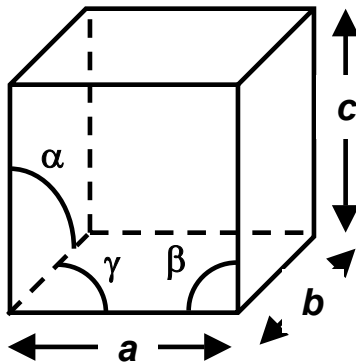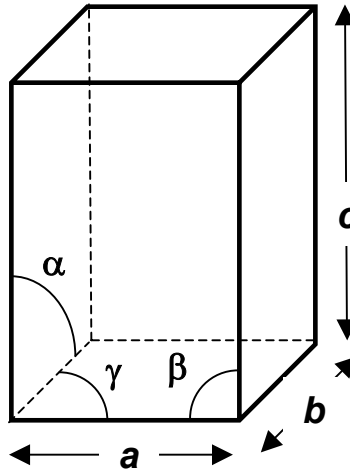# Seven unique Bravais lattice classes based on point symmetry
(subset of 14 total unique Bravais lattices)

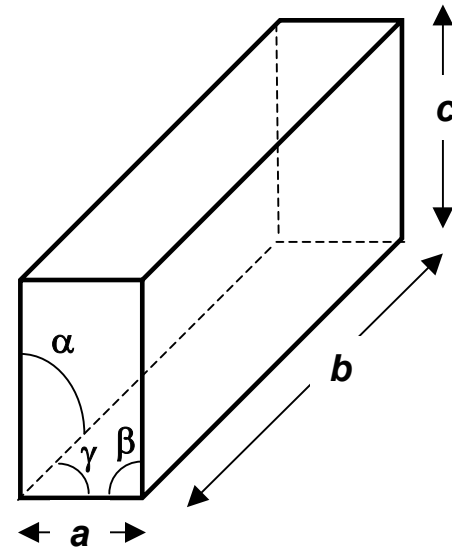**Cubic**

$a=b=c$
$\alpha=\beta=\gamma=90^o$

Tetragonal
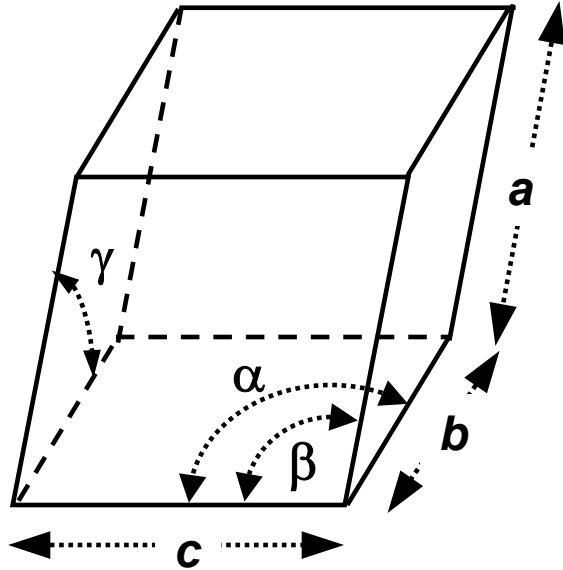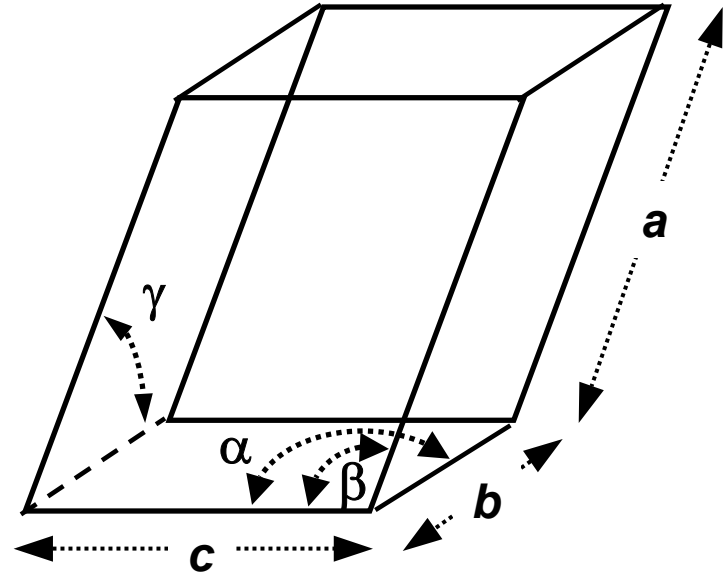
$a=b\neq c$
$\alpha=\beta=\gamma=90^o$

