

Convert the following decimal numbers to Binary

1. $45_{10} : \boxed{101101_2}$

$$\begin{cases} 45/2 = 22 \text{ R } 1 \\ 22/2 = 11 \text{ R } 0 \\ 11/2 = 5 \text{ R } 1 \\ 5/2 = 2 \text{ R } 1 \\ 2/2 = 1 \text{ R } 0 \\ 1/2 = 0 \text{ R } 1 \end{cases}$$

2. $169_{10} : \boxed{10101001_2}$

$$\begin{cases} 169/2 = 84 \text{ R } 1 \\ 84/2 = 42 \text{ R } 0 \\ 42/2 = 21 \text{ R } 0 \\ 21/2 = 10 \text{ R } 1 \\ 10/2 = 5 \text{ R } 0 \\ 5/2 = 2 \text{ R } 1 \\ 2/2 = 1 \text{ R } 0 \\ 1/2 = 0 \text{ R } 1 \end{cases}$$

3. $243_{10} :$

$$\begin{cases} 243/2 = 121 \text{ R } 1 \\ 121/2 = 60 \text{ R } 1 \\ 60/2 = 30 \text{ R } 0 \\ 30/2 = 15 \text{ R } 0 \\ 15/2 = 7 \text{ R } 1 \\ 7/2 = 3 \text{ R } 1 \\ 3/2 = 1 \text{ R } 1 \\ 1/2 = 0 \text{ R } 1 \end{cases}$$

4. $111_{10} : \boxed{1101111_2}$

$$\begin{cases} 111/2 = 55 \text{ R } 1 \\ 55/2 = 27 \text{ R } 1 \\ 27/2 = 13 \text{ R } 1 \\ 13/2 = 6 \text{ R } 1 \\ 6/2 = 3 \text{ R } 0 \\ 3/2 = 1 \text{ R } 1 \\ 1/2 = 0 \text{ R } 1 \end{cases}$$

5. $77_{10} :$

$$\begin{cases} 77/2 = 38 \text{ R } 1 \\ 38/2 = 19 \text{ R } 0 \\ 19/2 = 9 \text{ R } 1 \\ 9/2 = 4 \text{ R } 1 \\ 4/2 = 2 \text{ R } 0 \\ 2/2 = 1 \text{ R } 0 \\ 1/2 = 0 \text{ R } 1 \end{cases}$$

6. $212_{10} : \boxed{11010100_2}$

$$\begin{cases} 212/2 = 106 \text{ R } 0 \\ 106/2 = 53 \text{ R } 0 \\ 53/2 = 26 \text{ R } 1 \\ 26/2 = 13 \text{ R } 0 \\ 13/2 = 6 \text{ R } 1 \\ 6/2 = 3 \text{ R } 0 \\ 3/2 = 1 \text{ R } 1 \\ 1/2 = 0 \text{ R } 1 \end{cases}$$