



NUMERACY BOOKLET: HELPFUL HINTS

ADDITION / SUBTRACTION

SKILL	EXAMPLE	FAIRFAX SUGGESTED STRATEGY	HELPFUL HINTS
Column Addition	$38 + 26 = 64$	$\begin{array}{r} 38 \\ + 26 \\ \hline 64 \end{array}$	Start at the right adding the units. Remember to carry over the tens, hundreds etc.
Column Subtraction	$138 - 65 = 123$	$\begin{array}{r} 138 \\ - 65 \\ \hline 73 \end{array}$	Remember if the bottom digit is larger than the top digit to borrow from the next column

MULTIPLICATION

SKILL	EXAMPLE	FAIRFAX SUGGESTED STRATEGY	HELPFUL HINTS															
Mental Multiplication	$6 \times 8 = 48$	Learn your tables																
Column Method	32×26	$\begin{array}{r} \text{H T U} \\ 32 \\ \times 26 \\ \hline 192 \quad (32 \times 6) \\ +640 \quad (32 \times 20) \\ \hline 832 \quad (32 \times 26) \\ 1 \end{array}$	If a student uses an alternative correct method, that is acceptable, however curriculum guidelines recommend this method. Alternative method, if partly correct, will score no marks.															
Grid Method	$123 \times 15 = 1845$	<table style="display: inline-table; border-collapse: collapse;"> <tr> <td></td> <td style="text-align: center;">100</td> <td style="text-align: center;">20</td> <td style="text-align: center;">3</td> <td></td> </tr> <tr> <td style="text-align: right;">10</td> <td style="border: 1px solid black; padding: 2px;">1000</td> <td style="border: 1px solid black; padding: 2px;">200</td> <td style="border: 1px solid black; padding: 2px;">30</td> <td></td> </tr> <tr> <td style="text-align: right;">5</td> <td style="border: 1px solid black; padding: 2px;">500</td> <td style="border: 1px solid black; padding: 2px;">100</td> <td style="border: 1px solid black; padding: 2px;">15</td> <td></td> </tr> </table> <p>Add together highlighted amounts to get answer</p>		100	20	3		10	1000	200	30		5	500	100	15		$\begin{array}{r} 1000 \\ 200 \\ + 30 \\ 500 \\ 100 \\ \hline 15 \\ \hline 1845 \end{array}$
	100	20	3															
10	1000	200	30															
5	500	100	15															

DIVISION

SKILL	EXAMPLE	FAIRFAX SUGGESTED STRATEGY	HELPFUL HINTS
Mental Division	$63 \div 7 = 9$	Reverse the calculation $7 \times \text{what} = 63$	
Bus Shelter Method	$129 \div 6 = 21.5$	$\begin{array}{r} 21.5 \\ 6 \overline{)129.30} \end{array}$	1 is not divisible by 6 so carry to next digit $12 \div 6 = 2$ no remainder $9 \div 6 = 1$ remainder 3 so add a decimal point above and below bus shelter and add a 0 carry the remainder 3 to the 0 $30 \div 6 = 5$

DECIMALS

SKILL	EXAMPLE	FAIRFAX SUGGESTED STRATEGY	HELPFUL HINTS
Adding Decimals	$19.2 + 3.5 = 22.7$	Use column addition method $\begin{array}{r} 19.2 \\ + 3.5 \\ \hline 22.7 \end{array}$	Keep decimal points in line
Subtracting Decimals	$27.3 - 6.1 = 21.2$	Use column subtraction method $\begin{array}{r} 27.3 \\ - 6.1 \\ \hline 21.2 \end{array}$	Keep decimal points in line
Multiplying Decimals	$0.02 \times 3.6 = 0.072$	Count up the total number of decimal places - in this case there are 3. Ignore the decimal places and multiply the numbers $2 \times 36 = 72$ We need 3 decimal places in the answer so start from the right and move left by the number of places required. In this case 0.072	Use standard multiplication technique and learn tables
Dividing Decimals	$3.2 \div 0.08 = 40$	Change the question by multiplying both numbers by 10, 100, 1000...so both become whole numbers $3.2 \div 0.08$ becomes $320 \div 8$	You need to be able to divide by a whole number, not a decimal.

