С	S3 Nat 5 Non-Calculator Revision 3		
1	Evaluate $1\frac{1}{8} \div \frac{3}{4}$	2	
	0 4		
2	Factorise	4	
	(a) $x^2 - 1$ (b) $x^2 - 5x - 6$	_	
3	Write $x^2 - 4x + 7$ in completed square form $(x + a)^2 + b$		
4	Multiply out the brackets and collect like terms		
	$(2x-1)(4x+5) - 3(x^2+1)$	3	
5	A right-angled triangle has the		
	dimensions:		
	• AB is √50		
	• CB is $\sqrt{32}$		
	C B		
	$\sqrt{32}$		
_	Calculate the length of AC, give your answer as a surd in the simplest form.	3	
6	Change the subject of the formula $S = \frac{3}{4}a - t^2$		
С	S3 Nat 5 Calculator Revision		
7	Bacteria in a petri dish increase at a rate of 5% per hour.		
	At 12 noon there are 4000 bacteria in the petri dish.		
	How many bacteria will be present at 2.00 pm?	3	
8			
	Calculate the length of the		
	h = 5 cm space diagonal of this		
	cuboid (the dotted line).		
	Give your answer as a surd	4	
	<i>l</i> = 8 cm and as a decimal	4	
9	Sketch a possible graph to represent $y = mx + c$ where m is less than		
	zero and c is greater than zero.		
10	Calculate the volume of a hemisphere		
	which has a diameter of 6.4×10^3 metres		
	Give your answer in scientific notation		
	correct to 2 significant figures. \leftarrow 6.4 × 10 ³ metres	4	
	h A V III marrae		

	Answers		
1	$1\frac{1}{8} \div \frac{3}{4} = \frac{9}{8} \times \frac{4}{3} = \frac{3}{2}$		
2	(a) $(x+1)(x-1)$ (b) $(x-6)(x+1)$ 3 $(x-2)^2+3$		
4	$8x^2 + 10x - 4x - 5 - 3x^2 - 3 = 5x^2 + 6x - 8$		
5	$(\sqrt{50})^2 = (\sqrt{32})^2 + AC^2$, $50 = 32 + AC^2$, $AC^2 = 50 - 32$, $AC^2 = 18$, $AC = \sqrt{18}$, $AC = \sqrt{9}\sqrt{2} = 3\sqrt{2}$		
6	$AC^2 = 18$, $AC = \sqrt{18}$, $AC = \sqrt{9}\sqrt{2} = 3\sqrt{2}$ subtract t^2 $S - t^2 = \frac{3}{4}a$, multiply by 4 and divide by 3 $a = \frac{4}{3}(S - t^2)$		
7	105% of 4000 = 4000 + 200 = 4200, 105% of 4200 = 4200 + 210 = 4410 bacteria Or $4000 \times 1.05^2 = 4410$ bacteria		
8	The space diagonal is $\sqrt{8^2 + 6^2 + 5^2} = \sqrt{125} = \sqrt{25}\sqrt{5} = 5\sqrt{5} = 11.2 \ cm$		
9	If the gradient is negative then the line slopes down. If c is positive then the line crosses the y -axis anywhere above the origin (x =0)		
10	Volume of a hemisphere is $\frac{4}{3} \times \pi \times r^3 \div 2$, $V = \frac{4}{3} \times \pi \times (3.2 \times 10^3)^3 \div 2 = 6.8629 \dots \times 10^{10}$ Volume is 6 . 9 × 10 ¹⁰ m^3		

Exti	Extra Help from mathsworkout.co.uk. School login is madrascol school password is value28			
1	Changing the subject	Algebra: topic 11 Any Level 5 tasks		
2	Completing the square	Algebra: topic 12 Completing the Square (level 7)		
3	Expanding Brackets	Algebra: topic 12 Expanding Brackets (Level 4)		
4	Factorising	Algebra: topic 12 Factorising Quadratics (Level 5)		
5	Fractions	Number: topic 14 – Add, Subtract, Multiply and Divide		
6	Percentages	Ratio: topic 7 Percentage increase and decrease		
7	Straight Lines	Graphs: topic 2		
		Calculating the Gradient		
		Equation of a Straight Line 1 and 2		
8	3D Pythagoras	Geometry: topic 19 Pythagoras in 3D		
9	Volume	Geometry: topic 15 Volume of a sphere		