

### Numbers, Sequences, Factors

|                       |                                                                                                                                                                              |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Integers:             | $\dots, -3, -2, -1, 0, 1, 2, 3, \dots$                                                                                                                                       |
| Rationals:            | fractions, that is, anything expressable as a ratio of integers                                                                                                              |
| Reals:                | integers plus rationals plus special numbers such as $\sqrt{2}$ , $\sqrt{3}$ and                                                                                             |
| Order Of Operations:  | PEMDAS (Parentheses / Exponents / Multiply / Divide / Add / Subtract)                                                                                                        |
| Arithmetic Sequences: | each term is equal to the previous term plus $d$ Sequence: $t_1, t_1 + d, t_1 + 2d, \dots$ Example: $d = 4$ and $t_1 = 3$ gives the sequence 3, 7, 11, 15, $\dots$           |
| Geometric Sequences:  | each term is equal to the previous term times $r$ Sequence: $t_1, t_1 \cdot r, t_1 \cdot r^2, \dots$ Example: $r = 2$ and $t_1 = 3$ gives the sequence 3, 6, 12, 24, $\dots$ |
| Factors:              | the factors of a number divide into that number without a remainder                                                                                                          |
| Multiples:            | the multiples of a number are divisible by that number without a remainder                                                                                                   |
| Percents:             | use the following formula to find part, whole, or percent part = percent $100 \times$ whole                                                                                  |

### Averages, Counting, Statistics, Probability

|                                 |                                                                                                                                                       |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| average                         | average = sum of terms / number of terms                                                                                                              |
| average speed                   | total distance / total time                                                                                                                           |
| sum                             | Average * number of terms                                                                                                                             |
| mode                            | value in the list that appears most often                                                                                                             |
| median                          | middle value in the list (which must be sorted) Example: median of {3, 10, 9, 27, 50} = 10 Example: median of {3, 9, 10, 27} = $(9 + 10) / 2 = 9.5$   |
| Fundamental Counting Principle: | If an event can happen in $N$ ways, and another, independent event can happen in $M$ ways, then both events together can happen in $N \times M$ ways. |
| SAT Prep                        | <a href="#">SAT Prep</a>                                                                                                                              |