Orthorhombic

$a \neq b\neq c$
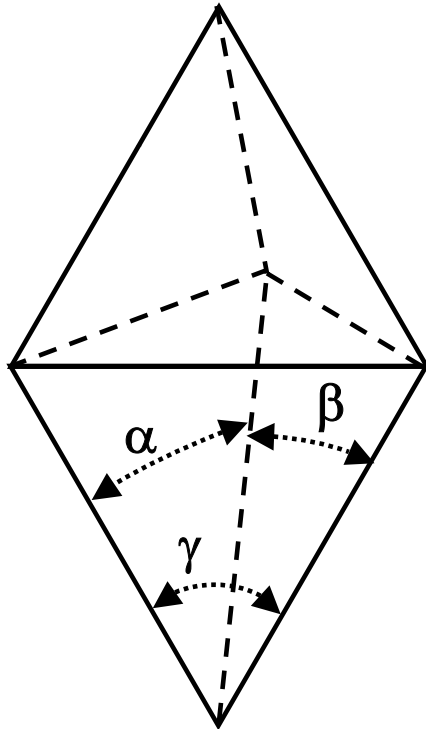$\alpha=\beta=\gamma=90^o$

Monoclinic (six sided)

Triclinic (six sided)

$a \neq b \neq c$
$\alpha = \gamma = 90^o$
$\beta \neq 90^o$

$a \neq b \neq c$
$\alpha \neq \beta \neq \gamma$

Trigonal (six sided)

Hexagonal (8 sided)

