CASIO EDUCATION

SUPPORT MATERIALS

AIMS EXAM

ARIZONA HIGH SCHOOL AIMS EXAM SAMPLE QUESTIONS

www.casioeducation.com

PUT VALUE BACK IN THE EQUATION.

AFFORDABILITY FUNCTIONALITY SUPPORT

The following items were gathered from the Arizona High School AIMS exam. These sample items can be located by visiting
http://www.ade.az.gov/standards/AIMS/SampleTests/HSSampleTestFinal.pdf

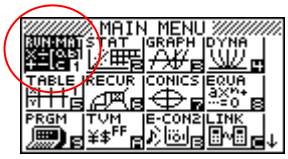
1. Evaluate $x + 4y$, when $x = 4$ and $y = -5$

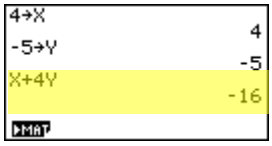
A 24
B 11
C -16
D -80

This question is designed to assess if the student can substitute given values into an expression evaluating $4 + 4(-5)$. However, for students who might have trouble with substitution, the *x*- and *y*-values can be stored into the *fx-9750GII* and then the expression can be evaluated.

a) From the RUN mode, enter the following:

- o [4] [→] [X,θ,T] [EXE]
- o [(−)] [5] [→] [ALPHA] [−] [EXE]
- o [X,θ,T] [+] [4] [ALPHA] [−] [EXE]





The correct answer choice is **C**.

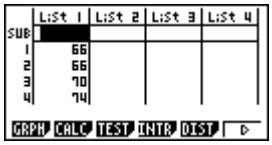
2. The following is an ordered list of monthly normal high temperatures for Phoenix, AZ.

66, 66, 70, 74, 75, 84, 88, 93, 99, 103, 103, 105

Sketch a box-and-whisper plot that best displays the data.

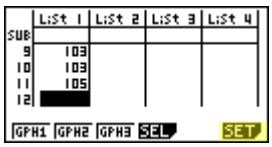
In the STAT mode of the *fx-9750GII*, the student can enter the data list and display the corresponding box-and-whisper plot.

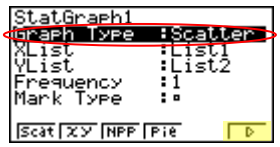
a) From the initial List Editor Screen, enter the list of high temperatures, pressing [EXE] after each temperature.

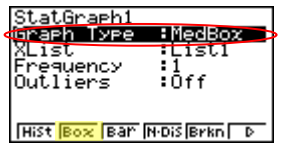


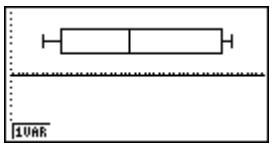
b) To display the box-and-whisper plot of this data, enter the following:

- F1 F6 ▼ F6 F2 EXIT F1

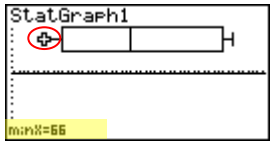


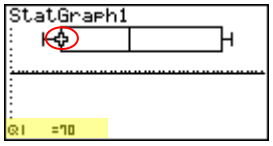


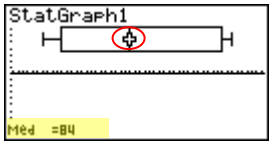


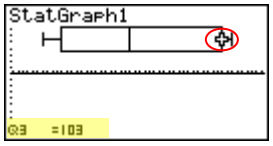


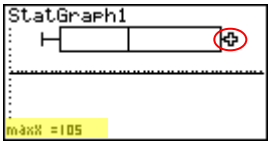
c) Press SHIFT F1 **(TRCE)** to view the minimum value. To display more data, press ▶ on the replay keypad.



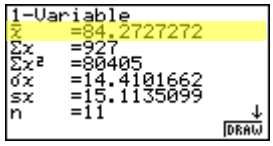


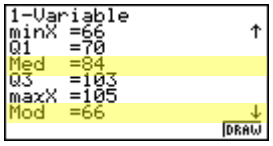






d) From here, pressing F1 twice will display 1-variable statistical data (mean, median, mode, standard deviation, etc.) regarding the monthly high temperatures.





