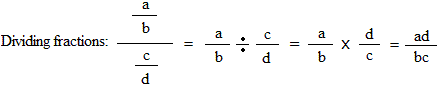
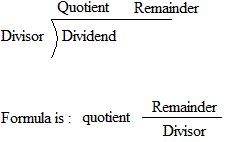
**Advanced Elementary Math formula list – Grades 4-7**

**Fractions formulas:**   
  
adding-fractions-formula-image  
  
  
subtracting-fractions-formula-image  
  
  
multiplying-fractions-formula-image  
  
  
  
  
  
**Converting a mixed number to an improper fraction:**  
mixed-to-improper-formula-image  
**Converting an improper fraction to a mixed number:**  
  
  
**Formula for a proportion:**   
  
proportion-formula-image  
  
  
In a proportion, the product of the extremes (a \* d) equal the product of the means(b\*c),   
  
Thus, a\*d = b\*c  
  
**Percent:**   
  
Percent to fraction: x% = x/100  
  
Percentage formula: Rate/100 = Percentage/base  
  
Rate: The percent.   
Base: The amount you are taking the percent of.

Percentage: The answer obtained by multiplying the base by the rate

**Consumer math formulas:**   
  
Discount = list price × discount rate  
  
Sale price = list price − discount  
  
Discount rate = discount ÷ list price  
  
Sales tax = price of item × tax rate  
  
Interest = principal × rate of interest × time  
  
Tips = cost of meals × tip rate  
  
Commission = cost of service × commission rate  
  
**Geometry formulas:**   
  
**Perimeter**:  
  
Perimeter of a square: s + s + s + s   
s:length of one side  
  
Perimeter of a rectangle: l + w + l + w  
l: length  
w: width  
  
Perimeter of a triangle: a + b + c  
a, b, and c: lengths of the 3 sides

Circumference of a circle:

**Area:**  
  
Area of a square: s × s   
s: length of one side  
  
Area of a rectangle: l × w  
l: length  
w: width  
  
Area of a triangle: (b × h)/2  
b: length of base  
h: length of height  
  
Area of a trapezoid: (b1 + b2) × h/2  
b1 and b2: parallel sides or the bases  
h: length of height

Area of a circle:

**Volume:**  
  
Volume of a cube: s × s × s   
s: length of one side  
  
Volume of a box: l × w × h  
l: length  
w: width  
h: height

**Distance**  
1 foot = 12 inches  
1 yard = 3 feet  
1 mile = 5,280 feet  
1 mile ≈ 1.61 kilometers  
1 inch = 2.54 centimeters  
1 foot = 0.3048 meters  
1 meter = 1,000 millimeters  
1 meter = 100 centimeters  
1 kilometer = 1,000 meters  
1 kilometer ≈ 0.62 miles

**Area**  
1 square foot = 144 square inches  
1 square yard = 9 square feet  
1 acre = 43,560 square feet

**Volume**  
1 cup = 8 fluid ounces  
1 quart = 4 cups  
1 gallon = 4 quarts  
1 gallon = 231 cubic inches  
1 liter ≈ 0.264 gallons  
1 cubic foot = 1,728 cubic inches  
1 cubic yard = 27 cubic feet  
1 board foot = 1 inch by 12 inches by 12 inches

**Weight**  
1 ounce ≈ 28.350 grams  
1 pound = 16 ounces  
1 pound ≈ 453.592 grams  
1 milligram = 0.001 grams  
1 kilogram = 1,000 grams  
1 kilogram ≈ 2.2 pounds  
1 ton = 2,000 pounds

**Triangle**  
sum of angles = 180°  
area = ½ (*base* x *height*)

**Circle**  
number of degrees in a circle = 360°  
circumference ≈ 3.14 x *diameter*  
area ≈ 3.14 x (*radius*)2

**Simple interest**

Interest ( I ) =

Amount ( A) = Interest + Principal

Where P = Principal ( Amount invested)R = Rate of interest (%)

T = terms of investment (could be in years)

**Roman numeral symbols**

|  |
| --- |
| I=1 |
| V=5 |
| X=10 |
| L=50 |
| C=100 |
| D=500 |
| M=1,000 |

|  |  |  |
| --- | --- | --- |
| 1 = I  2 = II  3 = III  4 = IV  5 = V  6 = VI  7 = VII  8 = VIII  9 = IX  10 = X | 11 = XI  12 = XII  13 = XIII  14 = XIV  15 = XV  16 = XVI  17 = XVII  18 = XVIII  19 = XIX  20 = XX  21 = XXI | 25 = XXV  30 = XXX  40 = XL  49 = XLIX  50 = L  51 = LI  60 = LX  70 = LXX  80 = LXXX  90 = XC  99 = XCIX |

**Average formula:**   
  
Let a1,a2,a3,......,an be a set of numbers, average = (a1 + a2 + a3,+......+ an)/n

