Exploring Graphs of Lines with Transformation Graphing

Prepare: Start the Transformation Graphing APP, press [Y=] and enter **A*X + B** in Y1.
Note: The letter **M** isn't used in the APP, so **A** is used instead.

Action-Consequence:

A. Begin with **A** = 1 and **B** = 1 in [WINDOW] Settings.
View the [GRAPH].
Change the value of **A** by increasing from 1 to 5 using the RIGHT ARROW [▶].

1. How are the lines the same?
2. How are they different?
3. Which graph appears the steepest?
4. Where does each graph cross the y-axis?
5. What causes the differences to occur?

B. In [WINDOW] Settings, change the starting value of **A** to –1.
View the [GRAPH].
Change the value of **A** by decreasing from –1 to –5 using the LEFT ARROW [◀].
Continue changing **A** to answer these questions.

6. How are these lines different from the other lines?
7. Which line appears the steepest?
8. What if **A** = 0?
9. What can you say about lines whose **A** values are OPPOSITES (like 1 and –1)?
10. What can you do to create a flatter line? A very steep line?

C. From the [GRAPH] screen, move to the value of **B** with the DOWN ARROW [▼].
Change the value using the RIGHT and LEFT arrows.

11. How are these lines changing?
12. Where does each line cross the y-axis?

Analyze Results:

Consider the usual equation of a line using **M** instead of **A**: y = **M**x + **B**.

D. Make a prediction about what will happen in the following situations. [Explain and/or draw a sketch.]

13. **M** is 4 and **B** is –1

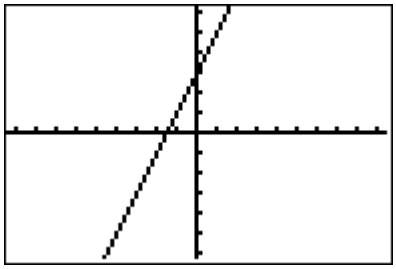
14. **M** is –1 and **B** is 4

15. **M** is negative

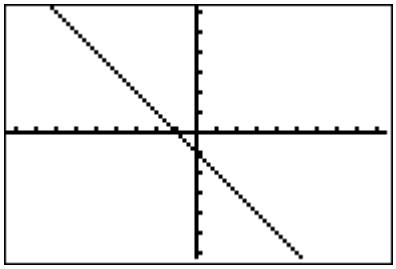
16. **B** is negative

17. Both **M** and **B** are zero

E. What can you say about the values of **M** and **B** in these two lines?



Line 1



Line 2

F. Explain how changing the values of **M** and **B** affects the graph of the line y = **M**x + **B**