



**S3 Upper Block 1 assessment revision  
(Calculator allowed).**

Your Name:
Teachers Name:

*Please note: This is a 'first edition' and whilst we hope there are no errors there may be some we have overlooked. If in doubt please check with your teacher. Thank you.*

**Ways in which you can revise:**

- Read through your jotters again, and again!
- Cover a worked through question with a piece of paper and answer again. Remove your piece of paper to see if your answer matches.
- Ask other people to test/help you.
- Write a question on one side of a piece of paper with the answer on the other. Ask somebody else to test you by holding up the 'test card' so you can see the question and they can see the answer. If this is not possible read the question and simply turn the piece of paper over to check you have the correct answer.

**Manage your time effectively:**

- Revise what you need to revise.
- If there is more than one of the same style of question (eg 1a, 1b, 1c, 1d, 1e, 1f etc) and you think you can do that type of question try the last one as this tends to be the hardest. If you can do it just have a quick look at the rest.

**On the day:**

- Do the best you can and make sure you've had a good meal beforehand eg breakfast!
- Look how many marks each question is worth and make sure you write enough.
- If you get stuck on a question miss it out and come back to it at the end.
- Check your paper once you have finished. Read each question again and make sure you have answered the question asked and not what you think has been asked (very common)!

## Scientific Notation

1) Write the following in full:

- a)  $4.3 \times 10^5$     b)  $6.83 \times 10^4$     c)  $9.34 \times 10^{-3}$   
d)  $3.764 \times 10^{-5}$

Formulae given in your test:

$$\text{Volume of Sphere} = \frac{4}{3} \pi r^3$$

$$\text{Volume of Cone} = \frac{1}{3} \pi r^2 h$$

2) An atom weighs  $7.067 \times 10^{-3}$  grams. Find the weight of 15 atoms giving your answer in scientific notation.

3) Last year a lottery jackpot of  $\text{£}8.1 \times 10^6$  was shared equally between 3 winners. Find how much each winner received giving your answer in scientific notation.



4) There are  $3.156 \times 10^7$  seconds in a solar year. How many seconds are there in 8 solar years giving your answer in scientific notation.

## Removing brackets

1) Expand and simplify where appropriate:

- a)  $x(3x + 7)$                       b)  $y(4y + 3)$                       c)  $x(7x - 5)$   
d)  $(a + 5)(a + 3)$                       e)  $(b + 7)(b + 5)$                       f)  $(c + 8)(c - 9)$

2) Factorise:

- a)  $x^2 - 5x$                       b)  $x^2 - 9x$                       c)  $x^2 - 12x$                       d)  $a^2 - 49$                       e)  $b^2 - 36$   
f)  $c^2 - 64$                       g)  $y^2 - y - 20$                       h)  $y^2 + 4y - 21$                       i)  $y^2 + 3y - 28$

3) Express the following in the form  $(x + p)^2 + q$ .

- a)  $x^2 + 6x + 5$                       b)  $x^2 + 10x + 8$                       c)  $x^2 + 8x - 2$                       d)  $x^2 + 2x - 3$

