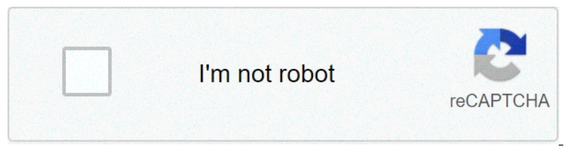

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Percent proportion worksheet 6th grade pdf

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Click to print A percent proportion is an equation where a percentage (%) of the whole is equal to the part of the whole or we can say it is an equation where a percent is equal to an equivalent ratio. When the ratio of part to whole is equal to the ratio of a percent to 100, shows a percent equal to an equivalent ratio, we call it a percent proportion. A percentage is a fraction expressed with 100 as the denominator. When two ratios are equal, they are said to be in proportion. Proportions are denoted by using the symbols "=" or "::". For example, 1/5 :: 20/ 100, and the given proportion is read as "1 is to 5 equals to 20 is to 100". Percentage in the Form of a Fraction Shows Proportion Following are the given examples that show how the percentage is converted into fractions and shows the proportion. 25% means 25 parts out of 100 and 25/100 = 1/4 of the total parts (whole). So, the given proportion is read as "25 is to 100 equals to 1 is to 4". 40% means 40 parts out of 100 and 40/100 = 2/5 of the total parts (whole). So, the given proportion is read as "40 is to 100 equals to 2 is to 5". 75% means 75 parts out of 100 and 75/100 = 3/4 of the total parts (whole). So, the given proportion is read as "75 is to 100 equals to 3 is to 4". The percent proportion formula helps in solving problems. It is expressed in form of PART/WHOLE = PERCENT/100, where, PERCENT is the number with a percent sign. PART is the number with the word IS. WHOLE is the number with the word OF. For example, 30 is what percent of 60? Here IS and OF are used in question where IS is PART and OF is WHOLE. Now with the help of formula, Part/Whole = Percent/100 ⇒ 30 / 60 = Percent /100 ⇒ Percent = (30 / 60) × 100 = 50% Taking another example, What number is 10 % of 50? Part/Whole = Percent/100 ⇒ Part/50 = 10/100 ⇒ Part = 5. Therefore, 10% of 50 is 5. Related articles on Percent Proportion Check out these interesting articles to know more about the percent proportion and its related topics. Example 1: What number is 15% of 300? Solution: Using the percent proportion formula, we have, Part/Whole = Percent/100. Here, part is the missing value that we have to find, the whole is 300, and percent is 15. So, Part/300 = 15 /100 = 45 is the number. Therefore, 15% of 300 is 45. Example 2: Solve the following using percent proportion formula: 50 is 40% of what number? Solution: Using formula, Part/Whole = Percent/100. Here, part is 50, the percent is 40, and we have to find the whole. 50/WHOLE = 40/100 (50 × 100)/ 40 = 125 Hence, 40% of 125 is 50. Example 3: What number is 60% of 500? Solution: Using the percent proportion formula, we have, Part/Whole = Percent/100. Here, percent is 60, whole is 500, and we have to find the value of the part. PART/500 = 60 /100 = 300 is the number. Therefore, 60% of 500 is 300. go to slidego to slidego to slide Breakdown tough concepts through simple visuals. Book a Free Trial Class go to slidego to slide We can find the percent proportion by using the given formula i.e. Parts /whole = percent/100. For example, 50% of 100 is 50 in number ⇒ Parts taken/100 = 50/100 = 50 Is Proportion Equal to a Percentage? Proportion is the relation or the equality between two ratios or fractions, while the percentage is a ratio or a fraction whose denominator is always 100. Both proportion and percentage can be written as fractions. The percentage is out of 100. The Proportion is out of any given total. What is the Relationship Between Proportion and Percentage? The relationship between proportion and percentage is when a proportion is multiplied by 100 it gives the percentage of parts taken i.e.(Parts /whole) × 100 = percent. Similarly, when a percent is multiplied by total it gives the number of parts taken i.e. Parts = percent × whole. How do you Solve Percent Proportion? While solving the percent proportions find the missing part of a whole when the percentage is given (Parts = percent × whole) and if part of the whole is given then find the missing percentage [(Parts /whole) × 100 = percent]. For example, 40% of 100 is 40 ⇒ (40/100) × 100 = 40, here 40 is parts taken and 100 is whole and 40% is the percent. What Percent of 50 is 25 Proportion? By using the formula, Parts /whole = percent/100, ⇒ 25/ 50 × 100 = 50%. So, 50 % of 50 is 25 proportion. What is the Formula for Percent Proportion? The Formula for Percent Proportion is Parts /whole = percent/100. This formula can be used to find the percent of a given ratio and to find the missing value of a part or a whole. If you're seeing this message, it means we're having trouble loading external resources on our website. If you're behind a web filter, please make sure that the domains *.kastatic.org and *.kasandbox.org are unblocked. In previous lessons, you were shown how to convert a decimal to a percent and a percent to a decimal. Thus, if you were asked to Find 15% of 120, you would multiply .15 by 120, to get an answer of 18. But what would you do if you given this problem: 8 is what percent of 20? In this