Xerox ViewPoint

VP Equations Training

VP Equations
Training

Changes are periodically made to this document. Changes, technical inaccuracies, and typographical errors will be corrected in subsequent editions.

This book was created on the Xerox 6085 Professional Computer System.

Table of contents

1. Getting started

Xerox ViewPoint Equations is an optional software application for the 6085 Professional Computer System and 8010 Information System. Using VP Equations, you can enter equations consisting of characters and mathematical symbols into a document.

When you finish this training guide, you will be able to do the following:

• Work with equation frames.

• Enter an equation using the standard keyboard.

• Use an equation structure.

• Enter a complex equation.

• Edit an equation.

This training guide assumes that you have completed the *ViewPoint QuickStart Training* guide. If you have not yet worked through that guide, complete it now before continuing with this guide.

Training guide exercises

This training guide provides exercises that illustrate typical ways of working with VP Equations. In these exercises, you create three equations and edit one equation.

You can apply the techniques presented here when creating equations for your own documents. For complete information on VP Equations, refer to the *Document Editor Options Reference* volume of the *VP Series Reference Library*.

Hardware and software you need to begin training

Before you begin your training, make sure you have the following hardware and software:

- An operating 6085 or 8010 workstation with a desktop, a fully qualified user name, and a password. If you have a 6085 or 8010 workstation that is part of a network, you can get help from your system administrator. If your workstation is a Standalone or Documenter, you can get help from the *Workstation Administration and System Resources Reference* volume.

- Default User Profile settings. The User Profile lists the settings that control your desktop. The procedures in this training guide are designed for desktops using the default User Profile settings. Check with your system administrator to make sure your desktop has the default User Profile settings, or refer to the *General User Reference* volume.

Check the status of your applications before you begin training; consult with your system administrator or follow the next procedure.

Checking the status of applications

Directory

1. **Open** the Directory icon.

2. **Open** the Workstation divider.

3. **Open** the Loader.

4. **Compare** the list of applications in the Loader window with the list of applications here.

   - VP Document Editor

   - VP Equations

Additional applications may be running.

If the Loader lists the applications you need and their STATUS column is set to RUNNING, select [Close All] in the Loader window header.

If the applications you need are not listed in the Loader, consult your system administrator or refer to the *General User Reference* volume for information on installing, enabling, and running the applications in the above sequence.

If the applications you need are listed, but the STATUS column is set to IDLE, change the status of the applications as described next.

Running applications

If the STATUS column of an application you need is set to IDLE, change it to RUNNING.

1. **Select** the application.

2. **Select** [Run] in the Loader window header.

3. **Select** [Close All] in the Loader window header when you are finished setting applications to RUNNING.

You can also set applications to run automatically; refer to the *General User Reference* volume for this procedure.

4. **Log off** your workstation.

   This is required to enable the Equation Special keyboard. This keyboard is used in the training exercise for this guide.

Two final notes before you begin:

- This training guide uses underlining to indicate information that you type; however, you do not need to underline the information you type.

- As you use this training guide, you will see terms in ***bold italic*** type. You can find more information on these terms in the Glossary, which is located in the *QuickFind Reference* volume.

You are now ready to start training.

2. Working with equation frames

Equations reside in equation frames within your documents. You enter characters in an equation frame from the standard keyboard and alternate keyboards. With the caret positioned within an equation frame, you have access to the Equation Special keyboard for entering equation structures and filling in their argument fields. Examples of equation structures are fractions, integrals, and summations.

In this chapter, you insert an equation frame into a new document, define the properties of the frame, and copy the frame to other locations within the document.

Preparing the document for the equation frame

Blank
Docum
ent

Equatio
ns for
trainin
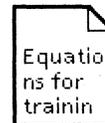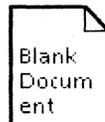
1. **Copy** a blank document from the Basic Icons divider of the directory to the desktop.

   Remember to close the divider and Directory windows.

2. **Name** the document "Equations for training."

3. **Open** the document, and **select** [Edit].

4. **Type:** Here is an equation frame for a simple equation:, and **press** the return key twice.

5. **Type:** Here is an equation frame for an equation using one equation structure:, and **press** the return key twice.

6. **Type:** Here is an equation frame for an equation using multiple equation structures:.

