CNC PROGRAMMING WORKBOOK
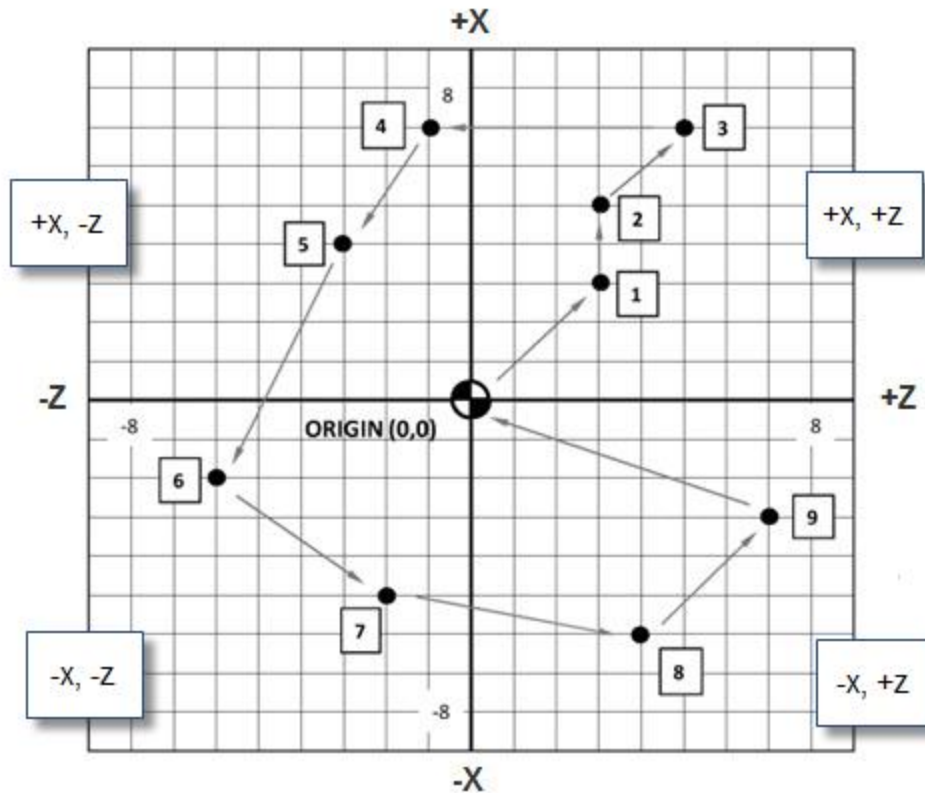
LESSON-1

ABSOLUTE AND INCREMENTAL POSITIONING

camInstructor

ABSOLUTE PROGRAMMING
All axis motions are based on a fixed zero reference point, known as ABSOLUTE ZERO (part zero).
Each coordinate is in relation to this absolute zero using Cartesian or Rectangular Co-ordinates.