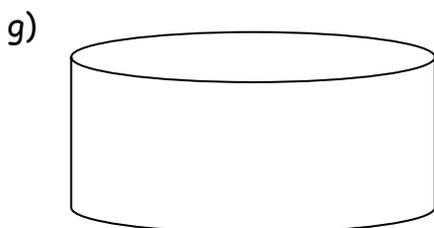
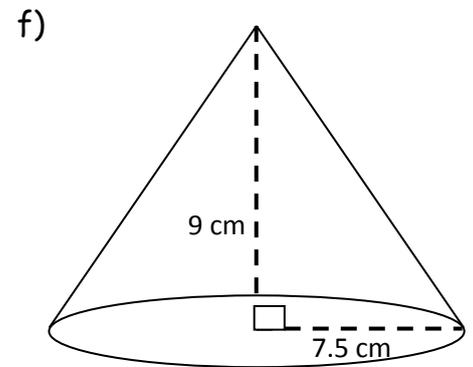
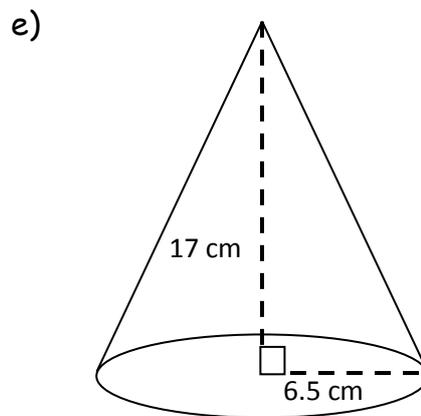
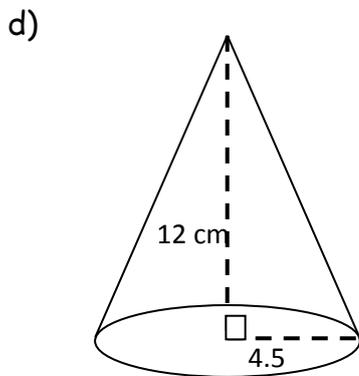
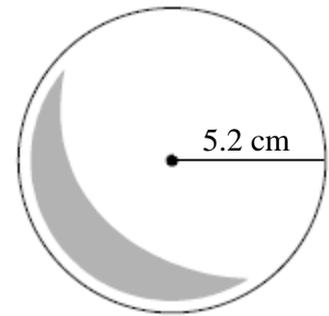
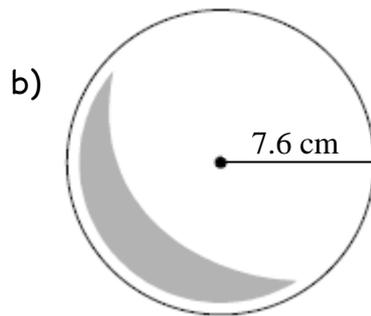
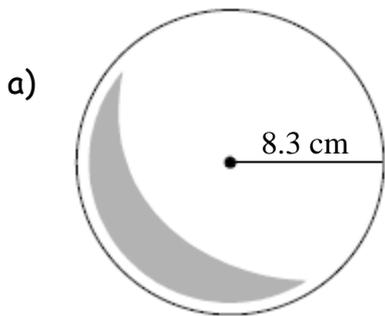
## Gradient

Find the gradient between the following points:

- a) A (2, 5) and B(4, 11)                      b) C(0, 11) and D (-2, 1)                      c) E(4, 6) and F(-2, 12)  
d) G(9, 25) and H (5, 5)

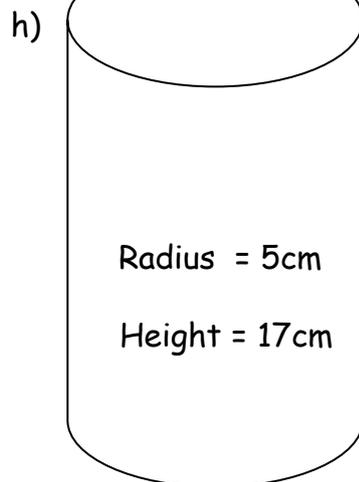
## Volume

Find the volume of the following correct to two significant figures and use your  $\pi$  button:



