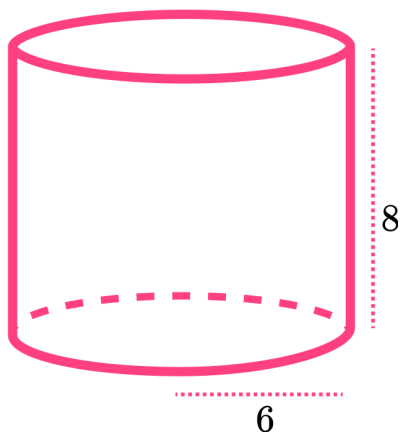# Volume and Surface Area of Cylinders - Worksheet
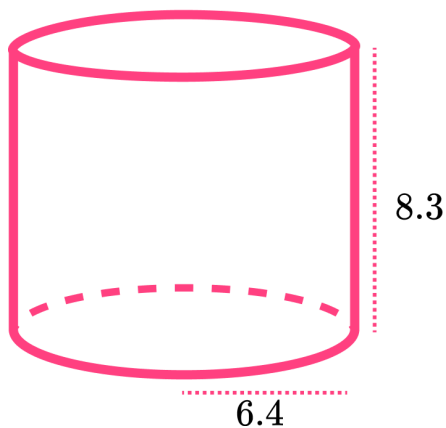
Skill

Group A - volume of a cylinder

Work out the volume of each cylinder. All dimensions are in centimetres and all diagrams are not to scale. Give your answer correct to 3 significant figures:
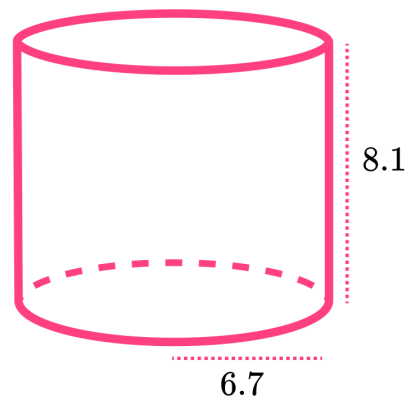
1)

8

6

2)

8.3

6.4

3)

8.1

6.7

4)

7

2

5)

7.1

2.3

6)

7.5

2.8

7)

4

5

8)

4.2

5.1

9)

4.8

5.6

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Volume and Surface Area of Cylinders - Worksheet

