Introduction to Graphing Calculators

1.1

Teacher Demonstration Material

Problem Solving Using a Graphing Calculator

This demonstration and worksheet can be used for group instruction or by individual students with graphing calculators. On their worksheets, students are asked to answer questions and complete exercises related to basic graphing calculator operations.

The objectives of this demonstration and worksheet are for students to be able to locate and use the following. **1.** The contrast keys **2.** The variable x and store keys **3.** The alphabet key **4.** The replay and cursor keys **5.** The insert and delete keys **6.** The negative and subtraction keys **7.** The exponent and absolute value keys **8.** The menus

1. THE CONTRAST KEYS

To make the screen darker or lighter, press the following keys. (The overhead projector may have a different method for contrast adjustment.)

TI-81: [2nd] [△] (hold) Darker
[2nd] [▽] (hold) Lighter

CASIO fx-7700G: [MODE] [▷] Darker
[MODE] [◁] Lighter

2. THE VARIABLE *X* AND STORE KEYS

Evaluate the expression $\frac{2}{3}x + 100$ when $x = 16.5$. (The value is 111.)

TI-81: 16.5 [STO▷] [X|T] [ENTER] [(] 2 [÷] 3 [)] [X|T] [+] 100 [ENTER]

CASIO fx-7700G: 16.5 [→] [X,θ,T] [EXE] [(] 2 [÷] 3 [)] [X,θ,T] [+] 100 [EXE]

3. THE ALPHABET KEYS

The letters A through Z are located above the keys. Each letter of the alphabet can represent a variable in which a value can be stored. To see the value of the stored variable H, press [ALPHA] [H] [ENTER] or [EXE]. To store a value of 10 in H, press the following.

TI-81: 10 [STO▷] [H] [ENTER]

CASIO fx-7700G: 10 [→] [ALPHA] [H] [EXE]

For many consecutive letters, you can activate the "Alpha-lock" key.

TI-81: [2nd] [A-LOCK] [A] [L] [G] [E] [B] [R] [A] [␣] [ALPHA] 1

CASIO fx-7700G: [SHIFT] [A-LOCK] [A] [L] [G] [E] [B] [R] [A] [SPACE] [ALPHA] 1

Press [CLEAR] or [AC] to clear the screen.

4. THE REPLAY AND CURSOR KEYS

Use to avoid retyping.

Suppose you need to evaluate the volume of two cylinders using the formula $V = \pi r^2 h$. Both have a radius of 17.8. The height of the first is 20 and the height of the second is 30. Instead of retyping the second calculation, you can use the replay and cursor keys.

For TI-84 PLUS, I had to use [2nd] [Entry] to get to formula, then use [<] cursor to 2, type 3, [enter]

TI-81: [2nd] [π] [×] 17.8 [x^2] [×] 20 [ENTER] [△], Cursor to 2, Type 3, [ENTER]

CASIO fx-7700G:
[SHIFT] [π] [×] 17.8 [SHIFT] [x^2] [×] 20 [EXE] [◁], Cursor to 2, Type 3, [EXE]

Use to make a correction.

Suppose you entered a formula incorrectly and need to make a change. You entered 33.4(11.2 + 15.7) when you meant to enter 33.7(11.2 + 15.7). To correct your error, use the replay and cursor keys.

TI-81: 33.4 [(] 11.2 [+] 15.7 [)] [ENTER] [△], Cursor to 4, Type 7, [ENTER]

CASIO fx-7700G: 33.4 [(] 11.2 [+] 15.7 [)] [EXE] [◁], Cursor to 4, Type 7, [EXE]

For TI-84, After [Enter], press [2nd] [Entry] then [<] cursor back to 4 and type 7, [Enter]

5. THE INSERT AND DELETE KEYS

Suppose you entered 35.17(1.2 + 2.5) when you meant to enter 35.1(1.2 + 2.5). To correct your error, use the replay, cursor, and delete keys.

TI-81: 35.17 [(] 1.2 [+] 2.5 [)] [ENTER] [△], Cursor to 7, [DEL] [ENTER]

CASIO fx-7700G: 35.17 [(] 1.2 [+] 2.5 [)] [EXE] [◁], Cursor to 7, [DEL] [EXE]

Suppose you entered 35.4(1.2 + 2.5) when you meant to enter 35.14(1.2 + 2.5). To correct your error, use the replay, cursor, and insert keys.

