Problem of the Week
Problem B and Solution
Up and Down

Problem

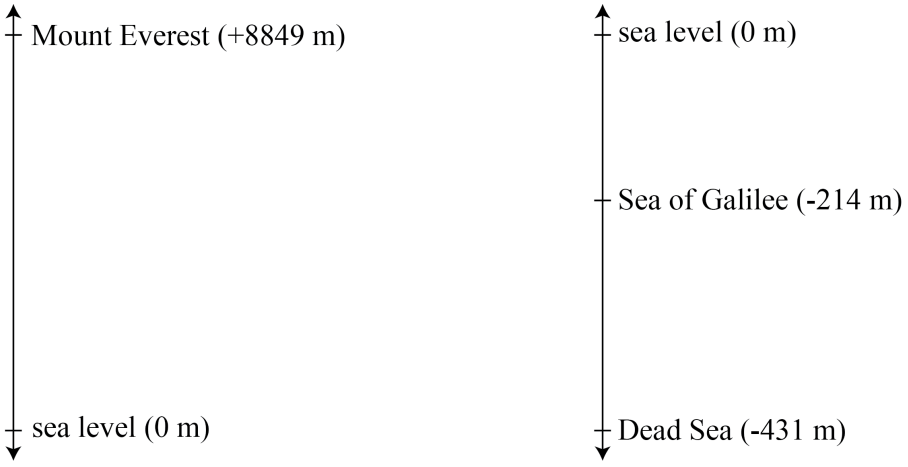
Sea level is the level of the sea's surface along a coast of land; it is often taken as the midpoint between average low and high tide levels. The elevation of a location is measured as its vertical distance above or below sea level.

(a) The table shows some geographical locations as well as their elevation. List the locations in order from highest elevation to lowest elevation.

Location	Elevation
New Orleans, Louisiana, USA	2 m above sea level
Mount Fuji, Japan	3776 m above sea level
Caspian Sea, Eastern Europe	28 m below sea level
Badwater Basin, Death Valley, California, USA	86 m below sea level
Laguna del Carbón, Argentina (lowest point in the Americas)	105 m below sea level
Mount Kilimanjaro, Tanzania	5895 m above sea level
Veryovkina Cave entrance, Abkhazia (deepest known cave)	2285 m above sea level
Ryfast Tunnel, Norway	292 m below sea level
Lake Assal, Djibouti	155 m below sea level
The Matterhorn, a mountain in the Alps	4478 m above sea level

(b) The highest point on Earth is Mount Everest, which is approximately 8849 m above sea level. The lowest land point on Earth is the Dead Sea, which is 431 m below sea level. The nearby Sea of Galilee is 214 m below sea level.

In the number lines below, we have written elevations above sea level as positive numbers (+) and elevations below sea level as negative numbers (−). Place the locations from the table in their approximate positions on the number lines.



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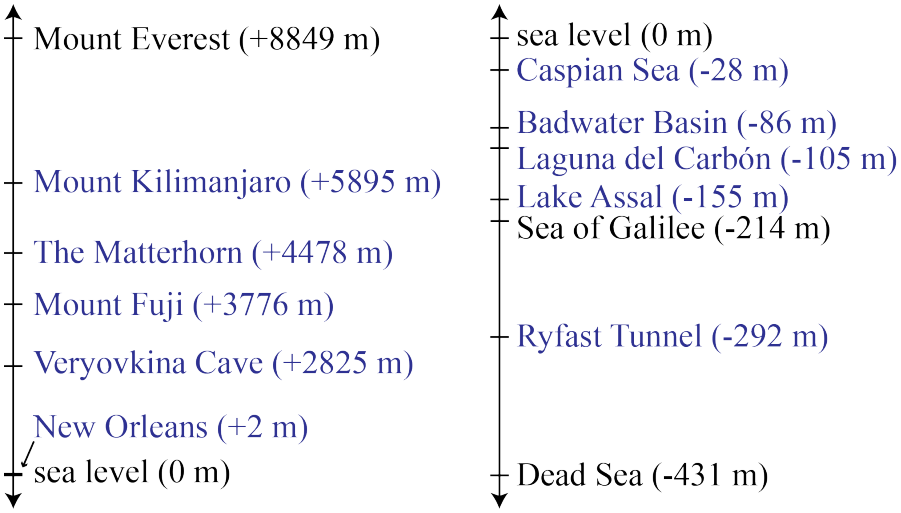
Solution

(a) The locations are listed below in order from highest elevation to lowest elevation. Elevations above sea level are written as positive numbers (+) and elevations below sea level are written as negative numbers (−).

Mount Kilimanjaro (+5895 m), The Matterhorn (+4478 m), Mount Fuji (+3776 m), Veryovkina Cave (+2285 m), New Orleans (+2 m), Caspian Sea (−28 m), Badwater Basin (−86 m), Laguna del Carbón (−105 m), Lake Assal (−155 m), Ryfast Tunnel (−292 m)

(b) The completed number lines are shown below. Note that New Orleans is not distinguishable from sea level on the number line because it is so much closer to sea level than to any of the other locations above sea level.



Extension:

Add scales to the number lines you drew in part (b). You will need to use different scales for each number line because the distance between Mount Everest and sea level is much larger than the distance between sea level and the Dead Sea.