# Top Tips for Tackling the SAT® with TI Technology

*Using the TI-84 Plus Family and TI-Nspire for Standardized Tests.*          *Post by Karen Campe*

As the spring SAT® administration dates approach, we want to lessen the uncertainty that has resulted from the coronavirus & provide some support to those students sitting for the exam.

Unlike in years past, students will be required to wear masks and will be socially distanced in the testing center. Also, students are allowed to have hand sanitizer at their desks along with their No. 2 pencils and a graphing calculator (hopefully a trusted TI calculator).

On the SAT® exam, calculators are allowed on one of the two math sections. Read on for tips to leverage your TI-84 Plus CE or your TI-Nspire CX for success on test day! The example questions explained below are like questions you might see on the SAT® exam.

## 1. Know Your Tools

Bring a calculator that you are familiar with to the SAT® exam and use it as you prepare with practice questions. There are many TI calculator models allowed on the test; see the SAT® Calculator Policy webpage for the full list. Note: Any TI-84 tips in this post focus on the TI-84 Plus CE model, but they are applicable to the entire TI-84 graphing calculator family.
Be sure your calculator is fully charged or has fresh batteries for test day. And keep in mind that the calculator is not needed for every question; it is sometimes better not to use a calculator because it will slow you down.

If you are a TI-Nspire user, keep in mind that the **Scratchpad** is the place to be! Press ⌨ the "fast calculator" button to get to a calculator screen and press it again to get to a graphing screen.

## 2. **Know the Test**

The Math-Calculator section of the SAT® exam is 55 minutes long and contains 38 questions. There are 30 multiple-choice questions, each with four answer choices, and 8 "grid-in" questions with no choices provided. There is also a set of reference formulas and diagrams provided for your use; so don't memorize what is already given. For more information about the structure and content of the test , go to the SAT® Math Test webpage.

For the grid-in questions, answers will be 1, 2, 3, or 4 digits long, *including any decimal point or fraction bar*, and the answer won't be negative. So if your answer does not meet these guidelines, you know it must be wrong and you will have to try again.

Use your TI calculator to help you work more efficiently, compute more accurately, and verify answers. Just like you would in your math class, do some scratch work on the test paper before

using the calculator. This enables you to decide if it is a good time to use the tool or not—you should avoid typing easy math operations that you can do mentally. Also, pay attention to the structure of the question (and what it is asking for) because that may save time getting to the correct answer.

### 3. Use the Home Screen History

When calculating on the home screen, use the previous answer and previous entry history to save some keystrokes and time. Pressing the next operation key immediately after a result will insert **Ans** so the previous answer is used in the next step and you don't have to retype numbers. »

Example 1:

If 26 + 3x is 11 less than 79, find x.