**Converting decimals to fractions**

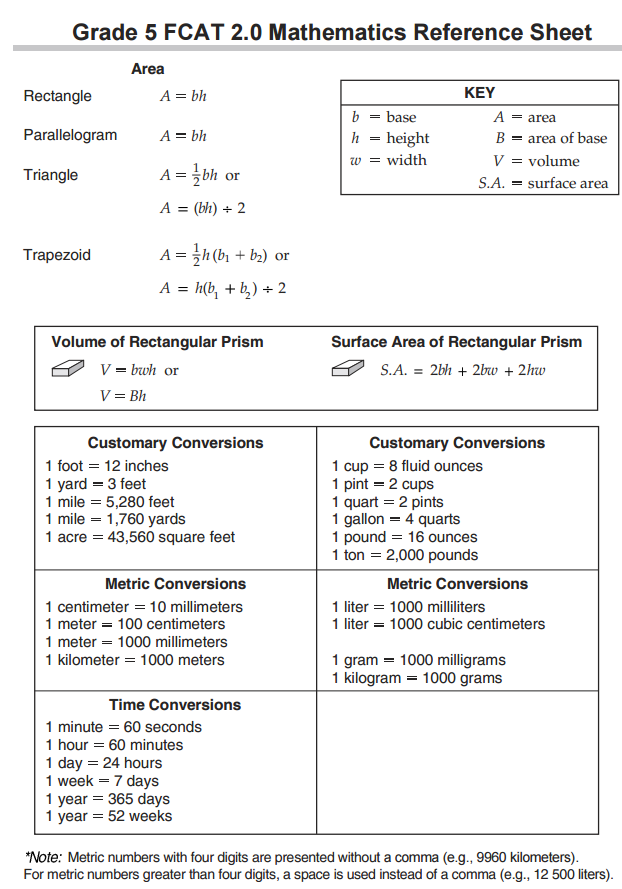
**Note the following pattern for repeating decimals:**  
0.22222222... = 2/9  
0.54545454... = 54/99  
0.298298298... = 298/999  
Division by 9's causes the repeating pattern.

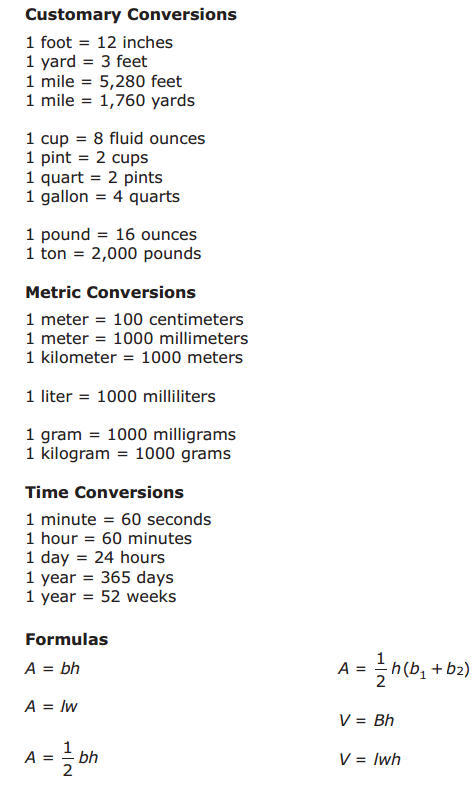
**Note the pattern if zeros precede the repeating decimal:**  
0.022222222... = 2/90  
0.00054545454... = 54/99000  
0.00298298298... = 298/99900  
Adding zero's to the denominator adds zero's before the repeating decimal.

