

Algoritmo división

$$a = 59$$

$$n = 7$$

$$8 < \frac{59}{7} < 9$$

$$r = 59 - (8)(7)$$

$$r = 59 - 56 = 3$$

$$59 = 7 \cdot 8 + 3$$

$$a = 84$$

$$n = 12$$

$$6 < \frac{84}{12} < 8$$

$$84 = 12 \cdot 7$$

$$a = 100$$

$$n = 9$$

$$11 < \frac{100}{9} < 12$$

$$r = 100 - 11 \cdot 9 = 1$$

$$100 = 9 \cdot 11 + 1$$

$$a = -96$$

$$n = 12$$

$$-9 < \frac{-96}{12} < -7$$

$$-96 = 12 \cdot (-8)$$

$$Q = -4$$

$$n = 5$$

$$-2 < -\frac{4}{5} < -1$$

$$r = -4 - (-2)(5)$$

$$r = -4 + 10$$

$$r = 6$$

$$-4 = (5)(-2) + 6$$

Euclides:

$$209 \text{ y } 78$$

$$209 = 2 \cdot 78 + 63$$

$$78 = 1 \cdot 63 + 25$$

$$63 = 2 \cdot 25 + 3$$

$$25 = 8 \cdot 3 + 1 \leftarrow \text{MCD}$$

$$3 = 3 \cdot 1 + 0$$

$$\text{MCD}(209, 78) = 1$$

$$93 \text{ y } 27$$

$$93 = 3 \cdot 27 + 12$$

$$27 = 2 \cdot 12 + 3 \leftarrow \text{MCD}$$

$$12 = 4 \cdot 3 + 0$$

$$\text{MCD}(93, 27) = 3$$

$$138 \text{ y } 61$$

$$\text{MCD}(138, 61) = 1$$

$$138 = 2 \cdot 61 + 16$$

$$61 = 3 \cdot 16 + 13$$

$$16 = 1 \cdot 13 + 3$$

$$13 = 4 \cdot 3 + 1 \leftarrow \text{MCD}$$

$$3 = 3 \cdot 1 + 0$$

$$231 \text{ y } 49$$

$$\text{MCD}(231, 49) = 7$$

$$231 = 4 \cdot 49 + 35$$

$$49 = 1 \cdot 35 + 14$$

$$35 = 2 \cdot 14 + 7 \leftarrow \text{MCD}$$

$$14 = 2 \cdot 7 + 0$$

Identidad de Bézout

93 y 42

$$93 = 2 \cdot 42 + 9$$

$$42 = 4 \cdot 9 + 6$$

$$9 = 1 \cdot 6 + 3$$

$$6 = 2 \cdot 3$$

$$3 = 9 - 1 \cdot 6$$

$$3 = 9 - 1(42 - 4 \cdot 9)$$

$$3 = 9 \cdot 5 - 42$$

$$3 = (93 - 2 \cdot 42)5 - 42$$

$$3 = 93 \cdot 5 - 11(42)$$

$$3 = 465 - 462$$

70 y 29

$$70 = 2 \cdot 29 + 12$$

$$29 = 2 \cdot 12 + 5$$

$$12 = 2 \cdot 5 + 2$$

$$5 = 2 \cdot 2 + 1$$

$$1 = 5 - 2 \cdot 2$$

$$1 = 5 - 2(12 - 2 \cdot 5)$$

$$1 = 5 \cdot 5 - 2 \cdot 12$$

$$1 = 5(29 - 2 \cdot 12) - 2 \cdot 12$$

$$1 = 5(29) - 12(12)$$

$$1 = 5(29) - 12(70 - 2 \cdot 29)$$

$$1 = 29 \cdot 29 - 12 \cdot 70 = 841 - 840$$

$$-112 \text{ y } -91$$

$$-112 = 1 \cdot 91 + 21$$

$$91 = 4 \cdot 21 + 7$$

$$21 = 3 \cdot 7$$

$$7 = 91 - 4 \cdot 21$$

$$7 = 91 - 4(112 - 91)$$

$$7 = 5 \cdot 91 - 4(112)$$

$$7 = -5(-91) + (4)(-112)$$

$$-105 \text{ y } 39$$

$$105 = 2 \cdot 39 + 27$$

$$39 = 1 \cdot 27 + 12$$

$$27 = 2 \cdot 12 + 3$$

$$3 = 27 - 2 \cdot 12$$

$$3 = 27 - 2(39 - 27)$$

$$3 = 3 \cdot 27 - 2 \cdot 39$$

$$3 = 3 \cdot (105 - 2 \cdot 39) - 2 \cdot 39$$

$$3 = 3 \cdot 105 - 8(39)$$

$$3 = -3(-105) + (-8)(39)$$

$$3 = 315 - 312$$

Aritmetica modular

$$\begin{array}{r} 7 + 3 \\ 1 + 3 \end{array} \pmod{6} \longrightarrow 10 \equiv 4 \pmod{6}$$

$$\begin{array}{r} 7 - 3 \\ 1 + 3 \end{array} \pmod{6} \longrightarrow 7 - 3 \equiv 4 \pmod{6}$$

$$\begin{array}{r} 23 - 24 \\ 5 - 0 \end{array} \pmod{6} \longrightarrow -1 \equiv 5 \pmod{6}$$

$$\begin{array}{r} 62 + 68 \\ 2 + 2 \end{array} \pmod{6} \longrightarrow 62 + 68 \equiv 4 \pmod{6}$$

$$\begin{array}{r} 601 - 6001 \\ 1 - 6000 + 1 \\ 5 \cdot 0 - 5 \end{array} \pmod{6} \longrightarrow 601 - 6001 \equiv 0 \pmod{6}$$

$$\begin{array}{r} -3 - 19 \\ 3 - 1 \end{array} \pmod{6} \longrightarrow -3 - 19 \equiv 2 \pmod{6}$$

$$6 + 4 \pmod{10} \rightarrow 10 \equiv 0 \pmod{10}$$

$$\begin{array}{l} -21 - 17 \pmod{10} \\ -1 + 3 \pmod{10} \end{array} \rightarrow -21 - 17 \equiv -1 + 3 \pmod{10}$$

$$\begin{array}{l} 14 - 7 \pmod{10} \\ 4 + 3 \pmod{10} \end{array} \rightarrow 14 - 7 \equiv 7 \pmod{10}$$

$$\begin{array}{l} 101 + 11 + 1 \pmod{10} \\ 1 + 1 + 1 \pmod{10} \end{array} \rightarrow 101 + 11 + 1 \equiv 3 \pmod{10}$$

$$\begin{array}{l} 13 - 15 \pmod{10} \\ 3 - 5 \pmod{10} \end{array} \rightarrow 13 - 15 \equiv 8 \pmod{10}$$

$$\begin{array}{l} 101 - 11 - 1 \pmod{10} \\ 1 - 1 - 1 \pmod{10} \end{array} \rightarrow 101 - 11 - 1 \equiv 9 \pmod{10}$$