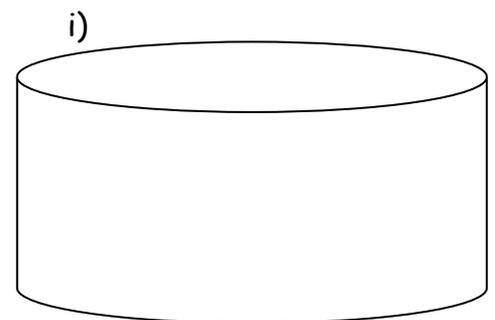
Radius = 8cm

Height = 5cm



Radius = 5cm

Height = 17cm



Radius = 12cm

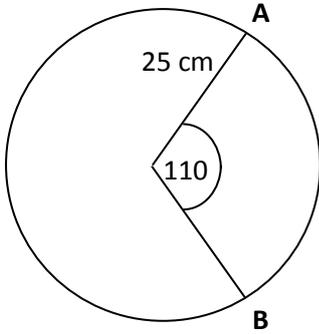
Height = 8cm



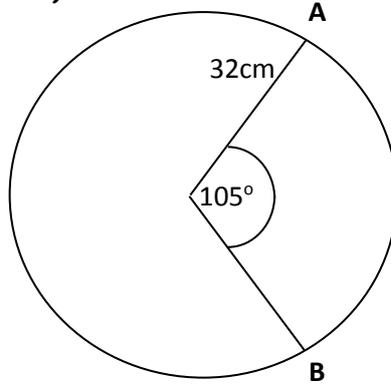
**Circles (not drawn to scale)**

1. Calculate the length of the minor arc AB in the circles shown below.

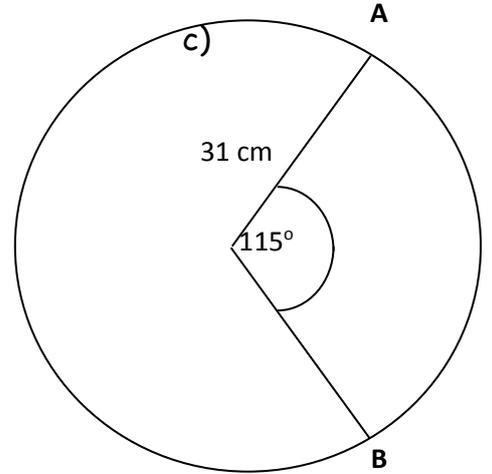
a)



b)

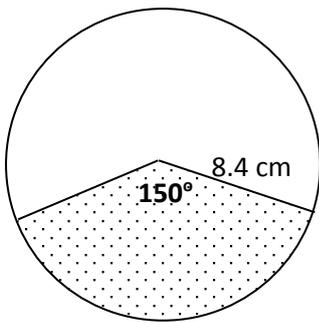


c)

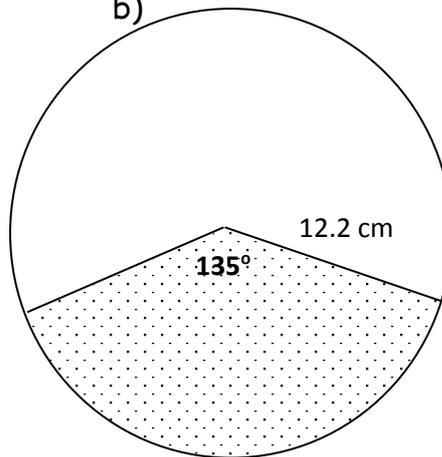


2) Calculate the area of the minor sectors in the circles below:

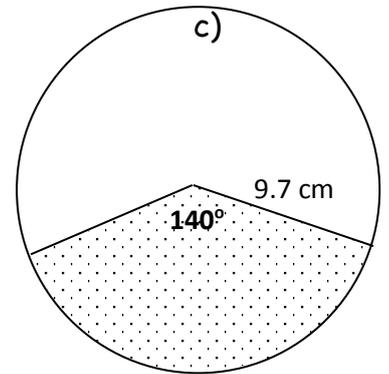
a)



b)



c)



Answers:

Removing brackets

1 a)  $3x^2 + 7x$  b)  $4y^2 + 3y$  c)  $7x^2 - 5x$  d)  $a^2 + 8a + 15$  e)  $b^2 + 12b + 35$

f)  $c^2 - c - 72$

2) a)  $x(x - 5)$  b)  $x(x - 9)$  c)  $x(x - 12)$  d)  $(a + 7)(a - 7)$

e)  $(b - 6)(b + 6)$  f)  $(c - 8)(c + 8)$  g)  $(y + 5)(y - 4)$  h)  $(y + 7)(y - 3)$  i)  $(y - 4)(y + 7)$

3) a)  $(x + 3)^2 + 4$  b)  $(x + 5)^2 - 17$  c)  $(x + 4)^2 - 66$  d)  $(x + 1)^2 - 4$

Scientific Notation: 1) a) 430 000 b) 68 300 c) 0.00934 d) 0.00003764

2)  $1.06005 \times 10^{-1}$  grams. 3)  $\pounds 2.7 \times 10^6$  4)  $2.5248 \times 10^8$

Gradient

a) 3 b) -5 c) -1 d) 5

Volume

a)  $570\text{cm}^3$  b)  $1800\text{cm}^3$  c)  $590\text{cm}^3$  d)  $250\text{cm}^3$  e)  $750\text{cm}^3$  f)  $530\text{cm}^3$

g)  $1000\text{cm}^3$  h)  $1340\text{cm}^3$  i)  $3600\text{cm}^3$

Circles (not drawn to scale)

1a). 47.997cm b) 58.64cm c) 62.2cm

2a)  $92.36\text{cm}^2$  b)  $175.3\text{cm}^2$  c)  $114.95\text{cm}^2$