



HOME FOOD PRESERVATION

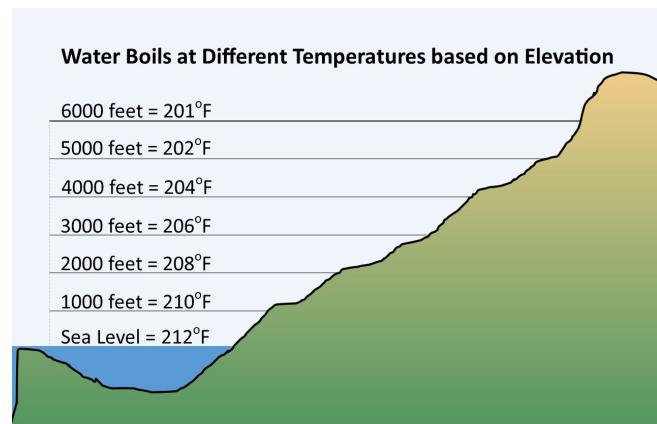
Activity - Adjusting for Elevation

How to make adjustments in canning for elevation.

With the participants as a group, adjust a canning recipe for elevation explaining the processes by following questions on the worksheet. Use the background information sheets as needed.

Have participants work in teams or individually adjusting for elevation with the workshop recipe.

**As elevation increases,
the boiling point of
water decreases.**



Nebraska is best described as flat. But in reality, the elevation gradually rises going west across the state. This rise in elevation affects everyday cooking, baking and home food preservation.

As the elevation increases, the boiling point of water decreases.

When canning foods at home, adjustments must be made to assure safe processing of home canned foods.

For foods processed in a **boiling water canner**, **extra time** needs to be added.

For foods processed in a **pressure canner**, **extra pressure** must be added.

Processing times are based on 1,000 foot elevations. Follow research tested recipes to determine the processing adjustments is important to have a safe product.

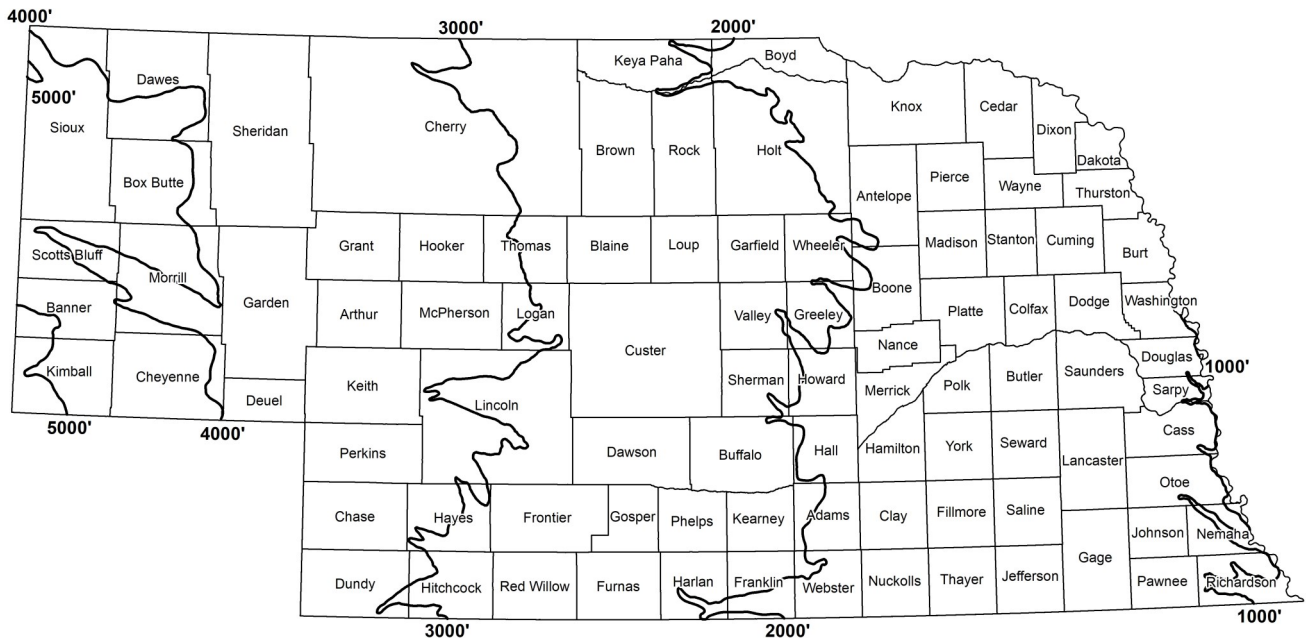
Sources: National Center for Home Food Preservation https://nchfp.uga.edu/how/general/selecting_correct_process_time.html

Photos & Graphics: Nebraska map prepared by Les Howard, cartographer, UNL School of Natural Resources, Nebraska Extension Food Preservation Team

HOME FOOD PRESERVATION

Activity - Adjusting for Elevation

How to make adjustments in canning for elevation.



Nebraska map prepared by Les Howard, cartographer, UNL School of Natural Resources

As elevation increases, temperature decreases.

This is true for boiling water and for water under pressure.

This affects both Boiling Water Canning and Pressure Canning!

What is the elevation?

The lowest point in Nebraska?