Group B - curved surface area of a cylinder

Work out the curved surface area of each cylinder. All dimensions are in centimetres and all diagrams are not to scale. Give your answer correct to 3 significant figures:
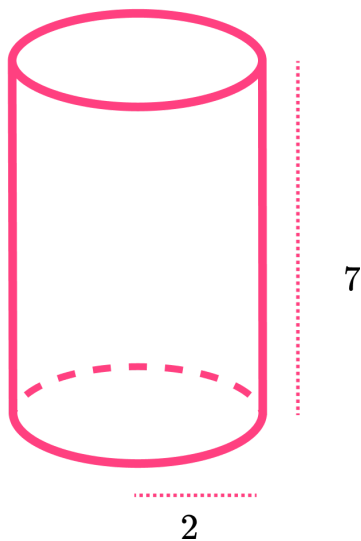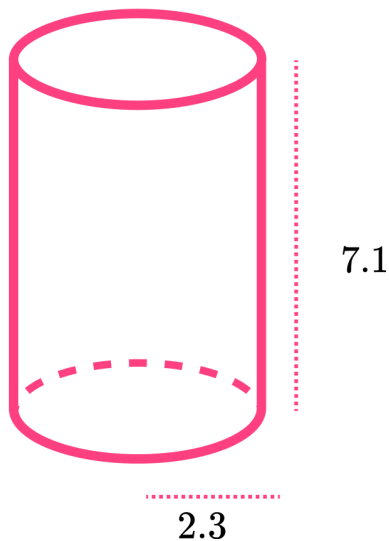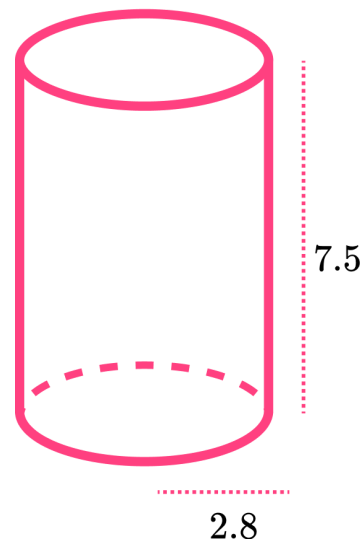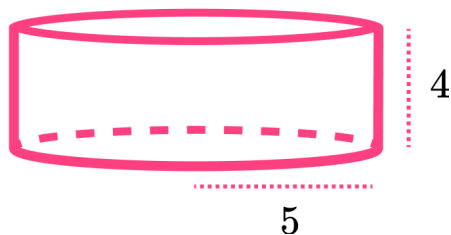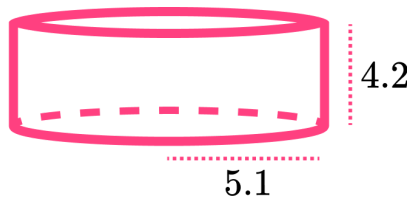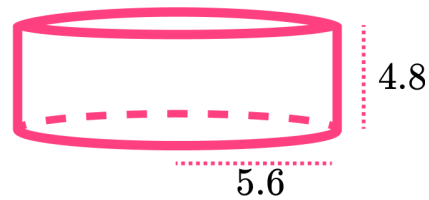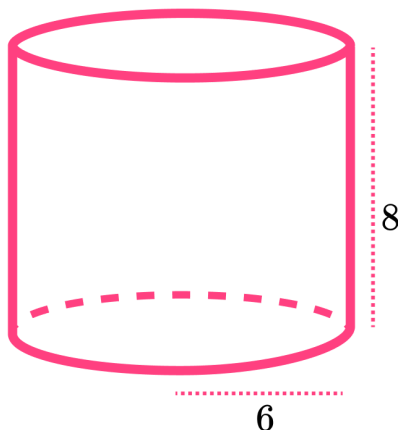
1)

8

6

2)

8.3

6.4

3)

8.1

6.7

4)

7

2

5)

7.1

2.3

6)

7.5

2.8

7)

4

5

8)

4.2

5.1

9)

4.8

5.6

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2

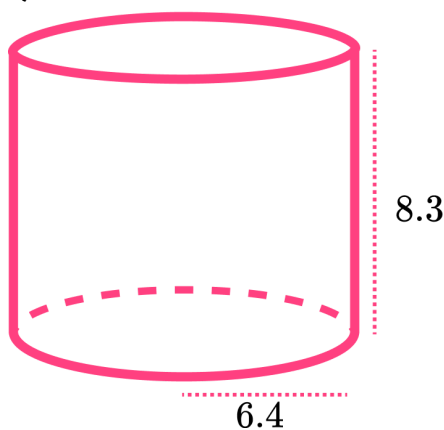# Volume and Surface Area of Cylinders - Worksheet

