Straight Line Graphs on Desmos

Go to desmos.com and click on **Launch Calculator**.

Task 1 – Sloping Straight Lines

Type $y = mx + c$ into the command bar. When the option to **add slider** appears click on **all**.

1. What value have m and c been automatically set at?

2. Now click on the point where the line crosses the **y axis** to show the y-intercept (0,1). Change the value of m using the slider. Do not change the value of c.

   What stays the same?

   What changes?

3. What happens when you change m so that it is a large number?

4. What happens when you change m so that is smaller than 1 but not negative?

5. What happens when you change m so that it becomes a negative number?

6. Now set the m slider back to 1. Do not change it. Move the c slider slowly making the numbers large, small and negative.

   What stays the same?

   What changes?

7. What feature of the line do you think the value of ‘m’ changes?

8. What feature of the line do you think the value of ‘c’ changes?

9. Draw the line $y = 3x - 4$ by typing it into box number 4 on the left. Now change the values of m and c to make a **parallel line** to this.
   What do you notice?

10. Change the values of m and c again to make another, different line that is also **parallel** to $y = 3x - 4$.
    What do you notice?

11. In general, what can you say about any line that is **parallel** to $y = 3x - 4$.

12. In general, what can you say about any line that is **parallel** to $y = mx + c$.

13. Now change the values of m and c so that both lines cross the **y axis** at the same place.
    What do you notice?

14. Change the values of m and c again so you have a different line that still crosses the **y axis** at the same point. What do you notice?

15. What can you say about all the equations of lines that cross the **y axis** in this place?

16. Delete the line $y = 3x - 4$. In box number 4 type (0,3) and in box number 5 type (2,9).
    Now change your values of m and c until the line goes through **both** points.
    Use the form y = mx + c and the values on the sliders to state the equation of this line.

17. Change your points to (0,1) and (4,9). Adjust m and c until your line passes through both points.
    What is the equation of this line?

18. Change your points to (0,-3) and (-2,7).
    What is the equation of this line?

19. Finally, change your points to (0,-5) and (10,0).
    What is the equation of this line?