Homework 1

No.	Questions	Marks
1	Draw axes with x from -2 to 8, y from -2 to 8. Draw the graph of $y = 2x + 1$. Use the cover up method to draw the graph of $x + 2y = 8$. Write down the coordinates of the point of intersection.	(5)
2	Expand and simplify: $5(3x-1) - 2(2x-1)$	(3)
3(a)	Factorise: $4a^2b - 10ab^2$	(2)
3(b)	Factorise: $22pq^3+55p^2q$	(2)

4(a)	Simplify $x^3 \times x^4$	(1)
4(b)	Simplify $\frac{m^9 \times m}{m^5}$	(2)
5(a)	Expand and Simplify: $(x+4)(x-5)$	(2)
5(b)	Expand and Simplify $(x-3)^2$	(2)
6	An equilateral triangle with sides 2x+1 has the same perimeter as a rectangle length 4x and width x+0.5. Form an equation in x and solve it to find the **area** of the rectangle.	(3)

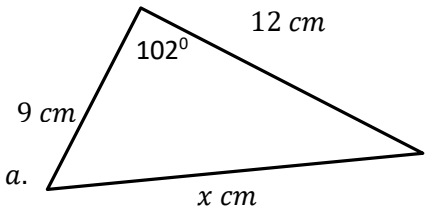
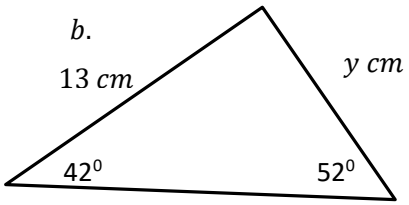
7(a)	Solve by factorising: $a^2 - 7a + 10 = 0$	(3)
7(b)	Solve by factorising: $w^2 - w - 12 = 0$	(3)
8	Sketch the graphs of… (a sketch is not drawn accurately but has key values such the x and y intersects) i) $y = x^3$ ii) $y = \frac{1}{x}$ iii) $y = 2^x$	(6)

9(a)	Solve: $$5x + 2y = 61$$ $$2x - 5y = -22$$	(4)
9(b)	Solve: $$6x = 52 - 2y$$ $$5x + 7y = 70$$	(4)

10	Expand and Simplify a) $(5+\sqrt{3})(6+\sqrt{3})$ b) $(4+\sqrt{2})(5-\sqrt{2})$ c) $(7+\sqrt{5})(7-\sqrt{5})$	(6)
11(a)	Simplify $\frac{7(2x+1)}{(2x+1)^2}$	(2)

11(b)	Simplify $$\frac{3x+9}{x^2+5x+6}$$	(2)
12(a)	Solve $$\frac{x}{3}+\frac{x-2}{5}=6$$	(4)
12(b)	Solve this equation $$\frac{x-2}{5}+\frac{x}{3}=\frac{x}{2}$$	(4)

13(a)	Factorise: $3x^2 - 7x + 2$	(2)
13(b)	Factorise: $6x^2 + 5x + 1$	(2)
14(a)	Write in the form $(x + a)^2 + b$ $x^2 + 8x + 3$ *(This is a common way of asking you to complete the square)*	(3)
14(b)	Write in the form $(x + a)^2 + b$ $x^2 - 6x - 12$	(3)

15	Prove, using algebra, that the mean of any 3 consecutive numbers is equal to the middle number	(3)
16	Solve the following quadratic equation using the quadratic formula; leave your answer to two decimal places. $x^2 - 10x + 5 = 0$	(3)
17	Find the missing values using sine and cosine rules  	(4)

18	Rationalise the denominator a) $\frac{5}{\sqrt{2}}$ $b)$ $\frac{8}{2-\sqrt{5}}$	(4)
19	Solve a) $4x+12 \leq 8x-8$ b) $5x+2>15x-4$	(4)

20(a)	If s=5 t=4 and v=0.5 find a where $s = vt - \frac{1}{2}at^2$	(2)
20(b)	If a= 4vand b=-5 find c $c = \sqrt{b^2 - a^2}$	(2)
21	Make x the subject a) $4x^2 + y^2 = r^2$ b) $ht = xy - 4x$	(4)
22	Find the Midpoint of the co-ordinates (-2,3) and (6,8)	(2)
23	Write an expression in terms of N for the sequences 37,33,29,25,21…	(2)