7. **Select** the colon at the end of the first paragraph.

Inserting the equation frame

1. **Hold down** <KEYBOARD>, **press** <Special>, and **press** <Show> to display the Document Special keyboard.

   The Document Special keyboard appears.
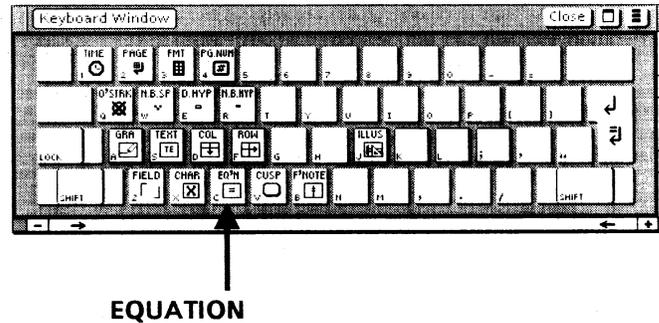
   EQUATION

2. **Press** <C> to insert the equation frame; then **release** <KEYBOARD>.

   The message area displays "Inserting Equation Frame ... done." If the equation frame does not appear, you need to close your practice document, log off your workstation, and then log on again to enable the Equation Special keyboard. The equation frame appears where there is room for it; in this case, it appears just after the third paragraph.

3. **Select** [Close] in both keyboard window headers.

4. **Select** [Show Structure] in the document auxiliary menu if it is not already selected.

   The VP Document Editor displays the document structure characters.
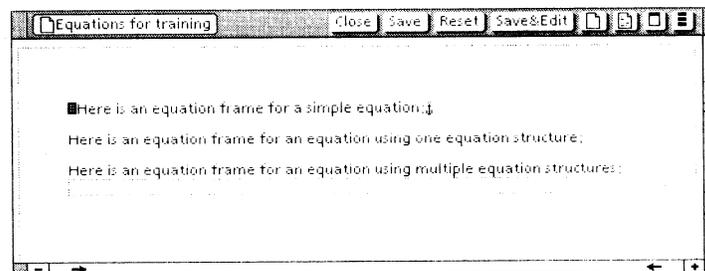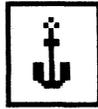
Notice the equation frame anchor after the first paragraph. When you paginate the document later, the VP Document Editor will move the equation frame to a location just after the anchor.

Defining the properties of the equation frame

Like graphics frames and text frames, equation frames have their own properties. You use the Equation Frame Properties sheet to define frame characteristics, including border width and style, margins, and equation captions.

1. **Select** the equation frame.

   Be sure the pointer is touching the frame border. The entire equation frame becomes highlighted.

2. **Press** < PROP'S >.

   The Equation Frame Properties sheet appears.

```
EQUATION FRAME PROPERTIES          Done  Apply  Cancel  Defaults
Border Style    █  ─  - -  ......  ═  ---
Border Width    █  ─  ─  ─  ─  ─
Units           [≡] [Inches]
Margins         Left [          0]   Right [          0]
                Top  [          0]   Bottom [         0]
Captions        [LEFT] [RIGHT] [TOP] [BOTTOM]
Width           [          6.5]
Height          [          .18]
Alignment       [FLUSH LEFT][CENTERED][FLUSH RIGHT] horizontally
                [FLUSH TOP][FLUSH BOTTOM][FLOATING] vertically
```
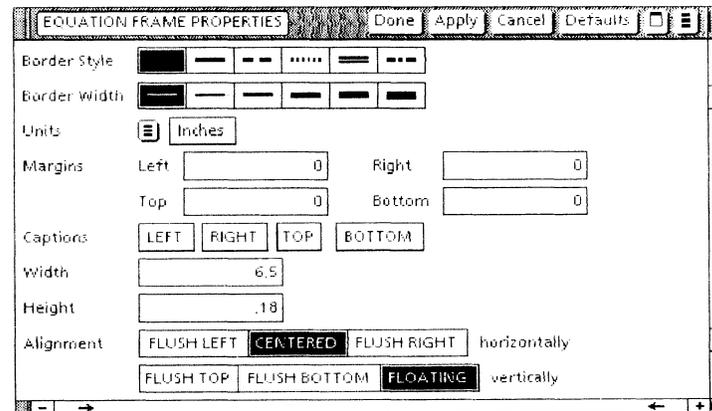
3. **Select** the second Border Style property.