Group C - Total surface area of a cylinder

Work out the total surface area of each cylinder. All dimensions are in centimetres and all diagrams are not to scale. Give your answer correct to 3 significant figures:
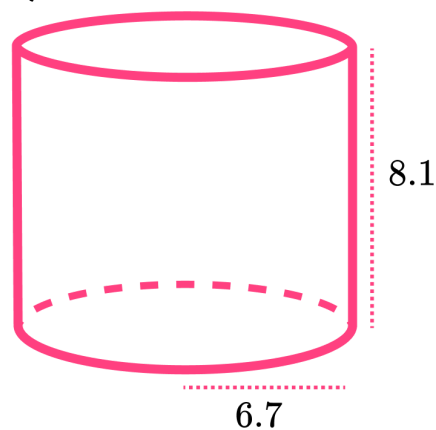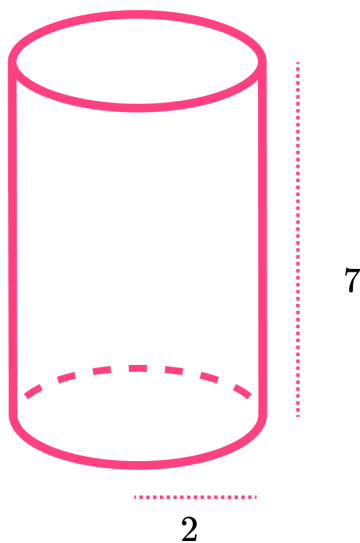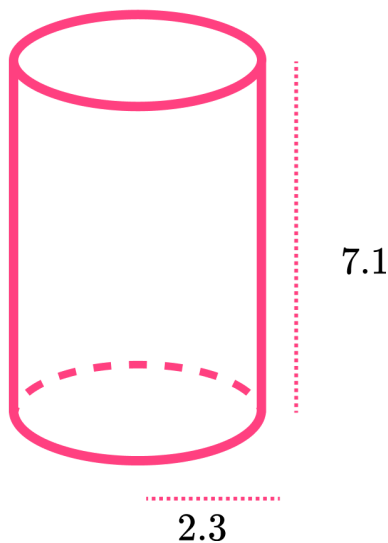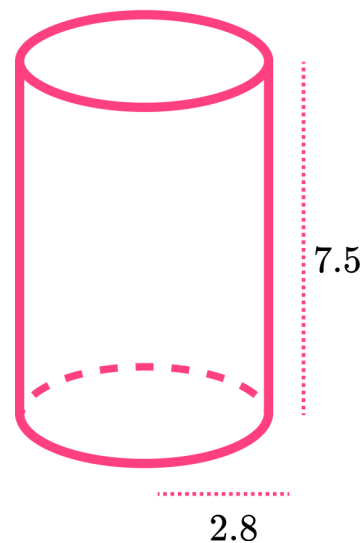
1)

8

6

2)

8.3

6.4

3)

8.1

6.7

4)

7

2

5)

7.1

2.3

6)

7.5

2.8

7)

4

5

8)

4.2

5.1

9)

