**Translation Investigation**







Graph the following functions on the coordinate plane above. After graphing each function, describe the change from the parent function y = 2x.

7. Graph: y = 2x – 5 by making a table. What change occurred from the parent graph y = 2x? Where is the y-intercept now? Where is the x-intercept now?

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| X-Values | -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
| Y-Values |  |  |  |  |  |  |  |  |  |  |  |

8. Graph y = 2x – 5 by making a table. What change occurred from the parent graph y = 2x? Where is the y-intercept now? Where is the x-intercept now?

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| X-Values | -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
| Y-Values |  |  |  |  |  |  |  |  |  |  |  |

9. Graph y = 2x – 5 – 4 by making a table. What change occurred from the parent graph y = 2x? Where is the y-intercept now? Where is the x-intercept now?

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| X-Values | -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
| Y-Values |  |  |  |  |  |  |  |  |  |  |  |

10. Graph: y = 2x + 3 by making a table. What change occurred from the parent graph y = 2x? Where is the y-intercept now? Where is the x-intercept now?

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| X-Values | -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
| Y-Values |  |  |  |  |  |  |  |  |  |  |  |

11. Graph y = 2x +3 by making a table. What change occurred from the parent graph y = 2x? Where is the y-intercept now? Where is the x-intercept now?

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| X-Values | -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
| Y-Values |  |  |  |  |  |  |  |  |  |  |  |

12. Graph y = 2x +3 + 4 by making a table. What change occurred from the parent graph y = 2x? Where is the y-intercept now? Where is the x-intercept now?

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| X-Values | -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 |
| Y-Values |  |  |  |  |  |  |  |  |  |  |  |

13. Describe in your own words how to make a horizontal shift with an exponential function. What does the general exponential function look like?

14. Describe in your own words how to make a vertical shift with an exponential function. What does the general exponential function look like?

15. Describe in your own words how to make both a vertical and horizontal shift with an exponential function. What does the general exponential function look like?