DIXONS NEWALL GREEN ACADEMY

Year 9 Mastery Homework
Maths
Cycle 3a

First name	
Last name	
Advisory	
Class	
Teacher	

Purpose:
This homework booklet is designed to support you in two areas:

1. Retrieval of key information on topics covered.
2. Practising application of knowledge to high frequency exam questions.

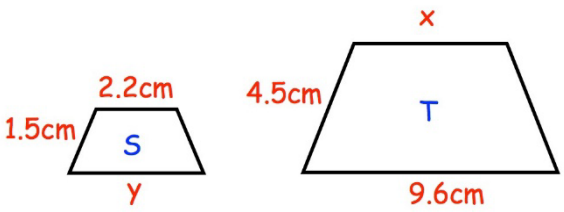
Deadlines:

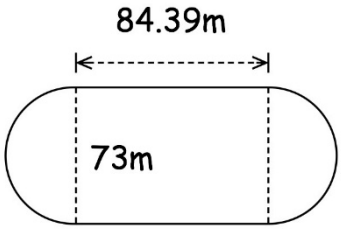
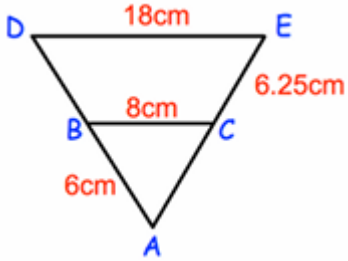
You will have one page of exam practice each week to complete in addition to your SparxMaths homework.

You should spend no longer than 20 minutes on your mastery homework task.

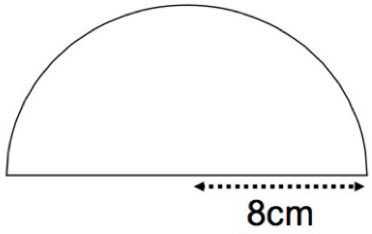
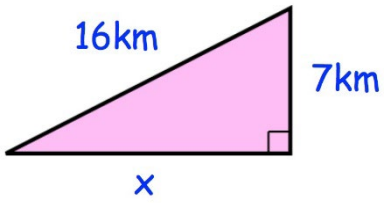
Mastery homework is due every week on Wednesday.

DUE: Wednesday 22nd April

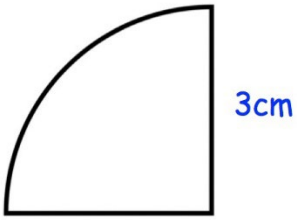
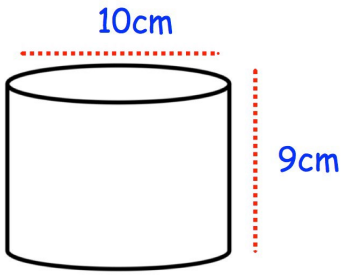
Solve $3(2x - 6) = 12$	
10 apples and 5 bananas cost £4.20 8 apples and 10 bananas cost £5.40 Find the cost of each type of fruit.	
Work out $\left(\frac{2}{3}\right)^{-2}$	
Trapezium S and trapezium T are similar. Find the size of x. 	
Write down the exact value of Sin 60° Write down the exact value of Sin 45°	

Expand and simplify $5(3x + 2) + 4(x + 9)$	
Find the area inside the running track.  	
Here are the equations of four lines. Line 1 $2y = 8x + 6$ Line 2 $x + y = 6$ Line 3 $4x - y = 5$ Line 4 $4x + 2y = 1$ Two of the lines are parallel. Which lines?	
Triangle ABC is similar to triangle ADE. Work out the length of AC.  	
Show that an increase of 10% followed by an increase of 10% is equivalent to a 21% increase overall.	

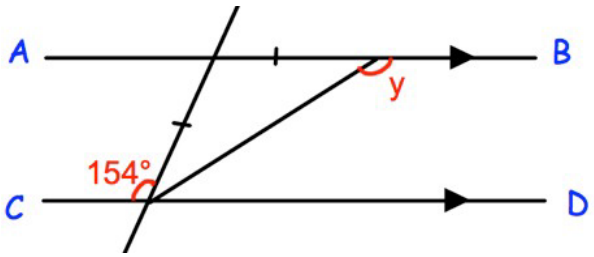
DUE: Wednesday 29th April

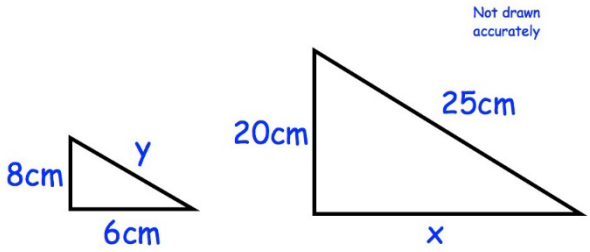
<table>
<tr>
<td>Find the area of the semi-circle.
Leave your answer in terms of π.
 
</td>
<td></td>
</tr>
<tr>
<td>Calculate x
Give your answer to 2 decimal places.
 
