

Scomposizione di un numero nel prodotto di fattori primi

$$24 = 8 \cdot 3 = 2 \cdot 4 \cdot 3 = 2 \cdot 2 \cdot 2 \cdot 3 = 2^3 \cdot 3$$

$$32 = 4 \cdot 8 = 2 \cdot 2 \cdot 4 \cdot 2 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 = 2^5$$

$$18 = 6 \cdot 3 = 2 \cdot 3 \cdot 3 = 2 \cdot 3^2$$

$$27 = 3 \cdot 9 = 3 \cdot 3 \cdot 3 = 3^3$$

$$42 = 7 \cdot 6 = 7 \cdot 2 \cdot 3 = 2 \cdot 3 \cdot 7$$

$$50 = 5 \cdot 10 = 5 \cdot 5 \cdot 2 = 2 \cdot 5^2$$

$$75 = 25 \cdot 3 = 5 \cdot 5 \cdot 3 = 3 \cdot 5^2$$

$$100 = 25 \cdot 4 = 5 \cdot 5 \cdot 2 \cdot 2 = 2^2 \cdot 5^2$$

$$120 = 12 \cdot 10 = 2 \cdot 6 \cdot 5 \cdot 2 = 2 \cdot 3 \cdot 2 \cdot 5 \cdot 2 = 2^3 \cdot 3 \cdot 5$$

ALGORITMO PER LA SCOMPOSIZIONE IN FATTORI PRIMI

$$45 = 3^2 \cdot 5$$

$$63 = 3^2 \cdot 7$$

$$72 = 2^3 \cdot 3^2$$

$$150 = 2 \cdot 3 \cdot 5^2$$

$$200 = 2^3 \cdot 5^2$$

$$270 = 2 \cdot 3^3 \cdot 5$$

$$800 = 2^5 \cdot 5^2$$

$$\begin{array}{r|l} 72 & 2 \\ 36 & 2 \\ 18 & 2 \\ 9 & 3 \\ 3 & 3 \\ 1 & \end{array}$$

$$\begin{array}{r|l} 45 & 3 \\ 15 & 3 \\ 5 & 5 \\ 1 & \end{array}$$

$$\begin{array}{r|l} 63 & 3 \\ 21 & 3 \\ 7 & 7 \\ 1 & \end{array}$$

$$\begin{array}{r|l} 150 & 2 \\ 75 & 3 \\ 25 & 5 \\ 5 & 5 \\ 1 & \end{array}$$

$$\begin{array}{r|l} 200 & 2 \\ 100 & 2 \\ 50 & 2 \\ 25 & 5 \\ 5 & 5 \\ 1 & \end{array}$$

$$\begin{array}{r|l} 270 & 2 \\ 135 & 3 \\ 45 & 3 \\ 15 & 3 \\ 5 & 5 \\ 1 & \end{array}$$

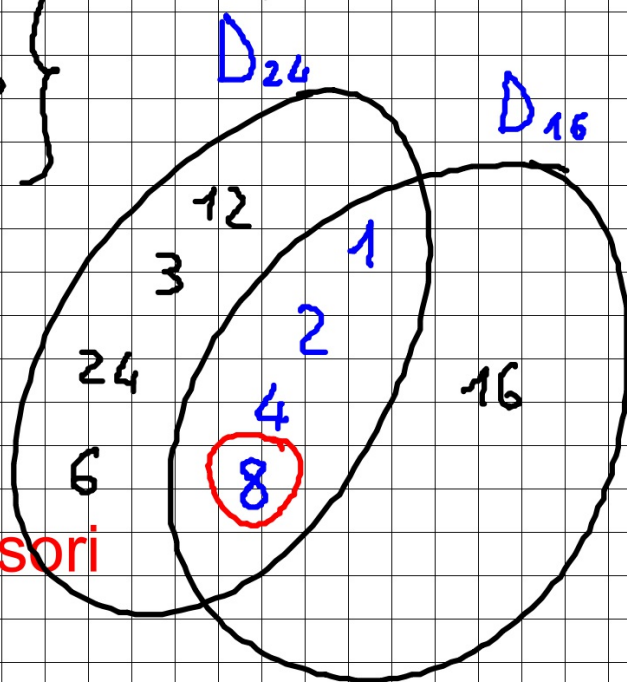
$$\begin{array}{r|l} 800 & 2 \\ 400 & 2 \\ 200 & 2 \\ 100 & 2 \\ 50 & 2 \\ 25 & 5 \\ 5 & 5 \\ 1 & \end{array}$$

