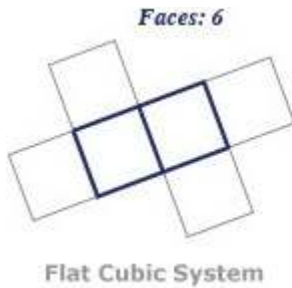


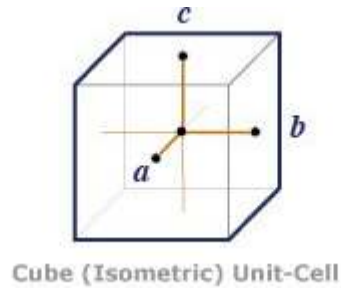
The Seven Crystal Systems

1. Cubic

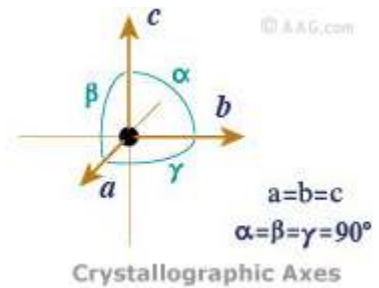
The *cubic* crystal system is also known as the "*isometric*" system. The *cubic* (Isometric) crystal system is characterized by its total symmetry. The Cubic system has three crystallographic axes that are all perpendicular to each other, and equal in length. The cubic system has one lattice point on each of the cube's four corners.



Flat Cubic System



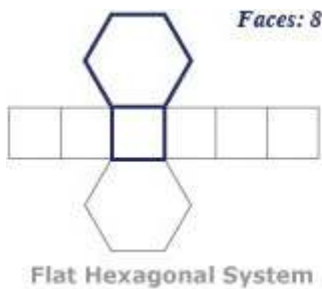
Cube (Isometric) Unit-Cell



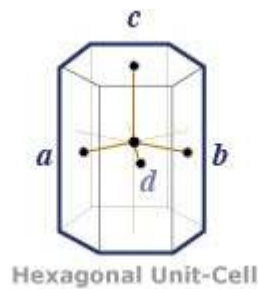
Crystallographic Axes

2. Hexagonal

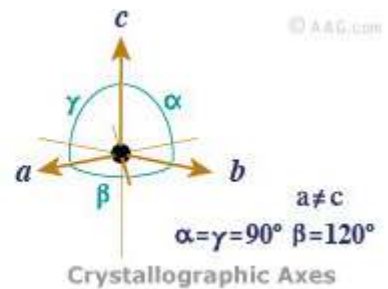
The *hexagonal* crystal system has four crystallographic axes consisting of three equal horizontal or equatorial (a , b , and d) axes at 120° , and one vertical (c) axis that is perpendicular to the other three. The (c) axis can be shorter, or longer than the horizontal axes.



Flat Hexagonal System



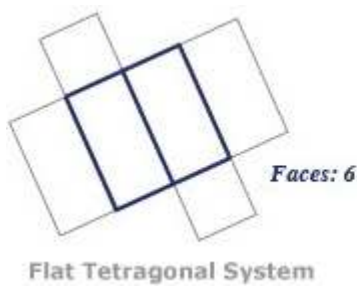
Hexagonal Unit-Cell



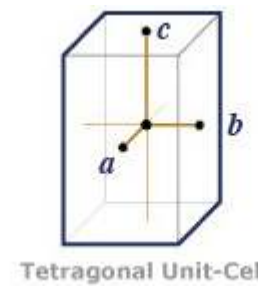
Crystallographic Axes

3. Tetragonal

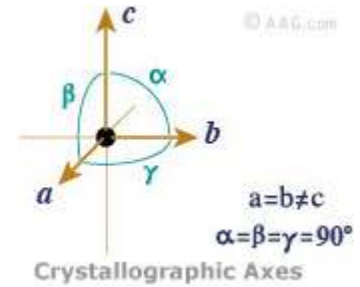
A *tetragonal* crystal is a simple cubic shape that is stretched along its (c) axis to form a rectangular prism. The tetragonal crystal will have a square base and top, but a height which is taller. By continuing to stretch the "body-centered" cubic, one more Bravais lattice of the tetragonal system is constructed.



