

Solution Authoring Guidelines

Version 9.4
September 2016

Chegg[®]

Save time. Save money. Get smarter.

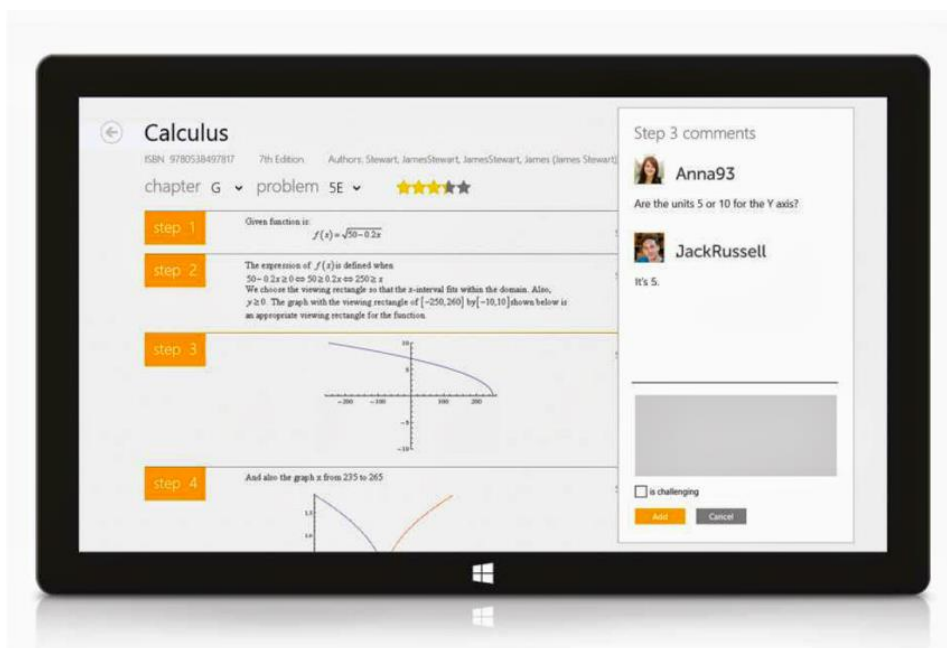


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1. Added section 4.4 under Delimiters.....Page no.10
2. Modified section 7.1.5.....Page no. 13
3. Details regarding one tab space in 7.2.1 has been removed.....Page no. 15
4. Second bullet point has been removed and modified 3rd and 4th bullet points in the section 7.2.6 of previous version.....Page no. 17
5. Fifth bullet point is added in section 7.2.6 of previous version.....Page no. 17
6. Modified Section 8.1.7Page no. 19
7. Added Section 8.1.9.....Page no. 19
8. Modified section 10.2.10Page no. 26
9. Modified section 12.2Page no.29
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1. Modified the content in 5. Solution steps.....Page no.11
2. One delimiter added to the screen shot given in section 9.5.....Page no.21
3. Modified Content in sections 13.2 to 13.5.....Page no.30 – 32
4. Added section 13.6 Very Short Answer Type.....Page no.32

List of changes made over Version 9.3

1. Deleted .doc from the content under 3.1 (Version).....page no. 7
2. Modified the fifth point under the section 4 (Title)page no. 9
3. Deleted 4.2page no 10
4. Modified 5.1 and 5.3. Deleted 5.2page no. 11
5. Modified 6.1.4Page no. 12
6. Introductory sentence modified under 7.1 (Text)page no. 13
7. Added more details in section 7.1.5page no. 13
8. Removed the third bullet point under section 7.2.5page no. 17
9. Modified second bullet point under 7.2.5.....page no. 17
10. Modified 8.1.7page no. 19
11. Modified section 8.1.8page no. 19
12. Modified option 2 (drawing tools of MS word) under 8.2 (Diagrams).....page no. 19
13. First diagram under option 2 (drawing tools of MS word) deleted and added sentence prior to the properly labeled diagram.....page no. 20
14. Modified 8.3 (Graphs)page no. 20
15. Modified 8.4 (Tables)page no. 20
16. Introductory sentence added under 10.2 (Notations)page no. 24
17. Added more points in section 10.2.10page no. 26
18. One more sample solution under section 13.3 is added.....page no. 31
19. Modified the second bullet point under section 13.7page no. 34
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What is a Chegg solution?

A typical Chegg solution is a step-by-step answer, created in an Microsoft Word document, which includes all the necessary explanation, diagrams, graphs, and tables. While authoring a Chegg solution, an expert may reference outside sources of content when stuck or needs a refresher in the subject. However, all parts of a Chegg solution must be original work. Plagiarized work will not be accepted, and will be ground for immediate termination from solution authoring without pay.

These Solutions Authoring Guidelines exist to ensure that the submitted solutions meet the following broad objectives:

- The solution should appear well-formatted when uploaded on Chegg's live website (www.chegg.com).
- The solution should help the students to understand how to solve a problem at hand, and should serve them as a guide in solving similar problems.

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1. Parts of a solution

The following screenshot shows the structure of a typical solution along with the possible labeling of data objects. The contents of the screenshot have been deliberately blurred.

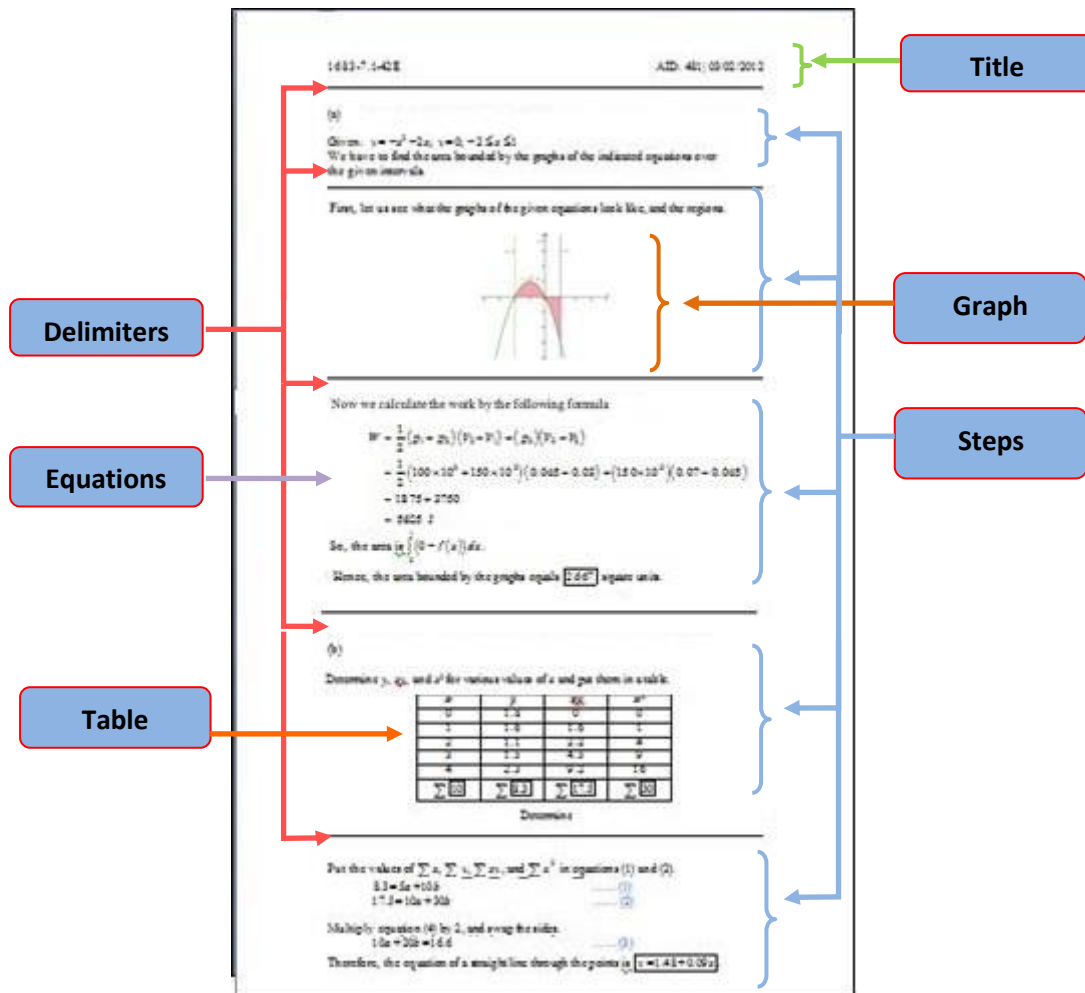


Figure 1

Navigate to the following sections for detailed guidelines on each part of the solution:

- Title: [Section 4](#)
- Steps: [Section 5](#)
- Delimiter: [Section 6](#)
- Equation: [Section 7.2](#)
- Diagram: [Section 8.2](#)
- Graph: [Section 8.3](#)
- Table: [Section 8.4](#)

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2. How a step-by-step solution appears on the Chegg website

Chegg Search for book or course Peter Account & Help

home / homework help / textbook solutions / electrical engineering / electric circuits / introduction to electric circuits / 8th edition / chapter 6.3 / problem 15p

Introduction to Electric Circuits 8th Edition Chapter 6.3 Problem 15P Textbook Solution

CH6.3 15P 0 users show all steps

Buttons to select Problem number and corresponding Chapter number.

Step number Step 1 of 5

Consider the following circuit diagram:

A button to view full screen mode

Step breaker

That is why delimiters are inserted—they create these new steps, which students have stated are very useful.

Step 2 of 5

Apply Kirchhoff's current law at node 'a'.

$$\frac{v_a - (-5)}{10\text{ k}} + \frac{v_a - v_b}{20\text{ k}} = 0$$

$$\frac{2v_a + 10 + v_a - v_b}{20\text{ k}} = 0$$

$$3v_a - v_b = -10$$

Substitute 0 V for v_a in the equation.

$$3(0) - v_b = -10$$

$$v_b = 10\text{ V}$$

Therefore, the voltage at node 'b', v_b , is 10 V.

Step 3 of 5

There is no current flow into the terminals of the right side of the op amp. Apply voltage divider rule to the resistors connected to the positive terminal of the right side op amp.

$$v_c = \left(\frac{10\text{ k}}{10\text{ k} + 10\text{ k}} \right) v_b$$

$$= \left(\frac{10\text{ k}}{10\text{ k} + 10\text{ k}} \right) (10)$$

$$= \left(\frac{1}{2} \right) (10)$$

$$= 5\text{ V}$$

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3. MS Word file settings

3.1 Version

We prefer to use MS Word 2010. However, we understand that you may have an older version of Word installed. We accept Word files that are saved with .docx extension only.

3.2 Filename

Each solution file should be typed in a *separate Word file* and named using the following notation:

<Book ID>-<chapter number>.<section number>-<problem number>

For example: 1738-5.4-35P

Here,

- 1738 is the book ID. Every textbook has a unique numerical Book ID, assigned by Chegg, for ease of reference
- 5.4 indicates chapter 5, section 4 of the textbook
- 35P is the problem number

Some textbooks have chapters that are not sub-divided into sections—the list of solutions sent by the territory manager will make it clear if the book has sub-sections or not. For textbooks without sub-sections in chapters, Word files should be named using the following notation:

<Book ID>-<chapter number>-<problem number>

The earlier example would then become: 1738-5-35P.

Important note: Do not prefix zeros to single-digit chapter numbers and problem numbers.

Example:

Incorrect: 1738-05-03P

Correct: 1738-5-3P (See [Figure-2](#))

3.3 Paper Size

Set the paper size (*File -> Page Setup -> Paper*) as follows:

- a. Page Height: 21” (inches)
- b. Page Width: 8.5” (inches)

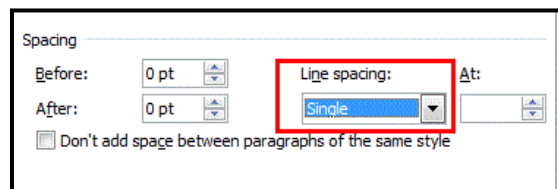
3.4 Margins

Set the page margins (*File -> Page Setup -> Margins*) as follows:

- a. Top and Bottom: 1”
- b. Left and Right: 1.25”

3.5 Line Spacing

Set line spacing to ‘Single’ in Paragraph settings.



3.6 Orientation

Set the orientation of the page to ‘Portrait’.



3.7 Font Settings

Font Style: Times New Roman

Font Size: 12

3.8 Alignment

Set the default alignment option to “Justify (Ctrl+J)”.

3.9 Language

The default language setting should be English (United States).

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4. Title

The title is the topmost part on the first page of a solution. **Please note that the title should NOT be placed in a header section. Instead, the title should appear in the first line of the body of the Word document.** The title has the following parts:

1. **Filename:** This is the same as the name that was given to the Word file as per guideline 2.2 (above).
2. **AID:** Author's **ID** is a unique identification number that is used to identify the subject expert who has developed the solution.
3. **Vertical bar** “|” (press SHIFT + “\”): The vertical bar is used to separate the AID and the Date of Creation.
4. **Date of creation:** It is the date on which the solution is created. If the solution is being resubmitted, use the resubmission date. **Use dd/mm/yyyy format.**
5. **Delimiter:** This is a horizontal line that demarcates the end of the title portion.

Procedure of creating delimiter:

- After entering the date of creation in the given format, hit ENTER Button twice.
- Now, hit the dash button three times “---”, and then click ENTER once.
- Now, click ENTER once more to create blank line.

This procedure creates blank lines above and below the delimiter. Follow the same procedure for creating delimiter anywhere in the solution.