4.8
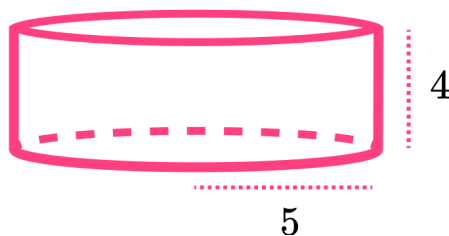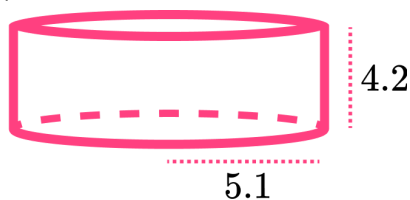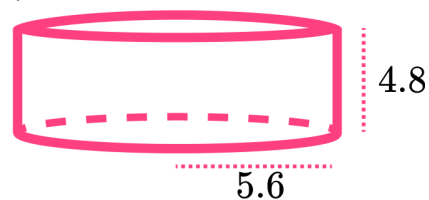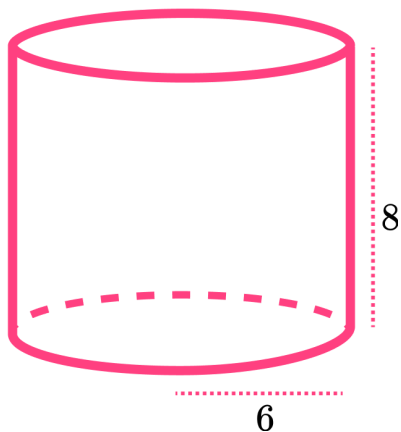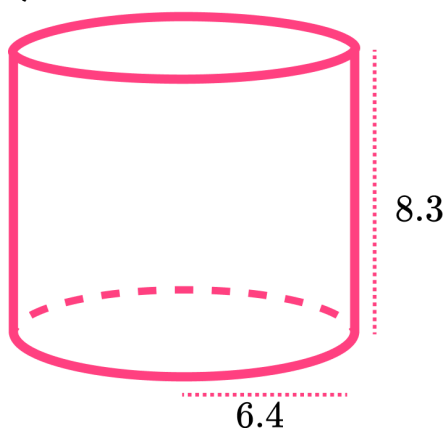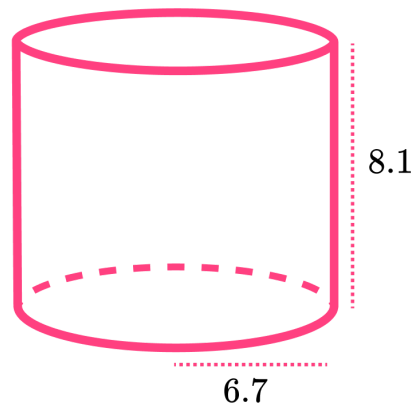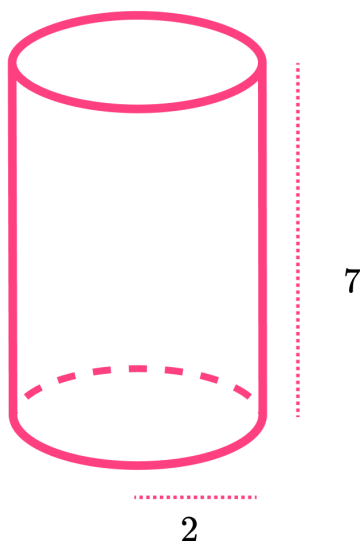
5.6
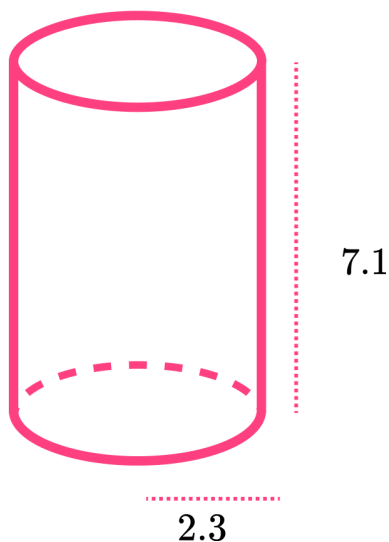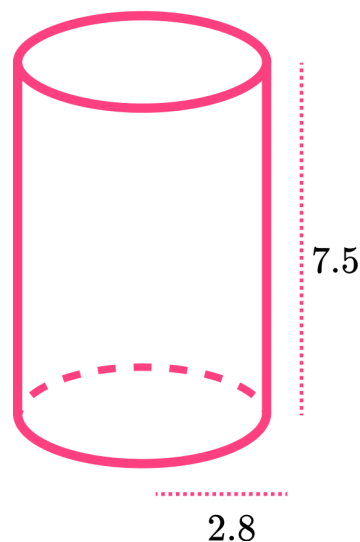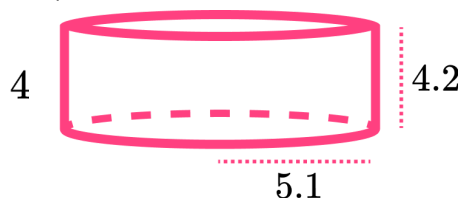
Volume and Surface Area of Cylinders - Worksheet

Applied

1)   Here is a cylinder.
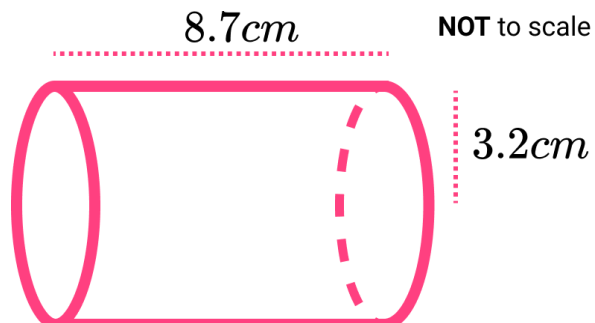
$8.7cm$

NOT to scale

$3.2cm$

(a)   Calculate the volume of the cylinder to 3 significant figures.

(b)   Calculate the surface area of the cylinder to 3 significant figures.

2)   Here is a cylinder.
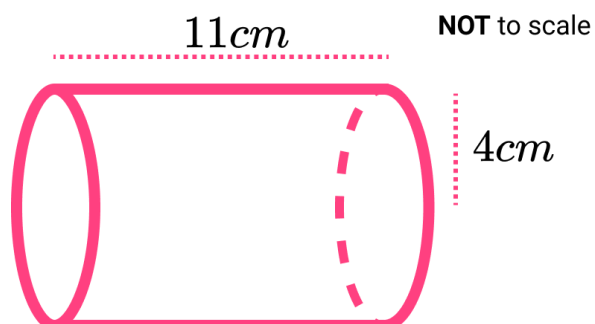
$11cm$

NOT to scale

$4cm$

(a)   Calculate the volume of the cylinder. Leave your answer in terms of π.

