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Let x and y be integers such that... If y is a positive integer, what is...? If you've done an ACT test or a practical ACT test, these types of math questions may seem familiar to you. You will probably come across a few questions on the ACT that mention the word integer. And if you don't know what the term means, these problems will be hard to solve. Issues related to integers are common to ACT Math, so it's important to have a firm understanding of them as you prepare for the test. What are integers and how do they fit into the bigger ACT Math picture? This article will be your guide to the main guides for the ACT, what they are, how they change, and how you will see them use on the test. For more advanced integer concepts, including absolute values, exponents, roots, and more, check out our best guide to ACT integers. What is the Integer? A whole number or any number that is not expressed by a decimal point or a fraction. Entire numbers include all positive whole numbers, all negative whole numbers, and zero. Here are some examples of integers: -32 ; -2 ; 0 ; 17 ; $2,035$ And here are a few examples of numbers that aren't integers: π $\frac{2}{3}$ $\frac{478}{1}$ Think of an integer as an object that can't be divided into pieces. For example, you can't have half an egg in a basket. Positive and negative numbers are used to demonstrate how numbers are linked to each other and to zero. All the numbers to the right of zero are positive numbers, and all numbers to the left of zero are negative numbers. The positive numbers are bigger the farther they are from scratch: Here we see that 154 is more than 12, because 154 are further down the line of numbers in a positive direction (right). In contrast, the negative numbers are smaller the farther they are from zero: As you can see here, -154 is less than -12 because -154 is further down the line of numbers in a negative direction (left). Another rule you should know is that a positive number will always be greater than a negative number. For example, 1 more $-10,109$. Below is an example of an ACT Math question that tests your knowledge of integers and number lines: Because we have no reference to 0, we can't say for sure whether the a is positive or negative, which excludes the choice of answer F, G and K. What we know, however, is that any number to the left of the other number will be smaller, that is the correct answer should be choice H (a is less than b). Very opposite to the numerical line. Typical Integer questions on the ACT Math Section Most ACT Math questions are a combination of word problem and equation problem. These questions tend to present you with an equation and then instruct you to use integers instead of variable. In order to solve these you need to know that the whole thing means a whole number (and that whole numbers and zero). Here's an example of a fairly simple integrative question that you can see on ACT Math: For 2 consecutive integers, the result of adding a smaller integer and a triple big integer is 79. What are 2 integers? A. 18, 19B. 19, 20C. 20, 21D. 26, 27E. 39, 40 Sometimes, however, you will have to answer more abstract questions about how integers relate to each other when you add, subtract, multiply or divide them. You don't need to look for a numerical answer to these types of questions; rather, you have to determine whether certain equations will be even or odd, positive or negative. Here's an example: If a is the odd integer and b is an even integer, which of the following is the odd integer? A. $3b$ B. a^3 C. $2(a+b)$ D. a^2b E. $2ab$ For this question, you can guess and check how integers change in relation to each other by connecting their own numbers and then deciding, or remembering the rules, how integers interact. How you approach these types of math questions is entirely up to you and depends on how you learn and/or like to solve math problems. For example, in the graphs below, you'll see this rule: $+$ Positive Umber - Positive Umber - Positive Umber If you forget this rule (or just don't want to know it in the first place), you can always try it yourself, just remembering that $2^3=6$. Since you can always figure out these results, Using our own numbers, we classify the following integer rules as well known (but not necessary to know): Integrating Rule (Multiplying Positive and Negative) Sample Positive - Positive - Positive $2^3=6$ Negative - Negative - Positive $2^3=6$ Positive - Negative - Negative $2^3=6$ Another Way to Think About These Rules, how it is: When the numbers are multiplied, the result is always positive if you do not multiply the positive number and the negative number. In addition to the positives and negatives, you should also know the rules for odd and even numbers: The Integrating Rule (Odd and Even Numbers Multiply) Sample Odd Result always, even if you multiply the odd number and another strange number. Finally, here are the rules to know when adding and subtracting odd and even integers: Rule Integra (Adding/Subtraction of Odd and Even Numbers) Example Odd th/ Odd - Even 5^7 12 Th/ Even the 11 result is always even if you don't add or subtract the odd number and even number. With these insights in mind, let's take another look at the above ACT Math problem: If a is the odd integer and b is an even more integer who of the following is the odd integer? A. $3b$ B. $2(a+b)$ D. a^2b E. $2a^b$ Choice A is wrong because (1) b is an even integer, and (2) we know that an even number is an odd number - an even number (never a strange number). Choice B is wrong because (1) a is an odd integer, and (2) we know that the odd number - the odd number - is an even number. Choosing C is wrong because it's the odd integer and $4b$ is an even integer. The even number is the odd number - the odd number. And the odd number - an even number (in this case 2) is an even number. Choosing D is the right one. Two b dollars will be even because the uniform number - the 4th - the 4th numbers. And the end result will be strange, because the odd number (a) - an even number ($2b$) - is an odd number. E choice is wrong. The two multiplied by the odd number (a) is an even number, because the even number - the odd number - is an even number. And even a number - if even a number, that is 4 numbers. So your final answer is D: a $2b$. You can also solve this problem by re-opping these rules by connecting your own numbers. If you've assigned an odd number to an even number b , you can check each option in about the same time as we are here. So for that question, you could a 5 and b 6 . Option D would then look like this: $5^2(6)$ 17 Again, because you can figure out these kinds of issues using real numbers, these rules are classified as good to know and not necessary to know. If you follow the right steps, solving a more important problem is often much easier than it seems. How to solve the problem of ACT Math Integer: 3 main steps in this section, we will go through three steps to remember when it comes to solving any ACT Maths problem. Step 1: Confirm that the problem is a more integral problem If you have to use integers to solve the problem, the ACT will explicitly use the word integer in question, so you don't waste your time and effort in search of decimal or fractional solutions. For example, the questions might say something like this: If x is a positive integer such that ... For all the negative integers ... How many integers give a solution. ... For any problem that does not indicate that variables (or solutions) are integers, your response or variables may be in decimal points or fractions. Let's take another look at the problem from earlier: For 2 consecutive integers, the resulting addition of a smaller integer and triple big integer is 79. What are 2 integers? A. 18, 19B. 19, 20C. 20, 21D. 26, 27E. 39, 40 Immediately, we can say that this problem is related to integers based on how it is formulated and its direct use of terms integer and integers. Our five answer options as well as all (positive) integers. To solve this problem, let's use basic algebra. We have two unknown integers who are said to be consistent (meaning that one integer integer 1 more than the others). Let's call a smaller integer a and more integrator b . To find the values of the two variables, we need to come up with a system of equations and solve each variable. We know that a should be 1 less than b , which gives us this equation: $a=b-1$ We also said we added three times the b gives us 79. As an equation, it looks like this: $a+3b=79$ now, all, what we need to do is solve our equation system to find values of a and b : $a=b-1$ $1+79=4b-80$ 80 80 20 If $b=20$, then $a=19$ (as it's 1 less than b). So, the correct answer is B. If you want, you could over-check your answer by plugging 19 and 20 in the second equation above to ensure the result goes to 79 (spoiler: it does!). Step 2: For equations that are always true, check out many different integrators If the ACT Math question asks you to determine whether certain equations or inequalities are true for all integers, the equation

