



# Year 8 Maths Homework Menu: HT1

For each unit (column) you must choose one take away item for homework. The chilli rating suggests the difficulty of the task, or the challenge it might offer. Choose your homework from the menu below. The extra hot tasks will gain the most bonus points. You can earn an extra bonus point for putting in maximum effort. Your teacher will set your deadline and how you should submit your work.

			Operations and BIDMAS	Powers and Roots	Linear Sequences
	More advanced thinking skills	REASONING	Creating 6 1. Create an informative poster on BIDMAS, remember to include; examples of different calculations and explain what each letter of BIDMAS represents.  2. Create a Kahoot.it quiz on BIDMAS or Operations.	Research the following number sequences; Square numbers Cube Numbers Triangle numbers Prime Numbers Fibonacci Numbers  Produce a poster on these five number sequences which demonstrates our understanding of what they are and why they are significant.	A sequence has first three terms 140, 133, 126, ...  A second sequence has first three terms -59, -54, -49, ...  1. Find the $n$ th term of each sequence and prove that the 17 <sup>th</sup> term is the same in both sequences.  2. There are 6 terms that are common to both sequences. Without writing out both sequences, can you find them all?
		REASONING	Evaluating 5 1. Find 20 different ways to calculate the number 34. Try to increase the difficulty of your calculations, use all the BIDMAS operations and use a scientific calculator to check and mark your answers.  2. Investigate why is BIDMAS important, and	According to an old Indian myth, Sissa ben Dahir was a courtier for a king. Sissa worked very hard and invented a game which was played on a board, similar to chess. The king decided to reward Sissa for his dedication and asked what he would like. Sissa thought carefully and	1. Find the term that is common to the sequence with the $n$ th terms $60 - 12n$ and $7n + 1$ . Explain your reasoning.  2. Is 75 a term in the sequence with the formula $5n - 3$ ? Explain your reasoning.



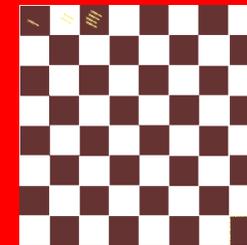
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how it is used with Algebra.

then said, "I would like one grain of rice to be put on the first square of my board, two on the second square, four on the third square, eight on the fourth and so on." The king thought this was a silly request, but little did he know ...

Below is a chess board with the first few squares filled with grains of rice as Sissa asked for:



How many grains of rice would there be on the 8th square?

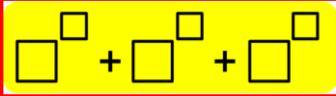
How many grains would you need altogether in order to fill up to the 15th square?

Estimate how many grains you would need in



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					total to fill the entire board in this way. Explain your thinking. Perhaps Sissa was cleverer than the king thought!	
		PROBLEM SOLVING	Analysing	4 Four Goodness Sake:  Write down the number 4, four times.  Put operation symbols between them so that you have a calculation.  So you might think of writing $4 \times 4 \times 4 - 4 = 60$  BUT use operations so that the answer is 12.  Now, can you redo this so that you get 15, 16 and 17 for your answers?  Need more of a challenge? Try getting answers all the way from 0 through to 10.	1. Without using a calculator can you complete the following statements.  $2^{15} = 32768$ $2^{14} = \dots\dots\dots$ $5^6 = 15625$ $5^8 = \dots\dots\dots$ $4^5 = 1024$ $4^6 = \dots\dots\dots$ $3^{10} = 59049$ $3^8 = \dots\dots\dots$	1. Are these statements true? Explain your answer.  a) The 50th term of 2,5, 8, 11, 14, ... is greater than 150 b) The 50th term of 5, 9, 13, 17, 21, ... is even c) The 100th term of 1000, 990, 980, 970, 960, ... is negative  2. Here are some terms of a sequence. In each case, find the nth term formula. Explain your reasoning.  a) The 5th term is 20, the 6th term is 28, and the 7th term is 36 b) The 100th term is 302, the 101st term is 305, and the 102nd term is 308 c) The 153rd term is 260, the 154th term is 262, and the 155th term is 264
					2.  a) Arrange the digits 1 to 6 in the boxes below to make the sum as large as possible:  b) Arrange the digits 1 to 6	