(b)   Calculate the surface area of the cylinder. Leave your answer in terms of π.

3)   Here is a cylinder.

NOT to scale

$5.6cm$

$6.2cm$

(a)   Calculate the volume of the cylinder to 3 significant figures.

(b)   Calculate the total surface area of the cylinder to 3 significant figures.

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Volume and Surface Area of Cylinders - Worksheet

4) Here is a cylinder.
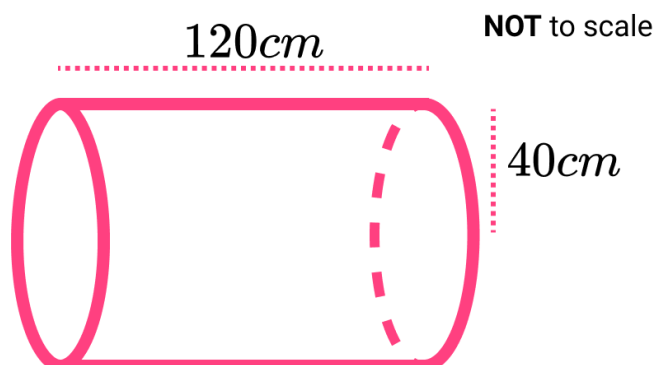
$120cm$ **NOT** to scale

$40cm$

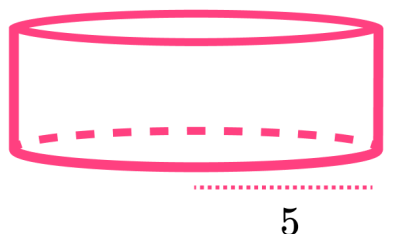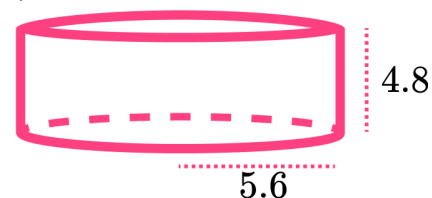**(a)** Calculate the volume of the cylinder. Give your answer in m^3 to 3 significant figures.

(b) Calculate the surface area of the cylinder. Give your answer in m^2 to 3 significant figures.
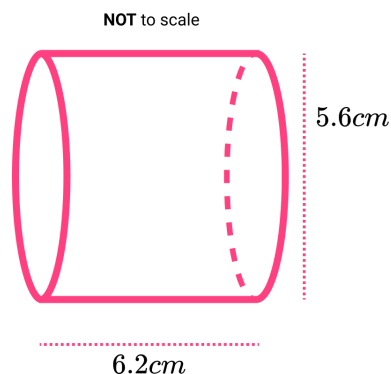
Volume and Surface Area of Cylinders - Exam Questions

1)   Here is a cylinder.

NOT to scale

$8cm$

$5cm$
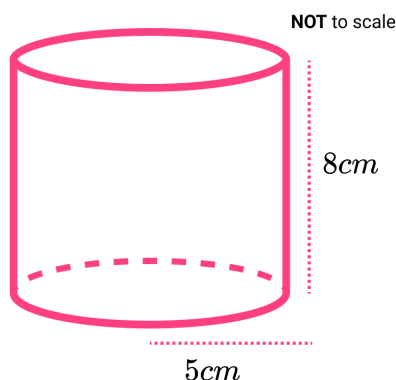
Calculate the volume of the cylinder. Leave your answer in terms of π.

………………cm^3

(2 marks)

2)   Here is a cylinder.
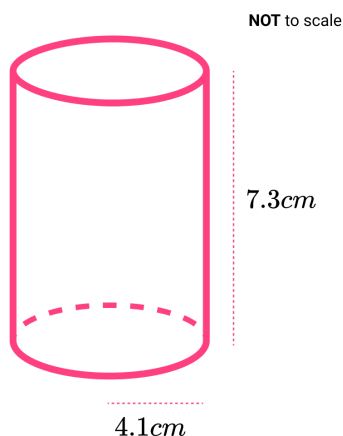
NOT to scale

$7.3cm$

$4.1cm$

Calculate the total surface area of the cylinder. Give your answer to 3 significant figures.

