



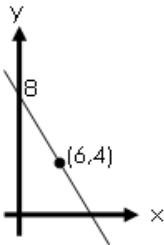
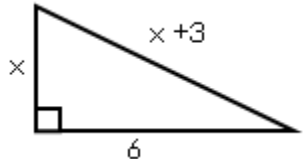
## Homework Sheet 1

Mark:

1	Evaluate $3\frac{1}{3} - 2\frac{4}{5}$	
2	Find the equation of the straight line passing through these points: (2,-3) and (3,9).	
3	Simplify $m^5 \times m^{-9}$	
4	Change the subject of the formula to $m$ : $k = \frac{mn^2}{p}$	
5	Solve $4\sin x^\circ = 2$ (for $0 < x < 360$ )	
6	Find the mean and standard deviation for this data: 3, 4, 6, 8, 8	
7	Factorise fully: $2t^2 - 18$	
8	A classic car bought for £74,000 increases in value by 6.5% every year for 3 years. Its new value?	
9	Is a triangle with sides 82cm, 80cm and 18cm right-angled?	
10	Find the roots of the equation $y = x^2 - 2x - 15$	

# Homework Sheet 2

Mark:

<p>1</p> <p>Evaluate <math>14.3 + 8.2 \times 30</math></p>	
<p>2</p> <p>Find the equation of the given straight line.</p> 	
<p>3</p> <p>Simplify <math>\frac{\sqrt{12}}{\sqrt{60}}</math></p>	
<p>4</p> <p>Change the subject of the formula to <math>r</math>: <math>p = \frac{3r^2}{y}</math></p>	
<p>5</p> <p>Solve <math>5\tan x^\circ + 3 = 4</math> (for <math>0 &lt; x &lt; 360</math>)</p>	
<p>6</p> <p>Solve this equation to 2d.p. <math>3x^2 + 7x - 4 = 0</math></p>	
<p>7</p> <p>Factorise fully: <math>3x^2 + 9x - 30</math></p>	
<p>8</p> <p>A bottle contains 336ml which is 30% more than it used to. What was the <b>original</b> volume?</p>	
<p>9</p>  <p>Find the value of <math>x</math>:</p>	
<p>10</p> <p>Find the roots of the equation <math>y = 2x^2 - 9x - 5</math></p>	

## Homework Sheet 3

Mark:

1	Find $4\frac{2}{5} \div \frac{1}{4}$	
2	Find the equation of a straight line through (3,-5) parallel to $y=4x+2$ .	
3	Remove brackets and simplify $a^{\frac{1}{2}}\left(a^{\frac{1}{2}}-2\right)$	
4	Solve $x-2(x+1) = 8$	
5	Sketch the graph of $y=4\cos 2x^\circ$ for $0 \leq x \leq 360$	
6	Find the volume of a sphere with radius 5cm, giving your answer to two significant figures.	
7	Remove brackets and simplify $(2x+3)^2 - 3(x^2-6)$	
8	Dave's car was bought for £16,000 but is losing 7.5% each year. What will it be worth in 4 years?	
9	Triangle ABC has $AC=5.6\text{m}$ , angle $ABC=83^\circ$ and angle $ACB=40^\circ$ . Find the length of AB.	
10	Describe the nature of the roots of $y = 5x^2 - 7x - 2$	

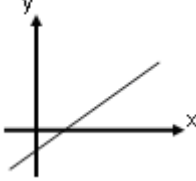
## Homework Sheet 4

Mark:

1	Without a calculator: $\frac{2.3 + 2.1 \times 5}{2^3}$	
2	Does the point (-2,5) lie on the line $y = 3x + 10$ ? Explain your answer.	
3	Simplify, leaving your answer as a surd: $2\sqrt{20} - 3\sqrt{5}$	
4	Simplify $(x + 4)(3x - 1)$	
5	Sketch the graph of $y = 3\sin(0.5x^\circ)$ for $0 \leq x \leq 360$	
6	Solve $3x^2 - 11x + 1 = 0$ , giving your answers to two decimal places.	
7	Factorise $3x^2 - 14x - 15$	
8	In a Spring Sale, a bag of springs now costs £3.60. What was it worth <b>before</b> the 20% sale?	
9	What is the area of an equilateral triangle of side 40cm?	
10	Sketch $y = (x - 3)(x + 2)$ . Label the intercepts and turning point.	