INCREMENTAL PROGRAMMING
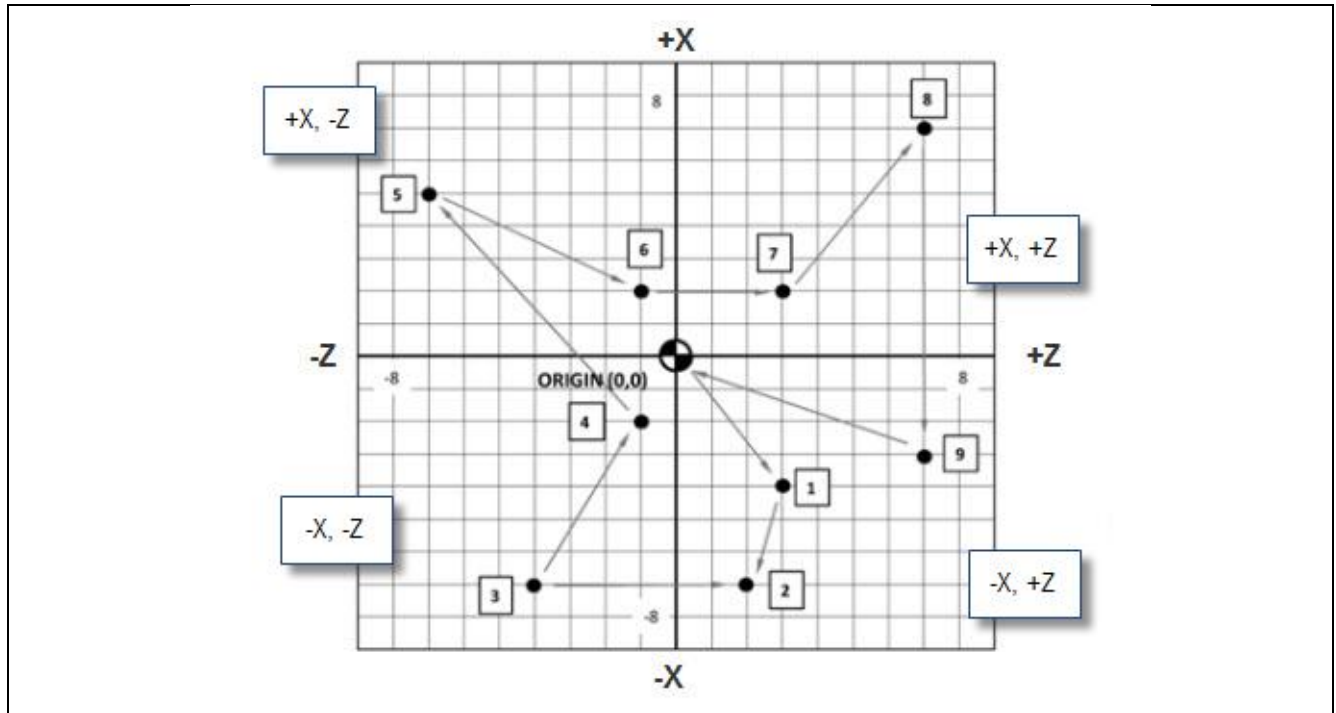All axis motions are based on the distance to the next location.
Each coordinate is based on how far the tool is to move from start to finish.
For an incremental move in X axis, we use U and for an incremental move in the Z axis we use W. G91 is not used.

STARTING AT THE POINT O (ORIGIN), DESCRIBE THE PATH FROM O THROUGH ALL 9 POINTS AND BACK TO THE POINT O USING ABSOLUTE & INCREMENTAL POSITIONING

ABSOLUTE	X	Z	INCREMENTAL	U	W
O (Origin)			O → 1		
1			1 → 2		
2			2 → 3		
3			3 → 4		
4			4 → 5		
5			5 → 6		
6			6 → 7		
7			7 → 8		
8			8 → 9		
9			9 → O		