……………….

(4 marks)

Volume and Surface Area of Cylinders - Exam Questions
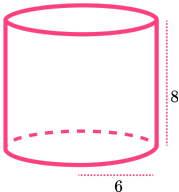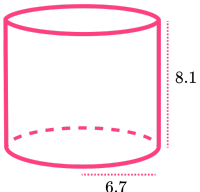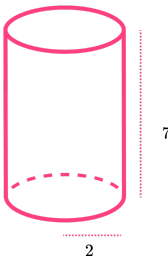
3)   Joe has to cover 6 containers completely with paint. Each container is the shape of a cylinder with a top and a bottom. The container has a radius of $0.4\ m$ and a height of $1.2\ m$.

NOT to scale

$1.2m$

$0.4m$
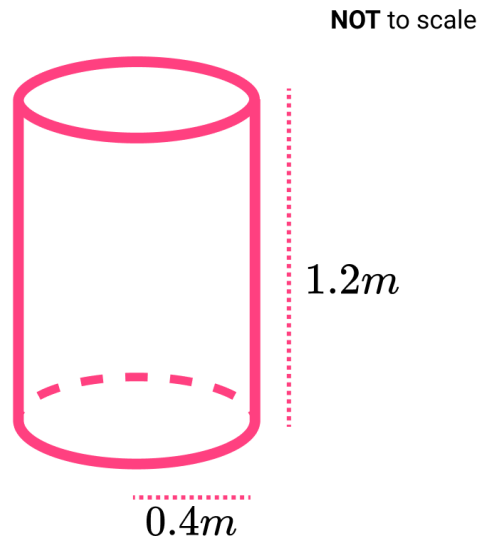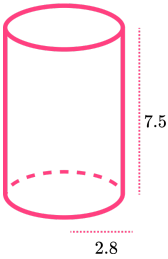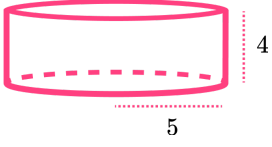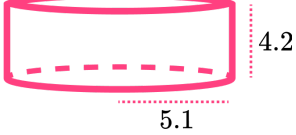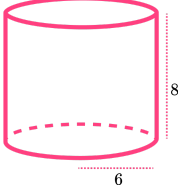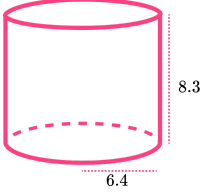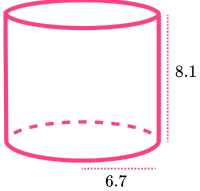
Joe has 4 tins of paint. Each tin of paint covers $7m^2$. Does Joe have enough paint to cover the containers? Show your working.

....

(5 marks)

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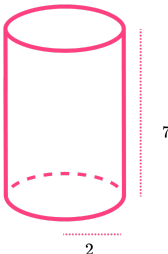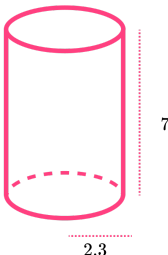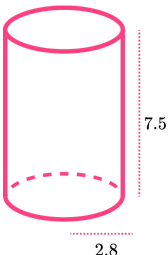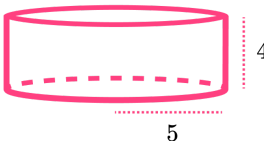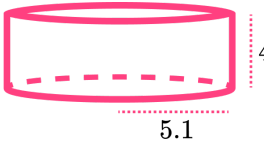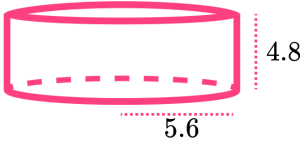
Volume and Surface Area of Cylinders - Answers

	Question	Answer
	Skill Questions	
Group A	Work out the volume of each cylinder. All dimensions are in centimetres and all diagrams are not to scale. Give your answer correct to 3 significant figures: **1)** 8 6 **2)** 8.3 6.4 **3)** 8.1 6.7 **4)** 7 2 **5)** 7.1 2.3	**1)** $905 \ cm^3$ **2)** $1070 \ cm^3$ **3)** $1140 \ cm^3$ **4)** $88.0 \ cm^3$ **5)** $118 \ cm^3$