Write the equation: 26 + 3x = 79 – 11 and solve using these algebraic steps:
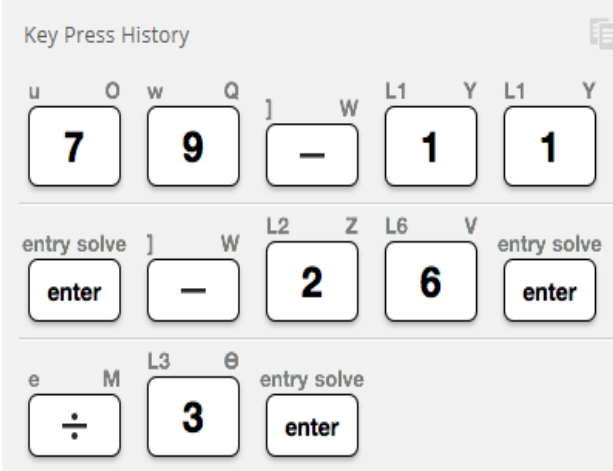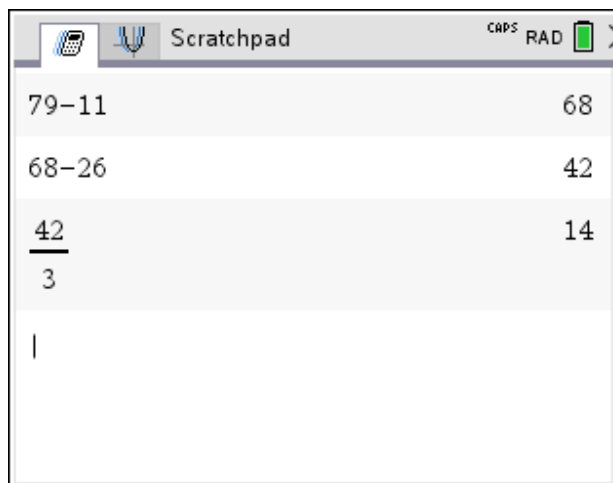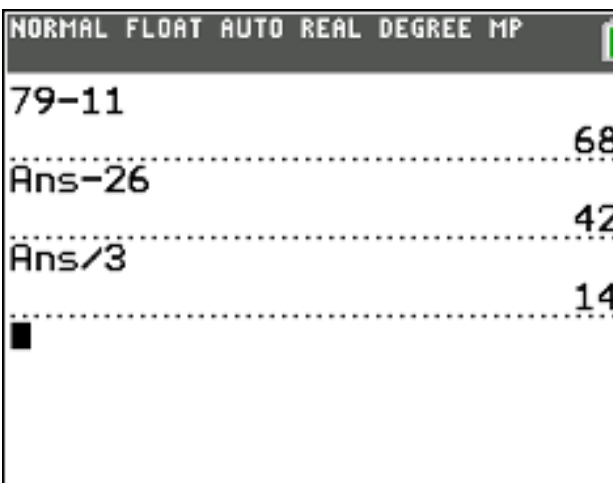


Notes for TI-Nspire:

- The "ANS" appears before pressing ENTER
- TI-Nspire will display division as a fraction when possible

You can also copy and edit previous entries. In example 2, you have an inequality and numerical choices, so you can substitute in one value into the expression to check if it works. Then ***arrow up*** twice to highlight the expression and press ***enter*** to use it again. ***Left arrow*** to edit the value and check the next choice. Stop as soon as you find the right answer.

Example 2:

For which value of m will this inequality be true? $17 + 5.5m > -71$

A. $-88$

B. $-17$

C. $-16$

D. $-5.5$
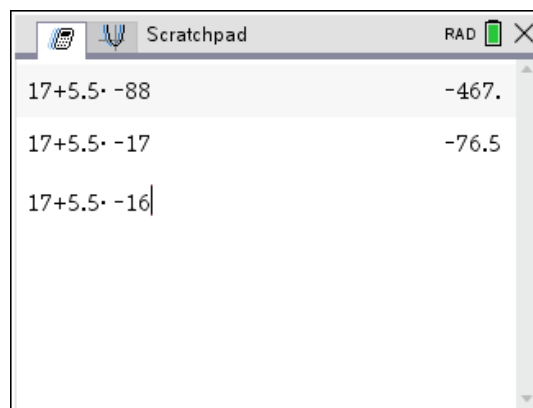


## 4. Use MathPrint Templates

When questions involve fractions, absolute values, or radicals, use the MathPrint templates built into the calculator.