During HTML conversion, information within the delimiters is considered as a single logical step. **Delimiters created using any other method will be rejected in HTML conversion process.** The Delimiter appears on the word document as shown below:

Title Section

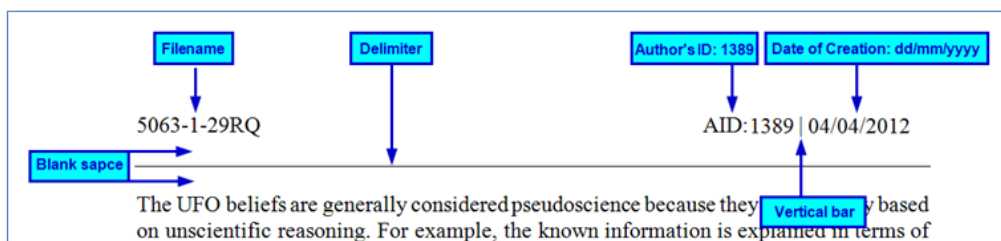


Figure-2

- 4.1** As illustrated in Figure-2, the first line of the title should contain parts 1-4.
- **Filename** must be placed to the extreme left
 - The **AID** and **Date of creation** at the extreme right, separated by the **Vertical bar** and a space on each side of the vertical bar.
- 4.2** Place a delimiter. The delimiter marks the end of the title portion, and the start of the first step of the solution.
- 4.3** Do not use macros enabled option for repeating the title section in word documents. Instead, write the title section separately for every document.

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5. Solution steps

Solutions primarily consist of multiple steps – aim to have at least two steps in every solution. A step is a collection of closely related sentences or calculations that generally cover a single concept, and aid in learning.

A step should always begin with sentences. In addition to sentences, a step may have equations, diagrams, graphs or charts. If equations, diagrams, graphs or charts are required, experts should re-create them on their own. If equations, diagrams, graphs, or charts are scanned or copied from the textbook or any external source, they will be considered as plagiarized and rejected.

- 5.1** After the blank line is created, begin typing first step of a solution.
- 5.2** Insert a delimiter to mark the end of the first step and the start of the second step. Follow the procedure of creating delimiter given in section 4. Title (point 5).
- 5.3** Continue using delimiters to separate subsequent steps until the last step. Do not insert a delimiter after the last step of a solution.

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6. Delimiters

6.1 A delimiter is a horizontal line that spans the entire text width on the page.

6.1.1 A delimiter separates the title section from the first step, and also separates the steps in a solution.

6.1.2 If a question consists of multiple parts or sub-questions (e.g., (a), (b), (c) ...), then separate each part of the solution using a delimiters.

(See [Figure-3](#))

6.1.3 Steps within a single part or sub-question should be separated with delimiters.

6.1.4 Follow the procedure of creating delimiter given in section 4. Title (point 5). Note that there should be single blank line above and below the delimiter.

6.2 Do not insert a delimiter in the following three situations:

- After the **last step** of a solution
- At the end of a page for solutions that are longer than one page
- At the beginning of a page for solutions that are longer than one page

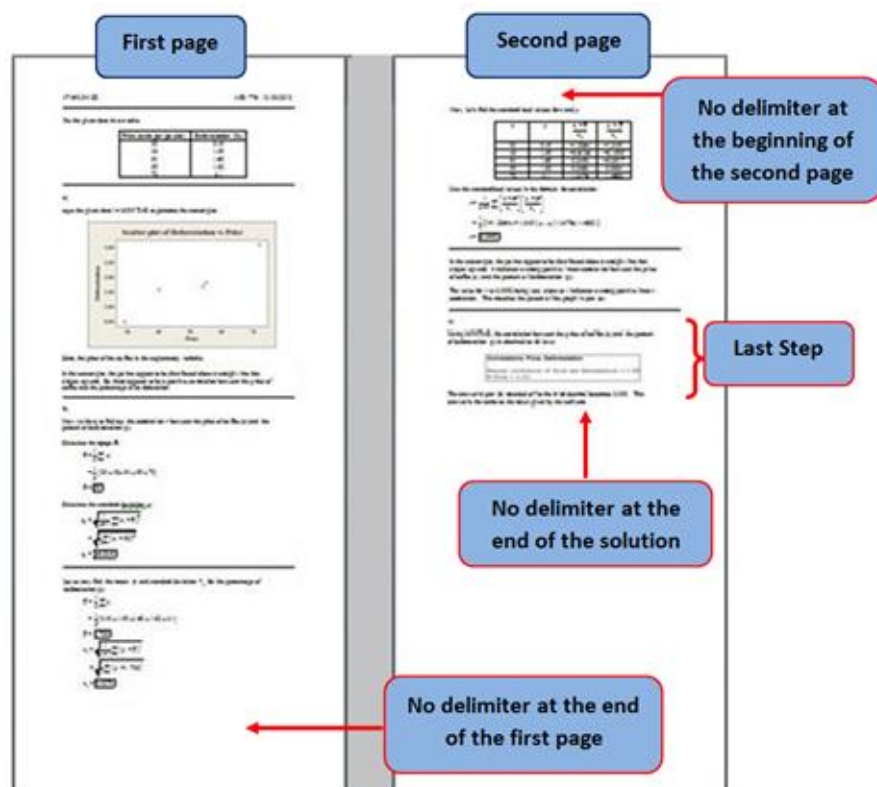


Figure-3

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7. Content guidelines: text and equations

As mentioned in section 1, every step of a solution must contain one or more sentences. Some steps may contain additional items like equations, graphs, charts, or diagrams.

Listed below are the contents of a typical solution:

- 7.1 [Text](#) (Sentences)
- 7.2 [Equations](#)
- 8.2 [Diagrams](#)
- 8.3 [Graphs](#)
- 8.4 [Tables](#)

7.1 Text

Chegg Solution is explained in the form of text to make it more learnable for the student.

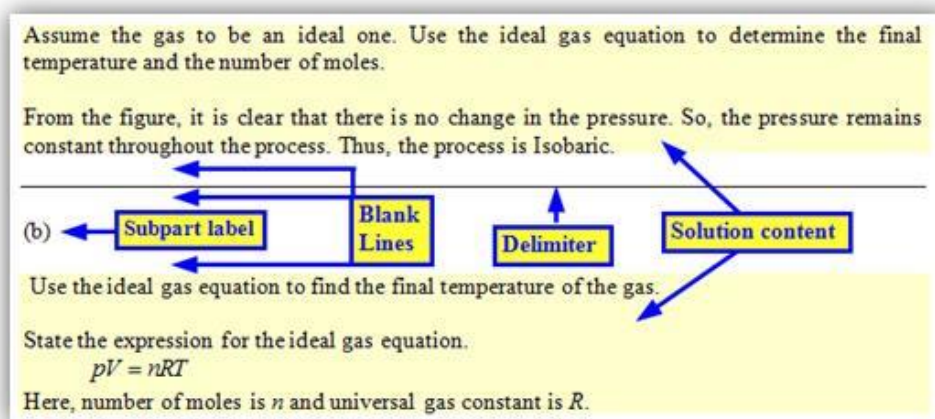
- 7.1.1 Every step in a solution must start with a sentence. Sentences should restate the relevant facts used in the step and outline what will be accomplished within the step.
- 7.1.2 Sentences should be short, grammatically correct, and easy to understand. Phrases should not be used in place of sentences.
- 7.1.3 Sentences should be conversational and direct in tone. For example, “Add the values” has a conversational and direct tone, while “One should take the summation of all the values” is neither conversational nor direct.
- 7.1.4 If there are a number of consecutive sentences, group them into paragraphs, each containing not more than three, preferably short sentences.
- 7.1.5 Colored, italics, bold text, highlighter, or bullet points should be used to emphasis important points. Note that regular text should be black in color. In order to emphasize the text with color, use MathType to color the text. Otherwise, color of the text would not appear after HTML conversion.

7.1.6 Labeling of Subparts:

If a problem consists of subparts like, (a), (b), etc., then they should be labeled in the following way:

- Type the subpart name in the same format as given in the problem
[For example: Do not type (A) in place of (a)]
- Do not type anything in the line containing the name of the subpart
- Leave the next line blank
- Start the opening sentence after the blank line

The below screenshot illustrates the method to label the subpart of a solution:



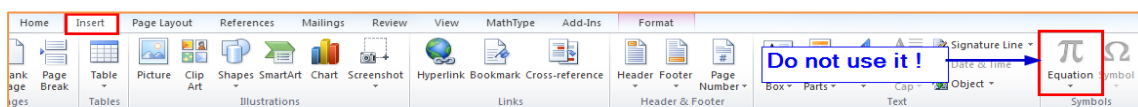
7.2 Equations

Use MathType to write equations and mathematical expressions in the solutions. MathType is a plug-in software available with MS Word. MathType equations should be saved as MathType objects in the document itself, to allow Chegg's experts to make quick edits if necessary.

If MathType is not available, use Microsoft Equation 3.0 available in Word. In Word 2007 or 2010, Equation 3.0 is inbuilt and available at Insert -> Object -> Microsoft Equation 3.0. It is almost identical to MathType in look, feel, and ease of use but inferior to MathType.

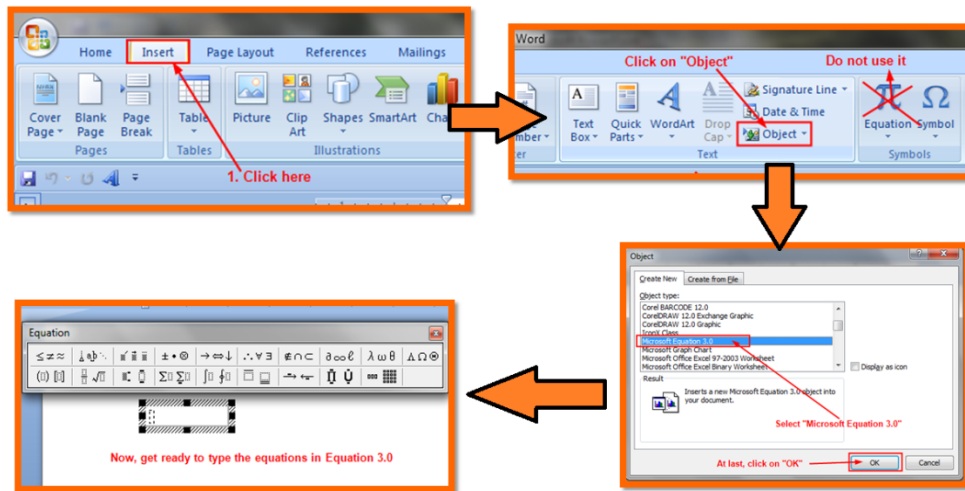
However, Word 2007/2010 has two different types of equation tools:

1. Equation Tool with the symbol " π " (**DO NOT USE IT**)



2. Microsoft Equation 3.0

- Steps for inserting equations by Microsoft Equation 3.0, which is recommended above, are as follows:



7.2.1 Every equation or mathematical expression in a solution, including those within sentences, should be created using MathType to render a consistent look and feel.

Exception: MathType does not need to be used to refer to single variables (examples: a , x , G , etc.) within sentences.

7.2.2 Include multiple lines in a single equation object (often useful when simplifying expressions). **However, limit the number of lines in a single equation object to no more than four.**

7.2.3 To ensure that MathType object does not spill into the page margins, the width of the MathType object should not be more than 6 inches.

- This dimension can be verified by using the top side ruler of the MathType window.
- Alternatively, right-click on the MathType object, select "Format Object" and choose the "Size" tab to measure the width.

Wrong Usage

$$\begin{aligned} \frac{d}{du} \left[\frac{1}{b^3} \left(a + bu - \frac{a^2}{a + bu} - 2a \ln|a + bu| - a \sin u \right) + C \right] &= \frac{1}{b^3} \cdot \frac{d}{du} \left[a + bu - \frac{a^2}{a + bu} - 2a \ln|a + bu| - a \sin u \right] + 0 \\ &= \frac{1}{b^3} \left[0 + b - b \cdot \frac{a^2}{(a + bu)^2} - 2 \frac{ab}{(a + bu)} - a \cos u \right] \\ &= \frac{1}{b^3} \left[\frac{b(a + bu)^2 + ba^2 - 2ab(a + bu) - a(a + bu)^2 \cos u}{(a + bu)^2} \right] \\ &= \frac{1}{b^3} \left[\frac{b^3 u^2 - a(a + bu)^2 \cos u}{(a + bu)^2} \right] \\ &= \frac{1}{b^3} \left[\frac{b^3 u^2 - a(a + bu)^2 \cos u}{(a + bu)^2} \right] \end{aligned}$$

There should not be more than 4 equations / expressions in a single MathType object.

Width of equation / expression should not exceed 6 inches.

Correct Usage

$$\begin{aligned} \frac{d}{du} \left[\frac{1}{b^3} \left(a + bu - \frac{a^2}{a + bu} - 2a \ln|a + bu| - a \sin u \right) + C \right] \\ &= \frac{1}{b^3} \cdot \frac{d}{du} \left[a + bu - \frac{a^2}{a + bu} - 2a \ln|a + bu| - a \sin u \right] + 0 \\ &= \frac{1}{b^3} \left[0 + b - b \cdot \frac{a^2}{(a + bu)^2} - 2 \frac{ab}{(a + bu)} - a \cos u \right] \\ &= \frac{1}{b^3} \left[\frac{b(a + bu)^2 + ba^2 - 2ab(a + bu) - a(a + bu)^2 \cos u}{(a + bu)^2} \right] \end{aligned}$$

7.2.4 Unless the equations are very short, a line should not contain more than one “equal to” (“=”) sign. For Example,

Incorrect:

$$\frac{dy}{dx} = \frac{x^3 \frac{d}{dx}(\sin x) - \sin x \frac{d}{dx}(x^3)}{(x^3)^2} = \frac{x^3 \cos x - \sin x(3x^2)}{x^6}$$

Correct:

$$\begin{aligned} \frac{dy}{dx} &= \frac{x^3 \frac{d}{dx}(\sin x) - \sin x \frac{d}{dx}(x^3)}{(x^3)^2} \\ &= \frac{x^3 \cos x - \sin x(3x^2)}{x^6} \end{aligned}$$

Note that the “=” symbols are aligned. Use the feature available in MathType to align “=” symbols when the left side doesn’t change.

7.2.5 Numbering equations:

- To refer to an equation in explanation, number the equation in its first use and then refer to it using the equation number. However, when referring to the numbered equation in a subsequent step, **restate the equation** along with the equation number.
- Equation numbers should be typed within a pair of parentheses “()” after six dots “.....” in word document, but not in MathType. Use a space bar to separate the numbering from the equation, instead of using Tab to create space.
- Align the equation numbers vertically.

Examples:

$$x^2 + y^2 = 0 \quad \text{.....(1)}$$

$$x^2 + y^2 + z^2 + 2xy + 2yz + 2zx = 0 \quad \text{.....(2)}$$

Or

$$F = ma \quad \text{.....(2)}$$

$$r = \cos \theta + i \sin \theta \quad \text{.....(3)}$$

- In general, resort to numbering of equations only when absolutely unavoidable.

