13 \times 9 = 367.5663405$$

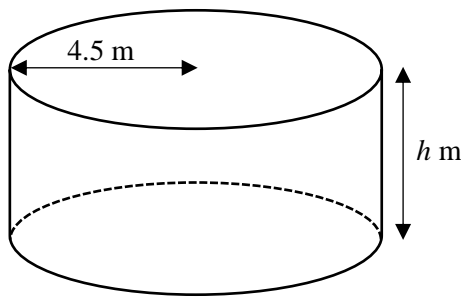$$265.46\ldots + 367.56\ldots = 633.0309197$$

633 .... cm²

(3)

(Total for Question 4 is 5 marks)

4

5 Here is a cylinder with a volume of 299 m^3

4.5 m

h m

(a) Work out the value of h, the height of the cylinder.
Give your answer to 1 decimal place.

$\pi \times 4.5^2 = 63.61725124$

$299 \div 63.61... = 4.699983011$

4.7 .... m

(2)

(b) Work out the surface area of the cylinder.
Give your answer to 3 significant figures.

$2 \times \pi \times 4.5^2 = 127.23...$

$\pi \times 9 \times 4.7 = 132.88...$

$127.23... + 132.88... = 260.12...$

260 .... m^2

(3)

(Total for Question 5 is 5 marks)

5

6 Here is a cylinder with a volume of 299 m³

9.4 cm

h cm
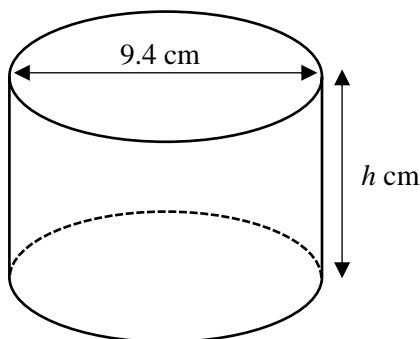
(a) Work out the value of h, the height of the cylinder.
Give your answer to 1 decimal place.

$$\pi \times 4.7^2 = 69.39778172$$
$$576 \div 69.3\ldots = 8.299977114$$

$\underline{\hspace{3em} 8.3 \hspace{3em}}$ cm

(2)

(b) Work out the surface area of the cylinder.
Give your answer to 4 significant figures.

$$2 \times \pi \times 4.7^2 = 138.79\ldots$$
$$\pi \times 9.4 \times 8.3 = 245.10\ldots$$

$$138.79\ldots + 245.10\ldots = 383.90\ldots$$

$\underline{\hspace{3em} 383.9 \hspace{3em}}$ cm²

(3)

(Total for Question 6 is 5 marks)

1st

6

7 Here are two cylinders.

Cylinder B

Cylinder A

18 cm

18 cm

13 cm

21 cm
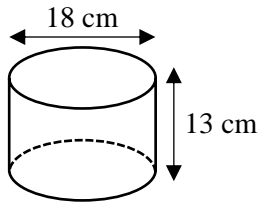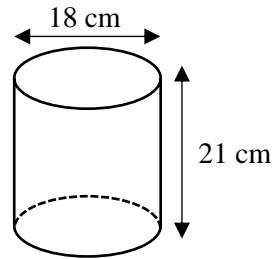
Cylinder A is placed on top of **cylinder B** to form a new cylinder.

18cm

21 + 13
= 34 cm
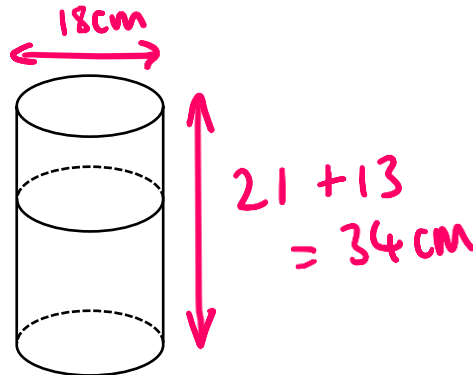
Work out the surface area of the new cylinder.
Give your answer to 4 significant figures.

