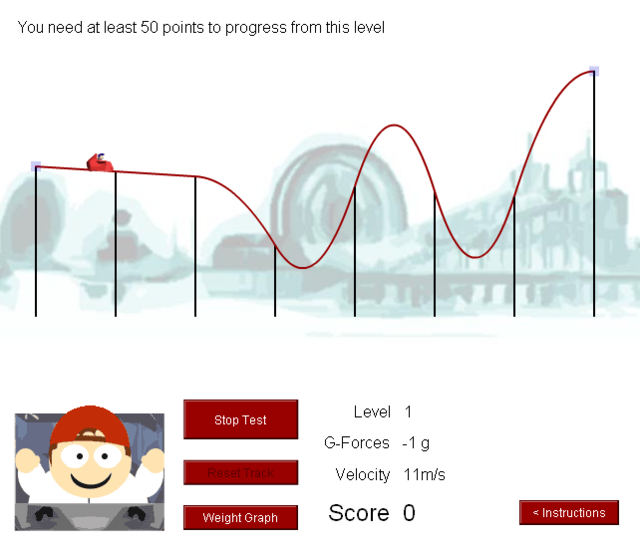
One way that we can think about the slopes of lines is to imagine lines as roller coasters. When looking at them from left to right, you can see the following things:

* When the roller coaster goes down hill, the slope (*m*) is negative (heading down/ decreasing)
* When the roller coaster goes up a hill, the slope (*m*) is positive (heading up/increasing)
* When the roller coaster is boring, totally horizontal, and nothing is happening, the slope (*m*) is 0 (no excitement)
* When the roller coaster is crazy and just drops straight down, is completely vertical, and may crash into the ground, the slope (*m*) is no solution, or ∅ (no possible)

1. Use the picture of the roller coaster below to label the points where the slope is positive, negative, 0, or ∅. **You should label at least 6 parts to this roller coaster.**



We describe the slope of lines, as the rise over run, or the change in y over the change in x.

|  |
| --- |
| *m* = rise = Δ y = y2 - y1  run Δ x x2 - x1 |

* The standard slope of an increasing (positive) line is a rise of 1 and a run of 1. *m* = 1/1.
* The standard slope of a decreasing (negative) line a rise of -1 and a run of 1. *m* = -1/1.
* If a **slope is steep** (quickly increasing/ decreasing), then it will be > 1 or < -1.
  + **Examples of steep slopes**
    - Rise of 5, run of 1. *m* = 5/1 = 5, steep and positive.
    - Rise of -10, run of 2. *m* = -10/2 = - 5, steep and negative.
* If a **slope is gentle** (slowing increasing/ decreasing), then it will be <1 and > -1, but not 0. Therefore, it must be a fraction or a decimal between -1 and 1.
  + **Examples of gentle slopes**
    - Rise of 1, run of 5. *m* = 1/5 = 5, gentle and positive.
    - Rise of 2, run of -10. *m* = 2/-10 = -1/ 5 =.2 , gentle and negative.

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| 1. The Kid Coaster has a few dips and dives, but is mostly gentle. Each segment of the track is about 1 inch long. It has the following sequence of slopes from left to right:  0 0 2 -1 0 ½ - ¾ 0 - ¼ 0  **Kid Coaster Sketch:** |

2. The adult coaster is a little bit crazier, so you need to help sketch it out. Use the Kid Coaster as an example. Each segment of the track is about 1 inch long. It has the following sequence of slopes from left to right: 0, 0, 2, -4, 1, ½ , 3, -5, 7, -10, 4, 2, 1, 0.

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| **Coaster Slopes**  0 0 2 -4 1 ½ 3 -5 7 -10 4 2 1 0  **Coaster Sketch:** |

3. Now, draw your own roller coaster that has at least 6 different changes in slope (6 segments of track). Label each segment/change above or below the coaster.

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| --- |
| **Coaster Slopes**  **Coaster Sketch:** |

4. Put the slopes in the box below in order from gentlest slope, to steepest. It does not matter whether it is positive or negative, just whether it is gentle or steep.

|  |  |  |  |
| --- | --- | --- | --- |
| 2 | ½ | -3 | 0 |
| ∅ | 10 | -8 | ¾ |
| .35 | -1 | -.875 | 6 |
| -4 | 30 | -52 | -.05 |

Put the slopes in order on the line below. Try to line it up with the appropriate adjective.

🡨 No excitement Boring Gentle Exciting Scary Impossible! 🡪