problem, the percent is the unknown quantity! We need to figure out how to find this unknown quantity. Every statement of percent can be expressed verbally as: "One number is some percent of another number." Percent statements will always involve three numbers. For example: ____ is ____ % of ____. In the problem, 8 is what percent of 20?, the number 8 is some percent of the number 20. Looking at this problem, it is clear that 8 is the part and 20 is the whole. Similarly, in the statement, "One number is some percent of another number.", the phrase "one number" represents the part and "another number" represents the whole. Thus the statement, "One number is some percent of another number.", can be rewritten: "One number is some percent of another number.", becomes, "The part is some percent of the whole." From previous lessons we know that the word "is" means equals and the word "of" means multiply. Thus, we can rewrite the statement above: The statement: "The part is some percent of the whole.", becomes the equation: the part = some percent x the whole Since a percent is a ratio whose second term is 100, we can use this fact to rewrite the equation above as follows: the part = some percent x the whole becomes: the part = x the whole Dividing both sides by "the whole" we get the following proportion: Since percent statements always involve three numbers, given any two of these numbers, we can find the third using the proportion above. Let's look at an example of this. Problem 1: If 8 out of 20 students in a class are boys, what percent of the class is made up of boys? Analysis: In this problem, you are being asked 8 is what percent of 20? You are given two numbers from the proportion above and asked to find the third. The percent is the unknown quantity in this problem. We need to find this unknown quantity. Identify: The phrase 8 is means that 8 is the part. The phrase what percent tells us that percent is the unknown quantity. This unknown quantity will be represented by x in our proportion. The phrase of 20 means that 20 is the whole. Substitute: Now we can substitute these values into our proportion. becomes Solve: Cross multiply and we get: 20x = 800 Divide both sides by 20 to solve for x and we get: x = 40 Solution: 8 is 40% of 20. Therefore, 40% of the class is made up of boys. Note that in Problem 1 we did not have to cross multiply to solve the proportion. We could have used equivalent fractions instead (i.e., since 20 multiplied by 5 equals 100, we get that 8 multiplied by 5 equals x, so x equals 40). In Problem 1 we were asked 8 is what percent of 20? and we found the solution by substituting into a proportion. But how would we solve this problem: 18 is 40% of what number? and how would we solve this problem: What is 20% of 45? We will look at these last two problems below. Problem 2: 18 is 40% of what number? Identify: The phrase 18 is means that 18 is the part. 40% means that 40 will replace percent in our proportion. The phrase of what number represents the whole and is the unknown quantity. We will let variable x represent this unknown quantity in our proportion. Substitute: Now we can substitute these values into our proportion. becomes Solve: Cross multiply and we get: 40x = 18(100) or 40x = 1800 Divide both sides by 40 to solve for x and we get: x = 45 Solution: 18 is 40% of 45 Problem 3: What is 20% of 45? Identify: The phrase what is means represents the part and is the unknown quantity. We will let variable x represent this unknown quantity in our proportion. 20% means that 20 will replace percent in our proportion. The phrase of 45 means that 45 is the whole. Substitute: Now we can substitute these values into our proportion. becomes Solve: Cross multiply and we get: 100x = 45(20) or 100x = 900 Divide both sides by 100 to solve for x and we get: x = 9 Solution: 9 is 20% of 45 In Problems 1, 2 and 3 we are given two numbers and asked to find the third by using a proportion. However, the unknown quantity was different for each problem. Let's compare these problems in the table below. Red is used for the unknown quantity in each problem. Problem 1 Problem 2 Problem 3 statement 8 is what percent of 20? 18 is 40% of what number? What is 20% of 45? part 8 18 x = What is percent x = what percent 40% 20% whole 20 x = of what number 45 In Problem 1 we let x represent the unknown quantity "what percent"; in Problem 2 we let x represent the unknown quantity "of what number"; and in Problem 3 we let x represent the unknown quantity "What is." Thus, we solved three different percent problems, where in each problem, two numbers were given and we were asked to find the third. We did this by letting a variable represent the unknown quantity and then substituting the given values into a proportion to solve for the unknown quantity. Note that in all three percent statements, the whole always follows the word "of" and the part always precedes the word "is". This is not surprising since our original statement is, "One number is some percent of another number." Thus, we can revise our proportion as follows: becomes Let's solve some more percent problems using proportions. Problem 4: What is 25% of 52? Identify: 25% means that 25 will replace PERCENT in our proportion. 