3. The n^{th} term of the linear pattern defined by the table is given by which expression?

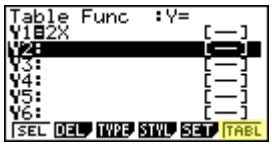
x	2	4	6	8	n
y	4	8	12	16	?

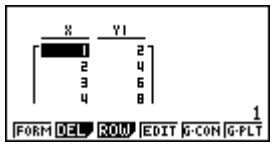
A 2n
B n + 2
C n + 4
D n^2

There are several ways to obtain the correct answer, determining changes in the *x*-and *y*-values, "plug & chug", and "guess and check" are common ways. With the *fx-9750GII*, the student can enter answer choices into the table mode and check for correctness.

a) From the initial Table screen, input the first answer choice (using x instead of n):

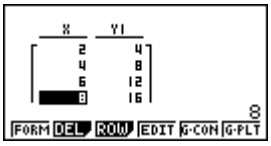
- 2 X,θ,T EXE F6





b) With the cursor in the x-column, begin entering each *x*-value and see if the correct *y*-value displays.

- 2 EXE ▼ 4 EXE ▼ 6 EXE ▼ 8 EXE



Each *x*-value entered results in the correct corresponding *y*-value given in the initial table, therefore, the correct answer choice is **A.**

4. Which of the following values of *x* make the proportion below true?

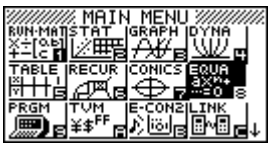
$$\frac{7}{4} = \frac{(x-3)}{(x+3)}$$

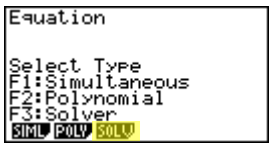
A –11
B –2
C 2
D 11

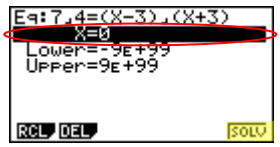
Students could approach solving this problem in different ways; some might cross-multiply and solve the resulting equation, 7x + 21 = 4x – 12. Some might substitute each answer choice for *x* and simply the fraction. On the *fx-9750GII*, the student can substitute each answer choice into the expression by assigning values to *x* similar to problem #1 or in the Equation Editor, the student could enter the proportion and solve for *x*.

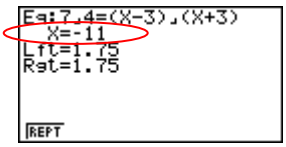
a) From the Icon Main Menu, enter the following:

- 8 F3 7 a b/c 4 SHIFT • (X,θ,T − 3) a b/c (X,θ,T + 3) EXE 0 EXE ▲ F6









Note: If the calculator displays previously entered data, simply begin entering the new problem; it is not necessary to delete the previous data.

The correct answer choice is **A**.

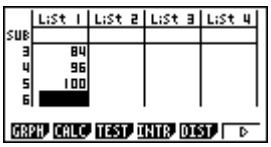
5. Paul's first project scores were: 96, 87, 84, 96, 100. Which statement is true about the project scores?

A The mode is the same as the median.
B The median is the same as the mean.
C The range is the same as the mode.
D The mode is the same as the mean.

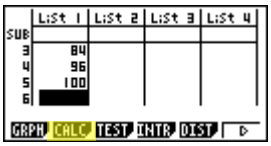
The student can calculate the mean, median and mode manually or, from the STAT mode, they can enter the list of data and display all pertinent one-variable statistical data.

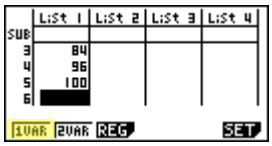
a) From the Icon Main Menu, select [2] and begin entering the following into List 1:

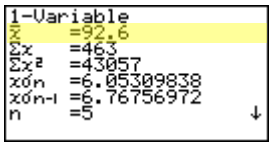
- [9] [6] [EXE] [8] [7] [EXE] [8] [4] [EXE] [9] [EXE] [1] [0] [0] [EXE]

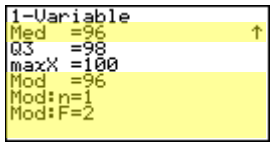


b) To display one-variable statistical data for List 1, select [F2] (CALC), then [F1] (1VAR). [▲] [▼] to view the mean, median and mode.









