



Tips for Finding Factors and Multiples

- Times 2: Double the number. If multiplying by 2, the result will always be even.
- Times 3: Triple the number. Products alternate odd and even (3, 6, 9, 12, etc.).
- Times 4: Double the number twice. The result will always be even.
- Times 5: The result must have a 5 or a 0 in the ones place. Multiply by 10 and cut in half.
- Times 6: Triple the number and double it, in whichever order is easiest.
- Times 7: These must be memorized, or use the Distributive Property to break into 5 and 2 or 4 and 3, and then add the products.
- Times 8: Double the number once, double it again, and double it a third time. The result will always be even.
- Times 9: Two tips here for multiplying single digits by 9.
 - 1) The fingers tip: see the video
 - 2) Take the number you are multiplying by 9, for example 7. The tens digit will be one less than the multiplier (6, in this example). The ones digit will be whatever it takes for the two digits to add up to 9. In this example, $6 + 3 = 9$, so the answer is 63.
- Times 10: The concept here is that when multiplying by 10, it increases by one place value. So 1×10 is 10, 10×10 is 100, etc. Thus you append a 0 to the number, increases the value by one place. The result will always be even.



- Times 11: For 1-9, the result is always that both digits will be the same as the multiplier, for example, $3 \times 11 = 33$. For two-digit numbers 10-19, there is a cool tip. The first digit will be the same as the first digit of the multiplier; the second digit will be the two multiplier digits added together; and the last digit will be the second digit of the multiplier. For example: $11 \times 18 = 198$, $11 \times 13 = 143$, etc. Just sandwich in the sum of the multiplier's digits between the multiplier's digits to get your product!
- Times 12: Same as the 6 tip, but double the result.□
- Divisible by 2: Even numbers.
- Divisible by 3: Sum of digits is divisible by 3 (e.g.: 87: $8 + 7 = 15$, 15 is divisible by 3, or keep adding: $1 + 5 = 6$, divisible by 3)
- Divisible by 4: Even, and even again when halved
- Divisible by 5: Ends in 5 or 0
- Divisible by 6: Even, and the 3 tip works.
- Divisible by 7: Double the last place and subtract it from the other digit(s). If divisible by 7, including 0, number is divisible by 7 (e.g., 91: 1 doubled is 2, subtract 2 from 9, get 7, divisible by 7).
- Divisible by 8: Even, even when halved, and even again when halved again.
- Divisible by 9: Sum of digits is divisible by 9
- Divisible by 10: Last digit is 0
- Divisible by 11: Add up odd-number digits, subtract sum of even-number digits. If answer is divisible by 11, it's divisible (e.g., 21,604: $2 + 6 + 4 = 12$; $1 + 0 = 1$; $12 - 1 = 11$, so it's divisible).
- Divisible by 12: Follows 3 rule and 4 rule.