Essential skills higher record sheet

Name:

Question	www.mathedup.co.uk Topic	Worksheet 1	Worksheet 2	Worksheet 3	Worksheet 4	Worksheet 5
1	Factorising quadratic expressions					
2	Trigonometry (SOH CAH TOA)					
3	Simplifying surds					
4	Compound percentages					
5	Using the quadratic formula					
6	Upper and lower bounds					
7	Volume and surface area					
8	Simultaneous equations					
9	Direct and inverse proportion					
10	Finding the nth term					
11	Simplifying indices					
12	Reverse percentage problems					
13	Equations of a circle					
14	Area & perimeter of sectors					
15	Completing the square					
	Total					

Keep a record of how well you do in this table.

You should always try to **improve** on the previous sheet. Make sure you look at your corrections and targets so you know what you have to do to achieve better.

After each sheet, set yourself a target as to what you want to improve for next time..

Date Set	Target	Date Achieved

Name:

Mark:

Higher GCSE – Essential Skills 1

Show all of your working out

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1	Factorise the expression $x^2 + 5x - 14$	
2*	Work out the missing length to 3sf	
3	Simplify the following surd $\sqrt{50}$	
4*	Jordan buys a car for £5000. It depreciates by 23% per year. How much is it worth after 5 years?	
5*	Use the quadratic formula to solve the equation to 3sf: $3x^2 + 5x - 7 = 0$	
6*	a = 2.3 (1dp) b = 3.83 (2dp) Calculate the upper bound of the following to 3dp **a – b**	
7*	Work out the volume of the cone to 3sf	

8	Solve the following simultaneous equations $2s + 4t = 32$ $5s + 8t = 70$	
9	P is **directly** proportional to Q. P=20 when Q=5 Write down a formula for P in terms of Q	
10	What is the nth term of the following sequence? **6, 10, 14, 18, 22**	
11	Simplify $(\mathbf{p^3 \times p^5})^2$	
12*	Mr Ladak buys a suit in a sale for £120. It had been reduced by 20%. What was the original price of the suit?	
13	A circle has a radius of 5 and centre (4, 6). Write down the equation of the circle.	
14*	Find the area of the sector to 3sf 	
15	Write the following in the form $(x + p)^2 + q$ $x^2 + 8x - 10$	

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Higher GCSE – Essential Skills 2

Show all of your working out

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1	Factorise the expression $x^2 - 9x + 20$	
2*	Work out the missing length to 3sf	
3	Simplify the following surd $\sqrt{45}$	
4*	Malcolm buys a caravan for £12000. It depreciates by 31% per year. How much is it worth after 7 years?	
5*	Use the quadratic formula to solve the equation to 3sf: $5x^2 - 2x - 11 = 0$	
6*	a = 3.4 (1dp) b = 5.8 (1dp) c = 5.12 (2dp) Calculate the lower bound of the following to 4dp **ab + c**	
7*	Work out the volume of the hemisphere to 3sf	

8	Solve the following simultaneous equations $3a + 4b = 58$ $12a + 5b = 122$	
9	M is **inversely** proportional to N. M=10 when N=2 Write down a formula for M in terms of N	
10	What is the nth term of the following sequence? **2, 10, 18, 26, 34**	
11	Simplify $(\mathbf{p^7 \times p^4})^3$	
12*	Zeeshan buys a hat for £21 in a 30% off sale. What was the original price of the hat?	
13	A circle has a radius of 7 and centre (2,3). Write down the equation of the circle.	
14*	Find the perimeter of the sector to 3sf 	
15	Write the following in the form $(x + p)^2 + q$ $x^2 - 6x + 15$	

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Higher GCSE – Essential Skills 3

Show all of your working out

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1	Factorise the expression $x^2 - 4x - 12$	
2*	Work out the missing angle to 1dp	
3	Calculate the following giving your answer as a simplified surd $\sqrt{6} \times \sqrt{3}$	
4*	Ben invests £8000 in a bank account. He gets 6% interest per year. How much does he have after 4 years?	
5*	Use the quadratic formula to solve the equation to 3sf: $2x^2 + 3x - 11 = 0$	
6*	a = 2.3 (1dp) b = 15.7 (1dp) Calculate the lower bound of the following to 3sf $\frac{b}{a}$	
7*	Work out the surface area of the hemisphere to 2dp	