The mean is 92.6, median is 96, and the mode is 96; the correct answer choice is **A**.

6. What is the value of the expression below?

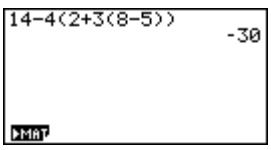
$14 - 4[2 + 3(8 - 5)]$

A 150
B 69
C –30
D –46

In the Run mode of the *fx-9750GII*, the student can enter the expression, remembering that brackets are grouping symbols and are entered as parenthesis.

a) From the Run mode, enter the following:

- [1] [4] [−] [4] [(] [2] [+] [3] [(] [8] [−] [5] [)] [)] [EXE]



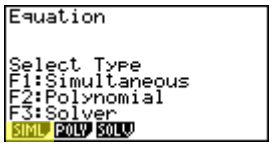
The correct answer choice is **C**.

7. Solve the system of equations below.

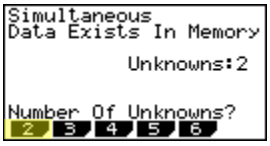
$$\begin{aligned} x + y &= 5 \\ -4x - 2y &= -8 \end{aligned}$$

There are multiple ways to solve a two-variable system of equations, graphing, substitution, combination etc. The *fx-9750GII* is able to evaluate systems of equations with up to 6 unknowns when the equations are written in standard form.

a) From the Icon Main Menu, select [8] for the Equation Mode. From the initial Equation Editor screen, select [F1] for Simultaneous.

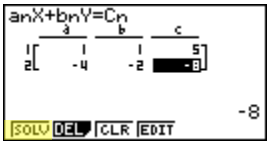


b) In this problem, there are two unknowns, *x* and *y*, select [F1].

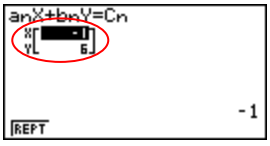


c) Once the equations are in standard form, starting from the left side of the first equation, begin entering the coefficients and constants, entering [EXE] after each entry.

- [1] [EXE] [1] [EXE] [5] [EXE] [(–)] [4] [EXE] [(–)] [2] [EXE] [(–)] [8] [EXE]



d) To solve, press [F1] (SOLV)

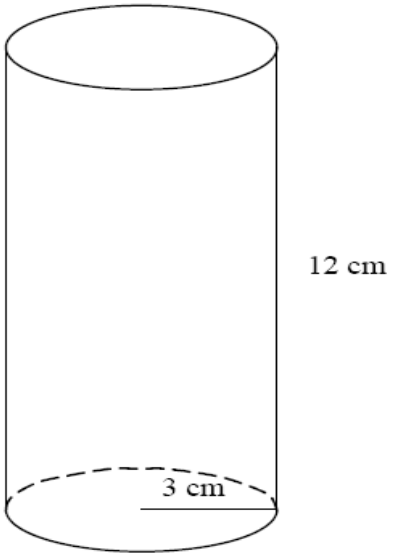


The solution to this system of equations is (–1, 6).

8. The right circular cylinder represented below has a base radius of 3 centimeters and a height of 12 centimeters.

What is the volume of the right circular cylinder in cubic centimeters?