$2 \times \pi \times 9^2 = 508.9380099$
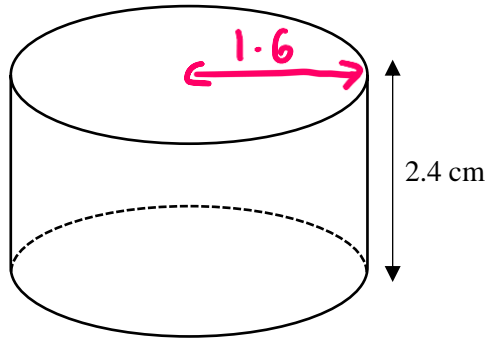
$\pi \times 18 \times 34 = 1922.654704$

$508.9... + 1922.6... = 2431.59...$

2432 cm²

(Total for Question 7 is 3 marks)

1st

7

8 Here is a cylinder with a height of 2.4 cm

1.6

2.4 cm

The ratio of the radius of the cylinder to the height of the cylinder is 2 : 3

(a) Work out the volume of the cylinder.
Give your answer to 1 decimal place.

$2.4 \div 3 = 0.8$

$0.8 \times 2 = 1.6$

$\pi \times 1.6^2 \times 2.4 = 19.30194526$

.... 19.3 .... cm³

(3)

(b) Work out the surface area of the cylinder.
Give your answer to 3 significant figures.

$2 \times \pi \times 1.6^2 = 16.08495439$

$\pi \times 3.2 \times 2.4 = 24.12743158$

$16.08... + 24.12... = 40.21238597$

.... 40.2 .... cm²

(3)

(Total for Question 8 is 6 marks)

8

9 Here are two cylinders with the same volume.

5 cm

12 cm

4 cm

h cm
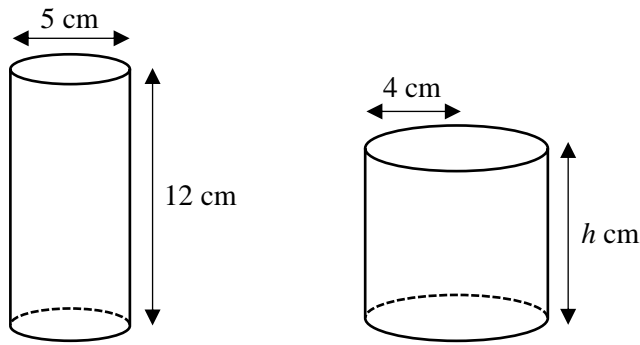
Work out the value of h, the height of the second cylinder.
Give your answer to 2 decimal places.

$$\pi \times 2.5^2 \times 12 = 235.619449$$

$$\pi \times 4^2 = 50.26548246$$

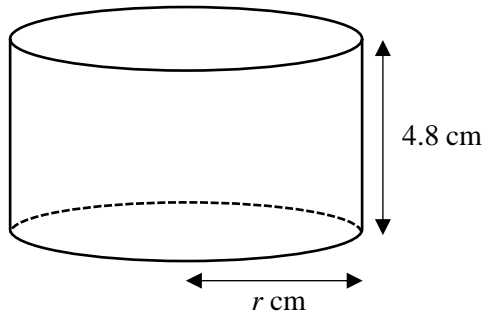$$235.61... \div 50.26... = 4.6875$$

4.69

.... cm

(Total for Question 9 is 4 marks)

1st

9

10 Here is a cylinder with a volume of 266 cm³

4.8 cm

r cm

(a) Work out the value of *r*, the radius of the cylinder.
   Give your answer to 1 decimal place.

$$\pi \times r^2 \times 4.8 = 266$$
$$r^2 = 266 \div 4.8\pi$$
$$r^2 = 17.63967286$$
$$r = \sqrt{17.639...}$$

4.2 .... cm

(3)

(b) Work out the surface area of the cylinder.
   Give your answer to 4 significant figures.

$$2 \times \pi \times 4.2^2 = 110.83...$$
$$\pi \times 8.4 \times 4.8 = 126.66...$$

$$110.83... + 126.66... = 237.50...$$

237.5 .... cm²

(3)

(Total for Question 10 is 6 marks)

1st

10