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8. Content guidelines: diagrams, graphs, and tables

Neat and well-labelled diagrams, graphs, and tables are a great addition to many solutions. In many cases, problems will reference diagrams, graphs, or tables from the textbook, for which you are required to recreate in the solutions. In other cases, the problem may ask for the creation of diagrams, graphs, or tables as part of the solution. And in still other cases, the problem may not explicitly require creating a diagram, graph, or table, but you should include them to better illustrate the ideas and concepts in the solution.

8.1 General guidelines for diagrams, graphs, and tables

- 8.1.1** All diagrams, graphs, or tables included in your solutions must be originally authored and cannot be scanned or copied from the textbook or any other source.
- 8.1.2** We encourage the creation of diagrams whenever possible. If a change/addition is not being made to the diagram/graph/table being re-created from the textbook, then we recommend referencing the diagram, graph or table from the textbook. Do not use the page number in the textbook to reference. Instead, use the diagram, graph or table number used in the textbook. **Example:** “Refer to Fig. 1.3 in the textbook”
- 8.1.3** If the solution to a problem requires the expert to add labels or highlight portions of a diagram, graph, or table given in the textbook, then recreate it in the solution. When recreating a diagram, graph, or table, the expert should avoid referencing any copyrighted content from the textbook. A good rule of thumb is to abbreviate all proper nouns from the textbook problem. For instance a diagram in the book that shows the route between San Francisco and Dallas should be recreated as a diagram showing the route between points “Country S” and “Country D”.
- 8.1.4** All diagrams, graphs, or tables must be created on a computer. Hand-drawn versions are not acceptable.

8.1.5 No step of a solution should start with a diagram, graph, or table. All steps for a solution should always start with one or more sentences to provide context.

8.1.6 Include a blank line before and after every diagram, graph, or table.

8.1.7 All diagrams, graphs, or tables should be less than 6 inches wide to avoid running into page margins.

8.1.8 Take only the image of diagrams, graphs or tables (JPEG/PNG) and paste it on the word document. Never copy paste directly from the source.

8.1.9 Include the name of the table/figure in the same image object instead of typing it separately.

8.2 Diagrams

There are two ways you can sketch diagrams in solutions:

Option 1: Specialized software

We strongly recommend using CorelDraw, ChemDraw or DrawPlus for drawing diagrams. If you do not have access to any of these, you may use any equivalent software that you have or are comfortable with. Once done, save a copy of the diagram as an image in JPEG/PNG format.

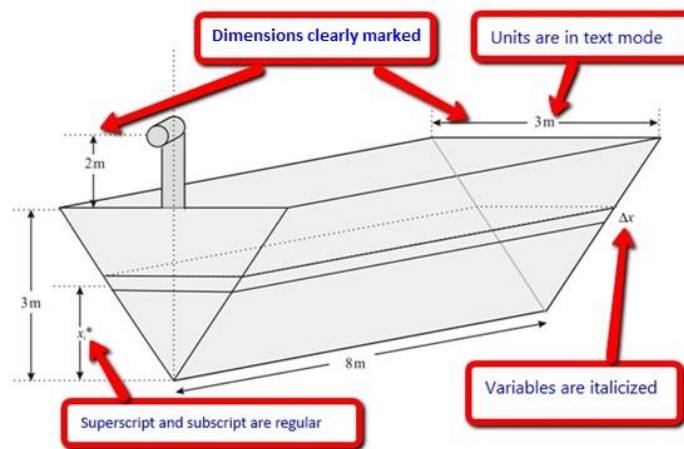
Option 2: Drawing tools of MS Word

Consider the following points for sketching simple diagrams:

- Use the Drawing tools (Shapes) provided in MS-word toolbar and then convert into image (JPEG/PNG) using either Snipping tool or GROUP option.
- Go through the procedure to group the parts of the diagram which is explained in Chapter 5 – FIGURES IN MS-WORD (page 300).
- Do not use the crop tool given in 'Picture Tools' of the word document to edit the diagram.

For sketching complicated diagrams, use the recommended software. Complicated diagrams cannot be drawn easily using the drawing tools within MS Word.

Example for properly labelled diagram:



Properly Labeled Diagram

8.3 Graphs

We prefer using Excel or Word directly or recommended software to create graphs. Please ensure that the graphs and all the axes are labeled, and that the labels should be uniform throughout the solution. Graphs should only be saved in image format (JPEG/PNG).

8.4 Tables

We prefer using excel to create tables and paste them in the solution in image format (JPEG/PNG). While sending authoring assignments, the respective excels should also be sent along with the word file for the purpose of editing. The name of the Microsoft excel should have the same name as the Microsoft word file.

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9. Creating instructional solutions

As noted earlier, each Chegg solution should help students understand how to solve the problem at hand, and should provide a guide in solving similar problems on their own. The guidelines in section 9 are meant to elaborate on what makes a Chegg solution an effective instructional tool.

- 9.1** Always review the worked out examples in the textbook before you begin authoring solutions for that chapter. You should use the same methods and conventions used in that chapter when creating your solutions. While there may be multiple ways to approach and solve a problem, you should always complete the problem as per the method that is used in that chapter.
- 9.2** Chegg solutions should be more elaborate than the worked out examples given in the textbook. The purpose is not simply to get the student to the answer, but to help them understand all the steps that got them there.
- 9.3** Break down your solutions into logical steps. Consult [Section 5](#) for more detail.
- 9.4** Always start every step with one or more sentences. Clearly restate all the relevant facts provided in the textbook that will be used when solving the problem, and outline what will be accomplished in the rest of the step. Consult [Section 7.1](#) for more detail.
- 9.5** All variables should be properly explained when first used in a solution.

Proper explanation of variables used in a step

| | |
|--|-----------------------|
| 2563-2-29RQ | AID: 607 24/03/2012 |
| <p>When a continuous wave travels along a stretched spring, the velocity v of the wave is equal to the product of its frequency f and wavelength λ.</p> $v = f\lambda$ | |
| <p>To obtain the velocity of the continuous wave, substitute 10 Hz for f and 0.6m for λ in the equation $v = f\lambda$.</p> $v = f\lambda$ $= (10 \text{ Hz})(0.6 \text{ m})$ | |

9.6 Reference other steps in the solution with proper notation.

Example:

Wrong usage

- (A) The equation is $x + y = z$.
- (B) The equation in part (a) is used here.

Correct usage

- (A) The equation is $x + y = z$.
- (B) The equation in part (A) is used here.

9.7 Formulas, units, and constants should be defined explicitly as needed.

9.8 No solution should refer to a previous solution, except when explicitly asked in the textbook problem.

9.9 Some problems ask you to reference another problem's solution. When you come across such a problem:

- **Case 1:** You have solved the referenced problem already. Then,
 - *Only final answer needs to be referenced:* Quote the final answer and use in the current solution
 - *Some portion of the solution needs to be referenced:* Copy the relevant portion and paste in the current solution
 - *Lengthy portions of the solution need to be referenced:* Abridge the relevant parts from the other solution and use in the current solution
- **Case 2:** You did not solve the referenced problem, so you do not have the solution to reference. Then,
 - Talk to your Territory Manager on how to proceed

9.10 Do not start any sentence with variables, numbers or equations.

Incorrect: r is the radius of the circle.

Correct: The radius of the circle is r .

9.11 Write sentences that have command tone.

Example:

Substitute 5 for a and 7.3 for b .

instead of

Let us substitute 5 for a and 7.3 for b .

or

Substituting 5 for a and 7.3 for b , we get,

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10. Units and Notations

10.1 Units

10.1.1 Ensure that units are always regular (never italicized).

Example:

Incorrect: $W = m g g c m / s^2$

Correct: $W = m g \text{ g} \cdot \text{cm} / \text{s}^2$

10.1.2 Always insert a space before the units.

Example:

PQ = 5cm should only be written as PQ = 5 cm.

10.1.3 Do not use “dot” where you have to use “mid-dot”.

Example:

Newton meter should be written as $\text{N} \cdot \text{m}$, not N.m

10.2 Notations

We should strictly follow the same notations of the textbook for variables/symbols while creating solutions.

10.2.1 Variables should be italicized everywhere – in sentences, equations, tables, diagrams, and graphs.

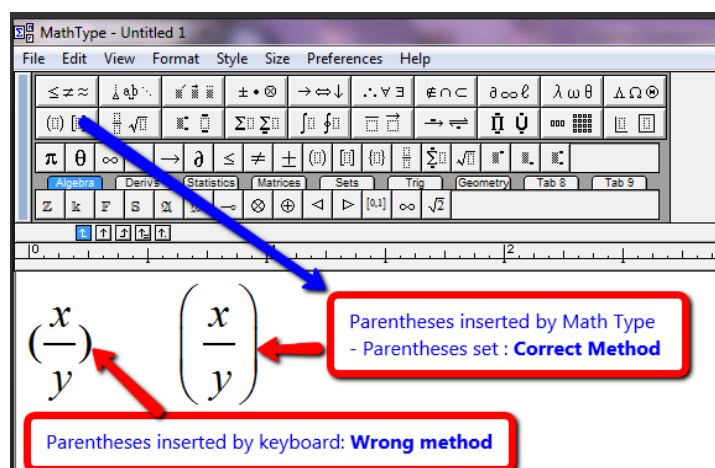
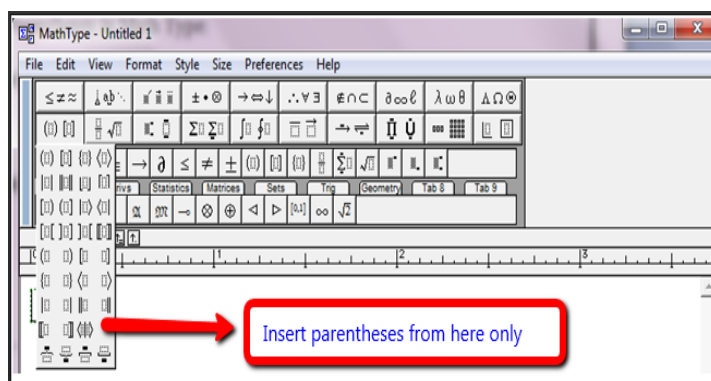
Wrong Usage

$P = \{a, b, c, d, e, f, g, h\} (P, \leq)$ is not a lattice because **f** and **g** are upper bounds of $\{b, c\}$ and **f** and **g** are incomparable, so that $\text{l.u.b}\{f, g\}$ does not exist.

Correct usage

$P = \{a, b, c, d, e, f, g, h\} (P, \leq)$ is not a lattice because *f* and *g* are upper bounds of $\{b, c\}$ and *f* and *g* are incomparable, so that $\text{l.u.b}\{f, g\}$ does not exist.

10.2.2 Parentheses: If the expression that should be put inside parentheses () is more than one line high, use MathType parentheses or brackets. Do not insert parentheses or brackets directly from the keyboard.



Inserting parentheses

- 10.2.3** When referring to constants/laws, use proper names. For example, Newton's law, Curie-Weiss law, Ohm's law, Planck's constant should not be written newton's law, curie-weiss law, ohm's law, planck's constant.
- 10.2.4** Superscripts and subscripts generally should be easily distinguishable and not in bold or italics. However, if the textbook uses bold or italics for superscripts and subscripts, then you should follow the textbook's notation.
- 10.2.5** Terms like: **sin**, **lim**, **cos**, **tan**, etc., should always begin in lowercase even if it they are at the beginning of a sentence. These terms should also be written in Times New Roman.

Example:

Incorrect format : **Sin** x , **Cos** x , **Lim**, etc.

Correct format : **sin** x , **cos** x , and **lim**.

10.2.6 Avoid using ampersands (“&”). The word “and” should be used instead.

10.2.7 Avoid use of all abbreviations like **L.H.S.**, **R.H.S.**, **F.T.C**, **CCW**, **w.r.t.**. Instead, write out the complete term you are trying to convey.

10.2.8 Avoid using (\therefore) to mean “therefore” and (\because) to mean “because”. Write out the terms “therefore” and “because”.

10.2.9 While describing a series use only three dots ‘...’ – referred to as an *ellipsis*.

Incorrect

$$\phi_n(t) = -t + \frac{t^2}{2!} - \frac{t^3}{3!} + \text{-----} + \frac{(-1)^n t^n}{n!}$$

$$\phi_n(t) = -t + \frac{t^2}{2!} - \frac{t^3}{3!} + \text{.....} + \frac{(-1)^n t^n}{n!}$$

Correct

$$\phi_n(t) = -t + \frac{t^2}{2!} - \frac{t^3}{3!} + \dots + \frac{(-1)^n t^n}{n!}$$

10.2.10 Box the final answer whenever necessary. For multi-part questions, box the answer of each part. For boxing the final answer, use the box provided in MathType only. **Do not use the customized border option in the MS-word to box the final answer.** If the final answer is in the form of a sentence, then box the most critical part of the sentence.

Example 1: final answer which cannot be boxed:

The tile is a better conductor of energy than the carpet.

Example 2: Numerical final answer as part of concluding sentence

Hence, the time required to achieve the speed of 60 mi/h will be 3.72 seconds

10.2.11 Use international notation: Putting commas to the left of every 3 digits counting from the right is proper international notation.

It is wrong to use commas this way: 1,00,000 or 1,00,00,000.

International notation

| | |
|---------------|------------------|
| 1 | One |
| 10 | Ten |
| 100 | Hundred |
| 1,000 | Thousand |
| 10,000 | Ten Thousand |
| 100,000 | Hundred Thousand |
| 1,000,000 | Million |
| 10,000,000 | Ten Million |
| 100,000,000 | Hundred Million |
| 1,000,000,000 | Billion |

10.2.12 There may be certain instances where the guidelines from section 10.2 directly contradict with the examples from the textbook. In such cases, you should generally emulate the examples from the textbook. If you are unclear, don't hesitate to ask.

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11 How much explanation? How many steps?

Explanation may be highly variable, and dependent on the individual expert's judgment. However, the following aspects should influence the length of a solution:

Type and objective of a problem - If a problem is of descriptive type, the solution has to be explanatory in nature.