PERCENTAGES

SKILL	EXAMPLE	FAIRFAX SUGGESTED STRATEGY	HELPFUL HINTS
Working out percentage of amount (non-calculator)	16% of 160	Use the "chunking" method. 10% is $160 \div 10 = 16$ 5% is $10\% \div 2 = 8$ 1% is $10\% \div 10 = 1.6$ 16% of 160 is $16+8+1.6 = 25.6$	Finding 10%, 5% and 1% will enable you to find any % required.
Working out percentage of amount (calculator)	Calculate 36% of 128	Divide the percentage given by 100 and multiply by the amount $\frac{36}{100} \times 128 = 46.08$	"Percent" means "per hundred", so 36% is 36 out of 100 or $\frac{36}{100}$

FACTORS, MULTIPLES & SEQUENCES

SKILL	EXAMPLE	FAIRFAX SUGGESTED STRATEGY	HELPFUL HINTS
Listing factors of a number	List factor of 60	Factors come in pairs and are numbers that when multiplied together equal the given number $1 \times 60 = 60, 2 \times 30 = 60, 3 \times 20 = 60, 4 \times 15 = 60, 5 \times 12 = 60, 6 \times 10 = 60$ Factors of 60 are: 1,2,3,4,5,6,10,12,15,20,30,60	Remember squared numbers have a factor multiplied by itself. Factors of 16: 1,2,4,8,16 since $4 \times 4 = 16$

SKILL	EXAMPLE	FAIRFAX SUGGESTED STRATEGY	HELPFUL HINTS
Common Factors	Common factors of 60 and 16	List factors as above and note any factors that appear in both lists. Factors of 60 are: 1,2,3,4,5,6,10,12,15,20,30,60 Factors of 16: 1,2,4,8,16 Common factors: 1,2,4	
Listing multiples of a number	First eight multiples of 3 and 4	List the first 8 terms in the times tables: Multiples of 3: 3,6,9,12,15,18,21,24 Multiples of 4: 4,8,12,16,20,24,28,32	
Common multiples	Common multiples of 3 and 4	List multiples that appear in both times tables: 12, 24, 36...	
Common sequences, square numbers	Evaluate 3^2	Square numbers are found by multiplying a number by itself: $= 3 \times 3 = 9$	Evaluate means 'work out the value of'
Common sequences, cube numbers	Write down the fourth cube number	Cube numbers are found by multiplying a number by itself, and then again: $= 4 \times 4 \times 4 = 64$	Don't confuse 4^3 with 4×3 .

NEGATIVE NUMBERS

SKILL	EXAMPLE	FAIRFAX SUGGESTED STRATEGY	HELPFUL HINTS
Adding a negative	$2 + -4$	Adding a negative is the same as subtracting a positive: $2 + -4 = 2 - +4 = -2$	Negative changes the sign next to it.
Subtracting a negative	$2 - -4$	Subtracting a negative is the same as adding a positive: $2 - -4 = 2 + 4 = 6$	Negative changes the sign next to it.
Multiplying by a negative	2×-3	Ignore the negatives and do the multiplication. If there are an odd number of negatives in the question the answer will be negative: $2 \times -3 = -6$ If there are an even number of negatives in the question the answer will be positive: $-4 \times -5 = 20$	Count the negatives in the question. Two negatives "cancel" each other to become positive.

Dividing by a negative	$63 \div -7$ $-39 \div -3$	Ignore the negatives and do the division. If there are an odd number of negatives in the question the answer will be negative: $63 \div -7 = -9$ If there are an even number of negatives in the question the answer will be positive: $-39 \div -3 = 13$	Count the negatives in the question. Two negatives "cancel" each other to become positive.
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RATIO

SKILL	EXAMPLE	FAIRFAX SUGGESTED STRATEGY	HELPFUL HINTS
Dividing a quantity into a ratio	Divide £72 in the ratio of 5:4	Add the number of parts in the ratio ($5+4 = 9$ parts) <ul style="list-style-type: none"> • Draw the boxes for the ratio • Divide the amount by the number of boxes • What is on each side? $\boxed{8} \boxed{8} \boxed{8} \boxed{8} \boxed{8} : \boxed{8} \boxed{8} \boxed{8} \boxed{8}$ $\pounds 72 \div 9 = 8$ $\pounds 40 : \pounds 32$	Always find one part first. Your answers should add up to the initial amount: $\pounds 40 + \pounds 32 = \pounds 72$ Remember to use any units given in the question; £, Kg, cm etc.

AVERAGES

SKILL	EXAMPLE	FAIRFAX SUGGESTED STRATEGY	HELPFUL HINTS
Mean	Find the mean of 2,4,4,8,10,20	Add the value together: $2+4+4+8+10+20 = 48$ Divide by the number of values: In this case $48 \div 6 = 8$	Add values together and divide by the number of parts
Mode	Find the mode of 2,4,4,6,10,18,20	Put the values in numerical order, the mode is the most common number 2, 4,4 ,6,10,18,20 Mode is 4	There may be more than one modal value or no mode.
Median	Find the median values of 2,4,4,6,10,18,20 and 2,4,4,6,8,9,18,20	If there are an odd number of values, put the values in numerical order, the median is the middle value 2,4,4, 6 ,10,18,20 median is 6. If there is an even number of values, put the values in order and the median is halfway between the two middle values. 2,4,4, 6,8 ,9,18,20: median is 7	Put the values in numerical order
Range	Find the range of 3,4,4,6,10,18,29	The range is the difference between the highest and lowest values; $29 - 3 = 26$	Put the values in numerical order.

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