4. **Select** the second Border Width property.

5. **Select** [Done] to close the property sheet.

Copying the equation frame and its properties

1. **Verify** that the equation frame is still selected, and **press** < COPY >.

2. **Select** the colon at the end of the second paragraph.

   VP Equations inserts an equation frame anchor next to the colon, and inserts a second equation frame into your document, just above the first equation frame.

3. **Press** < COPY > again.

4. **Select** the colon at the end of the third paragraph.

   VP Equations inserts another equation frame anchor next to the colon, and inserts a third equation frame into your document, just above the second equation frame.

5. **Paginate** the document.

   The equation frames move directly after their associated frame anchors, as shown below.
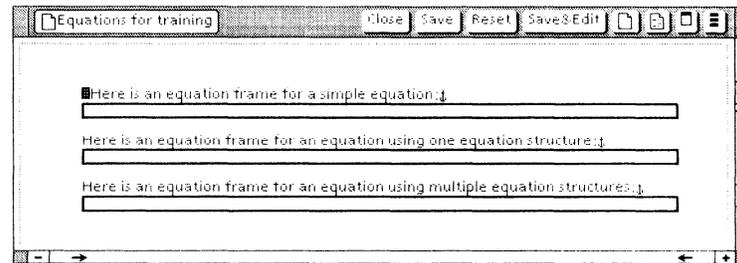
3. Entering an equation using the standard keyboard

If you do not need to create an equation that uses structure characters, entering an equation is as simple as typing alphabetic, numeric, and symbol characters from the standard keyboard. In this chapter, you type a simple equation and enter a caption for the equation.

Entering the equation

1. **Select** inside the first equation frame.

   The caret blinks at the bottom center of the equation frame.

2. **Type**: $9y = 2x + 1$.

   Your equation looks like this.
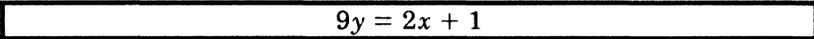
   $$9y = 2x + 1$$

Entering a caption for the equation

Numbered captions let you refer to equations in the text of your documents.

Reducing the frame width to make room for the caption

1. **Select** [Show Non-Printing with Spaces] from the document auxiliary menu.

2. **Select** the right edge of the first equation frame.

3. **Press** <Stretch>.

4. **Select** the box at the right edge of the equation frame border, and **hold down** the left mouse button.

5. While holding down the left mouse button, **move** the frame border to the left, one-third the width of the frame.

$$9y = 2x + 1$$
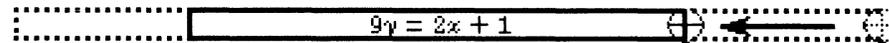
6. **Release** the mouse button.

   You now have enough room in the right margin for a caption.

Selecting the frame caption properties

1. **Verify** that the equation frame is still selected, and **press** <PROP'S>.

2. **Set** the Units property to [Inches], if it is not already set to [Inches].

3. **Set** the Right Margin property to .5 inch.

4. **Select** [RIGHT] for the Captions property.

5. **Select** [Done] to close the property sheet.

   Notice the new-paragraph character at the right of the equation frame. You will type the caption after that character.

Entering the caption

1. **Select** the new-paragraph character at the right of the equation frame.

2. **Type**: (1.0).

3. **Select** [Don't Show Non-Printing] from the document auxiliary menu.

   The equation frame with the simple equation and its caption now looks like this.

$$9y = 2x + 1$$ (1.0)

4.   Using an equation structure

In this chapter, you enter a summation structure and fill in its argument fields.

Entering the summation structure

1. **Select** a location within the second equation frame.

2. **Hold down** <KEYBOARD>, **press** <Special>, and **press** <Show> to display the Equation Special keyboard.

    The keyboard appears on the desktop.
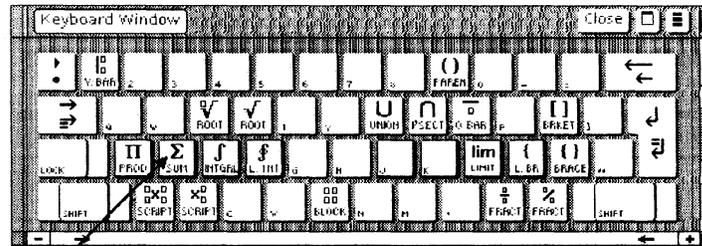
    SUMMATION

3. **Press** <S> to insert the summation structure; then **release** <KEYBOARD>.