ABSOLUTE PROGRAMMING
All axis motions are based on a fixed zero reference point, known as ABSOLUTE ZERO (part zero).
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INCREMENTAL PROGRAMMING
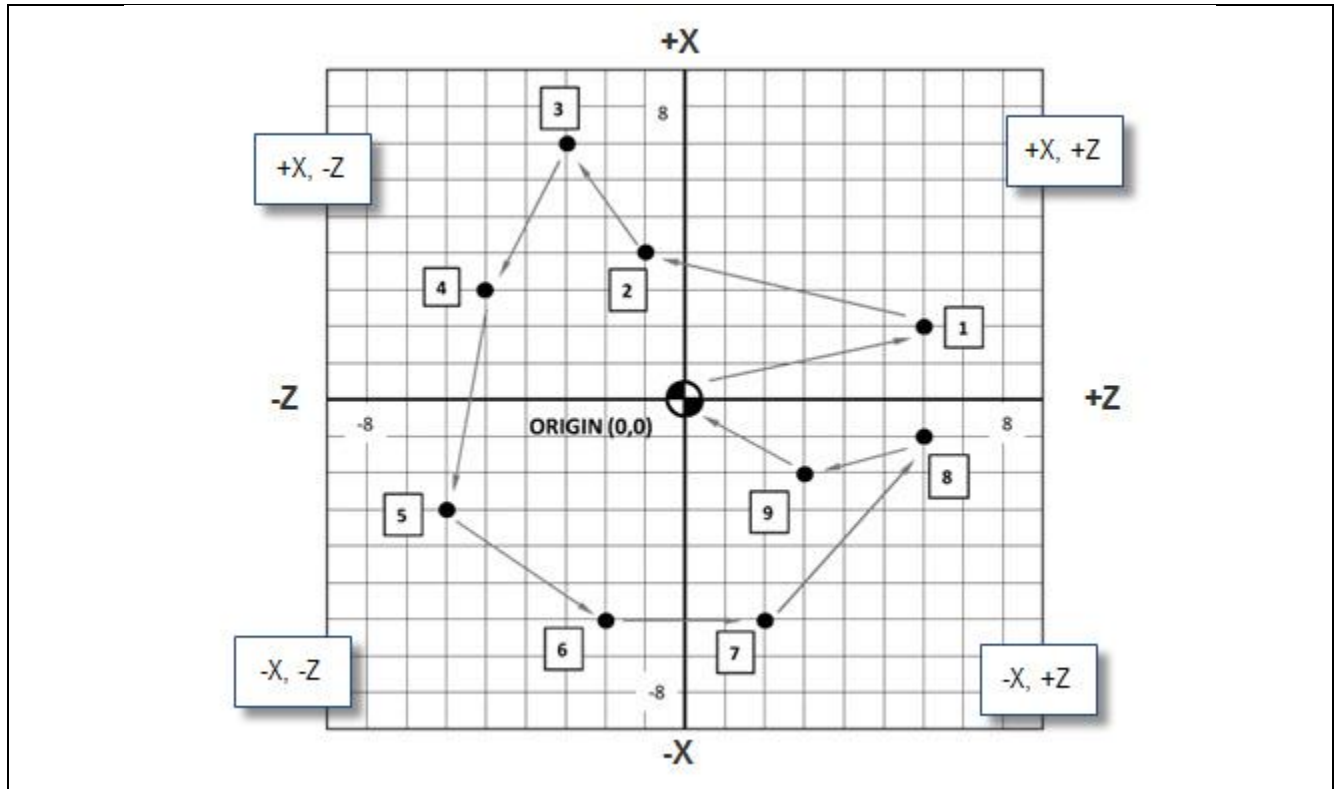All axis motions are based on the distance to the next location.
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🖉 *STARTING AT THE POINT O (ORIGIN), DESCRIBE THE PATH FROM O THROUGH ALL 9 POINTS AND BACK TO THE POINT O USING ABSOLUTE & INCREMENTAL POSITIONING*

ABSOLUTE	X	Z	INCREMENTAL	U	W
O (Origin)			O → 1		
1			1 → 2		
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3			3 → 4		
4			4 → 5		
5			5 → 6		
6			6 → 7		
7			7 → 8		
8			8 → 9		
9			9 → O		

ABSOLUTE PROGRAMMING

All axis motions are based on a fixed zero reference point, known as ABSOLUTE ZERO (part zero).
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INCREMENTAL PROGRAMMING