On the TI-84 Plus CE, access the fraction bar by pressing the ***alpha*** key then the ***X, T, Θ, n*** key on CE models and ***alpha*** then ***y=*** on other TI-84 Plus models. You can also easily convert between fractions and decimals. Absolute value and radical templates are found by pressing ***alpha*** then ***window***.
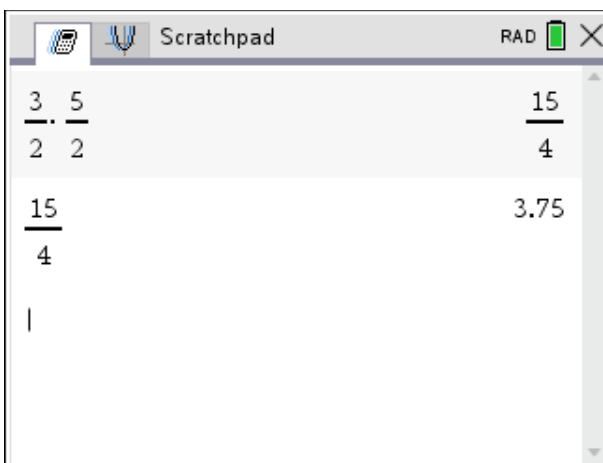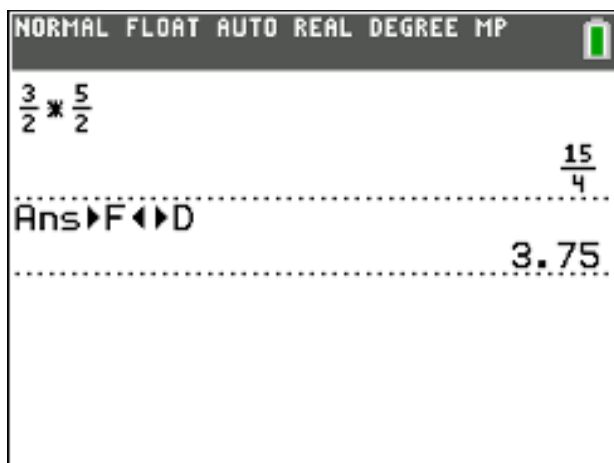
On the TI-Nspire, access the fraction bar by pressing ***CTRL*** then the ***divide*** key. Other templates are found with the ***template*** ⌨ key. To request a decimal answer on TI-Nspire, use ***CTRL-ENTER*** to get the approximately equals symbol.

In example 3, multiplying both sides by the reciprocal of 2/5 will solve the problem in one step (instead of taking two steps: multiplying by 5 and dividing by 2). Use the fraction template and convert to a decimal if desired, since both answers will fit in the grid.

Example 3: (grid-in)
Solve for x

$$\frac{2}{5}x = \frac{3}{2}$$

NORMAL FLOAT AUTO REAL DEGREE MP

$\frac{3}{2} * \frac{5}{2}$

$\frac{15}{4}$

Ans▶F◀▶D

3.75

Scratchpad          RAD ☐ ✕

$\frac{3}{2} \cdot \frac{5}{2}$          $\frac{15}{4}$

$\frac{15}{4}$          3.75

**5. Use a Graph**
You probably know from your school math class that there is more than one way to solve equations: two methods are to use algebraic operations or to examine a graph.

In example 4, you can find how many seconds it takes for a ball to hit the ground by graphing the quadratic equation on an appropriate window. Then on TI-84, use the CALC menu (press *2ⁿᵈ **trace***) to find the zero; on TI-Nspire, use the ANALYZE GRAPH menu.

