Discrete & Continuous Domains
Matching Situations to Graphs

The graphs show the speeds of two cars over time. Tell which graph corresponds to each situation.

Mr. Lee is traveling on the highway. He pulls over, stops, then accelerates rapidly as he gets back on the highway.

- Graph 2
Matching Situations to Graphs

The graphs show the speeds of two cars over time. Tell which graph corresponds to each situation.

Ms. Montoni slows down as she leaves the main road. She continues to slow down as she turns onto other streets and eventually stops in front of her house.

Graph 1
Check It Out: Example 1A

Tell which graph corresponds to the situation described below.

Jamie begins the race, and soon feels a pain in a muscle. He is unable to complete the race.

Graph 2—Jamie is unable to complete the race, so his speed decreases to zero.
Check It Out: Example 1B

Tell which graph corresponds to the situation described below.

Melissa builds up her speed during the beginning of the race. She maintains her running speed for the remainder of the race.

Graph 1—Melissa’s speed increases at the beginning and then the graph remains constant.
Create a Graph of a Situation

Create a graph for the situation. Tell whether the graph is continuous or discrete.

The table shows the temperature inside a car over time.

<table>
<thead>
<tr>
<th>Time</th>
<th>8:00</th>
<th>8:30</th>
<th>12:00</th>
<th>12:30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp.(F)</td>
<td>71</td>
<td>71</td>
<td>82</td>
<td>74</td>
</tr>
</tbody>
</table>

Car Temperature

Since every value of time has a corresponding altitude, connect the points.

The graph is continuous.
Creating a Graph of a Situation

Create a graph for the situation. Tell whether the graph is continuous or discrete.

A market sells pumpkins for $5 each.

The cost (y-axis) increases by $5 for each pumpkin purchased (x-axis). Because each person can only buy whole pumpkins or none at all, the graph is distinct points.

The graph is discrete.
Example 2A
Create a graph for the situation. Tell whether the graph is continuous or discrete.

<table>
<thead>
<tr>
<th>Time</th>
<th>8:00</th>
<th>10:00</th>
<th>12:00</th>
<th>2:00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance (mi)</td>
<td>280</td>
<td>320</td>
<td>500</td>
<td>580</td>
</tr>
</tbody>
</table>

The table shows the distance traveled during a family vacation.

*Since every value of time has a corresponding altitude, connect the points.*

The graph is continuous.
Create a graph for the situation. Tell whether the graph is continuous or discrete.

A business sells t-shirts for $10 each.

The cost (y-axis) increases by $10 for each t-shirt purchased (x-axis). Because each person can only buy one t-shirt or none at all, the graph is distinct points.

The graph is discrete.
Lesson Quiz

Tell which graph corresponds to the situation. Then tell whether the graph is continuous or discrete.
A bus pulls out from the gas station. It drives to its first stop. Then the bus gets on the expressway.
1. Maggi has $25 in her bank account. She gets $5 every day from her father and deposits the money in the account for the first three days. On the fourth day, she buys a hat for herself with the money. Identify the table that corresponds to this situation.

A.

<table>
<thead>
<tr>
<th>Day</th>
<th>Bank Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$30</td>
</tr>
<tr>
<td>2</td>
<td>$35</td>
</tr>
<tr>
<td>3</td>
<td>$20</td>
</tr>
<tr>
<td>4</td>
<td>$25</td>
</tr>
</tbody>
</table>

B.

<table>
<thead>
<tr>
<th>Day</th>
<th>Bank Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$30</td>
</tr>
<tr>
<td>2</td>
<td>$25</td>
</tr>
<tr>
<td>3</td>
<td>$40</td>
</tr>
<tr>
<td>4</td>
<td>$40</td>
</tr>
</tbody>
</table>

B