8	Solve the following simultaneous equations $5p - 7q = -13$ $2p + 7q = 34$	
9	p is **directly** proportional to q^2. p=40 when q=2 Write down a formula for p in terms of q	
10	What is the nth term of the following sequence? **-4, -1, 2, 5, 8**	
11	Find 2^{-3} Explain how you work out a negative power	
12*	Jacqueline buys a magic torch for £34 in a 15% off sale. What was the **original price** of the magic torch?	
13	A circle has a radius of 6 and centre (-2,1). Write down the equation of the circle.	
14*	Find the area of the sector to 3sf 	
15	Write the following in the form $(x + p)^2 + q$ $x^2 - 10x + 4$	

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Higher GCSE – Essential Skills 4

Show all of your working out

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1	Factorise the expression $x^2 - 8x + 16$	
2*	Work out the missing length to 3sf	
3	Simplify the following giving your answer in the form $a\sqrt{b}$ $\sqrt{20} + \sqrt{80}$	
4*	Alex buys a boat for £36,000. It depreciates by 18% per year. How much is it worth after 4 years?	
5*	Use the quadratic formula to solve the equation to 3sf: $3x^2 + 9x - 3 = 0$	
6*	a = 5.9 (1dp) b = 11.2 (1dp) c = 13.45 (2dp) Calculate the upper bound of the following to 3dp $\frac{b+c}{a}$	
7*	Work out the surface area of the cylinder to 1dp	

8	Solve the following simultaneous equations **6x - 2y = 33** **4x + 3y = 9**	
9	x is **inversely** proportional to y^2. x=5 when y=3 Write down a formula for x in terms of y	
10	What is the nth term of the following sequence? **-2.5, -1, 0.5, 2, 3.5**	
11	Find $36^{\frac{1}{2}}$ Explain how you work out a fractional power	
12*	Kaneez buys a lightsaber for £117 in a 35% off sale. What was the **original price** of the lightsaber?	
13	The equation of a circle is $(x-2)^2+(y-5)^2=100$ Write down the radius and the coordinates of the centre.	
14*	Find the perimeter of the sector to 3sf 	
15	Write the following in the form $(x+p)^2+q$ $x^2+8x+33$	

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Higher GCSE – Essential Skills 5

Show all of your working out

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1	Factorise the expression $x^2 + 7x - 60$	
2*	Work out the missing angle to the nearest degree	
3	Simplify the following giving your answer in the form $a\sqrt{b}$ $\frac{42}{\sqrt{7}}$	
4*	Dominika invests £3500 in a bank account. She gets 4.5% interest per year. How much does she have after 5 years?	
5*	Use the quadratic formula to solve the equation to 3sf: $6x^2 = 2 - 5x$	
6*	a = 5.9 (1dp) b = 3.2 (1dp) c = 1.4 (1dp) Calculate the lower bound of the following to 3sf $\frac{b-c}{a}$	
7*	Work out the surface area of the cone to 3sf Hint: Use Pythagoras to find the sloping length first	

8	Solve the following simultaneous equations **9x + 5y = -1** **4x - 3y = 10**	
9	p is **directly** proportional to $\sqrt{q}$. p=15 when q=9 Write down a formula for p in terms of q	
10	What is the nth term of the following sequence? **19, 15, 11, 7, 3**	
11	Find $27^{-\frac{1}{3}}$	
12*	Zack gets a pay rise of 15% and now earns £29,900. What was his **original** salary?	
13	The equation of a circle is $(x+5)^2 + (y-2)^2 = 144$ Write down the radius and the coordinates of the centre.	
14*	Find the area and perimeter of the sector to 3sf 	
15	Write the following in the form $(x+p)^2 + q$ $x^2 - 20x + 14$	