TI-81: 35.4 [(] 1.2 [+] 2.5 [)] [ENTER] [△], Cursor to 4, [INS] 1 [ENTER]

CASIO fx-7700G: 35.4 [(] 1.2 [+] 2.5 [)] [EXE] [◁], Cursor to 4, [SHIFT] [INS] 1 [EXE]

6. THE NEGATIVE AND SUBTRACTION KEYS

The negative key is [(−)] and the subtraction key is [−]. To enter $-8 - \pi$ or $50 - -1$, use the following.

TI-81: [(−)] 8 [−] [2nd] [π] [ENTER]
50 [−] [(−)] 1 [ENTER]

CASIO fx-7700G: [SHIFT] [(−)] 8 [−] [SHIFT] [π] [EXE]
50 [−] [SHIFT] [(−)] 1 [EXE]

7. THE EXPONENT AND ABSOLUTE VALUE KEYS

Some common powers such as x^2, x^3, $x^{1/2} = \sqrt{x}$, and $x^{1/3} = \sqrt[3]{x}$ have special keys. For other powers, such as 1.4^4, use the following.

TI83, 84 has these in [Math] menu.

TI-81: 1.4 [^] 4 [ENTER] **CASIO fx-7700G**: 1.4 [x^y] 4 [EXE]

To evaluate the absolute value of a number such as $|2 - 4|$, enter the following.

TI-81: [2nd] [ABS] [(] 2 [−] 4 [)] [ENTER]

CASIO fx-7700G: [SHIFT] [MATH] [F3] [F1] [(] 2 [−] 4 [)] [EXE]

For TI 83 or 84, ABS is in [Math] [Num] menu. To get there, press [Math] [>]
So for |2-4|, press [Math] [>] [Enter] 2 [−] 4 [)] [Enter].

8. THE MENUS

Many graphing calculator commands are on keys that activate menus. Activate the menus on the following keys and explore them using the four arrow keys.

TI-81: [MATH], [2nd] [TEST], [PRGM], [MATRX], [2nd] [STAT], [VARS], [2nd] [Y-VARS], [ZOOM]

CASIO fx-7700G: [SHIFT] [MATH], [F1], [PRE] [F2], [PRE] [F3], [PRE] [F4], [PRE] [SHIFT] [PRGM] [F1], [PRE] [F2], [PRE]

Introduction to Graphing Calculators

1.1

Name _____

Problem Solving Using a Graphing Calculator

A graphing calculator is actually a hand-held computer. This set of exercises gives you an introduction to some of the basic features that make graphing calculators more powerful than non-graphing calculators.

EXERCISES

1. List the keystrokes for adjusting the contrast level on a graphing calculator. How do you make the screen darker? How do you make it lighter?

2. List two ways to enter the variable X on a graphing calculator.

3. List the keystrokes for storing the following values. Then store the values.
   a. 8 in the variable X **b.** 21 in the variable A **c.** -6 in the variable E
   d. 100 in the variable I **e.** π in the variable O **f.** 1.1^2 in the variable U

4. Use a graphing calculator to evaluate $216.9x - \frac{7}{8}x + \frac{4}{7}$ when $x = 8$.

5. Find the value of each variable in your first and last names. (Answers will vary.)

6. Type in your first and last names with a plus sign between them. Press ENTER or EXE. What does the answer mean?

7. Which key is the "replay" key on the graphing calculator you are using?

8. Press the replay key to cause your name to reappear. Use the cursor key to move the cursor to the plus sign. Type over the plus sign with a minus sign. Press ENTER or EXE. What does the answer mean?

9. Press the replay key. Delete the minus sign and your last name. Insert a plus sign between consecutive letters of your first name. Press ENTER or EXE. What does the answer mean?

10. Evaluate the following.
    a. 2^5 **b.** $\pi 4^2(20)$ **c.** $17.3(3.4 + 5.2)$
    d. $12.2(6.12 - 5.67)$ **e.** $\dfrac{54.2 + 7.2}{11.3}$ **f.** $3.1\left(\dfrac{8.4 - 3.4 \cdot 1.4}{1.6}\right)$

11. Evaluate $\frac{9}{5}C + 32$ for $C = 39$.

12. Evaluate $\frac{5}{9}(F - 32)$ for $F = 70$.