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					in the boxes below to make the sum as small as possible:  c) Arrange the digits 1 to 6 in the boxes below to get the sum equal to 122		
	Thinking skills 	PROBLEM SOLVING	Applying	3	<p>1. Complete the mymaths lesson on BIDMAS and then complete the mymaths homework task on BIDMAS They can be found at <a href="http://mymaths.co.uk">mymaths.co.uk</a> and then search: 1167</p> <p>2. Complete the mymaths lesson on Multiplying and dividing and then complete the mymaths homework task. They can be found at <a href="http://mymaths.co.uk">mymaths.co.uk</a> and then search: 1393</p> <p>*Make sure your logged into mymaths so it saves your completed tasks.</p>	<p>Complete the mymaths task on higher powers Code: 1924</p>	<p>1. Find the nth term formula for these sequences: a) 11, 17, 23, 29, 35, ... b) 1, 10, 19, 28, 35, ... c) 15, 22, 29, 36, 43, ... d) -10, -6, -2, 2, 6, ... e) 15, 11, 7, 3, -1, ...</p> <p>2. Find the nth term formula for these sequences: a) 1, 1.5, 2, 2.5, 3, 3.5, ... b) -4, -2, 0, 2, 4, ... c) Counting down in 7s, starting from 13 d) 50, 49.75, 49.5, 49.25, 49, ... e) 1.4, 2, 2.6, 3.2, 3.8, ... f) 6, 5.25, 4.5, 3.75, 3, ...</p>



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		<p>FLUENCY</p>	<p>Understanding</p>	<p>2</p> <p>1. Calculate:</p> <p>a) <math>3 + 20 \times 3</math>            b) <math>4 + 5 - 8</math>            c) <math>10 \times 6 + 2</math>            d) <math>25 - 5 \div (3 + 2)</math>            e) <math>10 + 6 \times (1 + 10)</math>            f) <math>(3 + 2) + 5^2</math>            g) <math>(10 + 20) - 55 \div 5^2 + 10</math>            h) <math>7 + 7 \div 7 + 7 \times 7 - 7</math></p> <p>2. Calculate</p> <p>a) <math>45 \times 28</math>            b) <math>28 \times 37</math>            c) <math>18 \times 26</math>            d) <math>154 \times 67</math>            e) <math>1.29 \times 12</math>            f) <math>2.25 \times 27</math></p>	<p>Calculate:</p> <p>a) <math>3^2</math>                      b) <math>5^2</math>            c) <math>8^2</math>                      d) <math>2^3</math>            e) <math>\sqrt{64}</math>                    f) <math>\sqrt{49}</math>            g) <math>\sqrt{81}</math>                    h) <math>\sqrt[3]{27}</math></p>	<p>1. Find the first three terms and the 10th term of these sequences:</p> <p>a) <math>5n+1</math>                      b) <math>3n+8</math>            c) <math>8n-4</math>                      d) <math>6n-8</math>            e) <math>24 - 2n</math>                    f) <math>15 - 5n</math>            g) <math>-3n + 20</math>                    h) <math>-5n - 7</math></p>
		<p>FLUENCY</p>	<p>Remembering</p>	<p>1</p> <p>Learn what each letter of BIDMAS stands for; include an example question with each letter.</p>	<p>Write down:</p> <p>1. The first 10 square numbers.            2. The first 6 cube numbers.            3. The first 6 triangular numbers.            4. The first 20 prime numbers</p>	<p>1. Write down the next two terms of the sequences below. Explain how you found the answer each time.</p> <p>3, 8, 13, 18, 23, ...            126, 122, 118, 114, 110, ...            -13, -10, -7, -4, -1, ...            31, 25, 19, 13, 7, ...            4, 8, 16, 32, 64, ...            3, 5, 8, 12, 17, ...</p> <p>2. Write the first five terms of these sequences:</p>