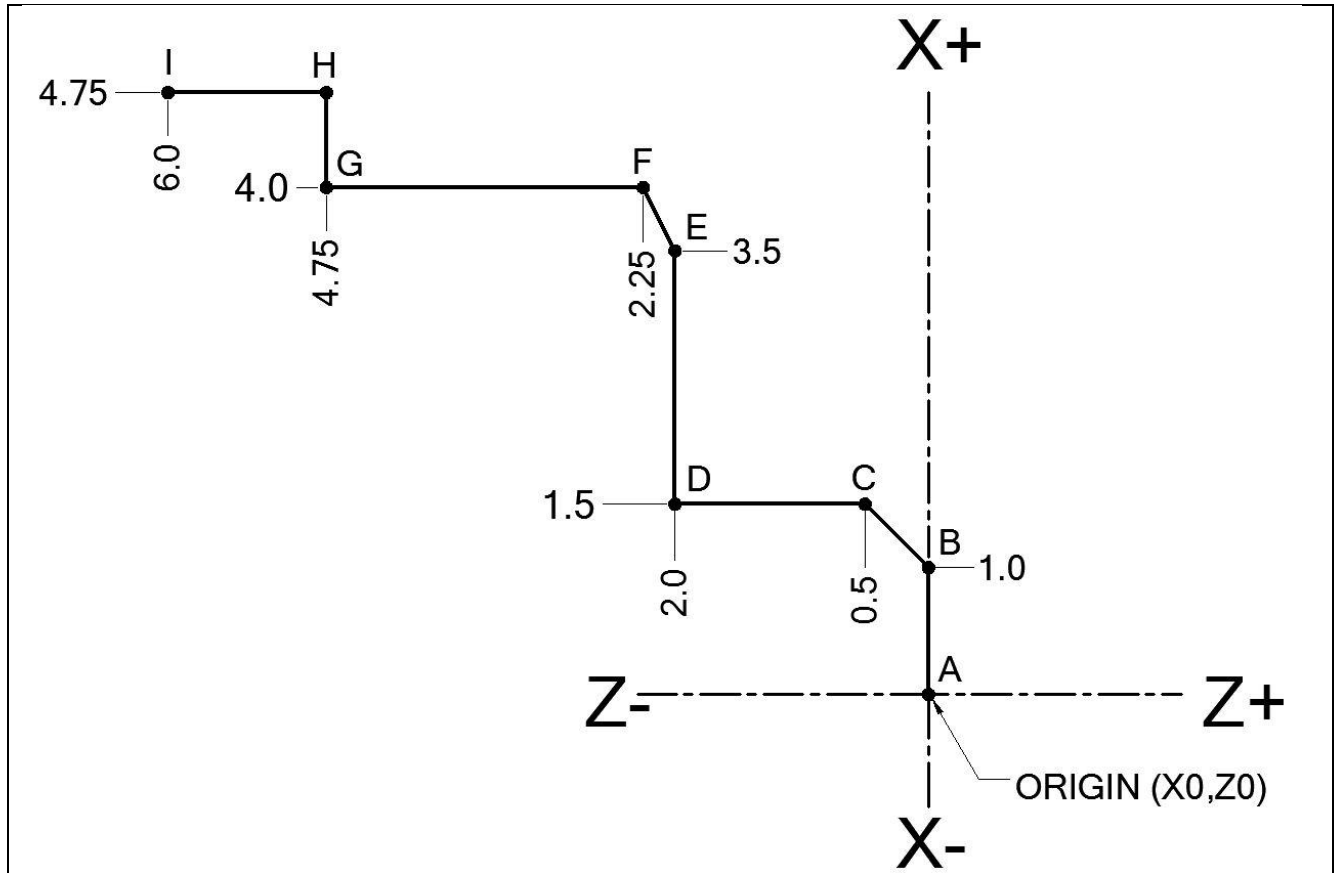All axis motions are based on the distance to the next location.
Each coordinate is based on how far the tool is to move from start to finish.
For an incremental move in X axis, we use U and for an incremental move in the Z axis, we use W. G91 is not used.

✎ *STARTING AT THE POINT O (ORIGIN), DESCRIBE THE PATH FROM O THROUGH ALL 9 POINTS AND BACK TO THE POINT O USING ABSOLUTE & INCREMENTAL POSITIONING*

ABSOLUTE	X	Z	INCREMENTAL	U	W
O (Origin)			O → 1		
1			1 → 2		
2			2 → 3		
3			3 → 4		
4			4 → 5		
5			5 → 6		
6			6 → 7		
7			7 → 8		
8			8 → 9		
9			9 → O		

✏ *STARTING AT THE POINT A (ORIGIN), DESCRIBE THE TOOLPATH THROUGH ALL THE POINTS USING ABSOLUTE & INCREMENTAL POSITIONING*

