

# Roman Numerals Chart

|    |      |
|----|------|
| 1  | I    |
| 2  | II   |
| 3  | III  |
| 4  | IV   |
| 5  | V    |
| 6  | VI   |
| 7  | VII  |
| 8  | VIII |
| 9  | IX   |
| 10 | X    |

|     |      |
|-----|------|
| 11  | XI   |
| 20  | XX   |
| 30  | XXX  |
| 40  | XL   |
| 50  | L    |
| 60  | LX   |
| 70  | LXX  |
| 80  | LXXX |
| 90  | XC   |
| 100 | C    |

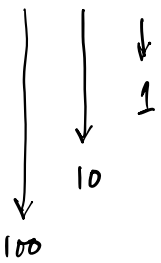
|      |      |
|------|------|
| 200  | CC   |
| 300  | CCC  |
| 400  | CD   |
| 500  | D    |
| 600  | DC   |
| 700  | DCC  |
| 800  | DCCC |
| 900  | CM   |
| 1000 | M    |
| 1001 | MI   |

$$\begin{array}{r}
 1 \\
 234 \\
 47+ \\
 \hline
 281
 \end{array}$$

DECIMAL SYSTEM  
(10)

0, 1, 2, 3, 4, 5, 6, 7, 8, 9.

$$234 = (2 \times 100) + (3 \times 10) + (4 \times 1) = (2 \times 10^2) + (3 \times 10^1) + (4 \times 10^0)$$



Positional notation.

$$234 \neq 432$$

$$15 \neq 4$$

$$51 \neq 6$$

314709

LEAST SIGNIFICANT DIGIT.

$$= 9 \times 10^0$$

$$+ 0 \times 10^1$$

$$+ 7 \times 10^2$$

$$+ 4 \times 10^3$$

$$+ 1 \times 10^4$$

$$+ 3 \times 10^5$$

base-10 system.

↓  
FAISAL  
jeie

## BINARY NUMBERS

Symbols: 0, 1

1101 chocolates  
least significant bit

$$\begin{aligned} &= 1 \times 2^0 && (1) \\ &+ 0 \times 2^1 && (0) \\ &+ 1 \times 2^2 && (4) \\ &+ 1 \times 2^3 && (8) \\ &= \underline{\underline{13}} \end{aligned}$$

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Octal: 0, 1, 2, 3, 4, 5, 6, 7

$$\begin{aligned} &246 \\ &= 6 \times 8^0 && \textcircled{1} \\ &+ 4 \times 8^1 && 6 \\ &+ 2 \times 8^2 && 32 \\ & && \underline{128} \\ & && 166 \\ &= 166 \end{aligned}$$

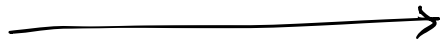
$$\begin{array}{r|l} 246 & \\ \hline 8 & 10 \end{array} = \begin{array}{r|l} 166 & \\ \hline 10 & \end{array}$$

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## Hexadecimal

0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F

67DAFF



$$\begin{aligned} &= F \times 16^0 && (15 \times 16^0) && \text{DECIMAL} \\ &+ F \times 16^1 && (15 \times 16^1) \\ &+ A \times 16^2 && (10 \times 16^2) \\ &+ 0 \times 16^3 && (0 \times 16^3) \\ &+ 7 \times 16^4 && (7 \times 16^4) \\ &+ 6 \times 16^5 && (6 \times 16^5) \end{aligned}$$

# DECIMAL TO BINARY

$5_{10}$

$$\begin{array}{r} 1 \\ 4 \overline{) 5} \\ \underline{4} \end{array}$$

$$\begin{array}{r} 0 \\ 2 \overline{) 1} \\ \underline{0} \end{array}$$

$$\begin{array}{r} 1 \\ 1 \overline{) 1} \\ \underline{1} \\ 0 \end{array}$$

$$\begin{aligned} &1 \times 2^2 \\ &+ 0 \times 2^1 \\ &+ 1 \times 2^0 \end{aligned}$$

$$= 101_2$$

$$2^0 = 1$$

$$2^1 = 2$$

$$2^2 = 4$$

$$2^3 = 8$$