Chapter 17 - Changing Line Lengths

Knowing and Understanding
After completing this module, you will know and understand the theory regarding:
- the modification of line lengths in CAD graphics using the extend or the lengthen function

Application of Knowledge
After completing this module, you will be able to:
- change lengths of lines in CAD graphics using the extend or the lengthen function

Assessment
After completion of this module, you will be assessed on:
- your knowledge and understanding of polar coordinates on a Cartesian Plane.
- your ability to modify line lengths in CAD graphics with the extend or the lengthen function
- your saved and printed drawing (Drawing Tutorial 10J)
- your updated portfolio. Marks will be given for neatness, completeness, correctness and presentation. (Refer to the chapter on portfolios for further details.)
CHANGING LINE LENGTHS

Many situations might present themselves where existing lines must be modified to fit a particular situation. Lines cannot always be created simply by connecting two points and other alternatives must be investigated.

USING AUTOCAD

AutoCAD has a wide variety of methods for changing line lengths. You should get to know them all so that you can choose the right tool for the job when the need arises.

The Lengthen function

The lengthen function can be activated by typing lengthen onto the command line or by selecting it from the “Modify” menu or toolbar. It will present you with four options as follows: [DELta/Percent/Total/DYnamic]

The capitalized letters indicate what you must enter on the command line to activate your specific choice.

**Delta** - If you choose delta, you will be given a choice of entering the delta length or typing an “A” to use the angle option. If you enter a negative delta value it will be subtracted from the line length, otherwise it will be added to the line length. When you now click on the line end, the delta value will be applied to that end of the line. (The angle option is meant for arcs.)

**Percent** - This option is similar to the delta except in the way that the changed value is determined. To decrease the line length with 10%, type a value of 90. To increase the line length with 10%, type a value of 110%.

**Total** - Simply type in the new line length and click on the line.

**Dynamic** - This method requires that you use the mouse on-screen to indicate the new line length. You can also make use of existing objects by snapping to them. You can have a lot of fun doing this. Try it!

The Extend function

The Extend function can be activated by typing extend onto the command line or by selecting it from the “Modify” menu or toolbar. It works by lengthening an object until it intersects a boundary line. Once you activate the function, it will present you with the following prompt:

Select boundary edges.
Select objects

You must now select the boundary objects, then right-click or enter. AutoCAD will then prompt for you to select the object to extend. When you click on the line, it will change to meet up with the boundary. You can click on more than one boundary at a time, but you cannot extend in both directions at the same time.

Using Grips

When you click on a line you will be presented with grip blocks on the line. The line can be modified by clicking on the grip and moving the cursor. It can operate similarly to the extend function by first dragging the end point past the boundary line and click, then bringing it back and snapping at the intersection.

USING ALLYCAD

The Divide/Extend function

This two-in-one function can be found on the Modify toolbar or menu. Use the left click to activate the function from the icon.

This function works best when you have a boundary object. First you click on the line to extend and then choose a point beyond the boundary object to extend to. You can then click on the intersection to divide the line at that point. Click “Done” to finish. This gives you two lines and the excess can be deleted.
TIME ALLOCATION: 1 HOUR

1. Start a new drawing using the template you created in 10A.
2. Name it and save it in the correct location.
3. Update your title block.
4. Choose an appropriate scale.
5. Use absolute, relative and polar coordinates to draw the Roof End shown on the next page.
6. You will also need to change line lengths to complete the drawing.
7. Make sure that you save regularly.
8. Show all dimensions and annotations.
9. Adhere to the SANS regarding civil drawing.
10. Print and save the final drawing.
11. Update your portfolio.
## Drawing Tutorial 10J

Extend and Lengthen Roof End

<table>
<thead>
<tr>
<th>Name of Learner</th>
<th>Name of FET Institution</th>
<th>Scale</th>
<th>Date</th>
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</thead>
</table>

**Diagram Details:**
- **SLAT:** 38mm x 38mm
- **TILE:**
  - LENGTH: 380 mm
  - THICKNESS: 20 mm
- **GAP:** 15 mm
- **Angles:**
  - 22°
  - **Dimensions:**
    - 300 mm
    - 50 mm
    - 530 mm
    - 30 mm
    - 250 mm
    - 680 mm
    - 10 mm
    - 110x100 mm