AutoCAD Utilities & Measurement

Class 8: Calculator, Measuring & Recovery Tools

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1 QuickCalc Calculator

Command: `QUICKCALC` or `QC` or **Ctrl+8**

Overview:
QuickCalc is AutoCAD's built-in calculator palette that performs mathematical calculations, unit conversions, and geometric calculations. It integrates directly with command line input, making complex calculations seamless during drawing operations.

Key Features:

- **Basic Calculator:** Standard arithmetic operations (+, , ×, ÷, powers, roots)
- **Scientific Functions:** Sin, Cos, Tan, Log, Exponential
- **Unit Conversion:** Convert between different measurement systems
- **Geometric Calculator:** Calculate distances, angles, areas between points
- **Variables:** Store and reuse calculated values
- **Command Line Integration:** Paste results directly into active commands

How to Use:

Basic Arithmetic:

1. **.BAK Files (Backup Files):**
   - Created when you save a drawing
   - Previous version of the .dwg file
   - Same location as original drawing
   - Rename .bak to .dwg to open
2. **.SV$ Files (Autosave Files):**
   - Automatic timed backups (default: every 10 minutes)
   - Saved to temp folder
   - Recover after crash
   - Rename .sv$ to .dwg to open
3. **.DWL Files (Drawing Lock):**
   - Indicates drawing is currently open
   - Shows who has file open
   - Prevents multiple users from editing simultaneously
   - Deleted automatically when file closes properly

Configuring Autosave:

Setting Autosave Options:

1. Type `OPTIONS` or `OP`
2. Go to **Open and Save** tab
3. Locate **File Safety Precautions** section:
   Key Settings:
   - **Automatic Save:** Check to enable (recommended: ON)
   - **Minutes between saves:** Set interval (recommended: 10-15 minutes)
   - **Create backup copy:** Creates .bak files (recommended: ON)
   - **Maintain log file:** Tracks file open/close history
   - **File extension for temporary files:** Default .ac$ or .sv$
4. **Autosave file location:** System variable `SAVEFILEPATH`
   - Type `SAVEFILEPATH` to see/change location
   - Default: C:\Users\[Username]\AppData\Local\Temp

Using Drawing Recovery Manager:

Recovery After Crash:

1. **Automatic Launch:**
   - Drawing Recovery Manager opens automatically after crash
   - Shows list of available backup files
   - Displays timestamp of each version
2. **Manual Launch:**
   - Type `DRAWINGRECOVERY`
   - Or: Application Menu → Drawing Utilities → Drawing Recovery Manager
3. **Recovery Panel Sections:**
   - **Backup Files:** Lists all available backup versions
   - **Original Drawing:** Shows current .dwg file
   - **Autosave Files:** Shows .sv$ temporary saves
   - **Backup Files:** Shows .bak backup files
   - Each file shows: Name, Date Modified, Size
4. **Recovery Workflow:**
   - Select file from list
   - Right-click → **Open** to view
   - Compare multiple versions
   - Right-click → **Details** for file information
   - Save recovered file with new name

Manual Recovery Methods:

Method 1: Recovering .BAK Files

1. Navigate to drawing folder
2. Find .bak file (same name as drawing)
3. Rename extension from .bak to .dwg
4. Open in AutoCAD

Method 2: Recovering .SV$ Files

1. Go to temp folder (type %temp% in Windows Explorer)
2. Look for files starting with drawing name
3. Find .sv$ file with recent timestamp
4. Copy to safe location
5. Rename extension from .sv$ to .dwg
6. Open in AutoCAD

Method 3: Using RECOVER Command

1. Type `RECOVER`
2. Browse to corrupted drawing file
3. AutoCAD attempts to repair and open
4. Save immediately with new name

Method 4: Using AUDIT Command

1. Open drawing (if possible)
2. Type `AUDIT`
3. Choose **Yes** to fix errors
4. AutoCAD checks and repairs drawing database
5. Save after audit completes

⚠ Prevention Best Practices:

- **Save frequently:** Ctrl+S every 5-10 minutes
- **Enable autosave:** Set to 10-minute intervals
- **Keep backup enabled:** Always create .bak files
- **Save incremental versions:** Drawing_v1, Drawing_v2, etc.
- **Use cloud backup:** OneDrive, Google Drive, Autodesk Drive
- **Regular PURGE:** Remove unused objects to prevent corruption
- **Run AUDIT periodically:** Monthly maintenance
- **Don't ignore warnings:** Address error messages immediately
- **Proper shutdown:** Always close AutoCAD properly
- **Update AutoCAD:** Install latest updates and service packs