11.1 Context

Understanding where the question appears in the textbook influences the length of your solution. Problems appearing in earlier chapters would require more explanation and steps although the concepts are simpler. Problems appearing in later chapters can do with shorter explanation.

Similarly, early problems within any chapter could be easier ones for which the solutions should be elaborate with sufficient number of steps. As you progress through the chapter, the problems usually become more complex. For such solutions, you may reduce the extent of explanation for the parts that were dealt in detail in the earlier problems of the chapter.

11.2 Level of textbook

In general, easy and basic-level textbooks require detailed explanation and steps in the solutions, considering the understanding capacity of student that would use them. Difficult and advanced level (example: Engineering) textbooks require less detailed explanation since the capacity of the students who use our solutions is superior.

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12 Copyright and Plagiarism

While creating solutions, extra care should be taken to avoid copyright infringement and plagiarism. Solutions containing copyright infringement or plagiarism will be rejected. Repeated violations may result in your termination from the solution authoring program.

12.1 Copyright

Certain information in the textbooks may be protected by copyright. The only contents in textbooks that can be copyrighted are the original concepts of the author(s). Facts presented in the textbooks are not copyrightable and can be used in your solution. In addition, ideas are not copyrightable, only the form of the ideas as presented in the textbook may be copyrighted. Creative thinking and careful analysis of the textbook content while authoring solution will help avoid copyright issues.

Hypothetical or fictitious data, names, or situations included in a question may be creative elements that could be subject to copyright protection. Fortunately, such types of information are not necessary to express or convey ideas in the solutions. Instead of copying such data, names or situations, use unique abbreviations. For example, the name “Joe”, the car company called “Toyota”, and the town “San Francisco” could be replaced with “Person J”, “Company T” and “City SF”.

12.2 Plagiarism:

Plagiarism is a very serious offense. In solution authoring, plagiarism involves copying of content (sentences, diagrams, graphs, tables, photos) from other sources (textbooks, internet sources, journals etc.) into your solutions. It also includes copying content/solutions from other sources, modifying it, and presenting it as your own independent content. It is grounds for having the entire batch of solutions rejected and returned to you for re-work and/or termination.

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13 Examples of common solution types

Few of the most common type of solutions you may encounter.

13.1 Regular (including multi-part) problems

See the figure in [Section 1](#).

13.2 Conceptual questions

The objective of conceptual questions is to check the students' understanding of the concepts. The goal is always to improve student learning outcomes. Presenting the right answer right away doesn't help students to think critically and understand the problem and how to solve it. Mostly, this category of solutions does not have numerical calculations, formulas or diagrams. Although, it may be tempting to be very brief when answering this type of question, in reality, such questions require detailed explanation, covering the underlining concepts.

Note: Single step answers are not acceptable. Recollect that steps are separated by delimiters.

13.3 Multiple choice questions

MCQs generally have four answers out of which one is the correct answer. In the first step, provide the reason for the incorrect answer(s). In the second step, state the incorrect answer(s). In the third step, explain the reason for the correct answer. In the fourth step, state the correct answer.

In one case, explanation may be required for every choice in separate steps, whereas, in other case, explanation may be given for all the wrong choices in one step. However, move the reasoning of the correct answer to the second last step. In the final step, state the correct answer.

Note 1: Single step answers are not acceptable. Recollect that steps are separated by delimiters.

Note 2: In the example screenshot, question is included only to help the reader understand the context. However, do not include actual question while authoring solution.

Sample 1:

Example solution to a multiple-choice type question - 1

Question:

When a pure substance was analyzed, it was found to contain carbon and chlorine. This substance must be classified as:
 (a) an element (b) a mixture (c) a compound (d) both a mixture and a compound

Solution:

When a pure substance was analyzed, it was found that it has carbon and chlorine. An element consists of a single chemical entity. A mixture consists of a two or more elements or compounds which do not combine chemically with each other. The given substance cannot be both a mixture and a compound.

Hence, the options (a), (b) and (d) are incorrect.

When two elements combine to form a new substance, it is said to be a compound. Carbon and chlorine are two distinct elements which combine and form a new, pure substance as a compound.

Hence, the correct answer is option **(c)**.

Sample 2:

Example solution to a multiple-choice type question-2

Question:

From the deaerator, oxygen and other non-condensable gases are separated from the feed-water and directed to the atmosphere _____.

A. by using the closed feed-water heater
 B. through the economizer
 C. by using steam traps
 D. through the vent

Solution:

Closed feed water heater consists of outlet valve, bypass line, and valve. It provides passage for feed water to the boiler.

Hence, option A is wrong.

An economizer uses the heat from combustion gases to heat the feed water before it enters the boiler.
 Hence, option B is wrong.

A steam trap provides passage for gases without any loss of steam.
 Hence, option C is wrong.

Oxygen and non-condensable gases are separated from the feed water in the deaerator and are escaped into the atmosphere through the vent provided.

Therefore, the correct option is **(D)**.

13.4 True or false type questions

Every solution should have at least two steps. Give appropriate explanation of the concept in the first step. In the second step, state whether it is true or false.

Example solution to a true-false type question

Question

A credit sale made on a credit card issued by a credit card company is accounted for in the same manner as a credit sale made on a bank credit card. True or False?

Solution

In case of sale made on bank credit card, the sale is accounted for the same as cash. But, credit sales on credit card issued by a credit card company, is considered a sale on account.

Hence, the given statement is **False**.

Note 1: In the example screenshot, question is included only to help the reader understand the context. However, do not include actual question while authoring solution.

Note 2: Single step answers are not acceptable. Recollect that steps are separated by delimiters.

13.5 Fill in the blank type questions

Fill in the blank solution should have at least two steps. In the first step, provide a brief explanation of the given question. In the second step, conclude with a statement - "The blank can be filled with _____." Do not copy the question statement from textbook to avoid plagiarism.

Example solution to a blank type question

Question

Neglecting the air resistance, a horizontally thrown object and an object dropped vertically from same height fall with the same constant _____?

Answer

Assume that the air resistance is ignored.

When an object is thrown horizontally from a certain height, the acceleration of the object along the horizontal direction is zero and the only acceleration of the object along the vertically downward direction is due to gravity.

Similarly, when another object is dropped from the same height with which the first object is dropped, the object moves with acceleration equal to the acceleration due to gravity.

Therefore, both the objects will fall with same constant acceleration called acceleration due to gravity.

Hence, the blank can be filled with acceleration

Note 1: In the example screenshot, question is included only to help the reader understand the context. However, do not include actual question while authoring solution.

Note 2: Single step answers are not acceptable. Recollect that steps are separated by delimiters.

13.6 Very Short Answer type

Generally, very short answer type questions have a brief answer. Although, it may be tempting to be very brief, in reality, such questions require detailed explanation, covering the underlining concepts. Therefore, every solution should have at least two steps. In the first step, explain the concept supporting the answer. In the second step, provide the actual answer. Thus, we are showing the new students that we care about providing them the reason for the answer.

Example solution to a very short answer type question

Question:

Which is larger, a liter or a quart?

Answer:

Liter: The volume of one kilogram water under standard conditions is named as liter.

Quart: It is a unit of capacity of liquid. The quart is equal to 946 mL.

One liter is equal to 1000 mL, where as one quart is equal to 946 mL.

Therefore, the liter is a larger unit than quart.

Note 1: In the example screenshot, question is included only to help the reader understand the context. However, do not include actual question while authoring solution.

Note 2: Single step answers are not acceptable. Recollect that steps are separated by delimiters.

13.7 Lengthy solutions spanning more than one page

- A step should not be partially on one page and partially on the next page. In such cases, insert blank lines until the entire step moves to the next page.
- Do not insert a delimiter below the last step on a first page. (see bottom of the first page in Figure 4)
- Do not insert a delimiter above the first step on the next page.

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Troubleshooting and Tips

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List of changes made over 9.3

1. Added more details under Section 1. Delimiter..... Page no. 37
2. Bullet point added at the end of part B in section 1. Delimiter..... Page no. 38
3. Points B and C under **Section 4 – Box the final answer** have been removed.
4. Text given in top of the page 305 is modified.....Page no. 52

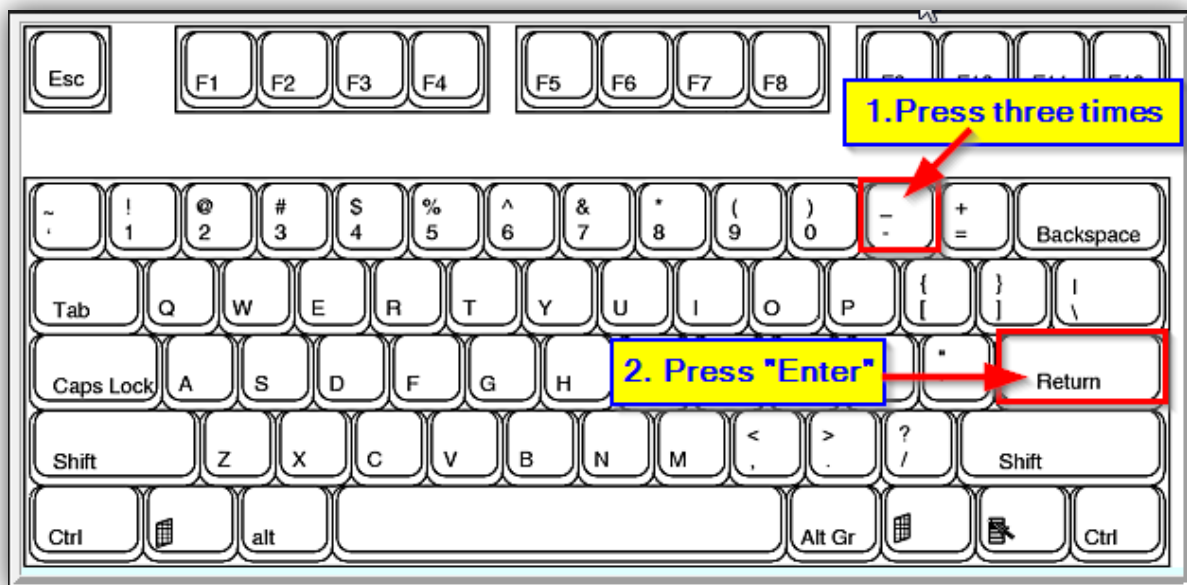
1.Delimiters

Follow the steps below when you face problem while creating correct delimiter:

- Identify whether the current delimiter is correct or not.
 - Put the cursor to the extreme left above the delimiter and click 'Delete' button once. If it gets deleted then the delimiter is correct, else it is incorrect.
Incorrect delimiter causes uploading issues.
 - Remove the existing delimiter by following the procedure given in section C. Steps to remove delimiter.
- Now, follow the procedure given in 5th point under Section 4. Title given in general guidelines to create correct delimiter.

Pictorial representation of the procedure to create delimiter:

A. Steps to insert a delimiter

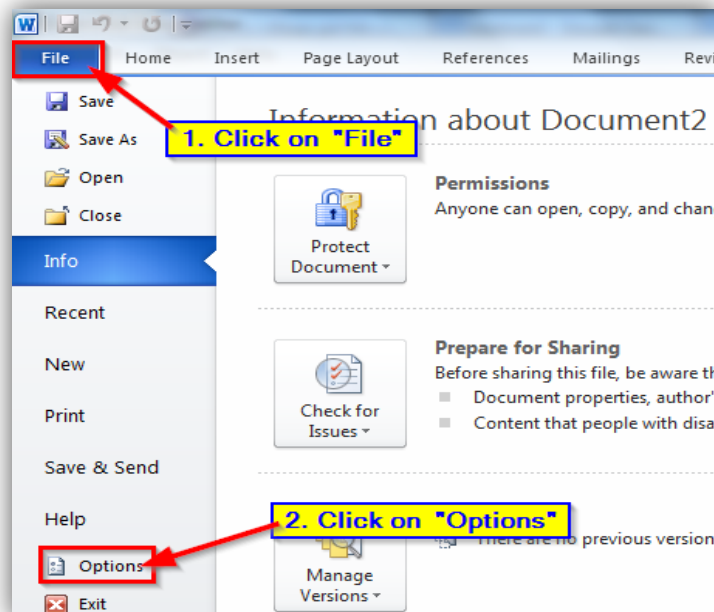


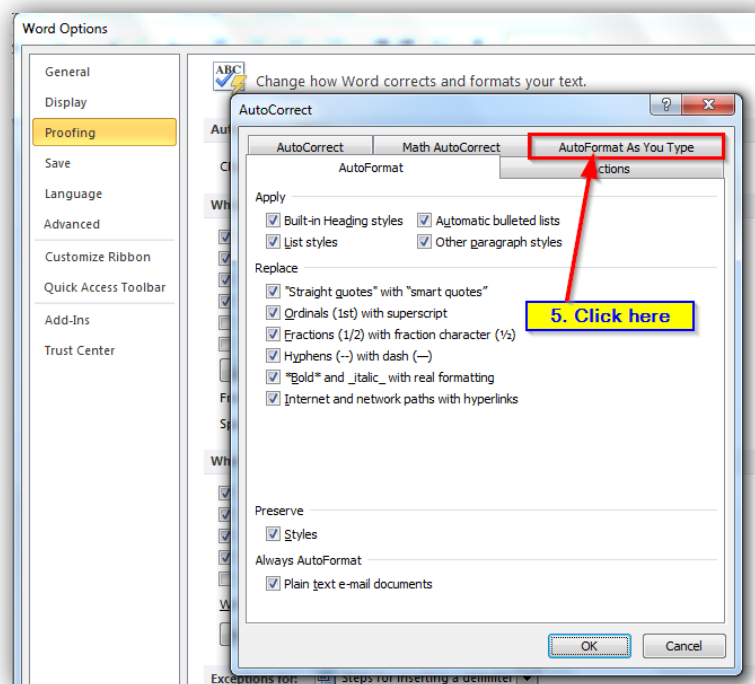
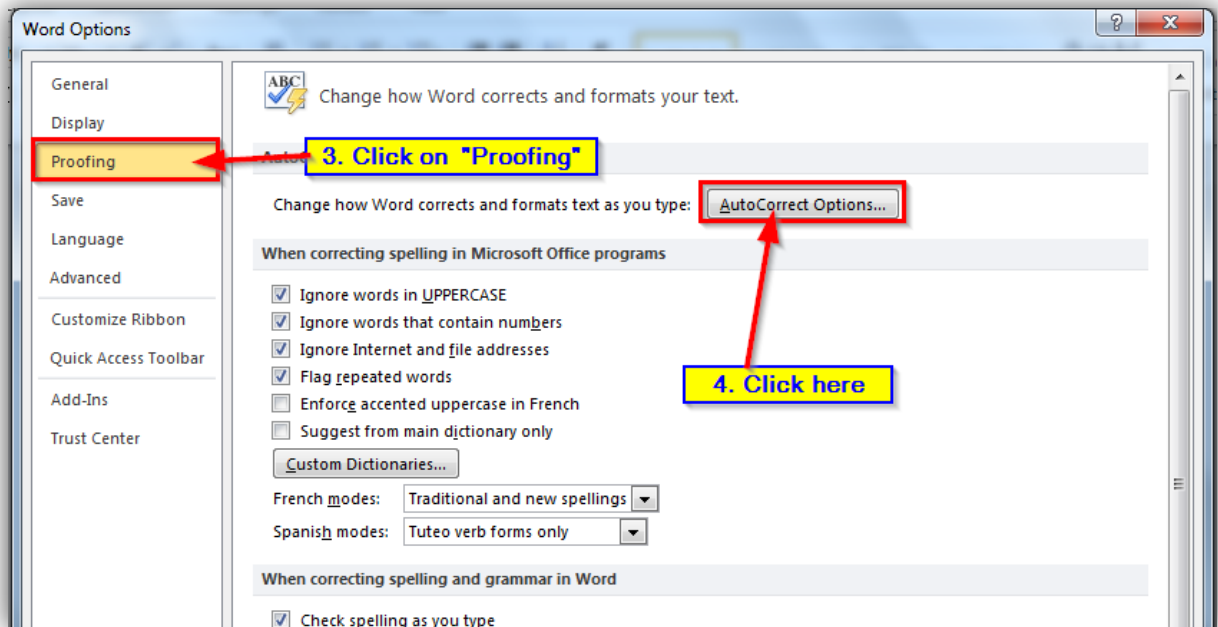
3. Delimiter is inserted successfully

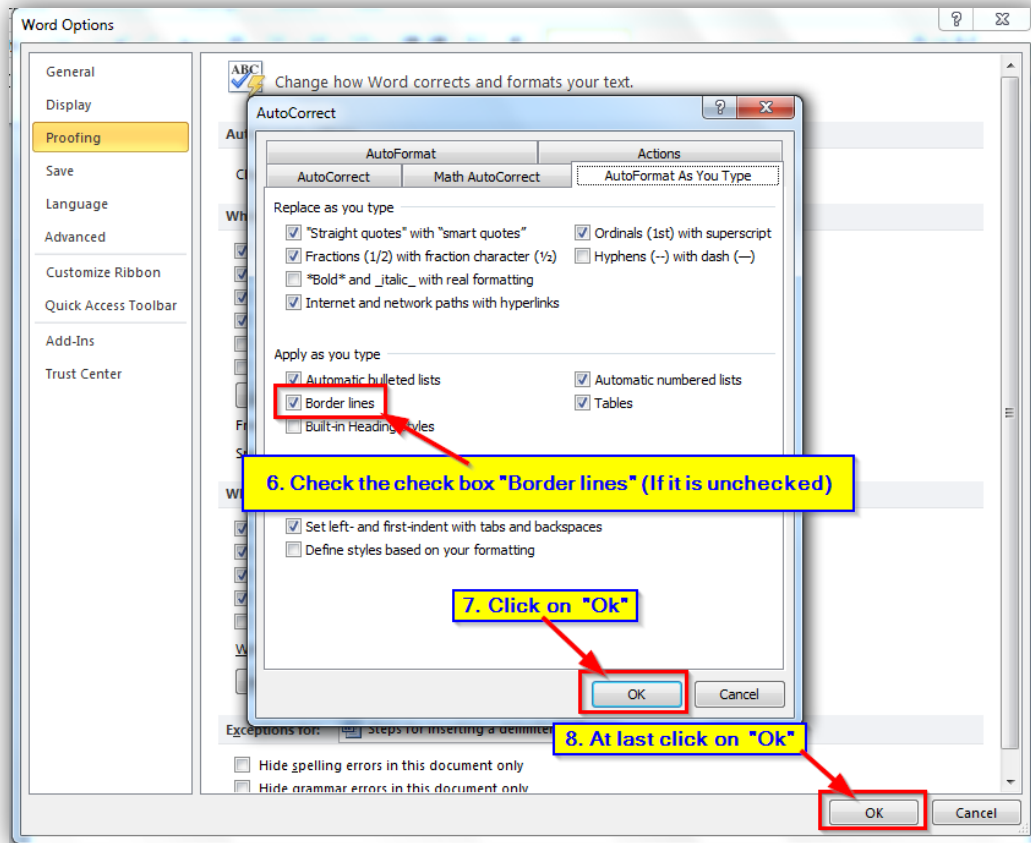


B. Steps to enable the three dashes option for inserting a delimiter

If the method shown in section (A) does not work, then change the settings (MS Word) using the following steps:





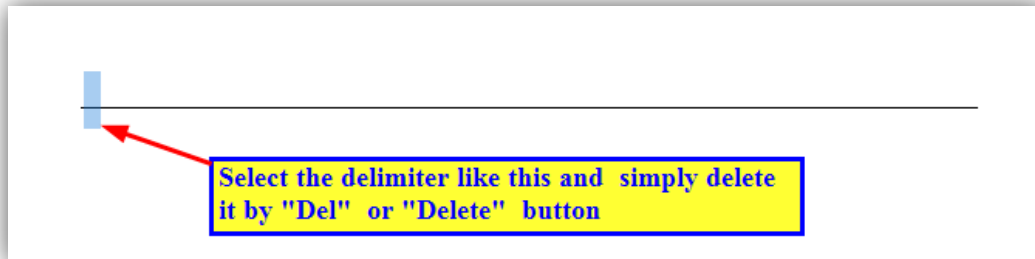


- Now, follow the procedure given in 5th point under Section 4. Title given in general guidelines to create correct delimiter.

C. Steps to remove a delimiter

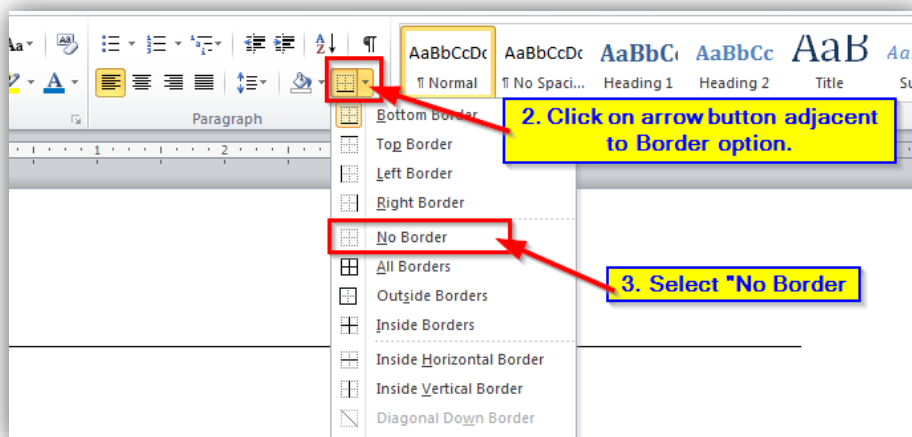
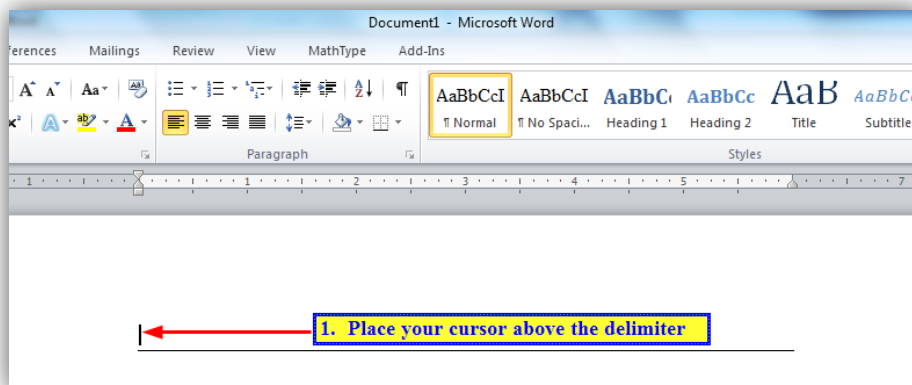
Choose any ONE of the options below:

Option 1



If Option 1 does not work, then you can choose Option 2.

Option 2

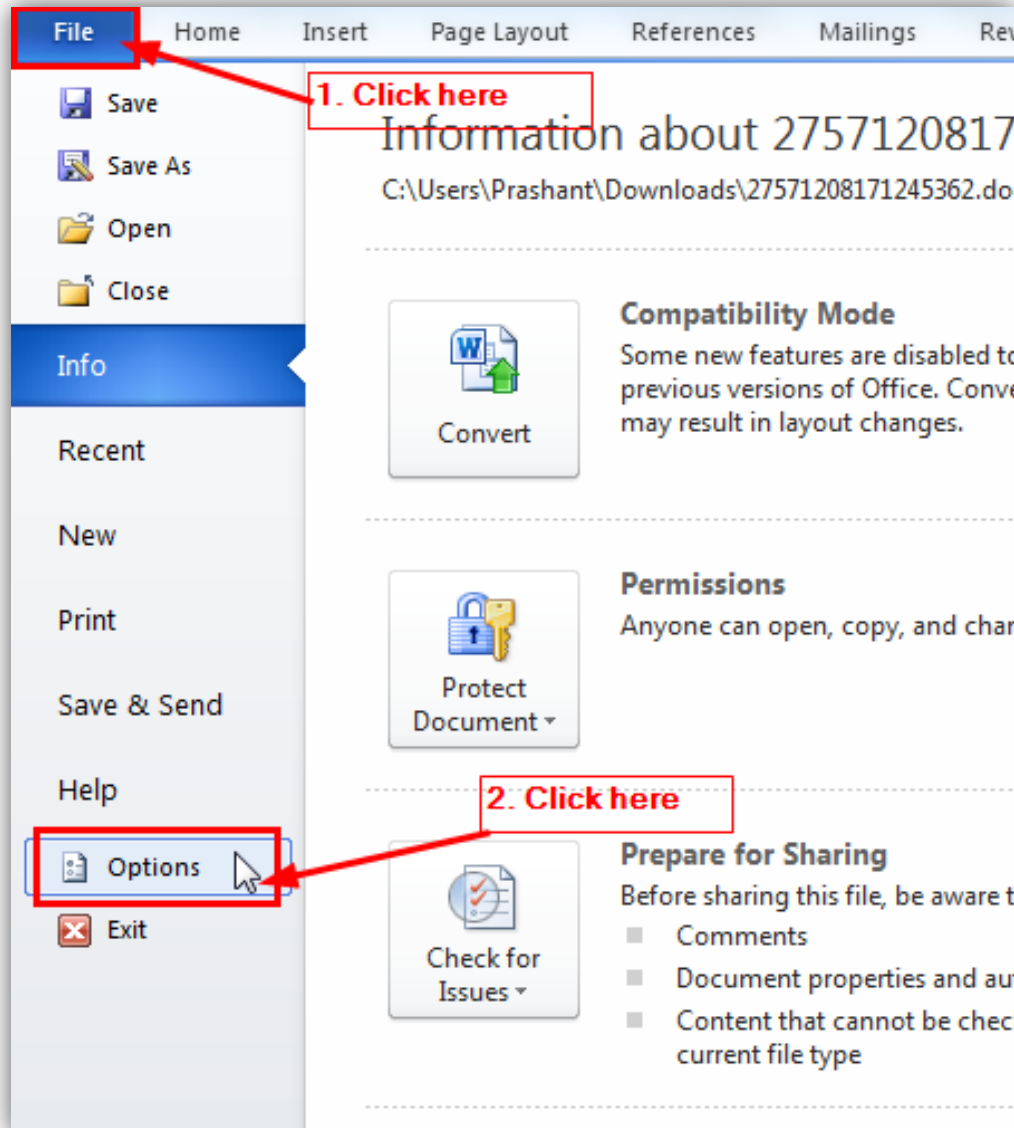


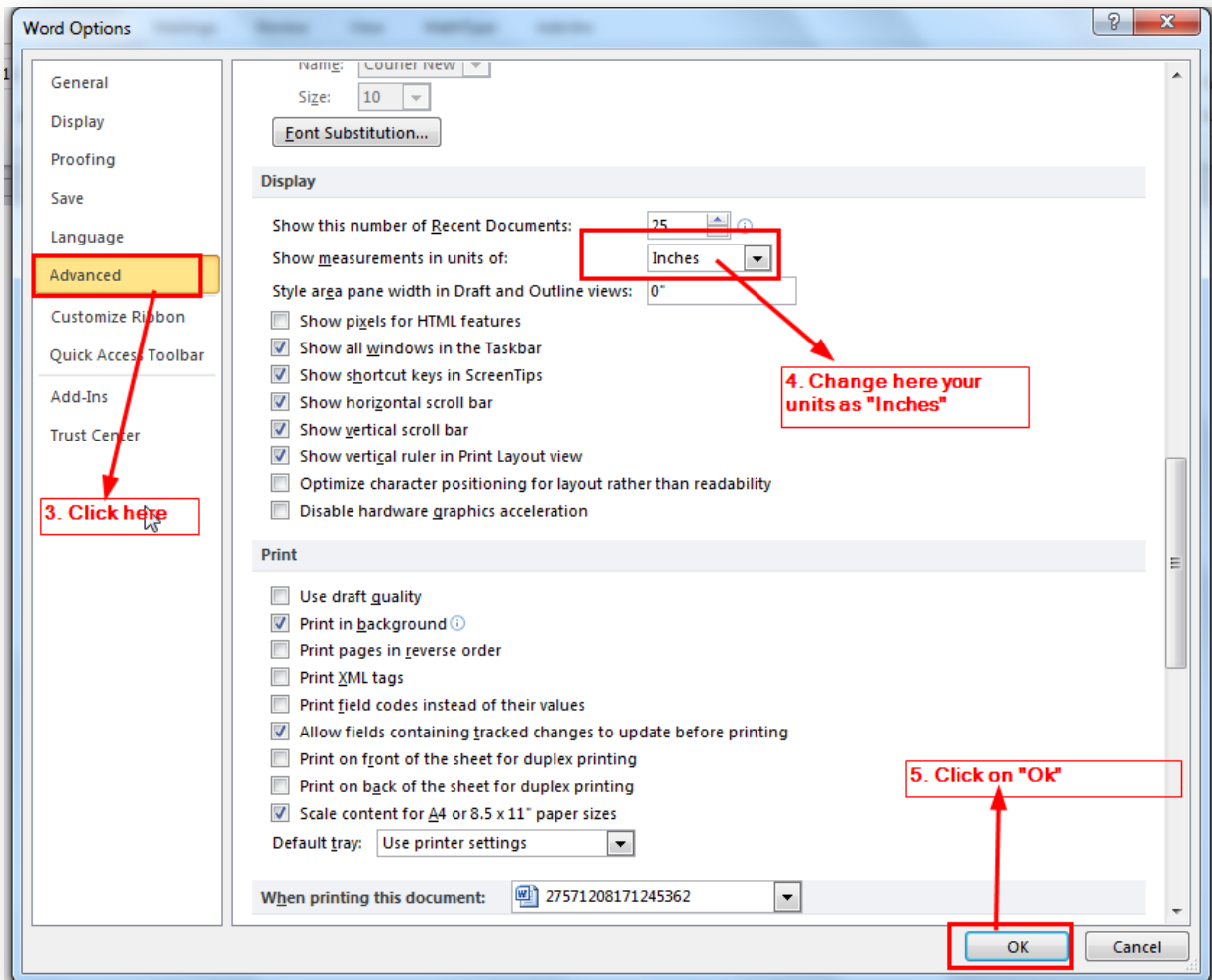
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2. File setup

