

# Basic Mathematics in Python

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## Basic Operations

1. Add the values of the first five positive integers (1, 2, 3, 4 and 5).
2. Multiply the values of the first five negative integers (-1, -2, -3, -4 and -5).
3. Calculate the area of a triangle with base 7 and height 9, using the formula  $A_t = \frac{1}{2}(b)(h)$ .
4. Calculate the area of a circle with radius 5, using the formula  $A_c = \pi r^2$ .
5. Calculate the volume of a cone with radius 12 and height 8, using the formula  $V_c = \frac{1}{3}r^2 h$ .
6. Calculate the volume of a sphere with radius 6, using the formula  $V_s = \frac{4}{3}\pi r^3$ .
7. Calculate the amount of HST (13%) charged on a \$20 shirt.
8. Calculate the final price of a \$30 pair of jeans, including HST.
9. Calculate the cost, per person, of a \$18 pizza split equally between eight people.
10. Calculate the slope,  $m$ , of the line through (1, 8) and (-5, 6), using the formula  $m = \frac{y_2 - y_1}{x_2 - x_1}$ .
11. Calculate the slope,  $m$ , of the line through (-12, 7) and (6, 7), using the formula  $m = \frac{y_2 - y_1}{x_2 - x_1}$ .
12. Explain why the slope through (5, 8) and (5, -3) cannot be calculated. What happens?
13. Mr. Garvin has a box of 200 candies to distribute to his 31 computer science students. If he gives every student in the class the same amount, how many will be left over for himself?
14. Evaluate both  $2^n - 1$  and  $2^{n-1}$  when  $n=8$ . What is necessary to differentiate the expressions?
15. Explain how are the results of  $6/2$  and  $6//2$  different?
16. Determine the quotient and remainder when 17 is divided by 3.
17. Determine the quotient and remainder when 17.5 is divided by 3. Explain what happened.
18. Determine the quotient and remainder when -17 is divided by 3. Explain what happened.