# Homework Sheet 5

Mark:

<p>1</p> <p>If <math>f(x) = x^2 + 3x</math>, find <math>f(-2)</math></p>	
<p>2</p>  <p>Which of these could this line represent?          A: <math>y = 3x + 2</math>   B: <math>y = -3x + 2</math>   C: <math>y = 3x - 2</math>          D: <math>y = 3x^2 - 2</math>   E: <math>y = -3x - 2</math></p>	
<p>3</p> <p>Find the length of the longest side on a right angled triangle with smaller sides 1cm and 7cm (leave your answer as a simplified surd).</p>	
<p>4</p> <p>Solve <math>2x + 15 \leq 3(x - 1)</math></p>	
<p>5</p> <p>Solve <math>4 \tan x^\circ = 2</math> (for <math>0 &lt; x &lt; 180</math>)</p>	
<p>6</p> <p>Calculate the standard deviation for this: 3, 8, 14, 20</p>	
<p>7</p> <p>Expand and simplify <math>(3x + 1)(x^2 - 5x + 4)</math></p>	
<p>8</p> <p>China's population is <math>1.34 \times 10^9</math>. If this increases by 5% for the next 6 years, what will it be?</p>	
<p>9</p> <p>A square has side <math>x</math>. It has a diagonal of 6cm. Calculate the exact length of <math>x</math>.</p>	
<p>10</p> <p>How many real solutions are there to the equation <math>2x^2 - 2x + 3 = 0</math>?</p>	

## Homework Sheet 6

Mark:

1

Find  $\frac{1}{2}\left(1\frac{2}{7}-\frac{5}{9}\right)$

2

A straight line with gradient 5 passes through (4,8) and (2,a).  
Find the value of a.

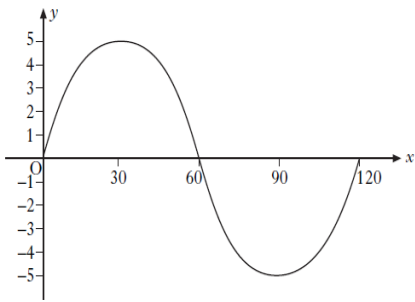
3

Expand  $k^2\left(3k+2k^{-4}-k^{\frac{1}{2}}\right)$

4

Change the subject of the formula to W:  $5W - J^2 = \frac{4}{L}$

5



This is the graph  
 $y = a \sin(bx^\circ)$

Find the value of a and b.

6

Can a cylinder with height 10cm and diameter 8cm hold 500ml of water? Explain your answer.

7

Factorise fully:  $10x^2 - 50x - 240$

8

My total bill for fixing my car included 8% tax. If the bill was £324, what was the bill **before** tax?

9

A triangle has sides 12cm, 14cm and 21cm. Find the sizes of its biggest angle.

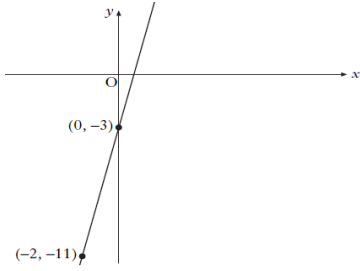
10

Sketch  $y = (2x - 5)(x + 1.5)$   
Label the intercepts and turning point.

# Homework Sheet 7

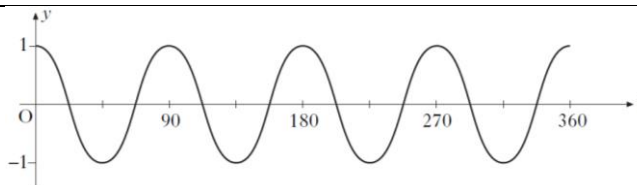
Mark:

1 Without a calculator find  $\frac{4}{7}$  to three decimal places.

2  What is the equation of this line?

3 Find  $27^{\frac{2}{3}}$

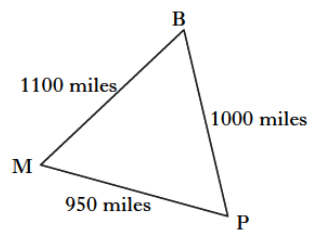
4 Solve  $3x + 1 = \frac{x - 5}{2}$

5  What is the value of a in this graph  $y = \cos(ax^\circ)$

6 Show that the standard deviation of 1,1,1,2,5 is  $\sqrt{3}$  and **write down** the s.d. of 101,101,101,102,105.

7 Multiply out and simplify:  
 $3(x^2 - 5x + 1) - 2x(x - 4)$

8 If these shapes have the same height which has greater volume:  
a cone with radius 3cm or a cylinder with radius 2cm?

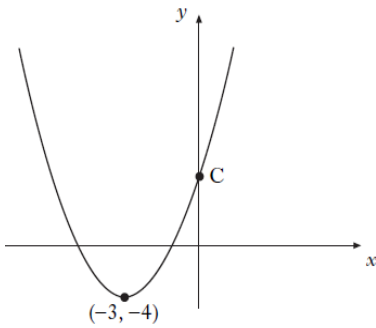
9  Here's the Bermuda Triangle (Bermuda-Miami-Puerto Rico). Find angle BMP

10 Write down the axis of symmetry and the coordinates of the turning point of  $y = (x - 6)^2 + 2$



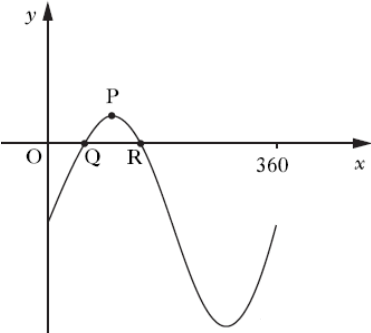
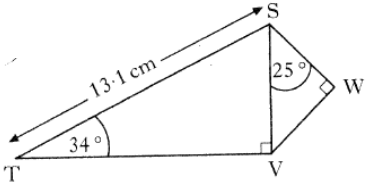
## Homework Sheet 8