52 is the whole and will replace OF in our proportion. The part is the unknown quantity and will be represented by p in our proportion. Substitute: Now we can substitute these values into our proportion. becomes Solve: Cross multiply and we get: 100p = 52(25) or 100p = 1300 Divide both sides by 100 to solve for p and we get: p = 13 Solution: 13 is 25% of 52 Note that we could restate this problem as, "Find 25% of 52", and get the same answer. However, in the interest of consistency, we will use proportions to solve percent problems throughout this lesson. In Problems 5 through 7, we will use n to represent the unknown quantity. Problem 5: What percent of 56 is 14? Identify: 56 is the whole and will replace OF in our proportion. 14 is the part and will replace IS in our proportion. PERCENT is the unknown quantity in our proportion, to be represented by n. Substitute: becomes Solve: Cross multiply and we get: 56n = 14(100), or 56n = 1400 Divide both sides by 56 and we get: n = 25 Solution: 25% of 56 is 14 Problem 6: 18 is 75% of what number? Identify: 18 is the part and will replace IS in our proportion. 75% means that 75 will replace PERCENT in our proportion. The whole is the unknown quantity in our proportion, to be represented by n. Substitute: becomes Solve: Cross multiply and we get: 75n = 18(100) or 75n = 1800 Divide both sides by 75 and we get: n = 24 Solution: 18 is 75% of 24 Problem 7: What is 15% of 200? Identify: 15% means that 25 will replace PERCENT in our proportion. 200 is the whole and will replace OF in our proportion. The part is the unknown quantity in our proportion, to be represented by n Substitute: becomes Solve: Cross multiply and we get: 100n = 200(15) or 100n = 3000 Divide both sides by 100 and we get: n = 30 Solution: 30 is 15% of 200 Now that we have solved a number of percent problems using proportions, we can go back to the type of problem presented at the beginning of this lesson: In Problems 8 through 10 we will solve real world problems, using different variables to represent the unknown quantity in each problem. Problem 8: At Little Rock School, 476 students ride their bike to school. If this number is 85% of the school enrollment, then how many students are enrolled? Identify: This problem can be rewritten as 476 is 85% of what number? 476 is the part and will replace IS in our proportion. The percent given is 85%. The whole is the unknown quantity, so y will represent the OF in our proportion. Substitute: becomes Solve: Cross multiply and we get: 85y = 47600 Divide both sides by 85 and we get: y = 560 Solution: There are 560 students enrolled at Little Rock School. Problem 9: A football team won 75% of 120 games in a season. How many games is that? Identify: This problem can be rewritten as What is 75% of 120? 120 is the whole and will replace the OF in our proportion. The percent given is 75%. The part is the unknown quantity, so p will represent the IS in our proportion. Substitute: becomes Solve: Cross multiply and we get: 100p = 9000 Divide both sides by 85 and we get: p = 90 Solution: The team won 90 games. Problem 10: Jennie has $300 and she spends $15. What percent of her money is spent? Identify: This problem can be rewritten as $15 is what percent of $300? 15 is the part and will replace the IS in our proportion. 300 is the whole and will replace the OF in our proportion. Percent is the unknown quantity, so x will represent the PERCENT in our proportion. Substitute: becomes Solve: Cross multiply and we get: 300x = 1500 Divide both sides by 300 and we get: x = 5 Solution: Jennie spent 5% of her money. Summary: Every statement of percent can be expressed verbally as: "One number is some percent of another number." Percent statements will always involve three numbers. Given two of these numbers, we can find the third by substituting into one of the proportions below. OR In this lesson, we solved percent problems using proportions by following this procedure: Read the percent problem. Identify what information is given. Identify what information is unknown. Use a variable to represent the unknown quantity. Set up a proportion for the problem by substituting the given information and the variable into one of the proportions listed above. Evaluate and solve the proportion in Step 5 to find the unknown quantity. Exercises Directions: Solve each percent problem below using a proportion. If your answer is a percent, do NOT enter the percent symbol. Just enter the number. For each exercise below click once in the ANSWER BOX and then type in your answer; then click ENTER. Your answers should be given as whole numbers greater than zero. After you click ENTER, a message will appear in the RESULTS BOX to indicate whether your answer is correct or incorrect. To start over, click CLEAR. 2. 14 out of 56 students got an A. What percent got an A? 3. There are 18 girls in a class. If this is 40% of the class list, then how many students are in the class? 4. In a school 25% of 312 students bring lunch from home. How many students is that? 5. 12 out of 30 students studied Spanish. What percent studied Spanish?

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