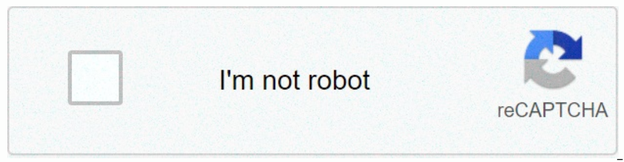

Continue

Direct and inverse proportion graphs worksheet

If two quantities are directly proportional, the other also increases at the same rate (proportionately) as one doubles, the other doubles as well. Example: Jeremy uses textcolorblue400text flour to make textcolorred {8} cupcakes. How much flour does he need to make textcolor purple {30} cupcakes? Step 1: Divide the amount of flour by 8 to find the flour value for 1 muffin. textcolorblue{400} div textcolorred {8} 50g of flour. Step 2: Multiply the amount of flour needed for 1 muffin by textcolorpurple {30} the necessary muffins. The text column is purple {30} 50 and 1500 grams of flour. If two quantities are inversely proportional, the other decreases at the same rate (proportionately) as one doubles, the other half. Example: textcolor blue{6} builders can build textcolorred homes {10} within 30 months. How long will it take textcolor builders {18} to build the same number of homes? Step 1: Multiply the number of months by the number of builders to get time for 1 builder. Textcolorred {10} the home will take 1 builder textcolorblue{6} time 30 180 months Step 2: Share the time required for 1 builders textcolor {18}. textcolor red {10} homes will take textcolor {18} 180 div textcolor {18} 10 months. If the two quantities, y and x, are directly proportional, we can write y 'textcolor-blue'propto' x It reads as 'y directly proportional x', where 'textcolor'blue'propto' is a symbol of proportionality. We can turn it into an equation by replacing propto with textcolor orange: y textcolororangek'k 'x 'textcolororange'k tells us how y and x are related, and are called constant proportionality. Other examples of direct proportionality for y can be seen in the table. If the two quantities, y and x, are inversely proportional, we can write y textcolorblue propto (dfrac{1}'x) It is publicized as 'y inversely proportional x', where 'textcolor'blue'propto' is as much a symbol of proportionality as before. We'll turn this into an equation again, replacing 'Textcolor-blue'propto' with 'textcolor-orange'k': y 'dfrac'textcolor'orange'k'x' Other examples of inverse proportionality for y can be seen in the table. Once we convert the proportion into an equation, we can easily build a graph. Note: If you are a student of the foundation, you will not be explicitly asked to form an equation. However, you need to know how to work with the constants of proportionality and use these equations, so all this content is still important to you. y straight proportional x. When you (textcolor-red) {24}, x textcolorblue{8}. Develop a value of y when x y textcolorblue {2}. (3 marks) Step 1: We have that have that is directly proportional x, ie y Propto x. Then, expressing this as an equation, we get from kx Step 2: In the question that we are given, that when u x textolorblue {8}. Replacing them in the equation above, we get a textcolorred {24} textcolorblue {8} k k time textcolorred{24} div textcolorblue {8} equation of proportionality becomes, y 'textcolor'darkorange' {3}x Step 3: Now we can use this to find out that when x y textcolorblue'{2}, y , textcolordarkorange {3} textcolorblue time{2} 6 y reverse proportional x. When you (textcolor-red) {2}, x textcolorblue{3}. Develop the value of y when x th textcolorsiny {18}. (3 marks) Step 1: We have that inversely proportional x, so we write from propto frak{1}x. Then, expressing this as an equation, we get y 'dfrac'k'x' Step 2: In the question that we are given that when the textcolor red{2}, x textcolor blue {3}. Replacing them in the equation above, we get textcolorred{2} dfracktextcolorblue{3} k textcolorred{2} textcolor timeblue{3} textcolor orange {6} thus {6}, the equation of proportionality becomes y when x-textcolor-blue {18}, y dfraqtext-darcorange {6}textcolor blue {18} - dfrac{1}{3} F inversely proportional to square r (i.e. r'2) , so F propto dfrac{1}'r Using k, to represent the constant of proportionality: F r No 3, so that we can develop a k by replacing these known values into an equation: {9} 50 , we have to change the formula to make