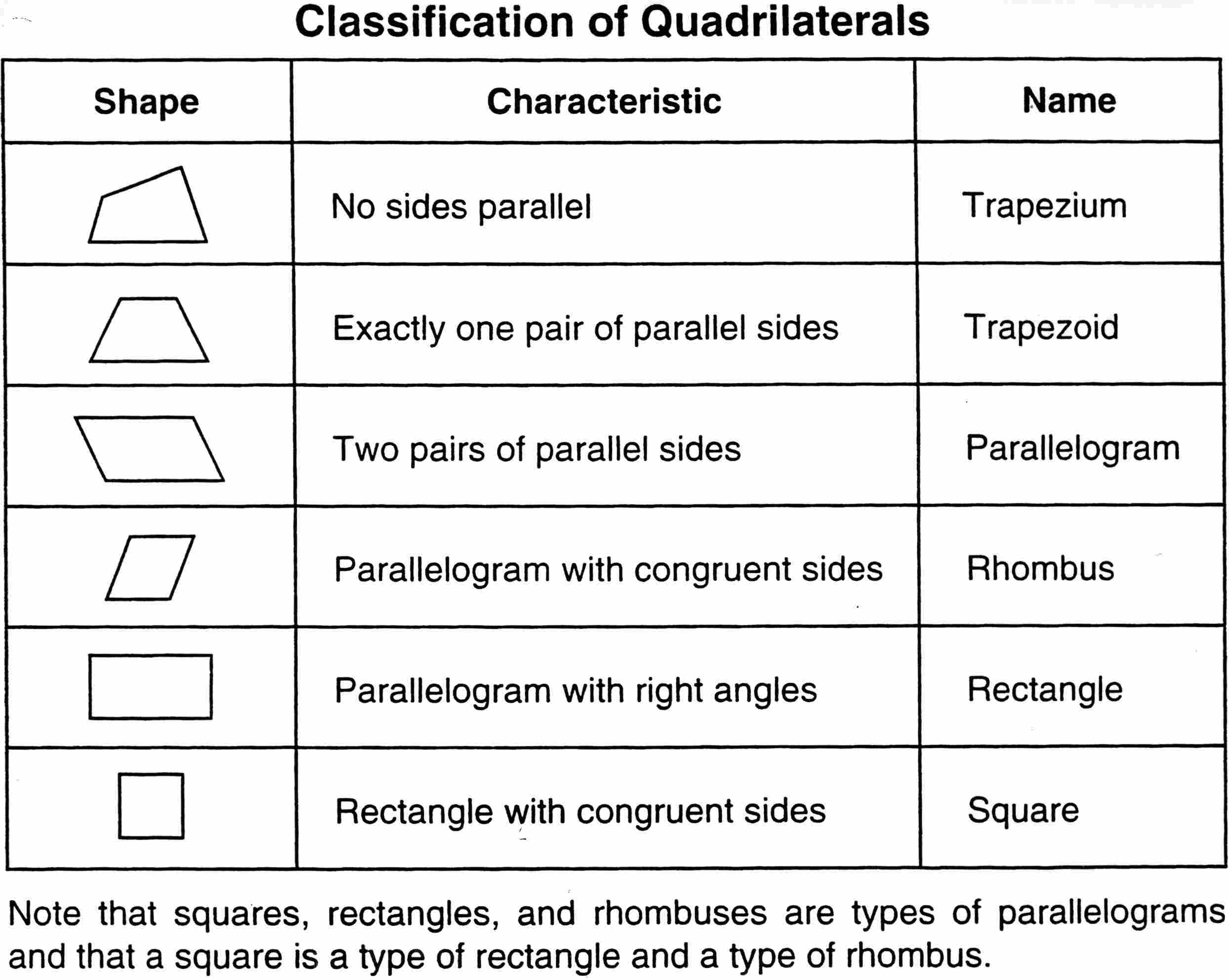
**Number Properties**

(Odd)(Even) = Even  
(Odd)(Odd) = Odd  
(Even)(Even) = Even  
  
(Odd) ± (Even) = Odd  
(Odd) ± (Odd) = Even  
(Even) ± (Even) = Even  
  
(Positive)(Positive) = Positive  
(Positive)(Negative) = Negative  
(Negative)(Negative) = Positive  
(Positive)/(Negative) = Negative  
(Positive)/(Positive) = Positive  
(Negative)/(Negative) = Positive

|  |  |  |
| --- | --- | --- |
| Number | squares | Cubes |
| 1 | 1 | 1 |
| 2 | 4 | 8 |
| 3 | 9 | 27 |
| 4 | 16 | 64 |
| 5 | 25 | 125 |
| 6 | 36 | 216 |
| 7 | 49 |  |
| 8 | 64 |  |
| 9 |  |  |
| 10 |  |  |
| 11 |  |  |
| 12 |  |  |
| 13 |  |  |
| 14 |  |  |
| 15 |  |  |
| 16 |  |  |
| 17 |  |  |
| 18 |  |  |
| 19 |  |  |
| 20 |  |  |
| 21 |  |  |