A $113.1\ cm^3$
B $226.2\ cm^3$
C $339.3\ cm^3$
D $1357.2\ cm^3$

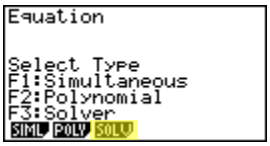


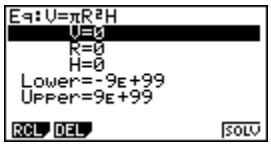
If a student doesn't remember the formula for finding the volume of a cylinder, $V=\pi r^2 h$, use the AIMS reference sheet. The student may choose to substitute the given values into the formula or use the Equation Editor on the *fx-9750GII*.

a) From the Icon Main Menu, select [8] for the Equation Mode. From the initial Equation Editor screen, select [F3] for Solver. From here, formulas can be entered in using [ALPHA] to enter letters.

b) To input the formula for volume of a cylinder, enter the following:

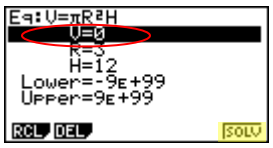
o [F3] [ALPHA] [2] [SHIFT] [•] [SHIFT] [EXP] [ALPHA] [6] [x^2] [ALPHA] [F↔D] [EXE]

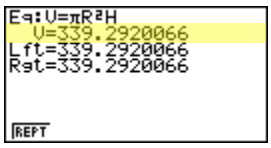




Note: Previously entered values might appear for some or all of the variables; simply overwrite these values, or press [F2] (DEL) to clear the screen.

c) Assign values to known variables, highlight the unknown variable and select [F6] (SOLV).





The correct answer choice is **C**.

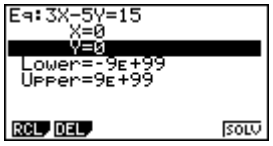
9. What is the *y*-intercept for the graph of the equation $3x - 5y = 15$?

A -5
B -3
C 3
D 5

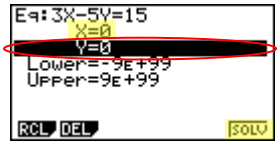
The simplest way to identify the *y*-intercept is convert it from standard form to y = mx + b form, $y = \frac{3}{5}x - 3$. The student could also use the Equation Editor on the *fx-9750GII*. If already in the Equation Mode, press [EXIT] until the Equation Editor screen displays; to clear the screen, press [F2] (DEL).

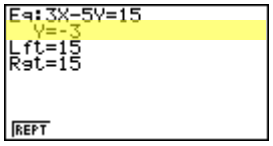
a) To input the equation, enter the following:

- [3] [X,θ,T] [−] [5] [ALPHA] [−] [SHIFT] [•] [1] [5] [EXE]



b) The problem is asking for the *y*-intercept, therefore make x = 0, highlight the y =, and press [F6] (SOLV).



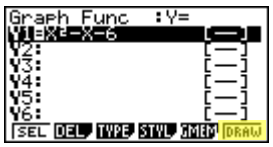


The correct answer choice is **B**.

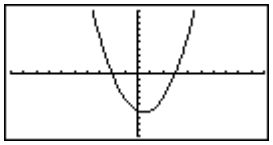
10. Graph: $y = x^2 - x - 6$, find the minimum and the *x*-and *y*-intercepts.

a) From the Icon Main Menu, select [3] for Graph Mode. From the initial Graph screen, input the equation by entering:

- [X,θ,T] [x^2] [−] [X,θ,T] [−] [6] [EXE]



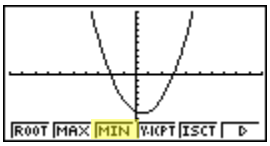
b) To view the graph, press [F6] (DRAW).

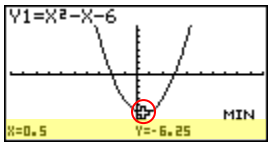


Note: If the graph looks different from the graph above, press [F3] to adjust the window settings.

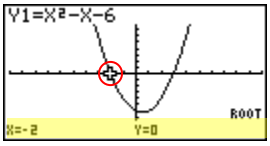
From the graphing view screen, select [F5] **(G-Solv)** to see information that can be calculated from the graph.

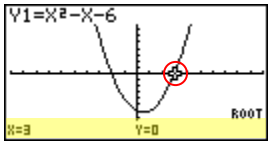
c) To find the ordered pair for the minimum, select [F3] (MIN).





d) To find the *x*-intercepts (roots), press [F5] **(G-Solv)**, select [F1] (Root), then ▶ to the next root.





e) To find the *y*-intercept, press [F5] **(G-Solv)** and select [F4] (Y-ICPT).