a k subject that we can do{450}, multiplying each side by 9: k50 times 9{450} 450 We can now rewrite the original equation with a value for permanent K: F we can write it as a equation , as follows: y propto dfrac{1}'x We can rewrite this equation using k to represent the constant of proportionality: y dfrac'k'x from the table, we know that when x No. 4, y 7.5. If we replace these values in our equation, we can develop a value of permanent k. Since I'm a 7.5 y dffok {4} Since we want to work out the value of K, we need to rearrange the formula to make k the subject that we can do, multiplying each side by 4: start align k 7.5 times 4 k30 end aligned Now we can rewrite the original equation with a constant value for a constant : y dfrac{30}'x Now that we have calculated the value of the permanent k and rewrote the original equation of proportionality, we can develop the value y when x No 60: When x y 60, y'dfrac{30}{60} y 0.5 We can also develop a value x when y 12: When y 12, 12 y dfrac{30}'x, if multiply both sides by x and divide both sides into 12 We have rebuilt the equation of solutions x is the subject: x and drfrak{30}{12} 2.5 So when in 12, x 2.5 So, the completed table should look like this: Since M is directly proportional to h, we can write this as an equation, as follows: M 'propto h We can rewrite this equation using k to represent the constant of proportionality: M and kh We know that when M q pounds155.80, h and 9.5 hours, so that we can develop a k, replacing these known values in the equation: 155.80 q times 9.5 So how do we want so much as we want to work out the value of k, we have to change the formula to make k the subject that we can do, dividing each side by 9.5: k th dfrac 155.80 '9.5' y 16.4 Now we can rewrite the original equation with a value for permanent k: M 16.4h b) Now that we have calculated the value of the permanent k and rewrote the original proportional equation, we can work out the value of the h when the M pounds 688.80. Since M 16.4h, then GBP688.80 16.4h If 16.4h GBP 688.80 pounds, then h and lb 688.80 yuan 16.4 th 42 So it will take Sasha 42 hours to earn 688.80 pounds. a) x is directly proportional u, so x y propto y We can write this as an equation where k is permanent: x y ky Now we need to develop a value of permanent K, which we can do by replacing in known values for x and y: Since x y ky, then 2 to 8 If we make k the subject of the formula by dividing both sides into 8 sides , we can develop a value k: th dfrac{2}{8} k So k has a value of frac{2}{8}, which can be simplified to frac{1}{4}. Now that we know the meaning of permanent k, we can write an equation connecting x and y: Since x x th x x {1}{4}y or x frac'y {4} b) Now we have an equation connecting x and y, so we can develop the value of x when we have 32. Ever since x-y-frak-y-{4} then x-frak{32}{4} 32 x 8 So x 8 c) We now have an equation connecting x and y, so we can develop the value of y when x 50. Since the x -1 frac'y'{4}, x x 4 50 times 4,200 So 200 a) From the moment the time is solidified (t) inversely proportional to the square number of on-duty employees (s), we can write a basic equation as follows: t propto dfrac{1}'s2 This formula can be rewritten with k as a constant that connects t and s : t .dfrac'k's'2' Now we can work out the value of k if we replace in known values for t and s: Since t 'dfrac'k's'2' then 20 ' dfrac'k'4'2' so 20 - dfrac'k's {16}'2 to work out the value of k, we need to change the formula by making a k. We can do by multiplying both sides by 16: 20 times 16 k So k 320 Since we now know the exact value of k, we can rewrite the formula of proportionality: Since{320} t Unfortunately, it is not. If the number of staff doubles, 8 staff members would be on duty instead of 4. We know from part a) that k No.320 and we know that with No 8. If we replace these values in our formula, it should look like this: Since t 'dfrac'k's{320}{64}{320},2, then t 5 minutes, so if you double the number of employees, orders are accepted in 5 minutes instead of 20 minutes, so orders are accepted 4 times faster. Try a revision map on this topic. Topic.