$a = b = c$
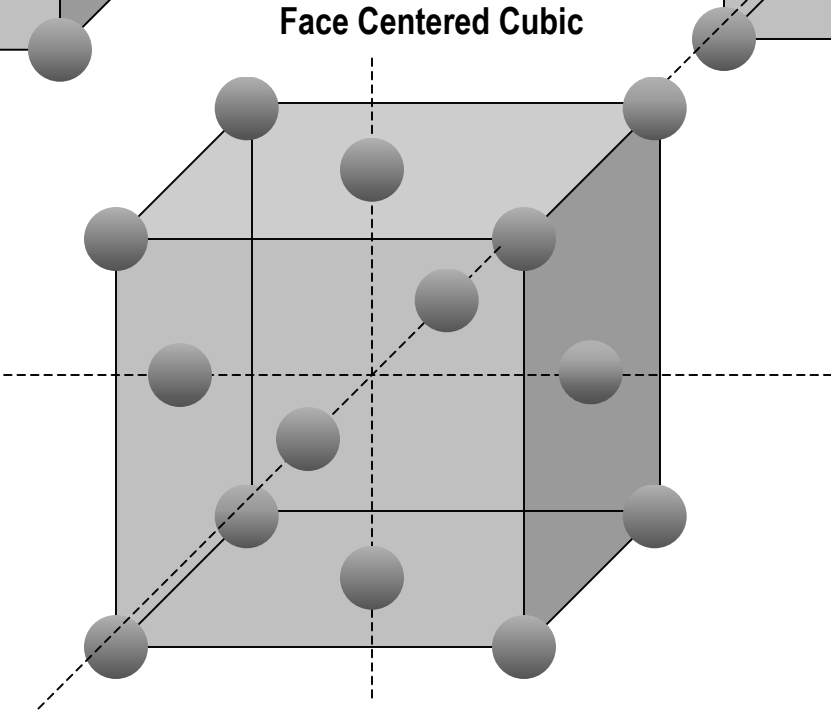
$\alpha = \beta = \gamma < 90^o$
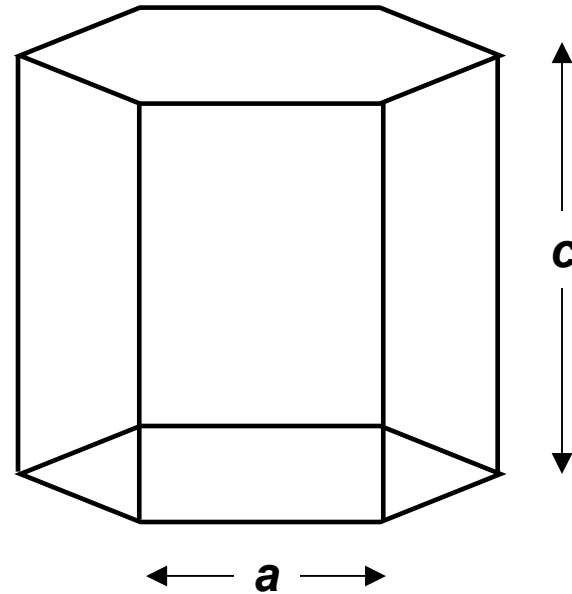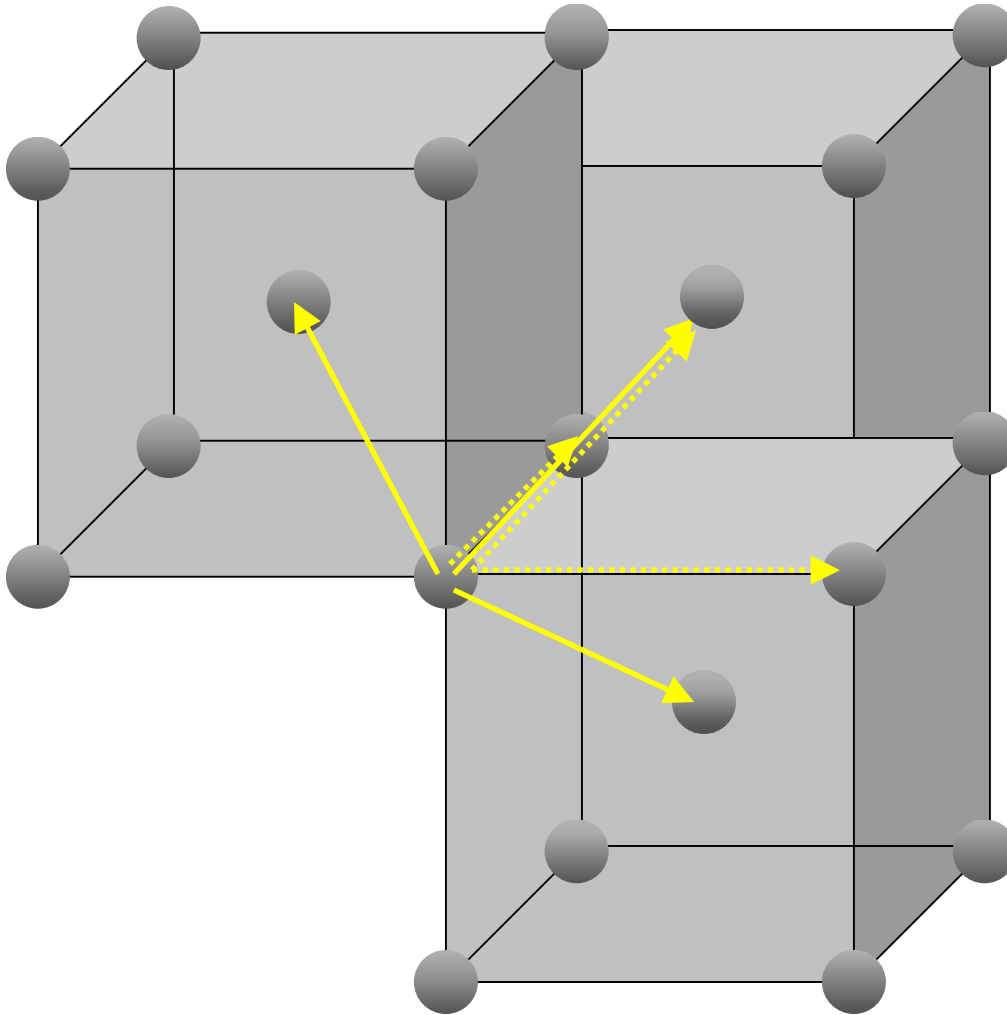
Cubic Crystal Class

