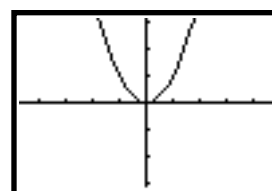


Task 1.3.2: FRIENDLY VIEWING WINDOWS**Solutions**

- The relation was graphed with two functions, $y = \sqrt{4 - x^2}$ and $y = -\sqrt{4 - x^2}$.
 - Which window is friendlier? *The second window.*
 - Why? *It makes the circle look like a circle and not an oval. Also, unlike the first window which show the circle not connected, the second window shows a complete circle. The window has the correct ratio between the width and height of the screen. This is important because the screen on the graphing calculator is rectangular and, therefore, the window must be set to counteract that so that the graph is not incorrectly stretched. You want things that are round to look round, etc.*
- The graphs show $y_1 = 2x + 5$ and $y_2 = 8$ in the same windows.
 - Which window is friendlier? *The middle one.*
 - Why? *Because the trace value in the middle window is the correct solution. Tracing in this window gives "nice" values. It is possible to set windows so that the trace function picks off integers, even integers, decimals rounded to tenths, hundredths, etc. These friendly values have to do with the number of pixels on the graphing calculator screen. If you set a window that has a multiple or integer quotient of the number of pixels than you get these friendly values.*
- What is a friendly window on your graphing calculator?
A friendly window can refer to a width-height ratio-friendly window or a trace-value-friendly window. The former shows the correct "shape" of the graph and the latter shows the desired trace values when using the trace feature.

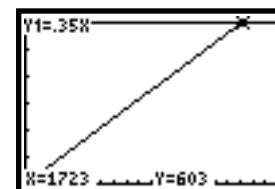
- Find a friendly viewing window on your graphing calculator to:
 - Graph $y=x^2$.

Answers will vary depending on the graphing calculator being used. See the calculator manual to choose an integer quotient of the number of pixels that go across the screen. The graph should look like:



- Solve the problem: The school club is having a fundraiser. They bought the popcorn machine and supplies for \$603.00. How much popcorn must they sell at \$0.35 per bag to break even? Sketch your graph and note the viewing window.

Answers will vary depending on the graphing calculator being used. See the calculator manual to choose a multiple of the number of pixels that go across the screen. The graph could look like:



Math notes

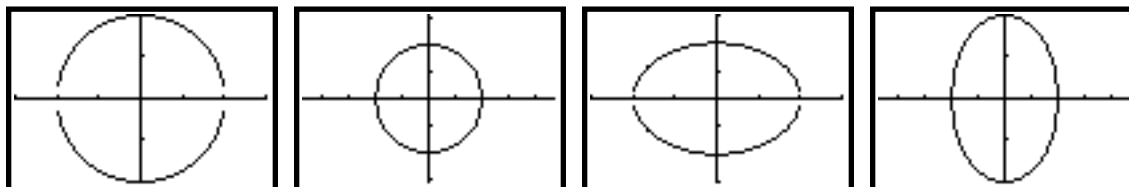
The important point to make from this task is that the quality of the graphs given and the information that can be obtained from a graph on a graphing calculator are interdependent upon the resolution of the screen (that is, the number of pixels that go across the screen and up and down the screen).

Teaching notes

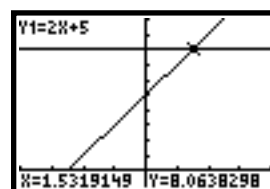
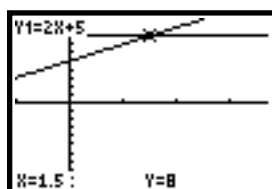
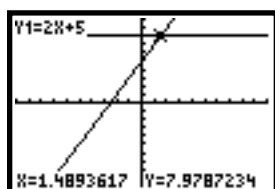
For this activity, it is a good idea to know what kinds of graphing calculators the participants have because the friendly windows will vary according to the type of calculator. Have participants work in pairs and compare results. Do not spend a lot of time on Exercise 3 because it will be revisited later in the module.

Task 1.3.2: FRIENDLY VIEWING WINDOWS

1. Which is a “friendlier” window for the relation $x^2 + y^2 = 4$? Why?



2. Which is a “friendlier” window to solve the equation $2x + 5 = 8$? Why?



3. What is a friendly window on your graphing calculator?
4. Find a friendly viewing window on your graphing calculator to:
- Graph $y = x^2$.
 - Solve the problem: The school club is having a fundraiser. They bought the popcorn machine and supplies for \$603.00. How much popcorn must they sell at \$ 0.35 per bag to break even? Sketch your graph and note the viewing window.