Example 4:
The equation $H = -4.9X^2 + 22X$ represents the height H of a ball in meters at time X seconds after it is tossed upward with an initial velocity of 22 meters per second. Approximately when does the ball hit the ground?
A. after 4.0 seconds
B. after 4.5 seconds
C. after 5.0 seconds
D. after 5.5 seconds
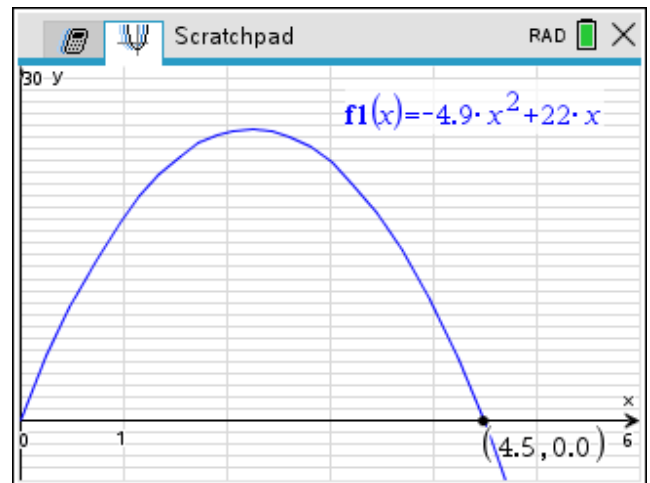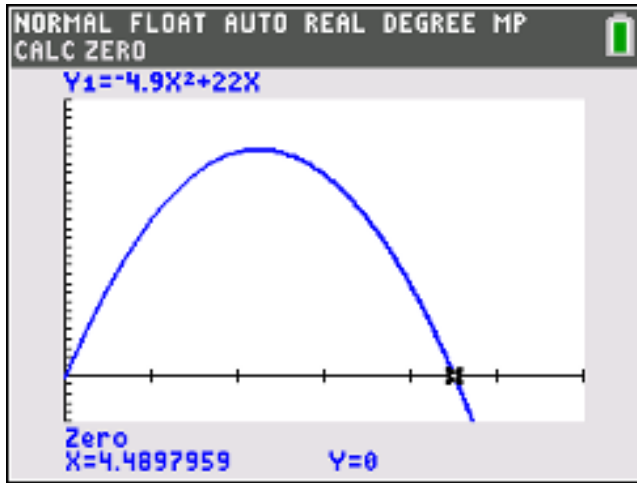
## 6. Substitute Numbers for Math Relationships

One of the trickiest types of SAT® exam questions is when a mathematical relationship is described between two or more variables and you are asked to pick which choice properly represents the relationship. One strategy is to pick some values for the variables, avoiding 0, 1 and numbers that are multiples of each other, like 3 and 6. Then use your calculator to solve the problem numerically with these values. Finally, substitute the values into each given equation to find the one that works.

Example 5:

The cost of using a computer at a business center is $0.45 per minute. Which equation represents the cost C in dollars for using the computer for H hours?

A. $C = 0.45(60H)$

B. $C = 0.45H + 60$

C. $C = (0.45H)/60$

D. $C = 60H/(0.45H)$

Choose a value for H such as 2 hours, and find the cost, which would be $54. Substitute into each answer choice.
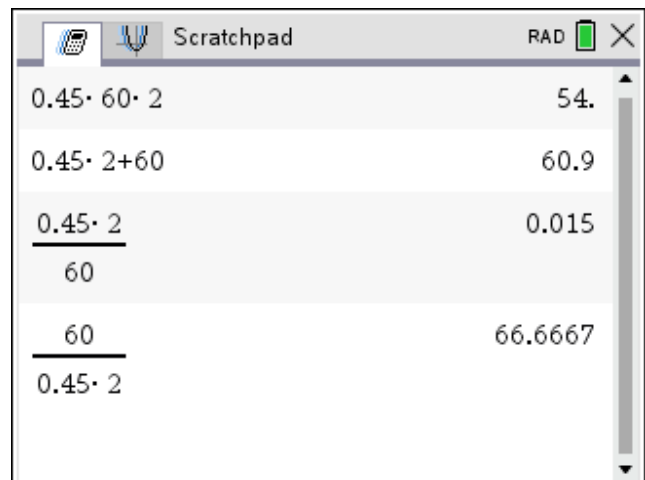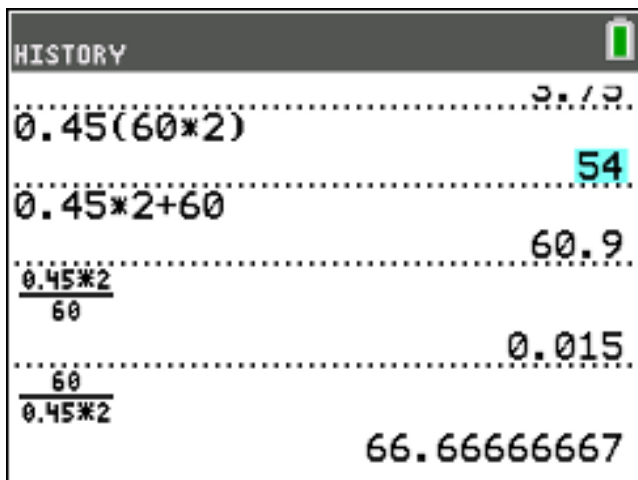
When choosing values, don't forget about negative numbers! In example 6, pick two values for X and Y then test each option, eliminating those that don't work. After trying a set of positive numbers, option III is eliminated (and so is choice C). Then try X = –5 and Y = –3 in order to finalize the answer.