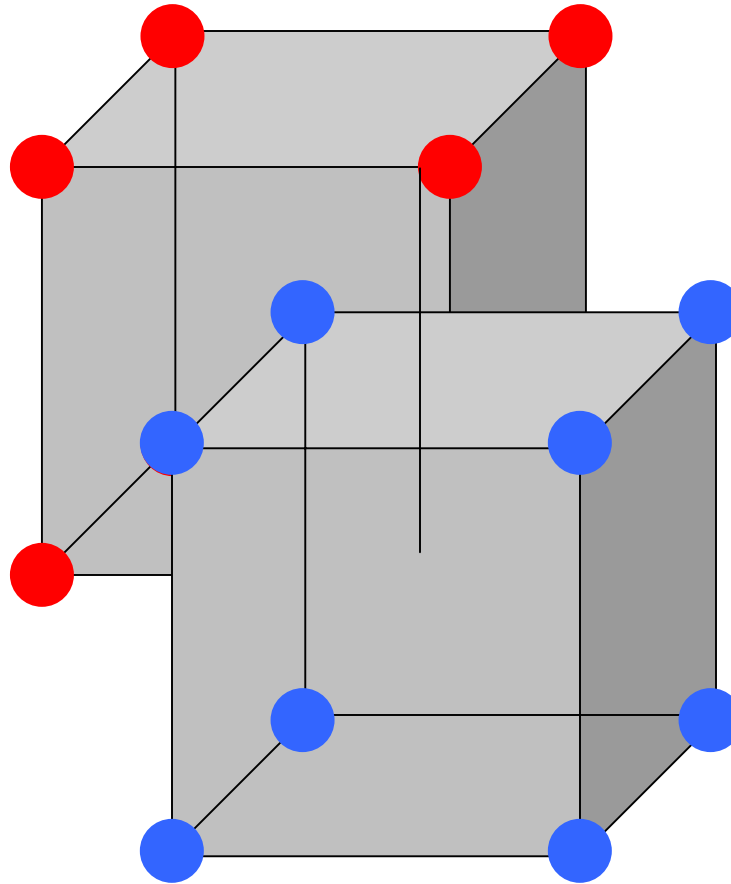**Simple Cubic**
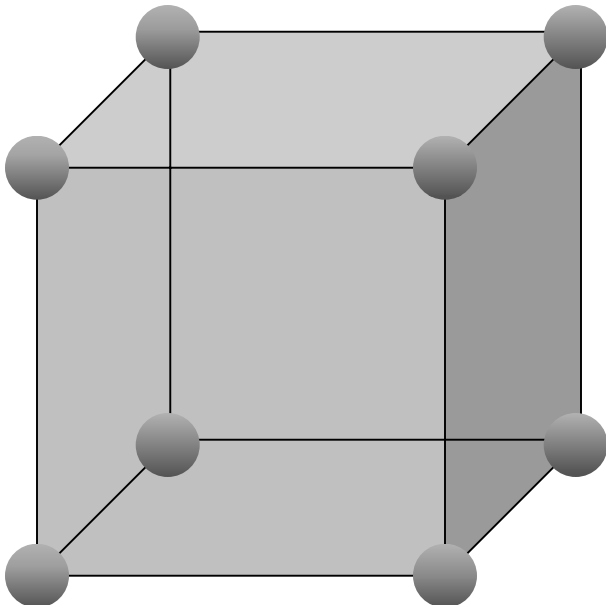
Face Centered Cubic

