

Topic 1. Number and Algebra

1) The product of 8×10^2 and 9×10^5 must be written as _____. And the quotient of 2×10^{-2} and 8×10^{-5} must be written as _____. You must be able to do this WITHOUT the use of a calculator.

2) The expression below means to _____ this _____ sequence from ____ to _____.

$$\sum_{x=4}^{100} 2 \times 3^x$$

In this example, the common _____ is _____.

3) Simple interest is calculated by multiplying _____, _____ and _____. It forms an _____ sequence because the _____ amount gets _____ every year.

4) The common difference is calculated by _____ U_1 from U_2 . An approximate could perhaps be found by finding the _____ of several differences.

5) The common ratio is calculated by _____ U_2 by U_1 . An approximate could be found by _____ the ratios or by making an _____ model.

6) For financial applications, such as geometric sequences showing growth, one can use _____ instead of _____ to form n th terms.

7) To get the **real** interest rate, one should subtract the _____ rate from the _____ rate.

8) For depreciation, it is important to use a _____ multiplier. For example, a 20% decrease becomes _____.

9) It is possible to write $8^{2/3}$ as _____. The value of this example is _____. It is also possible to write $\frac{1}{\sqrt[4]{x^3}}$ as a fractional exponent: _____. This is useful in calculus.

10) There are two types of infinite geometric sequences: _____ and _____.

For the latter, it is possible to use a formula to calculate the _____. In other words, it is only possible to sum geometric sequences to _____ if $|r|$ _____ 1.

11) For the following binomial expansion: $(3x + 2)^4$

a) The constant term in binomial expansion is the term _____ a variable, in this case _____. For this expansion it is the _____ term. The value is _____.

b) The second term of this expansion is _____.

c) The coefficient of the fourth term is _____.

12) For practice, write the first 5 rows of Pascal's triangle.

13) In calculator papers, it is simpler to use the _____ command than to draw the table or use the formula.

In non-calculator papers, it is best to use the formula for large values or when ____ is unknown.

For practice, calculate 5C_9 without a calculator:

Now find an expression for nC_2 without a calculator