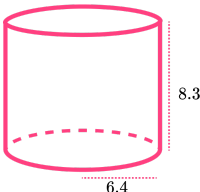**thirdspacelearning.com**   Helping schools close the maths attainment gap through targeted one to one teaching and flexible resources

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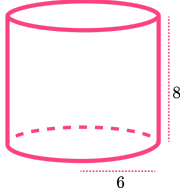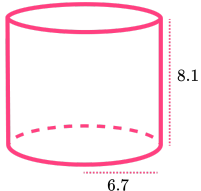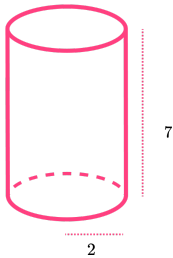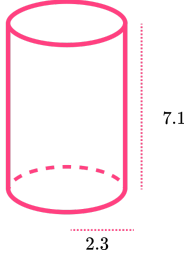
Volume and Surface Area of Cylinders - Answers

Group A contd	6) 7.5 / 2.8	6) $185\ cm^3$
	7) 4 / 5	7) $314\ cm^3$
	8) 4.2 / 5.1	8) $343\ cm^3$
	9) 4.8 / 5.6	9) $473\ cm^3$
Group B	Work out the curved surface area of each cylinder. All dimensions are in centimetres and all diagrams are not to scale. Give your answer correct to 3 significant figures:	
	1) 8 / 6	1) $302\ cm^2$
	2) 8.3 / 6.4	2) $334\ cm^2$
	3) 8.1 / 6.7	3) $341\ cm^2$
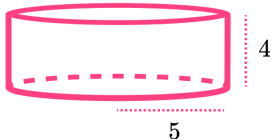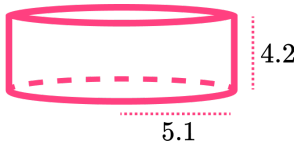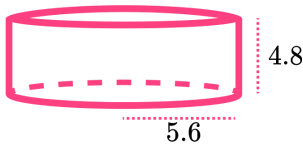
Volume and Surface Area of Cylinders - Answers

Group B contd		
	4) 7 / 2	**4)** $88.0\ cm^2$
	5) 7.1 / 2.3	**5)** $103\ cm^2$
	6) 7.5 / 2.8	**6)** $132\ cm^2$
	7) 4 / 5	**7)** $126\ cm^2$
	8) 4.2 / 5.1	**8)** $135\ cm^2$
	9) 4.8 / 5.6	**9)** $169\ cm^2$

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Volume and Surface Area of Cylinders - Answers

Group C	Work out the total surface area of each cylinder. All dimensions are in centimetres and all diagrams are not to scale. Give your answer correct to 3 significant figures:	
	1)	**1)** $528 \; cm^2$
	2)	**2)** $591 \; cm^2$
	3)	**3)** $623 \; cm^2$
	4)	**4)** $113 \; cm^2$
	5)	**5)** $136 \; cm^2$

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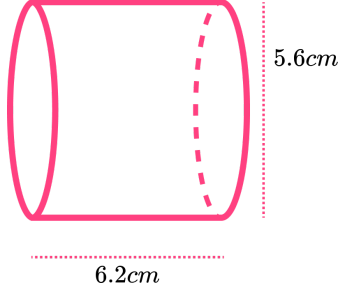
Volume and Surface Area of Cylinders - Answers

Group C contd	6)	6) $181\ cm^2$
	7)	7) $283\ cm^2$
	8)	8) $298\ cm^2$
	9)	9) $366\ cm^2$

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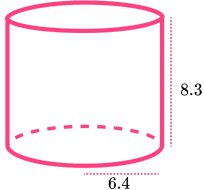
12