Body Centered Cubic

Two Possible Sets of Primitive Lattice Vectors for bcc Lattice
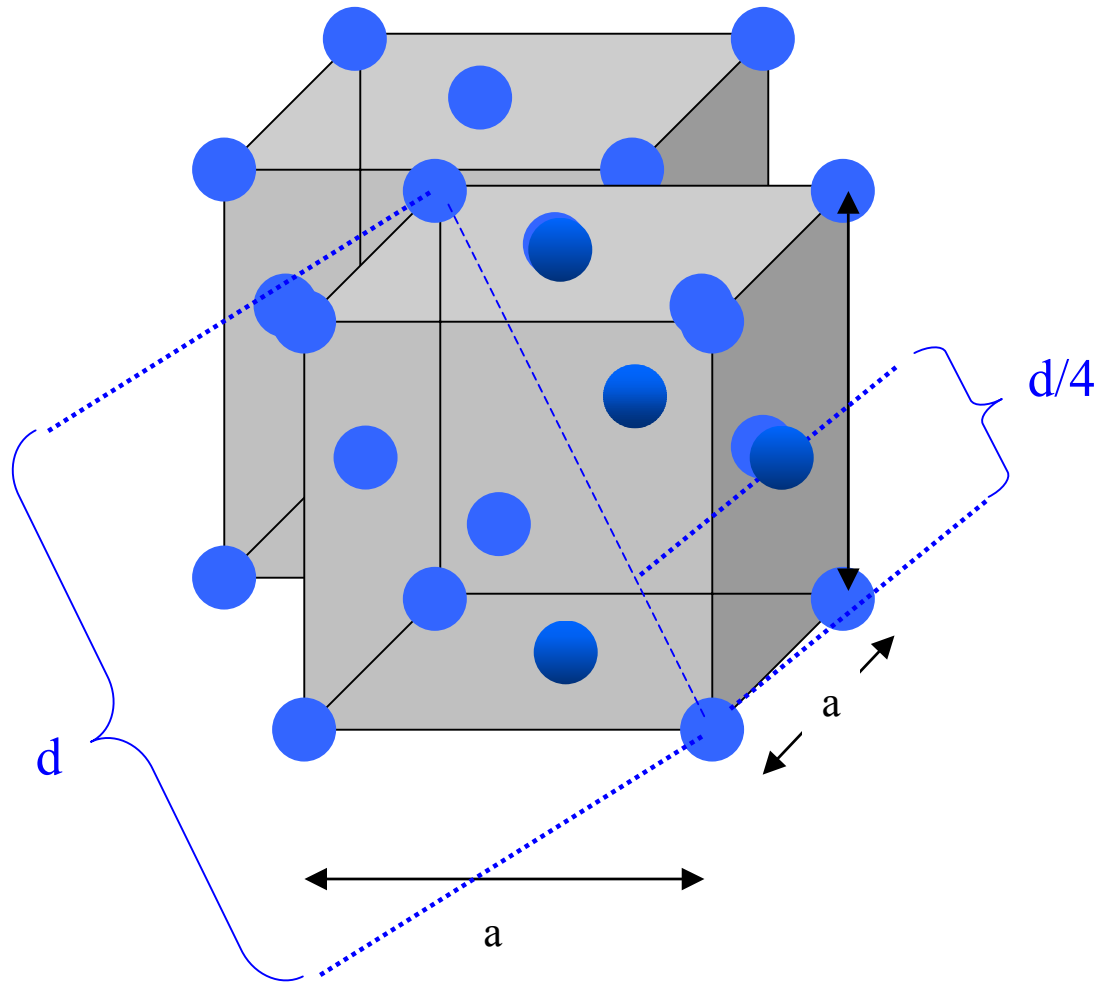(there are many others too)

Lattice with a Basis (1)
CsCl Structure: Two interpenetrating bcc lattices, each with different atom

Lattice with a Basis (2)
Diamond Structure: Two interpenetrating fcc lattices, each with same atom

Lattice with a Basis (3)
Zincblende: Two interpenetrating fcc lattices with different atoms on each