ABSOLUTE	X	Z	INCREMENTAL	U	W
A			A → B		
B			B → C		
C			C → D		
D			D → E		
E			E → F		
F			F → G		
G			G → H		
H			H → I		
I					
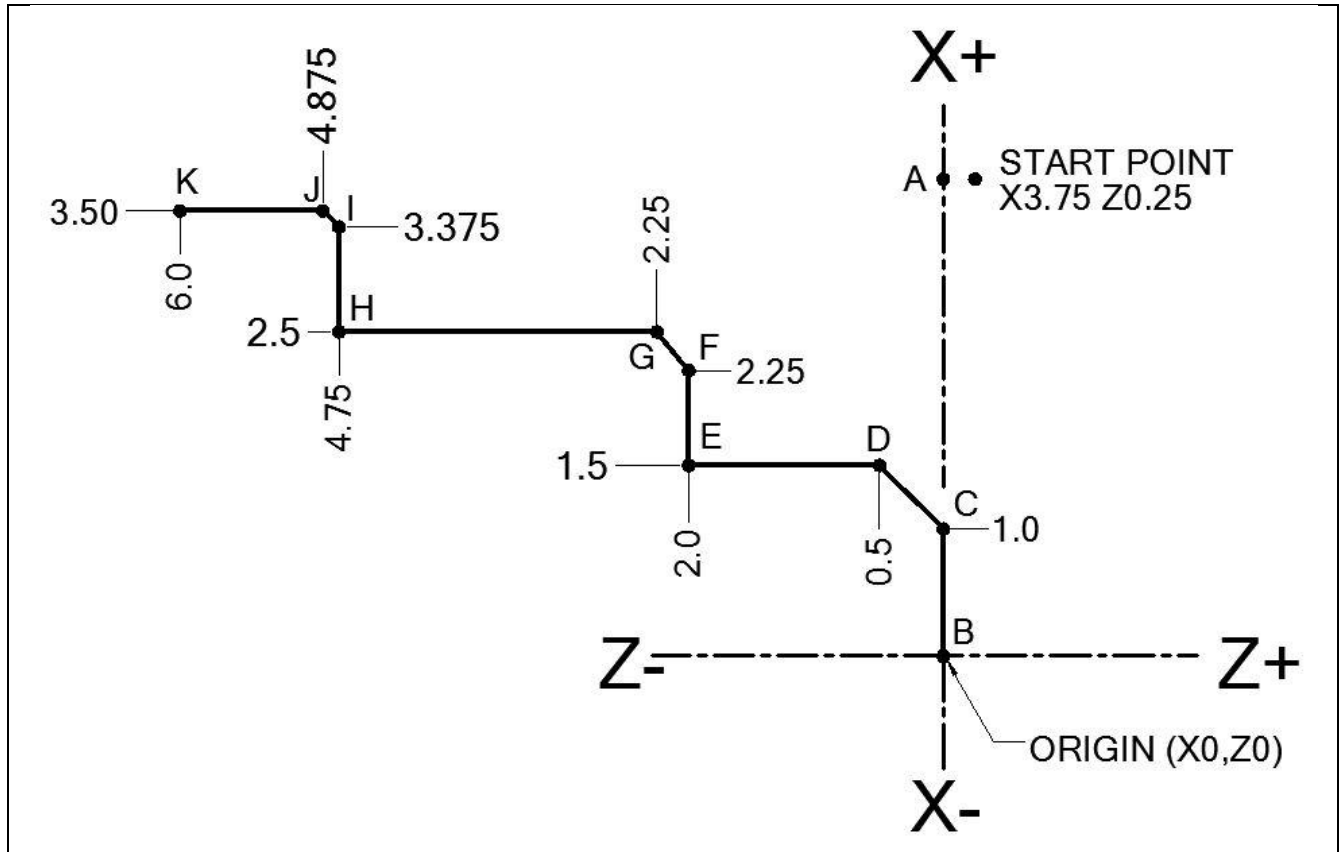
✎ *BEGIN AT START POINT SP (X3.75, Z0.25), DESCRIBE THE PATH FROM SP THROUGH POINTS A-K AND BACK TO POINT SP, USING ABSOLUTE & INCREMENTAL POSITIONING*

ABSOLUTE	X	Z	INCREMENTAL	U	W
SP (START POINT)			SP → A		
A			A → B		
B			B → C		
C			C → D		
D			D → E		
E			E → F		
F			F → G		
G			G → H		
H			H → I		
I			I → J		
J			J → K		
K			K → SP		
SP					