Example 6:
Let *X* and *Y* be numbers such that *X* < *Y*. Which of the following must be true?
I. $X^2 < Y^2$     II. $X – Y < 0$     III. $Y – X < 0$

A. I only
B. II only
C. III only
D. I and II only
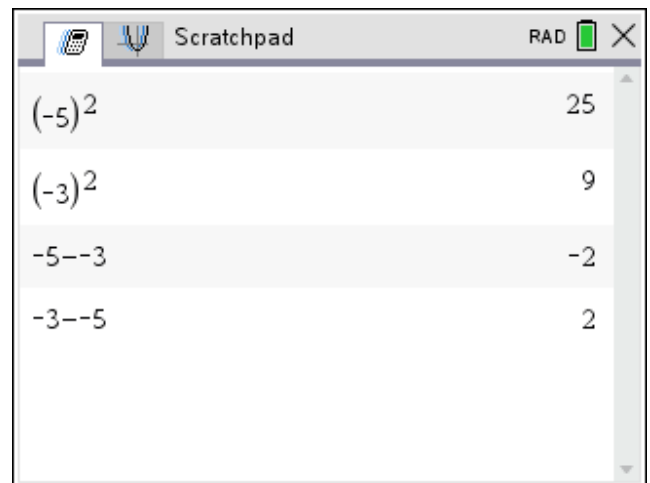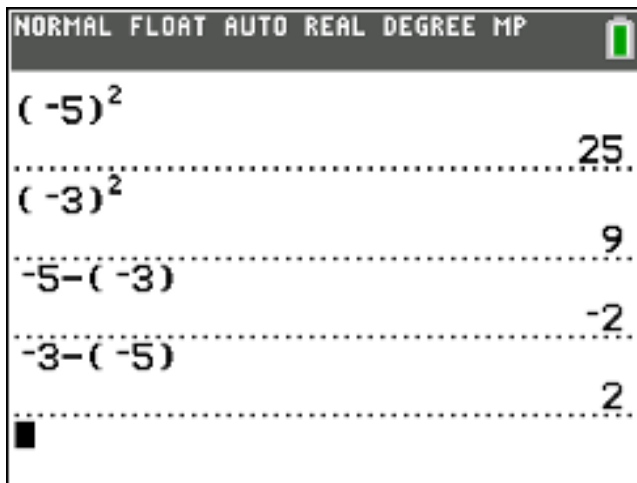


Notice the difference between the subtract key and the negative key for both devices. Also, the TI-Nspire will not display the parentheses on -3– (-5) once the ENTER key is pressed.

**Need More Help?**
Check out these test prep exam resources and product tutorial videos for additional tips. Best of luck!

***About the Author:*** *Karen Campe is a T³™ National Instructor with 15 years' experience teaching secondary math and pre-service teachers. She is passionate about using all types of technology to enhance student understanding in mathematics and has provided technology professional development at conferences, workshops, and webinars since 1998. Karen blogs at karendcampe.wordpress.com. Follow her on Twitter @KarenCampe.*