## Hillcrest Mathematics Knowledge Organiser





					ULLCRE2	
<u>Rounding to</u> <u>10, 100 &amp; 1000</u>		<b>Estimating</b> When estimating you are <b>not guessing</b> you are making the numbers 'easier' for you to work out the sum.				
Remember to kept the place value of each number by insert zeros where		To estimate a sum, you need to				
applicable.		1. Round each number to <b>1s.f</b> .				
Look at the number which <b>represents the place value</b> , look to the <b>right</b> , if this		2. Then calculate the sum using the hierarchy of operations.				
digit is <b>5 or more</b> the number <b>rounds up by 1</b> .						
If the number is <b>4 or less</b> the number <b>stays the same.</b>		Example 1:		E	xample 2:	
E.g. Round <b>17 839</b> to the nearest 10, 100 & 1000		Estimate $\frac{23.43 \times 4.3}{23.43 \times 4.3}$				<u>43 ×4.3</u>
(i) Nearest 10 – 17 840		3.1 ×3.9		Ľ	(	0.483
(ii) Nearest 100 – 17 800		A Downd to 1c f				
(iii) Nearest 1000 – 18 000		• Round to 1s.f. • Round to 1s.f.				
		$\frac{30 \times 4}{3 \times 4}$	$\frac{10}{1} = \frac{1200}{12} = 1$	100.		$\frac{20 \times 4}{0.5} = \frac{30}{0.5} = 160$
Decimal places (d.p.)		5.4				0.5 0.5
<b>1.</b> Identify the position of the decimal place to be rounded to, e.g. 2d.p. would		EXAMPLE: What is 7.45839	9 to 2 decimal places?			Estimating square roots
be the 2 <sup>nd</sup> digit after the decimal place.		7.	.4(5)(8)39 =	7.46		<ol> <li>Find the two consecutive square</li> </ol>
2. Then look to the <b>right</b> of this digit, this is called the <b>decider</b> , this number now		LAST DIGIT		The <u>LAST</u> because the	DIGI1 rounds <u>UP</u> <u>DECIDER</u> is	nu <u>mb</u> ers either side.
decides whether the decimal place is rounded up or kept the same.		$5 \text{ or more.}$ E.g. $\sqrt{48}$				
3. If the <b>decider</b> is <b>5 or more</b> then <b>round the digit up</b> .		Caracial assoc				The two consecutive square numbers
4. If the decider is 4 or less then leave the digit as it is.		Special case: are 36 and 49.				
		Round 23.999 to 20.p. = 24.00				2) Find the <b>square roots</b> of these two
<u>Significant figures (s.f.)</u>		As the 3 <sup>rd</sup> 9 rounds up the 2 <sup>rd</sup> 9 which rounds up the 1st 9    numbers: $\sqrt{36} = 6$ and $\sqrt{49} = 7$ .				
1. The <b>first significant number</b> is the first digit of a number which isn't zero.		due to the 9 turning into a 10 and insert zeros. Therefore the estimate of $\sqrt{48}$ would be				
2. The <b>2<sup>nd</sup>, 3<sup>rd</sup>, digits</b> follow immediately after the 1 <sup>st</sup> , regardless of zeros.						between 6 & 7.
0.002309 2.030	/0	EXAMPLES:		2.12		This can then lead onto estimating the
SIG. FIGS: 1st 2nd 3rd 4th 1st 2nd 3rd 4th	h		to 3 s.f.	to 2 s.f.	<u>to 1 s.f.</u>	value, as 48 is close to 49, I would
(If we're rounding to say, 3 s.f., then the LAST DIGIT is simply the 3rd sig. fig.)		1) 54./651	54.8	55	50	estimate that $\sqrt{48} = 6.9$
3. When rounding numbers the <b>place value</b> of each digit must be the same.		2) 0.0045902	30900	31000	30000	
		5) 50055.4	30900	31000	30000	
Linked Prior Topics:	<u>Vocabulary:</u>	• Estima	ate		Linked	Future Topics:
Place value	Significant figures	Decide	er		• Rou	nding answers e.g. area of a circle
	Decimal places	Conse	cutive			