Steps to change Word dimensions from centimeters to inches

Follow the steps below:



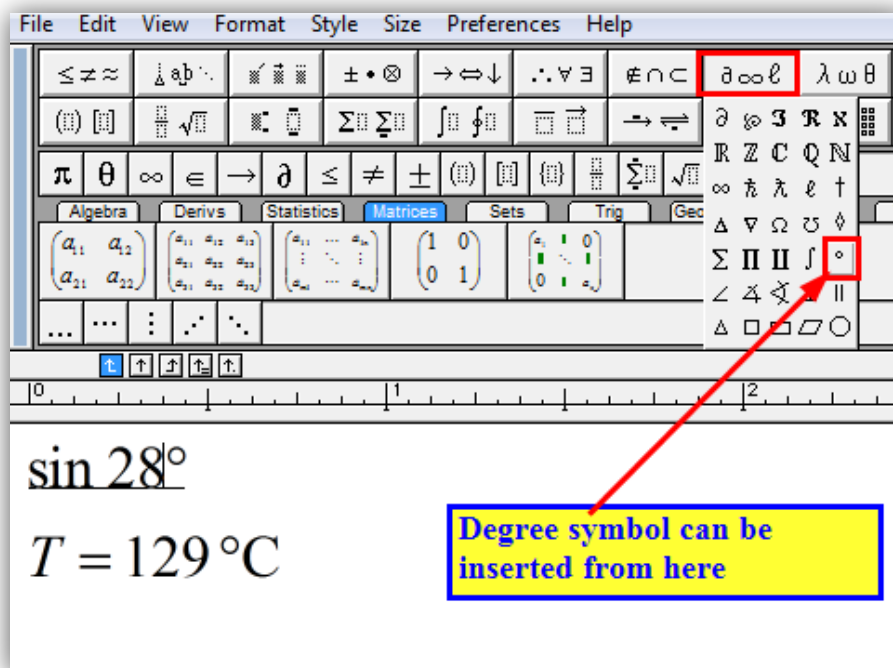


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3.Degree symbol

Steps to insert a degree (°) symbol

Always insert a degree symbol (°) using MathType only. The correct way to type a degree symbol is shown in the following figure:

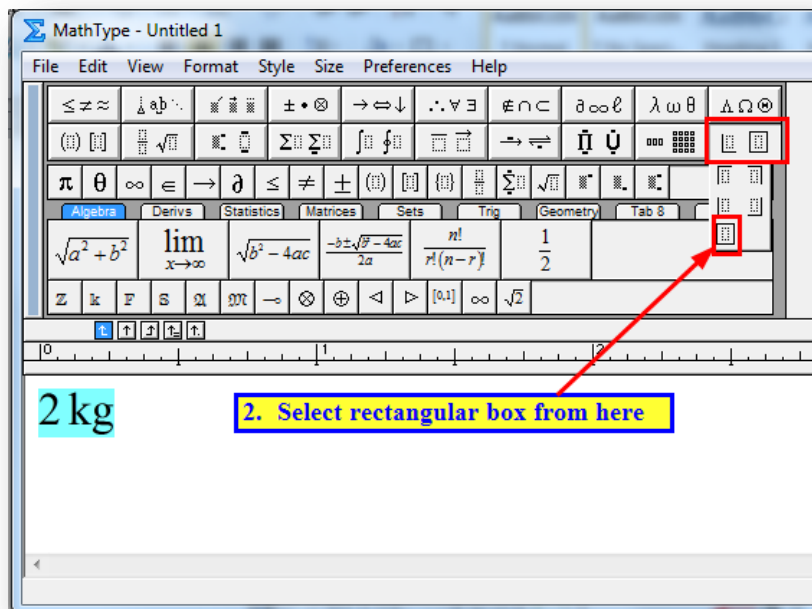
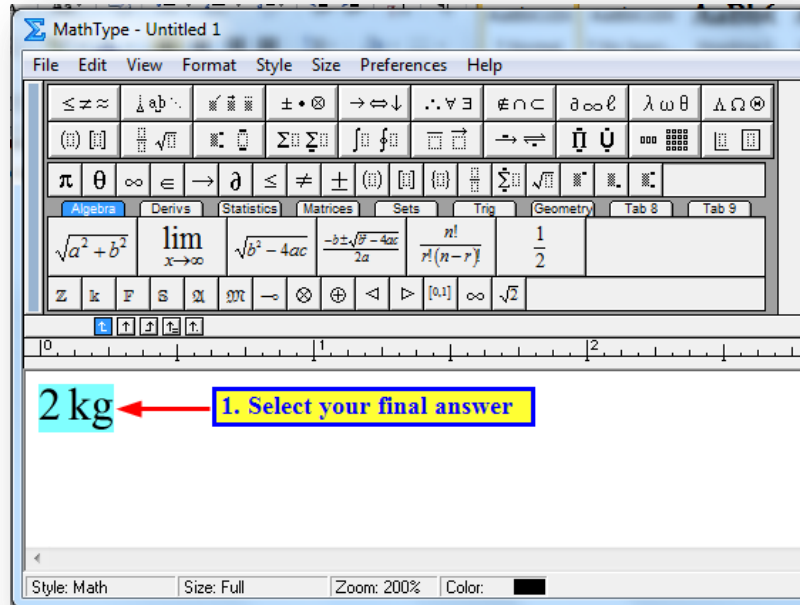


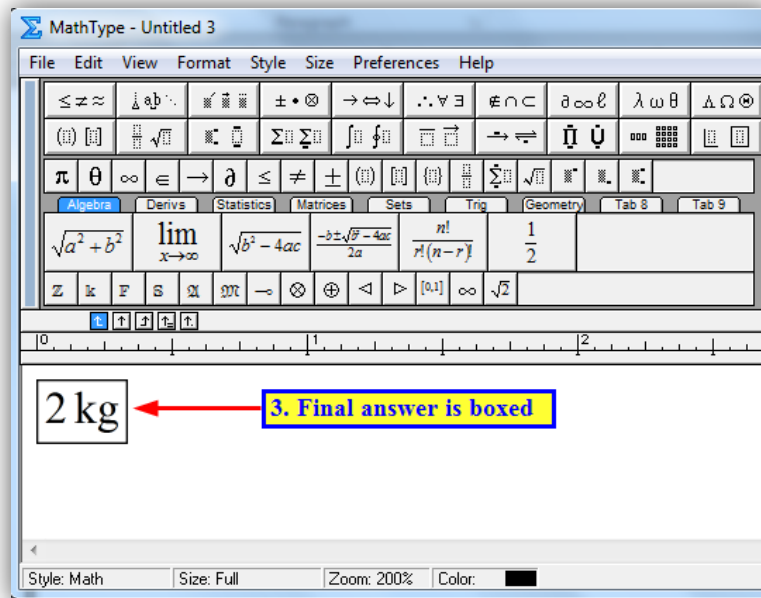
Note: Never use '0' (zero) or 'O' (alphabet O) as superscript for inserting a degree symbol.

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4. Final answer

Steps to box the final answer using MathType:





Note: Never use shapes or tables available in MS Word to box the final answer.

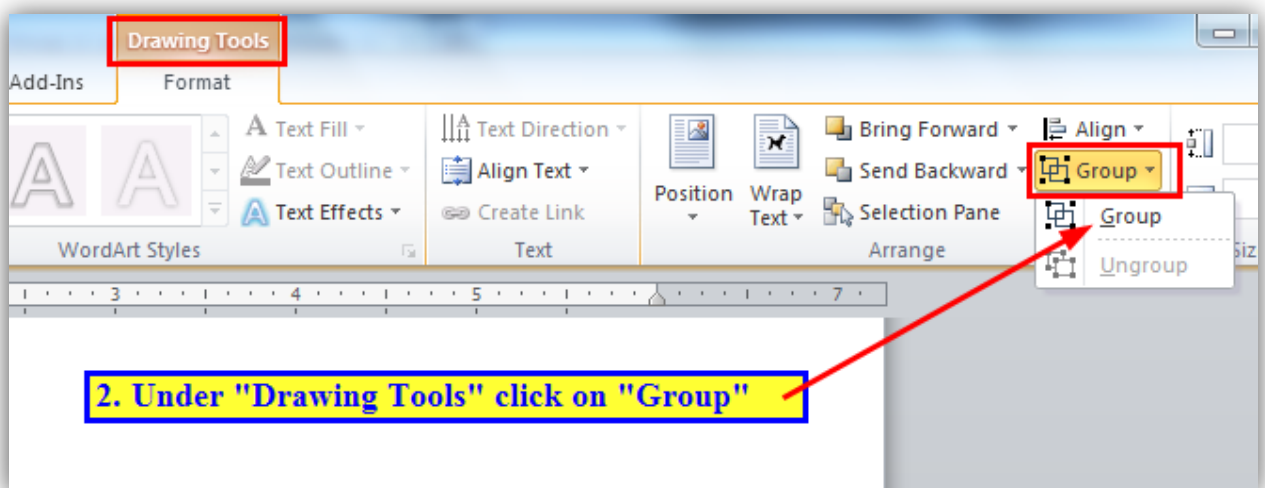
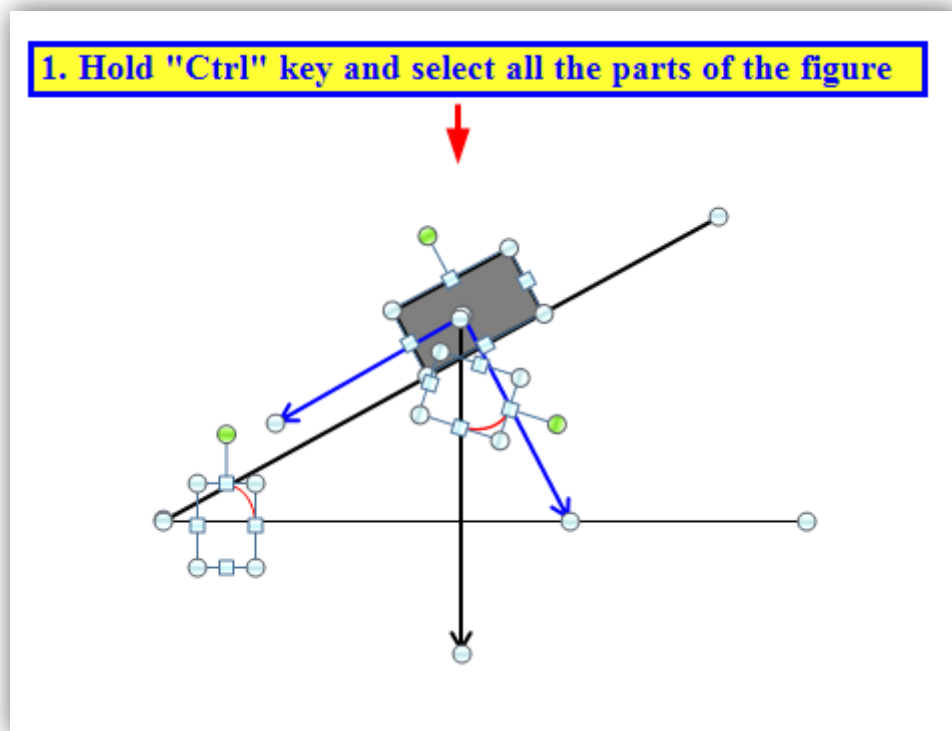
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5. Figures in MS Word