MASSIMO COMUNE DIVISORE

$$D_{24} = \{ \underline{1}, \underline{2}, 3, \underline{4}, 6, \underline{8}, 12, 24 \}$$

$$D_{16} = \{ \underline{1}, \underline{2}, \underline{4}, \underline{8}, 16 \}$$

$$\text{MCD}(16; 24) = \underline{8}$$



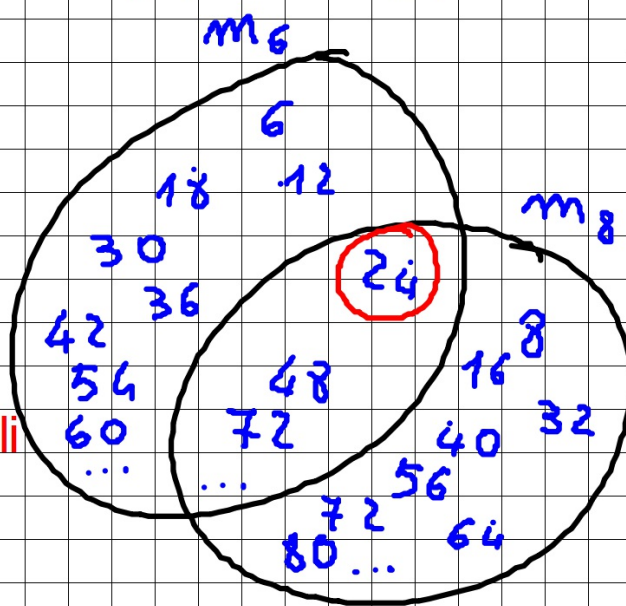
E' il più grande fra i divisori
in comune

minimo comune multiplo

$$m_6 = \{ 6, 12, 18, \underline{24}, 30, 36, 42, \underline{48}, 54, 60, \underline{66}, \underline{72}, \dots \}$$

$$m_8 = \{ 8, 16, \underline{24}, 32, 40, \underline{48}, 56, 64, \underline{72}, 80, \dots \}$$

$$m.c.m.(6;8) = \underline{24}$$



E' il più piccolo fra i multipli
in comune

ALGORITMO PER IL CALCOLO DEL mcm

$$\text{mcm}(720; 450) = 2^4 \cdot 3^2 \cdot 5^2 = 3600$$

$$450 \mid 2 \cdot 5$$

$$45 \mid 3$$

$$15 \mid 3$$

$$5 \mid 5$$

$$1 \mid$$

$$450 = 2 \cdot 3^2 \cdot 5^2$$

$$720 = 2^4 \cdot 3^2 \cdot 5$$

$$720 \mid 2 \cdot 5$$

$$72 \mid 2$$

$$36 \mid 2$$

$$18 \mid 2$$

$$9 \mid 3$$

$$3 \mid 3$$

$$1 \mid$$

$$\text{m.c.m.}(500; 360) = 2^3 \cdot 3^2 \cdot 5^3 = 9000$$

$$\begin{array}{r|l} 500 & 2^2 \cdot 5^2 \\ 5 & 5 \\ 1 & \end{array} \quad \begin{array}{r|l} 360 & 2 \cdot 5 \\ 36 & 2 \\ 18 & 2 \\ 9 & 3 \\ 3 & 3 \\ 1 & \end{array}$$

$$500 = 2^2 \cdot 5^3$$

$$360 = 2^3 \cdot 3^2 \cdot 5$$

Si scompongono i numeri in fattori primi.

*Si prendono **tutti** i fattori, comuni e non comuni, **una sola volta**, con il **massimo esponente**.*

ALGORITMO PER IL CALCOLO DEL M C D

$$\text{MCD}(650; 390) = 2 \cdot 5 \cdot 13 = 130$$

$$\begin{array}{r|l} 650 & 2 \cdot 5 \\ \hline 65 & 5 \\ 13 & 13 \\ 1 & \end{array} \quad \begin{array}{r|l} 390 & 2 \cdot 5 \\ \hline 39 & 3 \\ 13 & 13 \\ 1 & \end{array}$$

$$650 = 2 \cdot 5^2 \cdot 13$$

$$390 = 2 \cdot 3 \cdot 5 \cdot 13$$

Si scompongono i numeri in fattori primi.

Si prendono **solo** i fattori comuni,

una sola volta, con il **minimo esponente**.

$$\text{m c m} (9100; 728) = 2^3 \cdot 5^2 \cdot 7 \cdot 13 = 18200$$

$$\text{M C D} (9100; 728) = 2^2 \cdot 7 \cdot 13 = 364$$

$$\begin{array}{r|l} 728 & 2 \\ \hline 364 & 2 \\ 182 & 2 \\ 91 & 7 \\ 13 & 13 \\ 1 & \end{array}$$

$$\begin{array}{r|l} 9100 & 2^2 \cdot 5^2 \\ \hline 91 & 7 \\ 13 & 13 \\ 1 & \end{array}$$

$$728 = 2^3 \cdot 7 \cdot 13$$

$$9100 = 2^2 \cdot 5^2 \cdot 7 \cdot 13$$

$$\text{m.c.m.} (1350; 1200; 3600) = 2^4 \cdot 3^3 \cdot 5^2 = 10800$$

$$\text{M.C.D.} (1350; 1200; 3600) = 2 \cdot 3 \cdot 5^2 = 150$$

1350		2 · 5	1200		2 ² · 5 ²	3600		2 ² · 5 ²
135		3	12		2	36		2
45		3	6		2	18		2
15		3	3		3	9		3
5		5	1		1	3		3
1						1		

$$1350 = 2 \cdot 3^3 \cdot 5^2$$

$$1200 = 2^4 \cdot 3 \cdot 5^2$$

$$3600 = 2^4 \cdot 3^2 \cdot 5^2$$