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## Elimination method with multiplication worksheet

Problem 1: Solve the equation system by multiplying and adding. $3x - 5y = -17$  $2x + 15y = 7$ Problem 2 : Contestants in Run-and-Bike-a-thon run for a specified period of time, and then bike for a specified period of time. Jacob ran at an average speed of 8.4 km/h and ran on a bike with an average speed of 20.8 km/h, with a total speed of 23 km. Alex ran at an average speed of 10.7 km/h and ran on a bike with an average speed of 29.6 km/h, passing a total of 27 miles. How long do contestants run and how long have they biked? Detailed answer key issue 1: Solve the system equations by multiplying and adding. $3x - 5y = -17$  $2x + 15y = 7$ Solution:Step 1:Let's eliminate the variable y in the current two equations.  $3x - 5y = -17$  ----- (1) $2x + 15y = 7$  ----- (2)Step 2 :To make the y ratio the same in both equations, multiply the first equation by 3. (1)  $\times 3$  -----  $9x - 15y = -51$  ----- (3)In equations (2) and (3) variable y has the same coefficient, but has different features. Step 3 : Add an equation (2) and (3) to eliminate variable y. Divide both sides by 11. $11x/11 = -44/11x = -4$ Step 4 : Replace x values with one of the equations to find values y.  $3x - 5y = -17$  $3(-4) - 5y = -17$  $-12 - 5y = -17$ Add 12 on both sides.  $(-12 - 5y) + 12 = (-17) + 12$  $-5y + 12 = -17 + 12$ Simplify.  $-5y = -5$ Divide on both sides on  $-5$ .  $-5y / (-5) = -5 / (-5)y = 1$ So, Solution System is (x, y) = (-4, 1)Problem 2:Contestants in Run-and-Bike-a-thon run for a specified period of time and then bike for a specified period of time. Jacob ran at an average speed of 8.4 km/h and ran on a bike with an average speed of 20.8 km/h, with a total speed of 23 km. Alex ran at an average speed of 10.7 km/h and ran on a bike with an average speed of 29.6 km/h, passing a total of 27 miles. How long do contestants run and how long have they biked? Solution :Step 1:Let the contestants run x hours and bike y hours. Using the formula, Distance = Speed x Time, Jacob:  $5.2x + 20.6y = 14.2$  Alex:  $10.4x + 18.4y = 17$ Step 2:In both equations we have decimal. In terms we have decimal, the maximum number of digits after the decimal number is 1. So multiply both equations by 10. $10(5.2x + 20.6y) = 10(14.2)$   $52x + 206y = 142$  ----- (1) $10(10(10(110.4x + 18.4y))10 = 10(17)104x + 184y = 170$  ----- (2)Step 3: Exclude one of the variables to get the value of another variable. In (1) and (2) both x and y variables do not have the same coefficient. One of the variables should have the same coefficient. Thus, multiply both sides (1) by 2 to make the coefficients x the same in both equations. (1)  $\times 2$  -----  $104x + 412y = 284$  ----- (3) Variable x has the same sign in both (1) and (2). To change the x sign in (3), multiply both sides (2) by negative sign.  $(104x + 412y) = -284$  $-104x - 412y = -284$  ----- (4)Step 4: Add equation (2) and (4) to eliminate the y variable. Split both sides by  $-228$ .  $-228y / (-228) = -114 / (-228)y = 0.5$ Step 5 :  $y = 0.5$  inches (1) to get value x. (1) -----  $52x + 206(0.5) = 142$  $52x + 103 = 142$ Subtract 103 on both sides.  $52x = 39$ Divide on both sides at  $52$ .  $x = 39/52x = 0.75$ So, contestants run 0.75 hours and bike 0.5 hours. Besides the things above, if you need any other things in math, please use our custom Google search here. If you have any feedback on our mathematical content, please provide us with: [v4formath@gmail.com](mailto:v4formath@gmail.com) We always appreciate your feedback. You can also visit the following web pages on various math materials. PROBLEMS WITH WORDHCF and LCM problems with wordMeeting problems with simple equations Problems with Word on linear equations Problems with word on quadratic equationsAlgebra word problemsFor word problemsReading problemsTimesS catching problems with direct variations and inverse variations Problems with Word unit priceProcess per unit betting Problems with Word on compare ratesConverting custom units problems with word convert metric units problem Word problems About simple interestsProcess on complex interestsProcesses Hops on types of corners Additional and additional angles problems with the wordTo small facts problems with the wordTrygonometry problems with the word General problems with the word Profit and loss of the word Markup and markup problems with the word Decimal problems Word ProblemsProblems with fractionsProblems with mixed fracTriumsO step equation problems with the wordLine inequalities word problems Ratio and proportional problems with the wordTime and work problems with the word About problems with wobbling and veins About problems with the agesinteresting theorem of problems with the wordAddition of problems with the word About problems with constant speedInstability of the Word at a constant speedInventness of the word the amount of the angles of the triangle is 180 degreesO SMALLER THEMES Profits and losses ShortcutsDetermination of shortcutsTimes tableTimes, speed and distance shortcuts Ratio and proportional shortcutsDemain and range of rational functionsDemane and range of rational functionsChange rational functionsChange rational functions with holesVering repetitive decimals to fractionsDecimal representation of rational numbersDefition of the square root with a long separation. C.M a way to solve problems of time and workTranslation of word problems in algebraic expressionsRemennya, when 2 power 256 is divided into 17Remen, when 17 power 23 is divided into 16Sum of all three-digits, divided into 6Suma all three digits divided into 7Suma of all three digits, divided into 8Sum from all three digits formed by 1, 3,3,3, 4Sum of all three four digits formed with nonzero digitsSum of all three four digits formed using 0, 1, 2, 3Sum of all three four digits formed using 1, 2, 5, 6 author's onlinemath4all.com SBI! 7th, 8th, 9th, 10th, 11th, 12th, HomeschoolPage 26th, 7th, 8th, 9th, 10th, 11th, HomeschoolPage 38th, 9th, 10th, 11th, 12th 12th 12th

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