Mark:

1	Without a calculator find 35% of £84.50	
2	A straight line is given by $y=mx+c$ . Sketch this to illustrate a possible graph when $m > 0$ and $c < 0$ .	
3	Simplify $\frac{ab^6}{a^2b^3}$	
4	Write $\frac{3}{a} + \frac{5}{a-1}$ as a single fraction	
5	Solve $4\sin x^\circ = 2\sin x^\circ + 1$ for $0 \leq x \leq 360$	
6	Solve $3x^2 + 2x = 10$ , giving your answer to two decimal places.	
7	Factorise $10.2^2 - 9.8^2$ . Can you use your answer to see what the value of this expression is?	
8	The big jar of marmalade (450g) has 12.5% more than the standard one. What's in the standard one?	
9	Plot the point A (-5,2) on a coordinate diagram. How far is it from A to the origin?	
10	 <p>Here is the graph of <math>y=(x-a)^2+b</math> Find a, b and use your equation to find c.</p>	

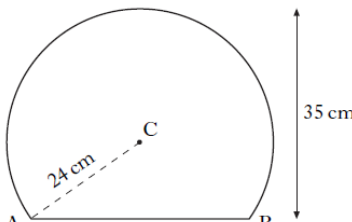
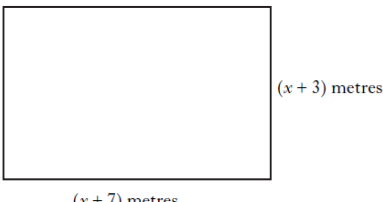
# Homework Sheet 9

Mark:

<p>1 Find the mean of <math>\frac{3}{5}, \frac{5}{8}, \frac{3}{4}, \frac{1}{2}</math>.</p>	
<p>2 Find the gradient and y-intercept for this straight line: <math>6x + 2y = 5</math></p>	
<p>3 Express <math>\frac{12}{\sqrt{2}}</math> with a rational denominator in its simplest form.</p>	
<p>4 Change the subject of the formula to h: <math>A = \frac{1}{2}h(a + b)</math></p>	
<p>5  The graph shown is <math>y = 5\sin x^\circ - 4</math>. Find the coordinates of Q and P.</p>	
<p>6 4M1 Test Scores: Mean=75%, s.d.=10% 4M2 Test Scores: Mean=69%, s.d.=8% Give two valid comparisons.</p>	
<p>7 Factorise fully <math>2y^2 - 30y - 68</math></p>	
<p>8 A patient gets 250mm of a drug at 3pm. Every hour the amount of blood decreases by 20%. How much is in the blood at 6pm?</p>	
<p>9  Find the length of SW.</p>	
<p>10 Describe the types of roots this quadratic has: <math>y = 3x^2 + 2x</math></p>	

# Homework Sheet 10

Mark:

<p><b>1</b> Jamie is baking cakes for a party. Each cake needs <math>\frac{2}{5}</math> block of butter. If he has 7 blocks of butter how many cakes can he make?</p>	
<p><b>2</b> Find the equation of a straight line between <math>(-8, 3)</math> and <math>(-4, -5)</math>.</p>	
<p><b>3</b> Express <math>p^3(p^{-3} - \sqrt{p})</math> in simplest form.</p>	
<p><b>4</b> Solve for x: <math>\frac{3(x-1)}{5} = \frac{x+1}{2}</math></p>	
<p><b>5</b> Solve <math>\sin^2 x = \frac{1}{4}</math> for <math>0 \leq x \leq 360</math></p>	
<p><b>6</b> A cuboid has a volume of <math>1.98\text{m}^3</math>. It has a length of 110cm and a breadth of 150cm. Find the height.</p>	
<p><b>7</b> Multiply out and simplify: <math>(x+2)^3</math></p>	
<p><b>8</b> My microwave cost £150 (includes 17.5% VAT). How much did it cost before VAT was added?</p>	
<p><b>9</b>  Find the length of AB.</p>	
<p><b>10</b> This garden has an area of <math>45\text{m}^2</math>. Find x.</p> 	

## Summary

Keep a record of the questions that you are getting right.

Use this to identify the areas where you are struggling a bit.

Ask your teacher for help with these areas!

10: Quadratics (Solving, Graphs)										
9: Triangle Rules (Pythagoras, Sine Rule, Cosine Rule, Area of Triangle)										
8: Percentages (including compound interest, appreciation, depreciation, working backwards)										
7: Factorisation and Multiplying Out Brackets										
6: Using formula (including standard deviation, quadratic formula and volumes)										
5: Trigonometric graphs and equations										
4: Algebra (including changing the subject of a formula, solving equations and inequations)										
3: Surds and Indices										
2: Equation of a straight line										
1: Basic calculations (including fractions and BODMAS)										
	Homework 1	Homework 2	Homework 3	Homework 4	Homework 5	Homework 6	Homework 7	Homework 8	Homework 9	Homework 10