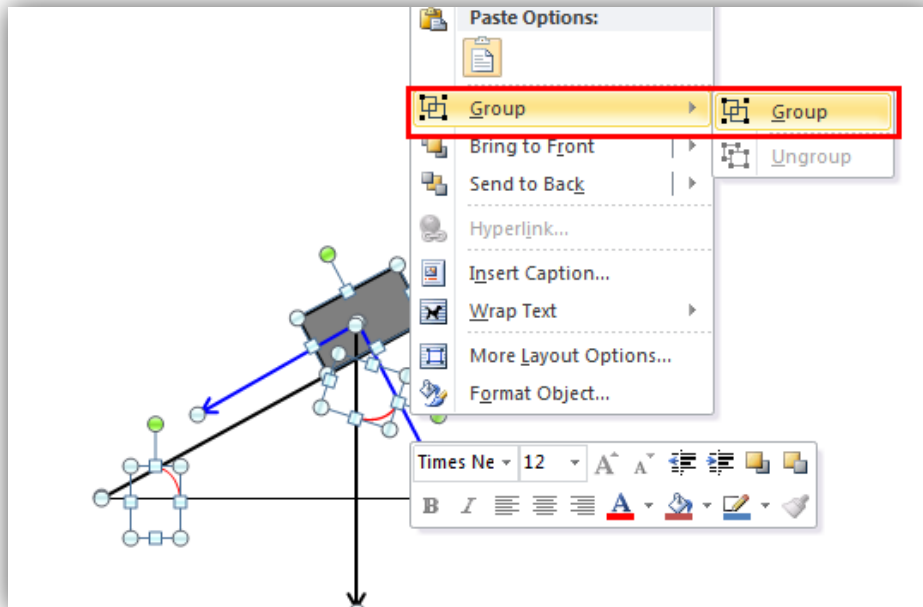
A. Steps to group the parts of a figure

Choose any ONE of the following options:

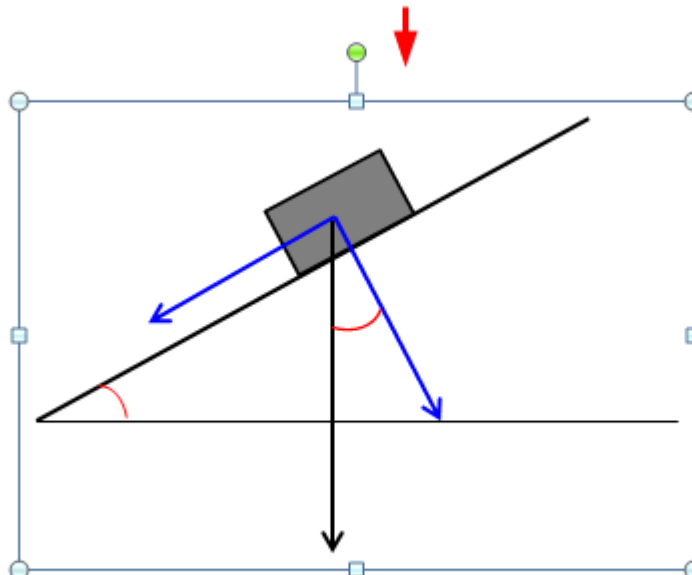
Option 1:



Option 2: Select all the parts (Ctrl+click), right click, and select the “Group” option from the pop up menu.

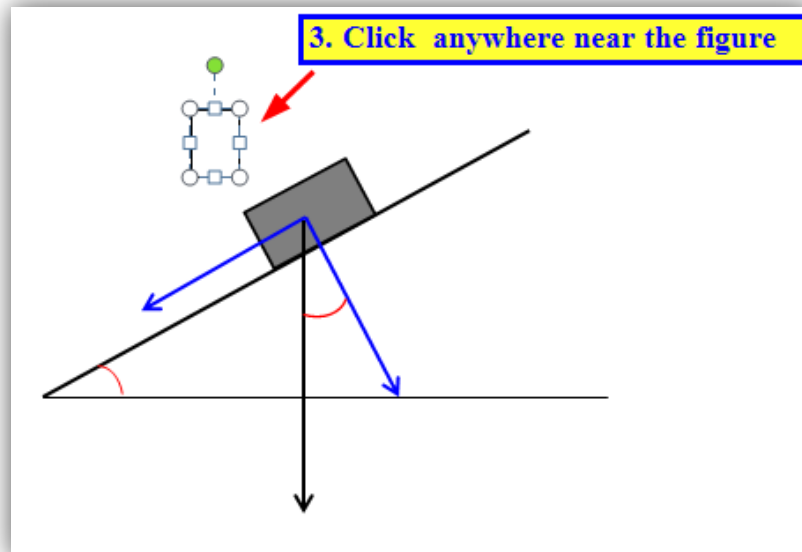
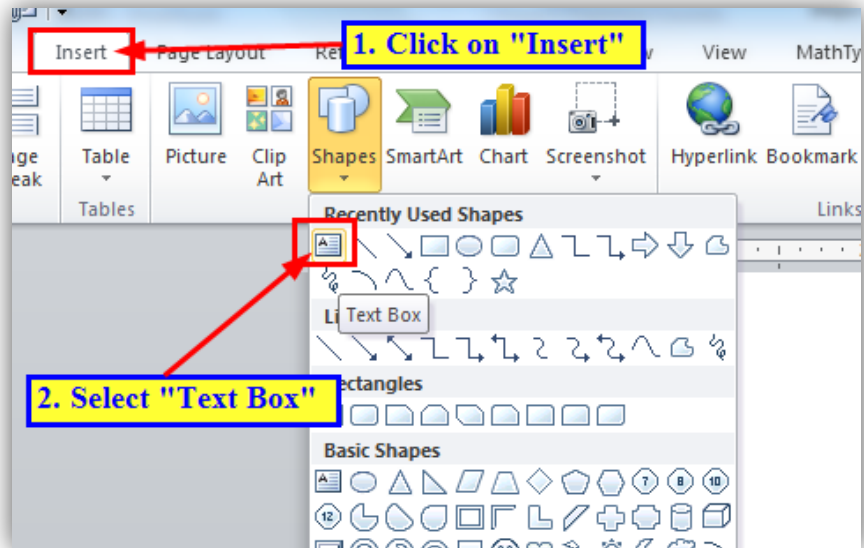


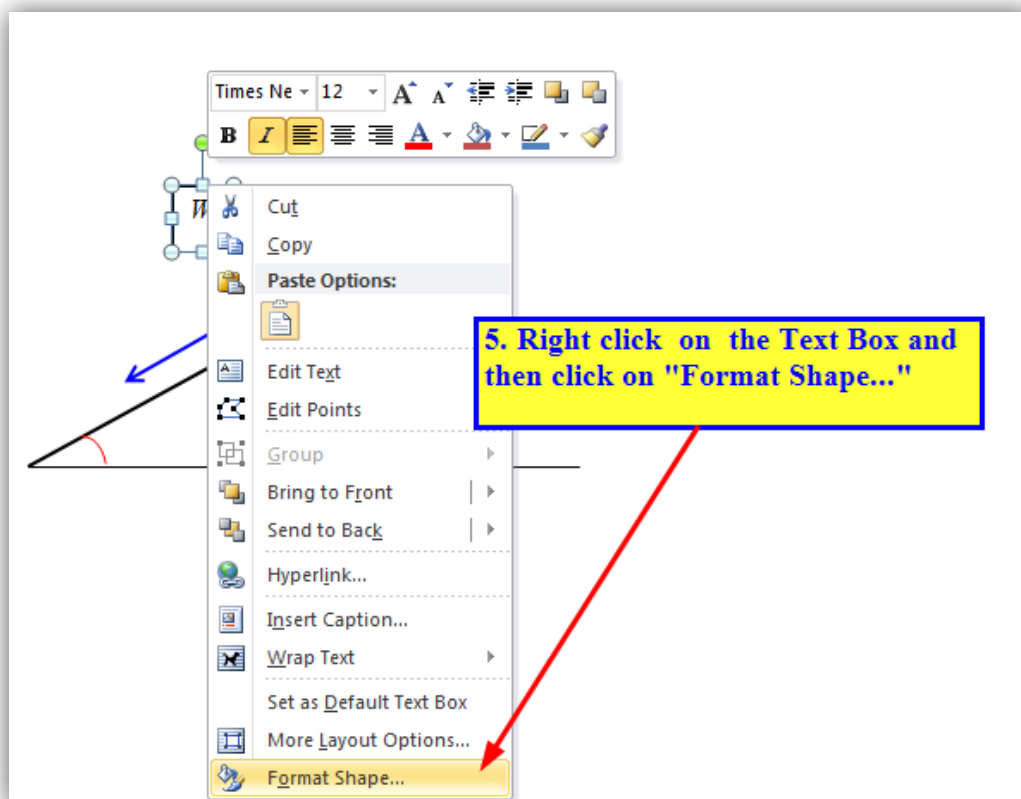
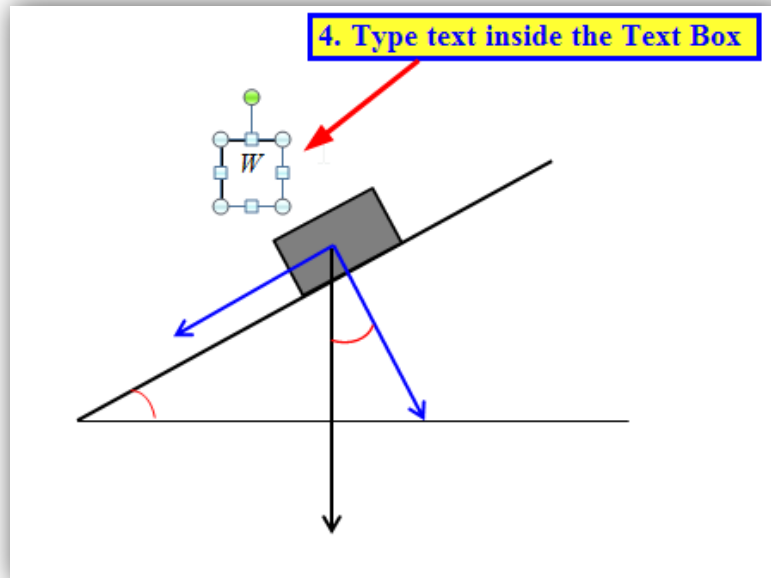
3. Figure is grouped as a single image

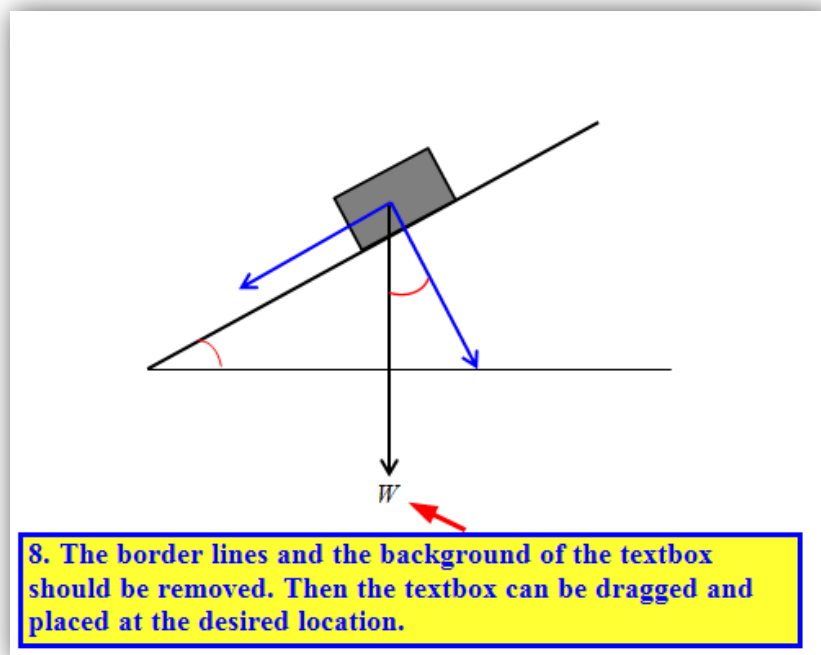
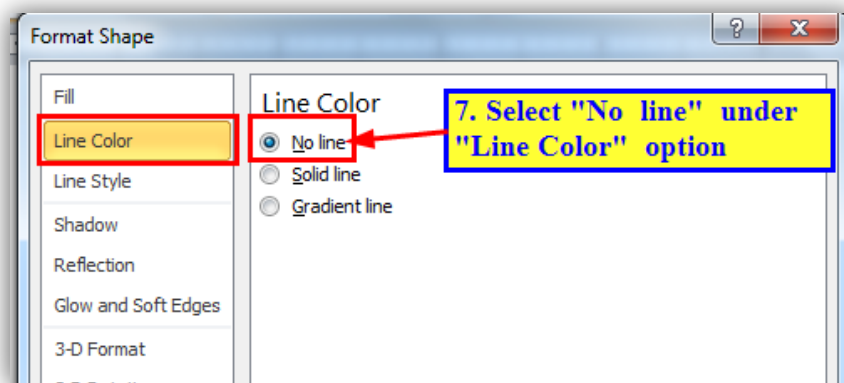
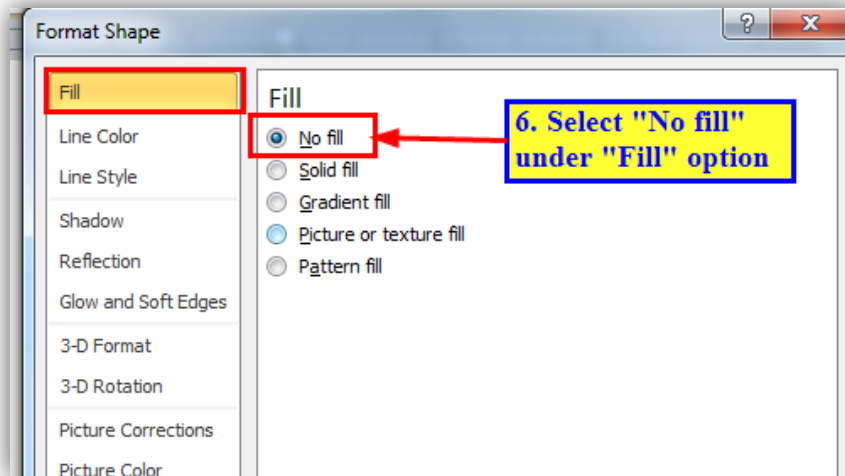


B. Steps to insert and group labels of the figure

Insert labels:

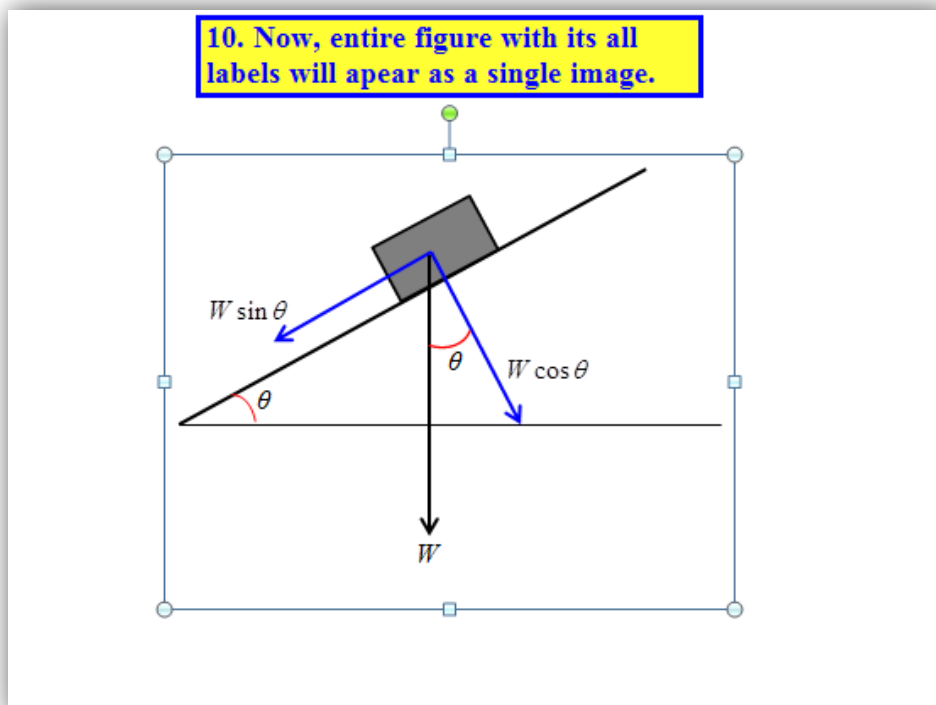
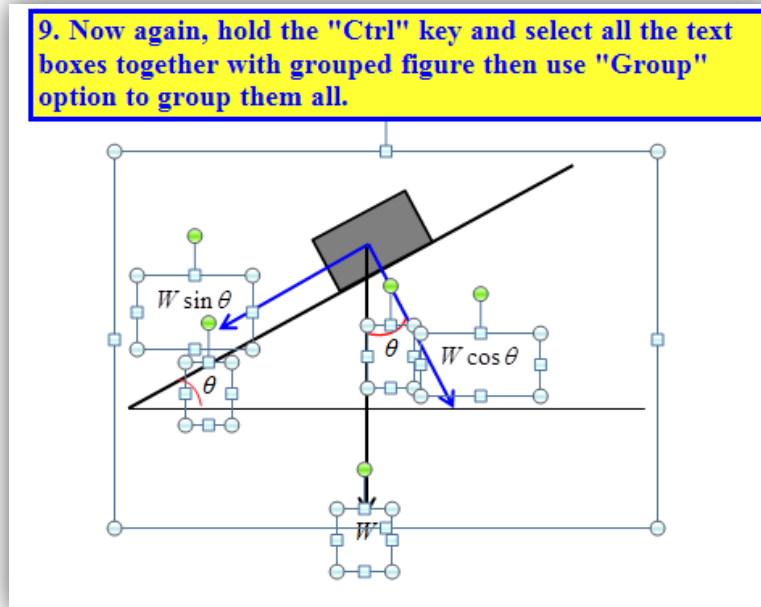






To insert other labels, you can copy and paste the textbox and then edit the text. You can also copy and paste any equation object (Typed in MathType) inside the textbox.

Now, group the labels and figure together by following step A:

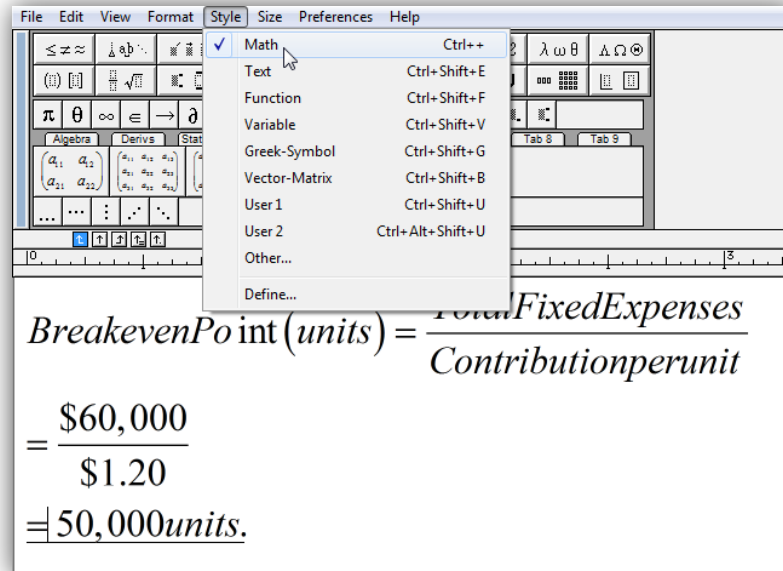


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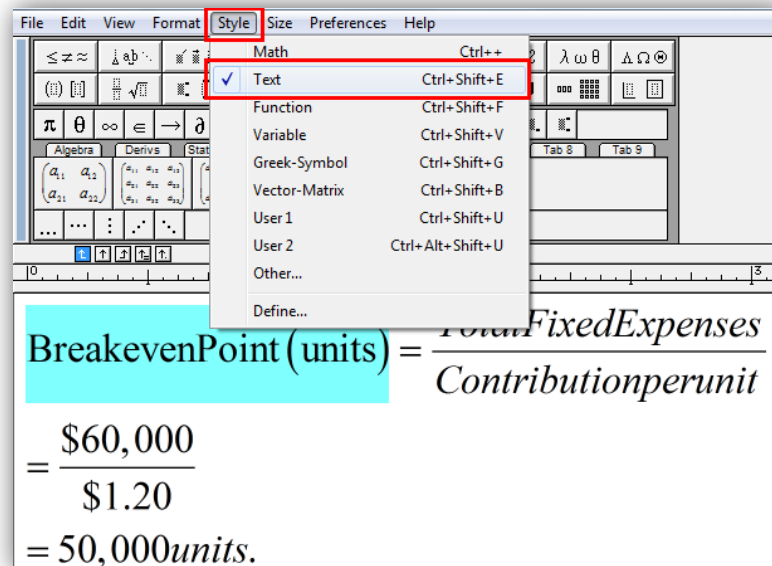
6. Text inside the equations

A. Steps to type text in regular font inside the equation objects

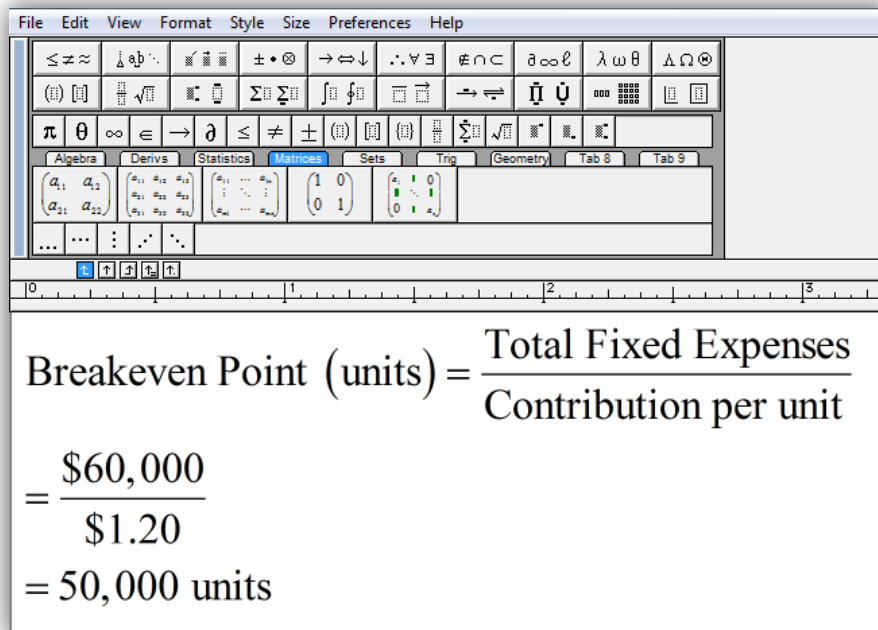
1. Open MathType and type all the equations. By default, the style will be “Math” as shown in the figure.



2. Select the text to be edited and click on “Style” tab. Now, select “Text” from the drop down menu.



3. Insert blank spaces within the text, typed in “Text” style.



The screenshot shows the MathType interface with the Breakeven Point equation. The equation is displayed as follows:

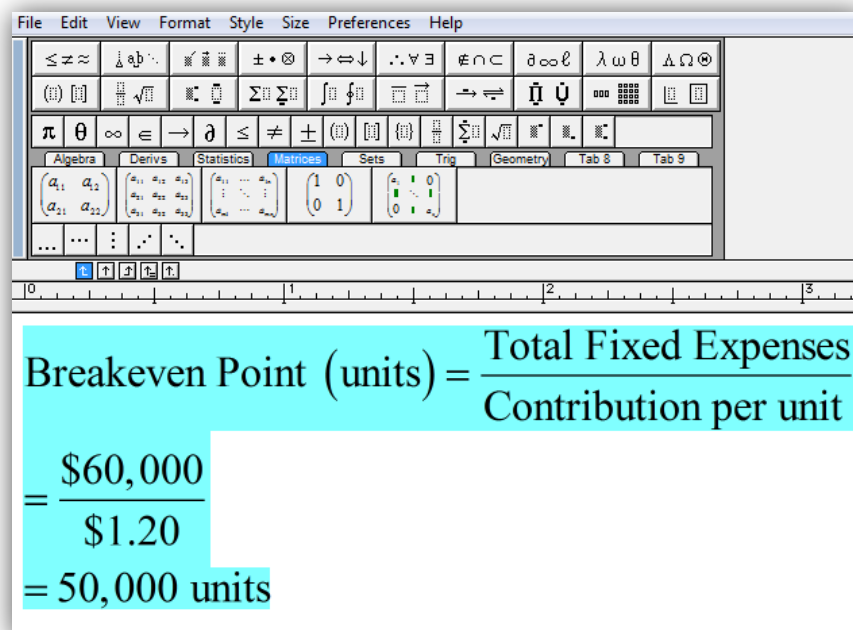
$$\text{Breakeven Point (units)} = \frac{\text{Total Fixed Expenses}}{\text{Contribution per unit}}$$

$$= \frac{\$60,000}{\$1.20}$$

$$= 50,000 \text{ units}$$

B. Steps to align equations at “=” signs in MathType

1. Select all the equations by pressing “Ctrl + A.”



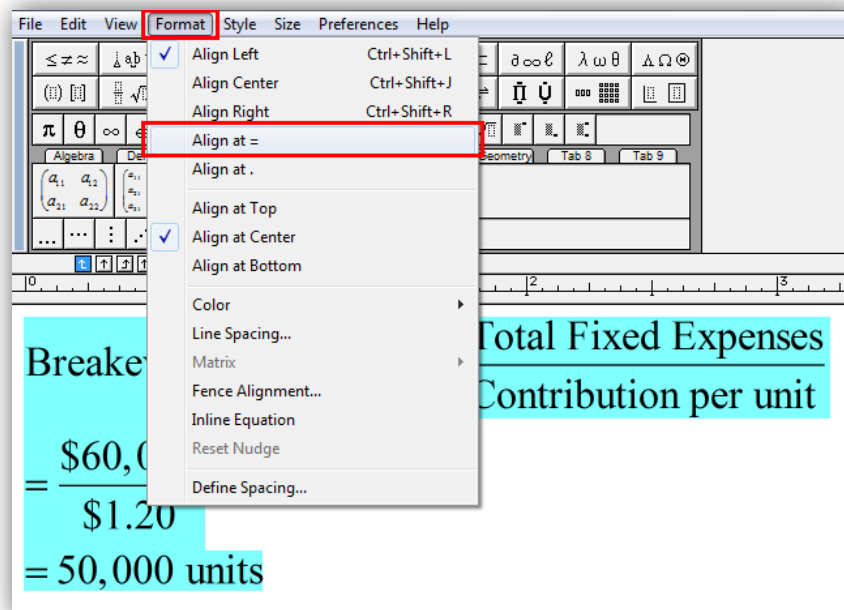
The screenshot shows the MathType interface with the Breakeven Point equation. The entire equation content is highlighted in cyan, indicating it has been selected using Ctrl + A.

$$\text{Breakeven Point (units)} = \frac{\text{Total Fixed Expenses}}{\text{Contribution per unit}}$$

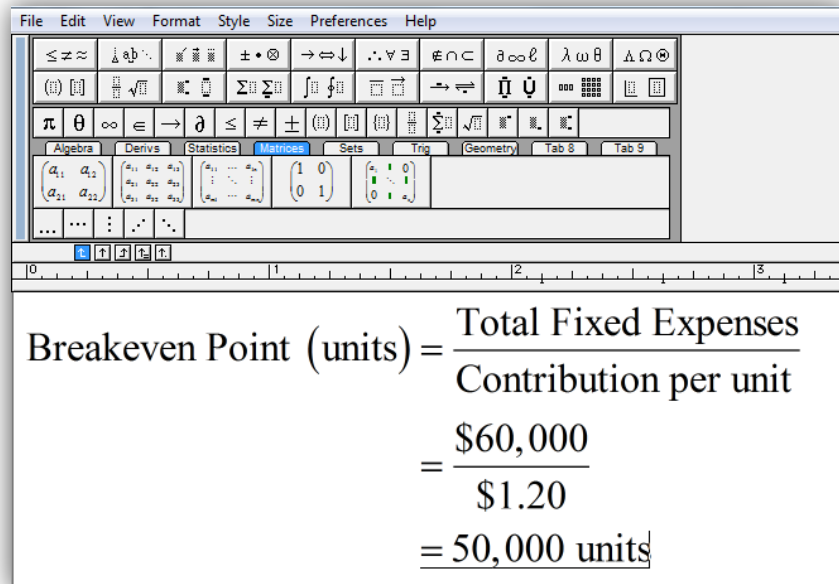
$$= \frac{\$60,000}{\$1.20}$$

$$= 50,000 \text{ units}$$

- Now, click the “Format” tab and then select “Align at =” from the drop down menu.



- Equations will be aligned at “=” sign.



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