</td>
<td></td>
</tr>
<tr>
<td>Calculate an estimate for the mean.
<table>
<tr><th>Mass</th><th>Frequency</th></tr>
<tr><td>$20 < m \leq 25$</td><td>12</td></tr>
<tr><td>$25 < m \leq 30$</td><td>24</td></tr>
<tr><td>$30 < m \leq 35$</td><td>17</td></tr>
<tr><td>$35 < m \leq 40$</td><td>15</td></tr>
<tr><td>$40 < m \leq 45$</td><td>4</td></tr>
</table>
</td>
<td></td>
</tr>
<tr>
<td>Work out $(9\times10^4)^2$</td>
<td></td>
</tr>
<tr>
<td>At a show
4 adult tickets and 1 child ticket cost £33
2 adult tickets and 7 child tickets cost £36

Work out the cost of 10 adult tickets and 20 child tickets.</td>
<td></td>
</tr>
</table>

Find the perimeter of this quarter circle.  	
Simplify $\frac{4^5 \times 4^6}{4^3}$	
Calculate the volume of the cylinder  	
3.6 has been rounded to one decimal place. Write down the error interval.	
Finn has some sweets in a bag. • 5 of the sweets are lemon. • 7 of the sweets are strawberry • The rest of the sweets are mint. The probability that Finn takes a mint sweet is $\frac{2}{5}$ How many mint flavoured sweets are in the bag?	

DUE: Wednesday 6th May

Factorise $y^2 + 14y + 48$ Factorise $9y^2 - 1$	
Express as a single power of y. $(y^5 \times y^6)^2$	
Find the size of y.  	
Write down the gradient of the line with equation $y = 3x - 4$ Write down the gradient of the line with equation $x + y = 8$	
The population of the United Kingdom in 1950 was 5.06×10^7 The population of the United Kingdom in 2020 was 6.79×10^7 Work out how many more people live in the United Kingdom in 2020 than in 1950.	

Work out $4\frac{3}{10} - 2\frac{5}{9}$	
Write 390000000 in standard form. Write 3.1×10^{-5} as an ordinary number.	
Shown below are two similar triangles. Find the size of x. 	
Solve $y^2 + 7y + 10 = 0$	
Below are the first two terms of a geometric sequence. 4 8 __ __ __ Find the next three terms	

DUE: Wednesday 13th May

Calculate the estimated mean height

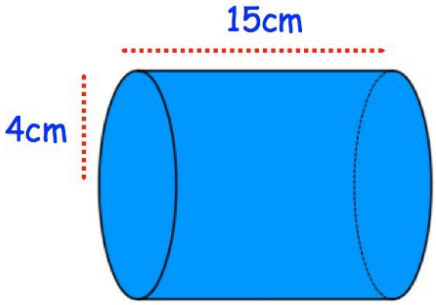
Height (h metres)	Frequency
$1.50 \leqslant h < 1.55$	6
$1.55 \leqslant h < 1.60$	10
$1.60 \leqslant h < 1.65$	24
$1.65 \leqslant h < 1.75$	17
$1.75 \leqslant h < 1.85$	3

Solve

$3 < 2x + 1 < 19$

What is the mass of an object which has a volume of $120cm^3$ and a density of $6g/cm^3$?

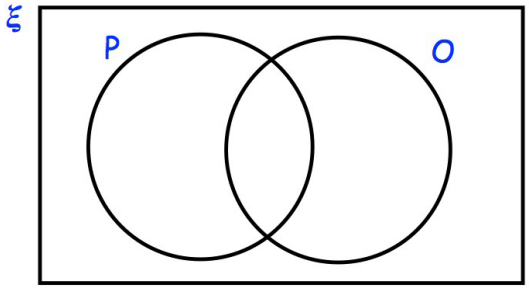
Calculate the volume of this cylinder



Given

$\frac{5}{6} : 2 = x : 1$

find the value of x

Solve $5x + 1 \leq 6.5$	
Expand and simplify $(y + 2)(y + 1)$	
Beth and Rosie are reading books. Beth's book has 120 pages. Rosie $\frac{7}{10}$ read of her book on Monday. On Tuesday she read the other 42 pages to finish her book. Find the ratio number of pages in - Beth's book : Rosie's book	
ξ = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13} O = Odd numbers P = Prime numbers Complete the Venn diagram	
A number is chosen at random Find P(O ∪ P) A number is chosen at random Find P(O ∩ P)	

DUE: Wednesday 20th May

The sum of the interior angles in a polygon is 7380° Calculate the number of sides the polygon has.	
Solve $x^2-3x-10=0$	
A container exerts a force of 4000 Newtons on the floor. The pressure on the floor is 500 Newtons/m² Calculate the area of the container that is in contact with the floor	
The number of visitors to a museum fell by 8% from March to April. In April, 51520 people visited the museum. How many people visited the museum in March?	
Work out $3^4 \times 9^{-2}$	

The table shows the ages of an under-21 rugby squad.

Find the median age

Age	Frequency
18	5
19	5
20	9
21	4

Calculate

$$\sqrt{4.7^2 + 2.55}$$

Give your answer to 1 significant figure

Sarah is x years old.
Thomas is 9 years older than Sarah.
Dan is three times as old as Sarah.
The total of their ages is 94.

How old is Dan?

Write down the equation of the line that is parallel to

$y = \frac{1}{2}x + 3$ and passes through (0, −1)

Work out the perimeter of the trapezium