    The summation structure appears within the equation frame. Notice the blinking caret in the lower-limit argument field.

4. **Select** [Close] in both keyboard window headers.

Filling in the argument fields

As you fill in the summation structure argument fields, notice how VP Equations automatically adjusts the size and placement of the characters.

1. **Type:** $\underline{i=1}$ to fill in the lower-limit argument field.

2. **Press** <NEXT>.

    The caret moves to the upper-limit argument field.

3. **Type:** $\underline{3}$ to fill in the upper-limit argument field.

4. **Press** <NEXT>.

    The entire structure becomes highlighted, and the caret moves to the right of the structure at the next point of entry.

5. **Type:** $\underline{4i=3x}$ to complete the equation.

    The complete summation equation now looks like this.

$$\sum_{i=1}^{3} 4i = 3x$$

Your exercise document looks like the document below.
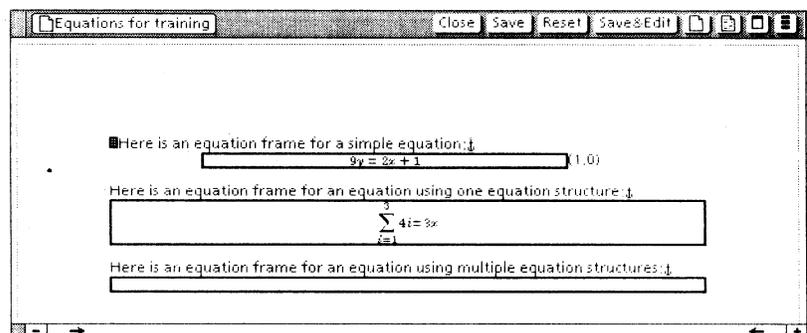
5. Entering a complex equation

In this chapter, you enter a complex equation into an equation frame. The equation employs several structures and numerous argument fields.

As you work through the procedures in this chapter, watch the message line; it provides valuable information about the structures and argument fields you enter.

Entering an integral structure

The integral structure you enter in this procedure looks like the equation structure below.
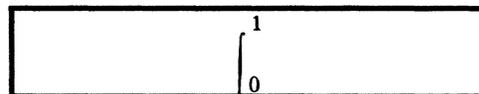
$$\int_{0}^{1}$$

1. **Select** a location within the third equation frame.

2. **Hold down** <KEYBOARD>, **press** <Special>, and **press** <D> to enter the integral structure from the Equation Special keyboard; then **release** <KEYBOARD>.

   The integral structure appears in the equation frame, and the caret moves to the lower-limit argument field.

   You can always press <Show> after pressing <Special> if you want to display the Equation Special keyboard. However, you can use the keyboard without displaying it.

3. In the lower-limit argument field, **type**: $\underline{0}$, and **press** <NEXT>.

The caret moves to the upper-limit argument field.

4. **Type**: $\underline{1}$, and **press** <NEXT>.

The entire integral structure becomes highlighted, and the caret moves to the next point of entry in the equation frame.

NEXT POINT OF

$$\int_0^1$$
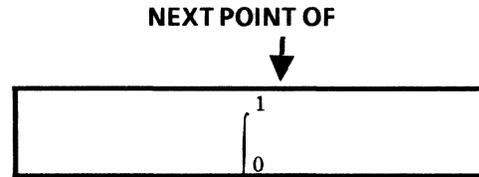
Entering a two-script structure

The two-script structure you enter next looks like this.