THIRD SPACE
LEARNING
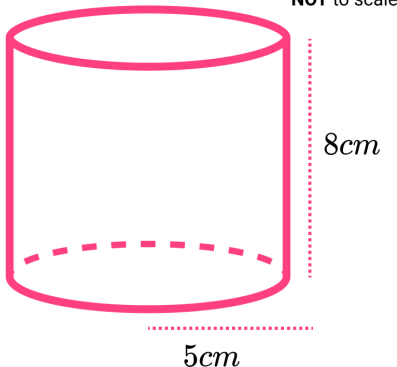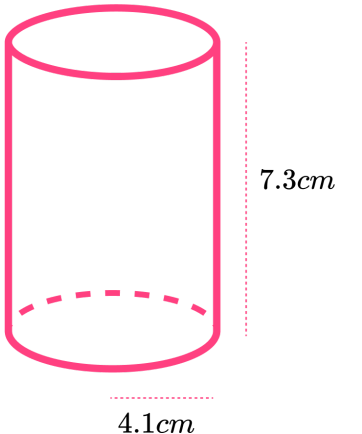
Volume and Surface Area of Cylinders - Answers

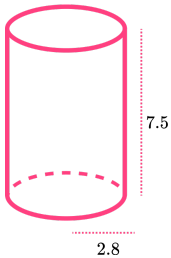|	Question	Answer
	Applied Questions	
1)	Here is a cylinder. $8.7cm$ **NOT** to scale $3.2cm$ **a)** Calculate the volume of the cylinder to 3 significant figures. **b)** Calculate the surface area of the cylinder to 3 significant figures.	**a)** $280 \ cm^3$ **b)** $239 \ cm^2$
2)	Here is a cylinder. $11cm$ **NOT** to scale $4cm$ **a)** Calculate the volume of the cylinder. Leave your answer in terms of π. **b)** Calculate the surface area of the cylinder. Leave your answer in terms of π.	**a)** $176π \ cm^3$ **b)** $120π \ cm^2$
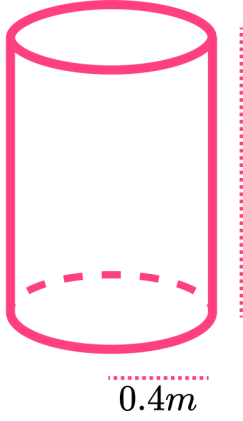
Volume and Surface Area of Cylinders - Answers

3)	Here is a cylinder.

NOT to scale

$5.6cm$

$6.2cm$ | | |
| | **a)** Calculate the volume of the cylinder to 3 significant figures. | **a)** $153\ cm^3$ | |
| | **b)** Work out its total surface area.
Give your answer to 3 significant figures. | **b)** $158\ cm^2$ | |
| **4)** | Here is a cylinder.

$120cm$ **NOT** to scale

$40cm$ | | |
| | **a)** Calculate the volume of the cylinder. Give your answer in m^3 to 3 significant figures. | **a)** $0.603\ m^3$ | |
| | **b)** Calculate the surface area of the cylinder. Give your answer in m^2 to 3 significant figures. | **b)** $4.02\ m^2$ | |

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Volume and Surface Area of Cylinders - Answers

	Question	Answer	
	Exam Questions		
1)	Here is a cylinder. **NOT** to scale $8cm$ $5cm$ Calculate the volume of the cylinder. Leave your answer in terms of π.	$V = \pi \times 5^2 \times 8$ $200\pi \; cm^3$	**(1)** **(1)**
2)	Here is a cylinder. **NOT** to scale $7.3cm$ $4.1cm$ Calculate the total surface area of the cylinder. Give your answer to 3 significant figures.	$2 \times \pi \times 4.1 \times 7.3 = 188.0557...$ $\pi \times 4.1^2 = 52.8101...$ $188.0557... + 2 \times 52.8101...$ $= 293.676... = 294 \; cm^2$	**(1)** **(1)** **(1)** **(1)**

Volume and Surface Area of Cylinders - Answers

3)	Joe has to cover 6 containers completely with paint. Each container is the shape of a cylinder with a top and a bottom. The container has a radius of $0.4\,m$ and a height of $1.2\,m$. **NOT** to scale $1.2m$ $0.4m$ Joe has 4 tins of paint. Each tin of paint covers $7\,m^2$. Does Joe have enough paint to cover the containers? Show your working.	$\pi \times 0.4^2 = 0.5026...$	**(1)**
		$= 2 \times \pi \times 0.4 \times 1.2 = 3.0159...$	**(1)**
		$6 \times (3.0159... + 2 \times 0.5026...)$ $= 24.127...$	**(1)**
		$4 \times 7 = 28\,m^2$	**(1)**
		YES - because $28 > 24.127\,m^2$	**(1)**

Do you have KS4 students who need additional support in maths?

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