

8-4 TECHNOLOGY ACTIVITIES

Technology activities in *MathLinks* enhance the meaning of the content being studied and increase student engagement. *MathLinks* technology activities typically require software and hardware that is readily available in schools.

Sometimes worksheets are provided to connect technology activities with *MathLinks* lessons. All links are checked periodically, and we apologize in advance if third-party websites are taken down or links do not work.

Name of Activity	Technology	Description	Links
Graphing Exploration 1	Desmos or Graphing Calculator	Students graph linear functions and observe the effects of different coefficient and constant values. Use before or with lesson 4.1.	https://www.desmos.com/ Use Worksheet: Graphing Exploration 1
Visual Patterns	Public domain website	Choose from a huge number of patterns to create more problems like those in Lesson 1. Use before or with lesson 4.1.	www.visualpatterns.org
Guess My Rule	Desmos	Students play with “function machines” and tables that prompt them to think about input-output rules and the definition of function. Use with lesson 4.2.	https://teacher.desmos.com/activity-builder/custom/5e54200051afec695ca0a71a?collections=featured-collections%2C5da6476150c0c36a0caf8ffb
The Tortoise and the Hare	Desmos	Students sketch and interpret graphs based upon different video snippets of a turtle’s walking journeys. Use with lesson 4.3.	https://teacher.desmos.com/activity-builder/custom/5f6bcf37028fd337f1e4b29c?collections=featured-collections%2C5e44be054273ab1a7f4e7471#preview/d0888c29-74b6-4409-b8a3-6b884214eb1a
Turtle Crossing	Desmos	Students sketch and interpret graphs based upon different video snippets of a turtle’s walking journeys. Use with lesson 4.3.	https://teacher.desmos.com/activity-builder/custom/5ddb9ae009cd90bcdeaadd7?r=w.hd&collections=featured-collections%2C5da6476150c0c36a0caf8ffb
Function Carnival	Desmos	Students sketch and interpret graphs based upon three different contexts with animated video. Use with lesson 4.3.	https://teacher.desmos.com/activity-builder/custom/5b7598c9427f050af07d2d5f?r=w.hd Use Worksheet: Function Carnival Rate Graphs

8-4 TECHNOLOGY ACTIVITIES GRAPHING EXPLORATION 1



Go to [desmos.com](https://www.desmos.com) and click "Graphing Calculator." Graph each set of linear functions, sketch the graphs, and answer the questions. *Explanations may vary.*

<p style="text-align: center;">Set 1</p> <p style="text-align: center;">$y = 2x$ $y = 2x + 1$ $y = 2x - 3$</p> <div style="text-align: center;"> </div> <p>How are Set 1 lines the same? <i>They are parallel (same "steepness" or slope).</i></p> <p>Different? <i>They cross the axes at different places (focus on the different y-intercepts).</i></p>	<p style="text-align: center;">Set 2</p> <p style="text-align: center;">$y = -3x$ $y = -3x + 2$ $y = -3x - 1$</p> <div style="text-align: center;"> </div> <p>How are Set 2 lines the same? <i>They are parallel (same "steepness" or slope).</i></p> <p>Different? <i>They cross the axes at different places (focus on the different y-intercepts).</i></p>
<p style="text-align: center;">Set 3</p> <p style="text-align: center;">$y = 3x + 1$ $y = x + 1$ $y = \frac{1}{2}x + 1$</p> <div style="text-align: center;"> </div> <p>How are Set 3 lines the same? <i>They have the same y-intercept.</i></p> <p>Different? <i>They have different "steepness" or slope.</i></p>	<p style="text-align: center;">Set 4</p> <p style="text-align: center;">$y = -3x - 1$ $y = -x - 1$ $y = -\frac{1}{3}x - 1$</p> <div style="text-align: center;"> </div> <p>How are Set 4 lines the same? <i>They have the same y-intercept.</i></p> <p>Different? <i>They have different "steepness" or slope.</i></p>

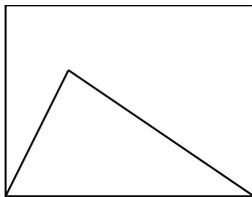
8-4 TECHNOLOGY ACTIVITIES FUNCTION CARNIVAL RATE GRAPHS



Go to student.desmos.com and do the Desmos activity called Function Carnival.

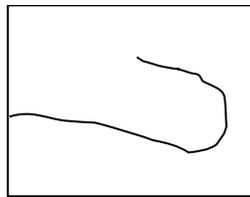
1. Here are some student sketches of the Cannon Man graph, the Bumper Car graph, and the Ferris Wheel graph. Maybe you did a better job than these students.
 - a. Which of these could be the graph of a function? Explain.
 - b. Which of these graphs show increases? Decreases? Explain.
 - c. Which of these graphs appear to be linear? Nonlinear? Explain.

Cannon Man
(height off ground vs time)



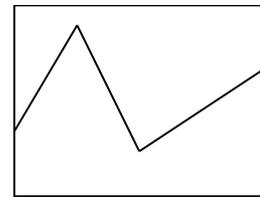
"piecewise" linear function;
increase and decrease

Bumper Car
(distance traveled vs time)



nonlinear non-function;
increase and decrease

Ferris Wheel
(height off ground vs time)



"piecewise" linear function;
increase and decrease

2. Draw sketches for the following. **Notice that changes have been made to the variables.**
Graphs will vary.

Cannon Man
(distance vs time)

vertical distance
will increase
over time (no
decreases)

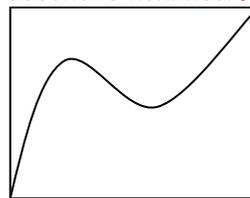
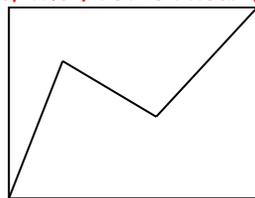
Bumper Car
(speed vs time)

speed will stay
constant (or
close to it) over
time

Ferris Wheel
(distance vs time)

distance
traveled will
increase at a
constant rate
over time

3. Look at the following two graphs below. Describe how they are different. Describe how they are the same. Use vocabulary like on **Practice 5 in Packet 4**. *Both represent a function, both increase and decrease; the first is linear (piecewise), the second is nonlinear.*



4. Make up the same scale for the axes in the graphs above and estimate appropriate ordered pairs for each graph (like on **Practice 5 in Packet 4**).

Scales may vary, but when both have the same scale, ordered pairs may be the same or very similar for many points along these graphs. For example, (0, 0), (1, 3), (2.5, 2), (4, 5)