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Arithmetic sequence and series worksheet key

Question 1 : A man repays a loan of 65,000 by paying 400 in the first month and then increasing the payment by 300 each month. How long will it take for him to clear the loan? Solution :For the first month he pays = 400payment of the second month = 400 + 300 = 700payment of 3rd month = 700 + 300 = 1000400 + 700 + 1000, loan amount = 65000(n/2)[2a + (n - 1)d] = 65000(n/2)[2(400) + (n - 1)300] = 65000 (n/n/2 2)800 + 300n - 300] = 65000 (n/2)[500 + 300n] = 65000(n/2)[5 + 3n] = 650 n[5 + 3n] = 13005n + 3n2 = 13003n2 + 5n - 1300 = 03n2 - 60n + 65n - 1300 = 03n(n - 1 3 20) + 65(n - 20) = 0(n - 20) (3n + 65) = 0n = 20 or n = -65/3 (not acceptable)So he will clear the loan amount in 20 months. Question 2 : A brick staircase has a total of 30 steps. The bottom step requires 100 bricks. Each step requires two blocks smaller than the previous step. (i) How many bricks are needed to build the stair case? Solution :Let l be the number of bricks in the last stepNumber of bricks in 1. 2number of steps (n) = 30(i)130 = a + 29d = 100 + 29(-2) = 100 - 58 = 42So, we will have 42 bricks in the top step. (ii) How many bricks are needed to build the stair case? Sn = (n/2)[a + l] = (30/2)[100 + 42] = 15(142) = 2130Quests 3 :if S1, S2, S3,.... Sm are the amounts of n terms in m A.P.'s, whose first terms are 1, 2, 3,.... m and if common differences are 1, 3, 5,.... (2m - 1) respectively, then shows that S1 + S2 + S3 +..... Sm = (mn/2)(1 + mn)Solution : n = [(i-a)/d] + 1 n = [(2m - n + 1) - (1 + n)]/2n] + 1 n = [(2 m n - n + 1 - 1 - n)/2n] + 1 n = [(2mn - 2n)/2n] + 1n = (m - 1) + 1n = m S1 + S2 + S3 +..... Sm Therefore proven. Question 4 :Find sum Solution :a = (a-b)/(a+b)d = (3a-2b)/(a+b) - (a-b)/(a+b) d = [3a - 2b -(a - b)]/(a + b) d = [3a - 2b - a + b]/(a + b) d = (2a - b) / (a + b)Sn = (n/2)[2a + (n - 1)d] Except for the things listed above, if you need other things in math, you can use our google custom search here. If you have feedback about our math content, please send us an email: v4formath@gmail.comWe always appreciate your feedback. You can also visit the following web pages about different things in math. WORD PROBLEMHCF and LCM word problemsWord problems on linear equations Word problems on square equationsAlgebra word problemsWord problems on trainsArea and perimeter words problemsWord problems on direct variation and reverse variation Word problems on device rate Word problems about comparison of ratesElect usual units word problems Conversion of metric units word problemsWord problems on simple interestWord problems on interest ratesWord problems on types of angles Complementary and complementary angles words problemsDouble fact words problemsTrigonometry words problemsPercentage word problems Profit and loss word problems Markup and word problems Decimal word problemsWord problems on fractionsWord problems on mixed fractionsOne steps equation word problemsLinear inequalities word problemsRatio and proportion word problemsTime and work word problemsWord problems on set and venn diagramsWord problems at agesPythagorean phrase word problemsPerf of a number of words problemsWord problems on constant speedWord problems at average speed Word problems at the sum of the angles of a triangle are 180 degreesOther topics Winding and loss shortcutsPercentage shortcutsTime table shortcutsTime , speed and distance shortcutsRatio and proportion shortcutsDomains and range of rational functionsThe domains and range of rational functions with holesGrafing rational functionsGraphy rational functions With holesConverting repeating decimals in to fractionsDecimal representation of rational numbersFinding square root using long divisionL.C.M method of solving time and work problemsTransverting the word problems in algebraic expressionsRemainder, when 2 power 256 is divided by 17Remainder when 17 power 23 is divided by 16Sum of all three digits shareable by 6Sum of all three digit numbers shareable with 7Sum of all three digits shareable with 8Sum of all three digits formed using 1, 3, 4Sum of all three four digits formed with not zero digitsSum of all three four digits formed using 0, 1, 2, 3Sum of all three four digits formed using 1, 2, 5, 6 copyright onlinemath4all.com SBI! What is the difference between an arithmetic and geometric sequence? A sequence is a set of numbers called expressions arranged in one order or another. But two of the sequences that are the easiest to solve are the arithmetic and geometric sequence. The arithmetic sequence works when you need to add or subtract the same value to get the next number in the sequence. For example, if you have a sequence, 2, 5, 8, 11, 14, ... then you know that you have to add 3 to get the next number. On the other hand, one expression is always multiplied or divided by the same value in a geometric sequence to get the same number. For example, if you have a sequence, 1, 2, 4, 8, 16,.... Then, each procedure number is the multiple of 2 of the previous number. Guide students through arithmetic and geometric sequences. To find an expression of an arithmetic sequence: a = a1 + (n-1)d, where a1 is the first expression in the sequence, d is the common difference, n is the number of the concept to be found. How to find the sum of a certain number of terms for an arithmetic sequence: Sn = n (a1+ a)2, where Sn is the sum of n terms (nth partial sum), a1 is the first term, one is n'th term. See spreadsheets A really good activity that allows students to understand the concept of arithmetic and geometric sequences. To find any expression of a geometric sequence: a = a1 . n - 1, where a1 is the first period of the sequence, r is the common relationship, n is the number of expressions to find. Show worksheet finder the arithmetic and geometric sequences sequences different problems. The answers can be found below. Find d or r, one and Sn. Show spreadsheets Students are provided with problems to obtain the concepts of arithmetic and geometric sequences. Show spreadsheets This tests students' ability to evaluate arithmetic and geometric sequences. View worksheet responses to math worksheets, quiz, homework, and lessons. Show spreadsheets There are two ways to do great math. The first is to be smarter than everyone else. The other way is to be dumber than everyone else - but persistent. Some of the worksheets below are arithmetic sequence spreadsheets, recognize the difference between a sequence and a series, find the sum of an arithmetic series, steps to determine whether a given sequence is arithmetic with step by step solutions and lots of examples and interesting exercises. Basic instructions Once you've found your spreadsheet, you can either click the pop-out icon or download the button to print or download the worksheet you want. Note that you can also find the download button under each document. Arithmetic sequences : Questions to determine whether the sequence is arithmetic. If so, you must find the common difference, and given the first expression and the common difference in an arithmetic sequence find the recursive formula and the three expressions in the order of the last given. Arithmetic and geometric progressions : More examples with exercises. Evaluation of Arithmetic Series: 26 interesting problems with solutions at the end of the page. Arithmetic and geometric means : Find the missing expression(s) in each arithmetic sequence. Arithmetic sequences : Definition with several solved exercises and test problems and practice problems like finding the 200th century. Examples of arithmetic and geometric sequence word problem with Word problems. Arithmetic and geometric progressions : Learning goals - Recognize the difference between a sequence and a series, find the sum of an arithmetic series, ... Loading... Download Arithmetic Sequences and Series: Find explicit and recursive formulas for the general term of the arithmetic sequence 7, 11, 15, 19. Then find the sum of the first 45 terms. Arithmetic Sequences : Steps to determine whether a given sequence is arithmetic with step by step solutions with lots of examples and interesting exercises. 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