TWO-SCRIPT

$$\int_0^1 y_c^m$$
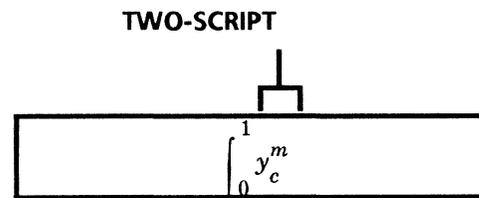
1. **Hold down** <KEYBOARD>, **press** <Special>, and **press** <X> to enter the two-script structure from the Equation Special keyboard; then **release** <KEYBOARD>.
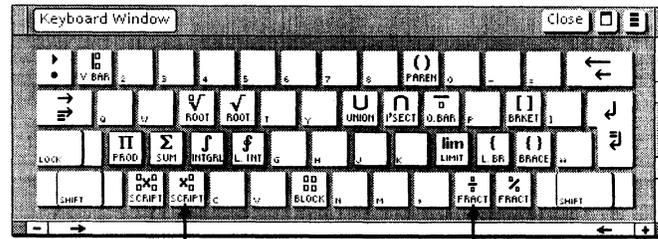
TWO-SCRIPT   **FRACTION**

VP Equations inserts the structure, but you cannot see it until you fill in its argument fields. The caret moves to the base argument field.

2. For the base, **type:** y, and **press** <NEXT>.

The caret moves to the subscript argument field.

3. For the subscript, **type:** c, and **press** <NEXT>.

The caret moves to the superscript argument field.

4. For the superscript, **type:** m, and **press** <NEXT>.

The entire two-script structure becomes highlighted, and the caret moves to the next point of entry in the equation frame.

Completing the integral statement

The rest of the integral statement, including another two-script structure, looks like this.

REST OF INTEGRAL
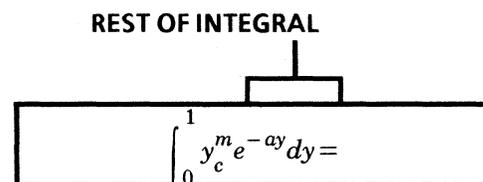
$$\int_0^1 y_c^m e^{-ay} dy =$$

1. **Hold down** < KEYBOARD >, **press** < Special >, and **press** < X > to enter a second two-script structure from the Equation Special keyboard; then **release** < KEYBOARD >.

   VP Equations places the caret in the base argument field.

2. For the base, **type:** e, and **press** < NEXT >.

   The caret moves to the subscript argument field.

3. **Press** < NEXT > again to skip the subscript argument field.

   The caret moves to the superscript argument field.

4. For the superscript, **type:** -ay, and **press** < NEXT >.

   The two-script structure becomes highlighted, and the caret moves to the next point of entry in the frame.

5. To complete the integral statement, **type:** dy=.

   Your equation now looks like this.
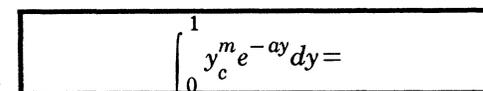
$$\int_0^1 y_c^m e^{-ay} dy =$$

Entering a fraction structure

The fraction structure you enter in this procedure looks like this.

FRACTION
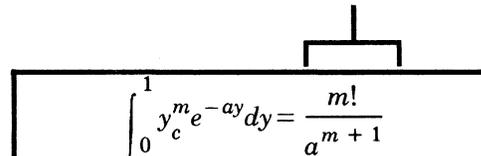
$$\int_0^1 y_c^m e^{-ay} dy = \frac{m!}{a^{m+1}}$$

1. **Hold down** <KEYBOARD>, **press** <Special>, and **press** <.> to enter the fraction structure from the Equation Special keyboard; then **release** <KEYBOARD>.

    The fraction structure appears, and the caret moves to the numerator argument field.

2. In the numerator argument field, **type**: m!, and **press** <NEXT>.

    The caret moves to the denominator argument field.

3. **Insert** a two-script structure from the Equation Special keyboard into the denominator argument field.

    Refer to "Entering a two-script structure" earlier in this chapter for details.

    VP Equations inserts the two-script structure, and the caret moves to the base argument field.

4. For the base, **type**: a, and **press** <NEXT> twice.

    The caret moves to the superscript argument field.

5. For the superscript, **type:** <u>m + 1</u>, and **press** <NEXT> twice.

The entire fraction structure becomes highlighted, and the caret moves to the next point of entry. Your equation now looks like this.

$$\int_0^1 y_c^m e^{-ay} dy = \frac{m!}{a^{m+1}}$$

Entering information within a pair of square brackets

The square brackets and the information you enter within them appear below.