💡 Pro Recovery Tips:

- Check multiple backup versions - crash may have started before last save
- Use `RECOVERALL` command to recover drawing with all xrefs
- Keep original corrupted file - sometimes partial recovery possible later
- If drawing won't open, try opening in newer/older AutoCAD version
- Use `INSERT` command to bring recovered drawing as block into new file
- Third-party recovery tools available for severely corrupted files

7 Additional Utility Commands

🔧 ID Command - Point Coordinates

Command: `ID`

- Displays X, Y, Z coordinates of selected point
- Useful for verifying exact point locations
- Stores coordinates in LASTPOINT system variable
- Can use `@` to reference in next command

Usage:

```
Command: ID
Specify point: (pick point)
X = 150.0000  Y = 200.0000  Z = 0.0000
```

TIME Command - Drawing Statistics

Command: `TIME`

- Shows current date and time
- Creation date of drawing
- Last update/save time
- Total editing time
- Elapsed timer (stopwatch function)

Options:

- Display: Show current statistics
- ON: Start elapsed timer
- OFF: Stop elapsed timer
- Reset: Reset elapsed timer to zero

STATUS Command - Drawing Information

Command: `STATUS`

Displays comprehensive drawing statistics:

- Total objects in drawing
- Drawing limits
- Drawing extents (actual objects boundary)
- Current layer, color, linetype
- Snap, Grid, Ortho settings
- Memory usage
- Free disk space

PURGE Command - Clean Drawing

Command: `PURGE` or `PU`

- Removes unused named objects (layers, blocks, linetypes, styles)
- Reduces file size significantly
- Improves performance
- Clean up before sharing drawings

Purge Options:

- Purge All: Remove all unused items
- View items you can purge: Selective removal
- Confirm each item: Review before deletion
- Purge nested items: Remove recursively

Best Practice: Run PURGE before `AUDIT` and before final save

8 Quick Command Reference

Essential Commands Summary:

Command	Alias	Function
QUICKCALC	QC	Built-in calculator
CAL	'CAL	Transparent calculator
DIST	DI	Measure distance between points
MEASUREGEOM	MEA	Advanced measurement tool
AREA	AA	Calculate area and perimeter
LIST	LI	Display object properties
QSELECT	QSE	Filter-based selection
DRAWINGRECOVERY	-	Recover backup files
RECOVER	-	Repair corrupted drawing
AUDIT	-	Check and fix errors
ID	-	Display point coordinates
TIME	-	Show drawing time statistics
STATUS	-	Display drawing status
PURGE	PU	Remove unused objects

1. **Calculator Practice:**
   - Use QuickCalc to find midpoint between two endpoints
   - Draw a circle with radius = (100 + 75) / 2 using CAL
   - Calculate area of rectangle using mathematical formula
2. **Measurement Exercise:**
   - Draw a complex polyline path and measure total length
   - Measure angles between multiple lines
   - Calculate area of irregular polygon using point selection
   - Calculate room area with furniture (use Add/Subtract mode)
3. **Quick Select Challenge:**
   - Select all circles with radius greater than 50
   - Select all objects on specific layer and change color
   - Find all text objects with specific height
   - Delete all lines shorter than 10 units
4. **Recovery Setup:**
   - Configure autosave to 5-minute intervals
   - Locate your autosave file path
   - Practice recovering a .bak file
   - Run AUDIT on an existing drawing
5. **Utility Commands:**
   - Use ID to find coordinates of 5 different points
   - Check TIME statistics of your drawing
   - Run STATUS to see drawing information
   - PURGE unused items from a drawing

Mastery Goals:

- Use CAL transparently during any command without hesitation
- Measure complex areas accurately using multiple methods
- Create efficient Quick Select filters for batch operations
- Confidently recover drawings from any backup source
- Integrate measurement tools into your daily workflow
- Maintain clean, optimized drawings using utility commands

Er. Ajay Bhattarai | *AutoCAD Fundamentals Course*

Measure twice, draw once - Master the tools that ensure precision.

Next class: Advanced Drawing Techniques & Productivity Tools