Quadrilateral

Square

Rectangle

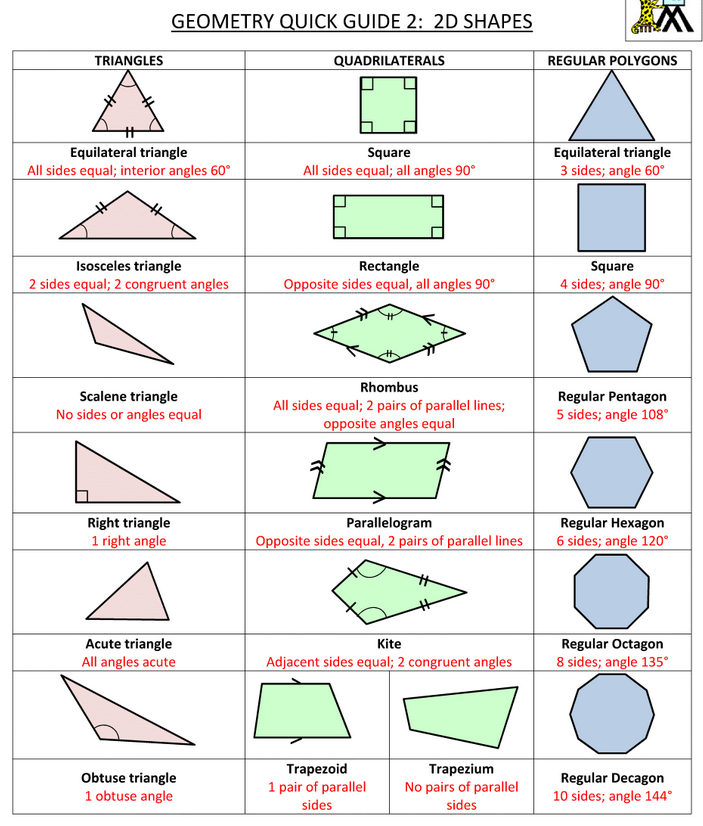
Parallelogram

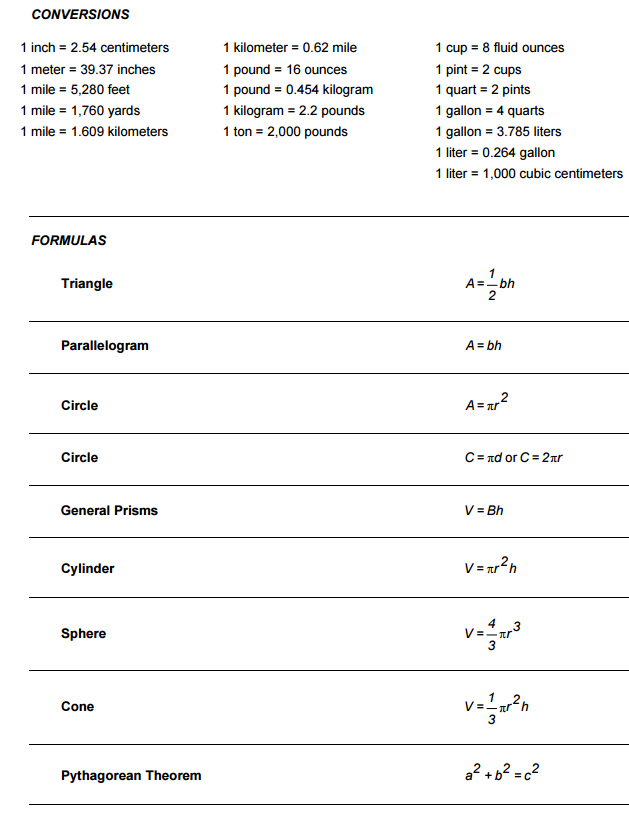
Isosceles Trapezoid

Trapezoid

Rhombus

Kite





Here is a list of all the prime numbers up to 1,000:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2 | 3 | 5 | 7 | 11 | 13 | 17 | 19 | 23 | 29 | 31 | 37 | 41 | 43 | 47 | 53 | 59 | 61 | 67 |
| 71 | 73 | 79 | 83 | 89 | 97 | 101 | 103 | 107 | 109 | 113 | 127 | 131 | 137 | 139 | 149 | 151 | 157 | 163 |
| 167 | 173 | 179 | 181 | 191 | 193 | 197 | 199 | 211 | 223 | 227 | 229 | 233 | 239 | 241 | 251 | 257 | 263 | 269 |
| 271 | 277 | 281 | 283 | 293 | 307 | 311 | 313 | 317 | 331 | 337 | 347 | 349 | 353 | 359 | 367 | 373 | 379 | 383 |
| 389 | 397 | 401 | 409 | 419 | 421 | 431 | 433 | 439 | 443 | 449 | 457 | 461 | 463 | 467 | 479 | 487 | 491 | 499 |
| 503 | 509 | 521 | 523 | 541 | 547 | 557 | 563 | 569 | 571 | 577 | 587 | 593 | 599 | 601 | 607 | 613 | 617 | 619 |
| 631 | 641 | 643 | 647 | 653 | 659 | 661 | 673 | 677 | 683 | 691 | 701 | 709 | 719 | 727 | 733 | 739 | 743 | 751 |
| 757 | 761 | 769 | 773 | 787 | 797 | 809 | 811 | 821 | 823 | 827 | 829 | 839 | 853 | 857 | 859 | 863 | 877 | 881 |
| 883 | 887 | 907 | 911 | 919 | 929 | 937 | 941 | 947 | 953 | 967 | 971 | 977 | 983 | 991 | 997 | [more...](https://www.mathsisfun.com/numbers/prime-numbers-to-10k.html) | | |