Flat Tetragonal System



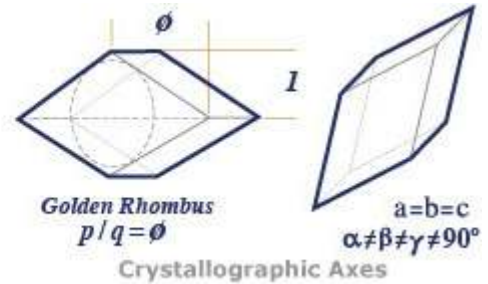
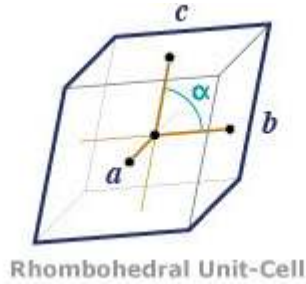
Tetragonal Unit-Cell



Crystallographic Axes

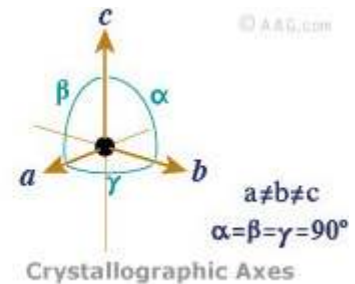
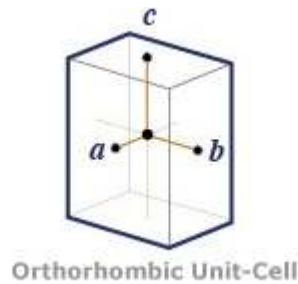
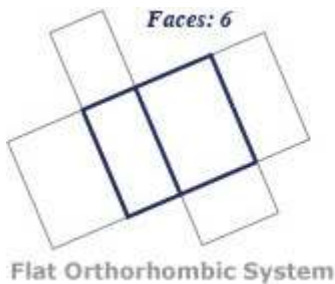
4. Rhombohedral

A *rhombohedron* (aka *trigonal system*) has a three-dimensional shape that is similar to a cube, but it has been skewed or inclined to one side making it oblique. Its form is considered "prismatic" because all six crystal faces are parallel to each other. Any faces that are not squared at right angles are called "*rhombi*." A rhombohedral crystal has six faces, 12 edges, and 8 vertices. If all of the non-obtuse internal angles of the faces are equal (flat sample, below), it can be called a trigonal-trapezohedron.



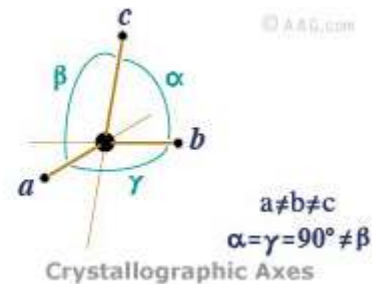
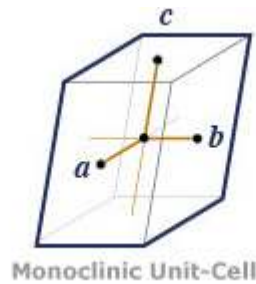
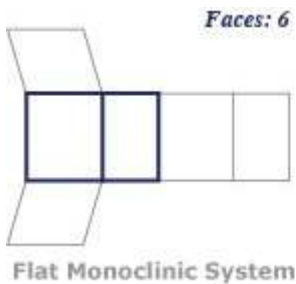
5. Orthorhombic

Minerals that form in the *orthorhombic* (aka *rhombic*) crystal system have three mutually perpendicular axes, all with different, or unequal lengths.



6. Monoclinic

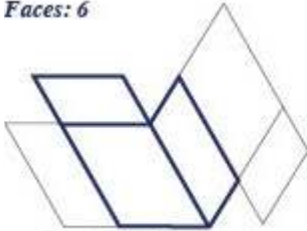
Crystals that form in the *monoclinic* system have three unequal axes. The (a) and (c) crystallographic axes are inclined toward each other at an oblique angle, and the (b) axis is perpendicular to a and c. The (b) crystallographic axis is called the "ortho" axis.



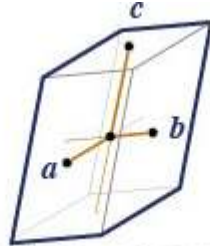
7. Triclinic

Crystals that form in the *triclinic* system have three unequal crystallographic axes, all of which intersect at oblique angles. Triclinic crystals have a 1-fold symmetry axis with virtually no discernible symmetry, and no mirrored or prismatic planes.

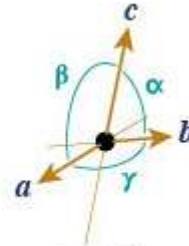
Faces: 6



Flat Triclinic System



Triclinic Unit-Cell



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$a \neq b \neq c$
 $\alpha \neq \beta \neq \gamma \neq 90^\circ$

Crystallographic Axes