SQUARE

$$\int_0^1 y_c^m e^{-ay} dy = \frac{m!}{a^{m+1}} \left[1 - e^{-a} \sum_{i=0}^{m} \frac{a^i}{i!} \right]$$

1. Hold down <KEYBOARD>, **press** <Special>, and **press** <[> to enter the square brackets structure from the Equation Special keyboard; then **release** <KEYBOARD>.

The left and right square brackets appear within the frame.

2. Type: <u>1-</u>.

3. Insert a two-script structure from the Equation Special keyboard.

Refer to "Entering a two-script structure" earlier in this chapter for details.

The caret moves to the subscript argument field.

4. **Type**: e̲, and **press** <NEXT> twice.

   The caret moves to the superscript argument field.

5. **Type**: -̲a̲, and **press** <NEXT>.

   The caret moves to the next point of entry.

Entering a summation structure

1. **Hold down** <KEYBOARD>, **press** <Special>, and **press** <S> to enter the summation structure from the Equation Special keyboard; then **release** <KEYBOARD>.

   The summation structure appears within the frame, the entire equation becomes highlighted, and the caret moves to the lower-limit argument field.

2. **Type**: i̲=̲0̲, and **press** <NEXT>.

   The caret moves to the upper-limit argument field.

3. **Type**: m̲, and **press** <NEXT>.

   The caret moves to the next point of entry.

Completing the equation

1. **Insert** a fraction structure just to the right of the summation structure.

   Refer to "Entering a fraction structure" earlier in this chapter for details.

   A fraction bar appears to the right of the summation structure, and the caret moves to the numerator argument field.

2. **Insert** a two-script structure from the Equation Special keyboard.

Refer to "Entering a two-script structure" earlier in this chapter for details.

The caret moves to the subscript argument field.

3. **Type:** a͟, and **press** <NEXT> twice.

The caret moves to the superscript argument field.

4. **Type:** i͟, and **press** <NEXT> twice.

The caret moves to the denominator argument field.

5. **Type:** i͟!.

Your completed equation looks like this.

$$\int_0^1 y_c^m e^{-ay} dy = \frac{m!}{a^{m+1}} \left[1 - e^{-a} \sum_{i=0}^{m} \frac{a^i}{i!} \right]$$

6. **Paginate** the document.

6.   Editing equations

Editing equations works much the same as editing text. In this
chapter, you edit a character and then move part of an equation
to a different location within the same equation.

Editing a character

1. In the third equation, **select** the "c" subscript of the first
   two-script structure.

"c"

$$\int_0^1 y_c^m e^{-ay} dy = \frac{m!}{a^{m+1}} \left[1 - e^{-a} \sum_{i=0}^m \frac{a^i}{i!} \right]$$

   Make sure that just the "c" is highlighted.

2. **Press** <DEL> to delete the character.

3. **Type:** <u>b</u>.

Moving a structure

1. **Select** the fraction structure to the left of the square brackets.

FRACTION
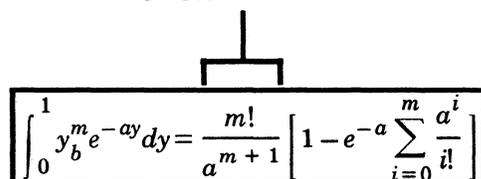
$$\int_0^1 y_b^m e^{-ay} dy = \frac{m!}{a^{m+1}} \left[1 - e^{-a} \sum_{i=0}^m \frac{a^i}{i!} \right]$$

For best results, select the horizontal line dividing the numerator and denominator.

2. **Press** <MOVE>.

3. **Select** the destination for the fraction, just to the right of the square brackets.

The fraction structure becomes highlighted, and your edited equation looks like the equation below.
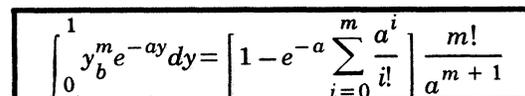
$$\int_0^1 y_b^m e^{-ay} dy = \left[1 - e^{-a} \sum_{i=0}^m \frac{a^i}{i!} \right] \frac{m!}{a^{m+1}}$$

TRY THIS Now that you see how simple editing equations is, try editing the complex equation further, or edit the other equations you created earlier.

You've experimented with the major aspects of VP Equations. Now you can insert your own equations into documents. For complete information on VP Equations, refer to the *Document Editor Options Reference* volume.

XEROX