Go to the website: https://www.desmos.com/testing/georgia/graphing

Undo: ctrl + z **Redo**: ctrl + y
New expression: press "enter"
Add a new note: type " in an empty expression
Exponent: can be entered like x^2
Subscript: can be entered like y1 or v_ariable
Symbols:
√: type "sqrt" (you can also type "nthroot" for cubed roots, etc)
∑: type "sum"
π: type "pi"
θ: type "theta"
∫: type "int

Evaluating

Use the keyboard tools to solve each of the following problems. There are shortcuts – Desmos is much more intuitive than TI Calculators.

1. $21^2=$
2. $6^3=$
3. $\sqrt{56}=$
4. $\frac{113}{45}=$

We can also use Desmos to evaluate expressions, either by using sliders or defining values.

7. Evaluate the expression $2\sqrt{a}-c\sqrt{b}+9$ when a = 2, b = 3, c = - 5 _____

Graphing functions

8. Graph the function f(x) = 3x – 5. Notice the x- and y-intercepts are plotted. Click on these points – what do you notice?

9. On the same set of axes, graph the function $g(x) = -3x^2 + 1$. What points on the graph of g(x) does Desmos provide?

10. How could you use this to find where f(x) = g(x)?

11. We can also use the graphing function to check our factors. Graph f(x) = (x + 2)(x + 1) and $g(x) = x^2 + 3x + 2$. With this tool available, why not use it for students to check their answers?

Hit the + in the top left corner. This allows you to create a table. Rename x_1 as x and y_1 as g(x)....all you have to do is type over the column titles.

12. Now use the table to find the range of g(x), given the domain {1, 2, 4, 7}.

13. You can use the same table to find the range of f(x), given the domain {1, 2, 4, 7} by adding a new column to the right and naming it f(x).

Solving Equations

Desmos not only solves one variable equations, but will show what this looks like graphically. Unfortunately, this tool is disabled for the Georgia Milestones ☹, but is available when using the free version of Desmos.com. However, you can always graph the equation and find the x-intercept, or use the skill discussed in #10.

14. Solve 3x + 2 = 5 by graphing y = 3x+2 and then y = 5, and find the point of intersection.

Systems of Equations

One of the best characteristics of Desmos is the ability to graph explicit functions – you do not have to solve for y! Use Desmos to find the solution to each system of linear equations.

15. $3x + 2y = 5$
    $2x - 2y = 10$

16. $y = 8 - x$
    $3x + 3y = 5$

17. $x - 2y = 3$
    $-2x = -6 - 4y$

Linear Inequalities

Desmos will shade inequalities, as well as create dashed and solid lines. Try each of the graphs below.

18. $y \leq 2x + 3$

19. $3x - 4y < 8$

20. $x > 4$

21. Graph the system of linear inequalities: $\begin{array}{l} y > 5x + 3 \\ 2x - y \leq -3 \end{array}$.

One Variable Statistics

You can enter a list very quickly on Desmos.

22. Create a list of the numbers 1, 2, 3, 4, 5 by defining it as L=[1,2,3,4,5]

    Type: mean(L)

    Type: median(L)

    Type: max(L)

    Type: min(L)

    To find your quartiles, just type quartile(L, 1) for first quartile or quartile(L,3) for third.

Regressions

Desmos will also perform regressions. For example, we're going to create a linear regression for the points in the table below.

x	1	3	5	7
y	4	7	11	15

Create a table in Desmos (again, press the + in the upper left corner) and enter the points.
To run a linear regression...if your table is labeled as x_1, y_1, then type $y_1 \sim mx_1 + b$

Not only are the values for m and b given, you also get the correlation coefficient. Just make sure your x and y variables match the variables in the table.

To create a quadratic regression, type $y_1 \sim ax_1^2 + bx_1 + c$

To create a cubic regression, type $y_1 \sim ax_1^3 + bx_1^2 + cx^1 + d$

To create an exponential regression, type $y_1 \sim a(b)^{x1}$

Desmos has already been embedded in to www.gaexperienceonline.com