1.1. Symbols and terms used in Parts 1–4

In this chapter the crystallographic symbols and terms that occur in the tables and the text of Parts 1–4 of this volume are defined. These symbols and definitions follow those given in Part 1 of Volume A of *International Tables for Crystallography* (1983).

Table 1.1.1. *Printed symbols for crystallographic items*

Printed symbol	Explanation
a; **b**; **c**	Basis vectors of direct lattice
a; *b*; *c*	Length of basis vectors
α; β; γ	Interaxial (lattice) angles **b**∧**c**, **c**∧**a**, **a**∧**b**
a′; **b**′; **c**′	New basis vectors after a transformation of the basis vectors
(*abc*)	Setting symbol, notation for the transformation of the basis vectors, *e.g.* ($b\bar{a}c$) means **a**′ = **b**, **b**′ = −**a** and **c**′ = **c**
r	Position vector of a point or an atom
x, *y*, *z*	Coordinates of a point or location of an atom expressed in units of *a*, *b* and *c*; coordinates of the end point of the position vector **r**
*x***a**; *y***b**; *z***c**	Components of the position vector **r**
[*uvw*]	Indices of a three-dimensional lattice direction
[*uv*]	Indices of a two-dimensional lattice direction
(*hkl*)	Miller indices

Table 1.1.2. *Printed symbols for symmetry elements and for the corresponding symmetry operations*

Printed symbol	Symmetry element and its orientation	Generating symmetry operation with glide or screw vector
m	Reflection plane, mirror plane (three dimensions)	Reflection through a plane
	Reflection line, mirror line (two dimensions)	Reflection through a line
a, *b* or *c*	'Axial' glide plane	Glide reflection through a plane, with glide vector
a	⊥[010] or ⊥[001]	$\frac{1}{2}$**a**
b	⊥[100] or ⊥[001]	$\frac{1}{2}$**b**
c	⊥[100] or ⊥[010]	$\frac{1}{2}$**c**
	⊥[1$\bar{1}$0] or ⊥[110]	$\frac{1}{2}$**c**
	⊥[100] or ⊥[010] or ⊥[$\bar{1}\bar{1}$0]	$\frac{1}{2}$**c**, hexagonal coordinate system
	⊥[1$\bar{1}$0] or ⊥[120] or ⊥[$\bar{2}\bar{1}$0]	$\frac{1}{2}$**c**, hexagonal coordinate system
n	'Diagonal' glide plane (in noncentred cells only)	Glide reflection through a plane, with glide vector
	⊥[001]	$\frac{1}{2}$(**a** + **b**)
e	'Double' glide plane ⊥[001] (in centred cells only)	Two glide reflections through planes with glide vectors $\frac{1}{2}$**a** and $\frac{1}{2}$**b**
g	Glide line (two dimensions)	Glide reflection through a line, with glide vector
	⊥[01]; ⊥[10]	$\frac{1}{2}$**a**; $\frac{1}{2}$**b**
1	None	Identity
2, 3, 4, 6	*n*-fold rotation axis, *n* (three dimensions)	Counterclockwise rotation of 360/*n* degrees about an axis
	n-fold rotation point, *n* (two dimensions)	Counterclockwise rotation of 360/*n* degrees about a point
$\bar{1}$	Centre of symmetry, inversion centre	Inversion through a point
$\bar{2} = m$, $\bar{3}$, $\bar{4}$, $\bar{6}$	Rotoinversion axis, $\bar{n}$	Counterclockwise rotation of 360/*n* degrees around an axis, followed by inversion through a point on the axis
2_1, 3_1, 3_2, 4_1, 4_2, 4_3, 6_1, 6_2, 6_3, 6_4, 6_5	*n*-fold screw axes, n_p	Right-handed screw rotation of 360/*n* degrees around an axis, with screw vector (p/n)*t*; *t* is the shortest translation vector parallel to the axis in the direction of the screw

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