The highest point in Nebraska?

Where you live?

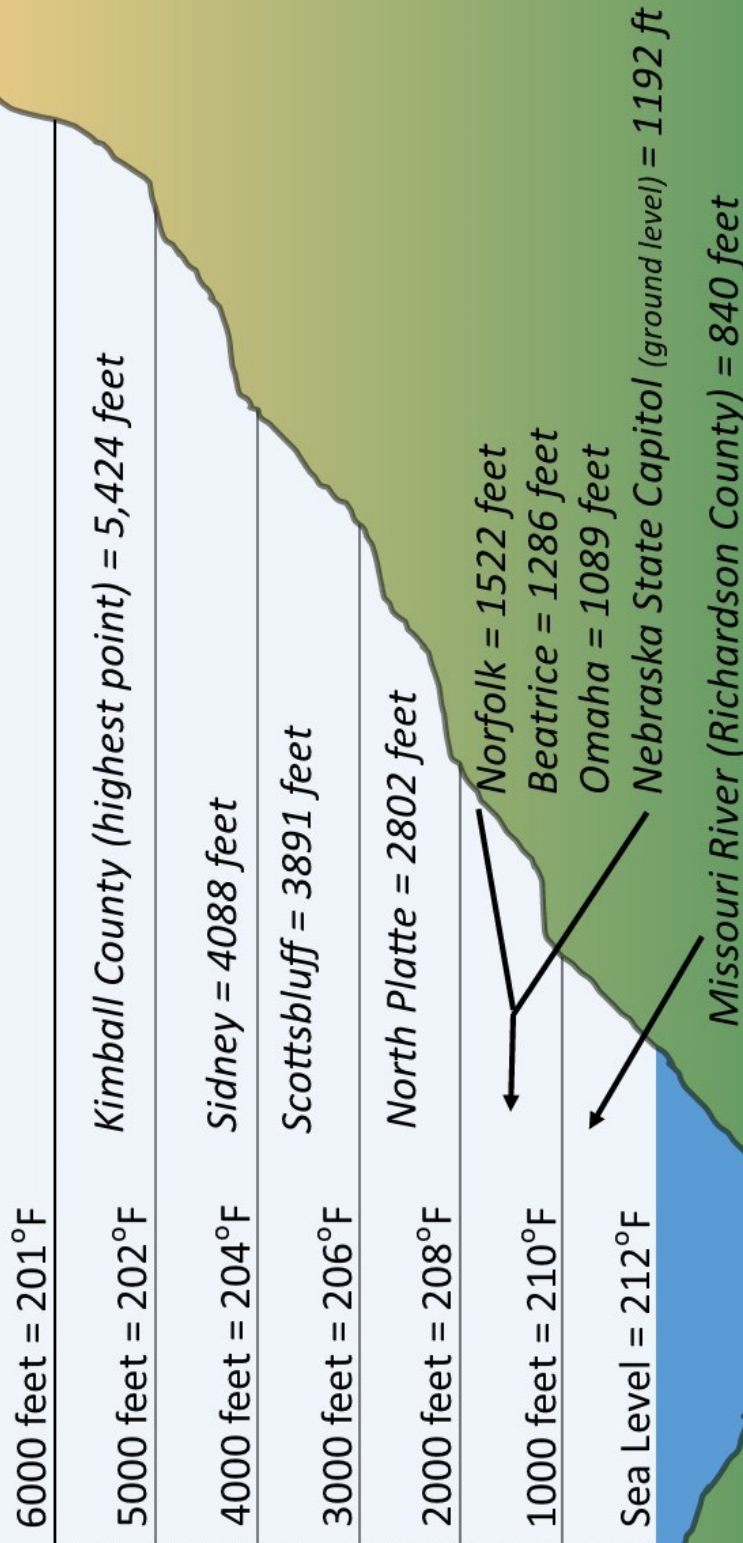
Nebraska Elevations

- Panorama Point (Kimball County) = 5,424 feet*
- Missouri River (Richardson County) = 840 feet*
- Nebraska State Capitol (ground level) = 1192 feet*
- Norfolk = 1522 feet*
- Omaha = 1089 feet*
- Beatrice = 1286 feet*
- Grand Island = 1860 feet*
- North Platte = 2802 feet*
- Sidney = 4088 feet*
- Scottsbluff = 3891 feet*



Water Boils at Different Temperatures Based on Elevation

Nebraska Towns



HOME FOOD PRESERVATION

Activity - Adjusting for Elevation

Pressure Canning

How to make adjustments in pressure canning for elevation.

As elevation increases, temperature decreases.

This is true for boiling water and for water under pressure.

HOW TO:

Start by finding the elevation of your location by using a mobile phone or looking it up on the internet. Once you know the elevation, look at your pressure canner and determine the type of gauge it uses. Adjust the canning recipe according to an up to date, research tested recipe.

As elevation increases, increase pressure to increase temperature.



Dial Gauge

Research tested recipes will list a range of elevations with the proper pressure and time.

All dial gauges should be tested yearly.

Research tested recipes will have instructions for both dial gauge canners and weighted gauge canners.

Pressure canning is used for meat, poultry, seafood, vegetables, beans, and mixed foods that contain one of the above.

Weighted Gauge

A weighted gauge is a weight that sits on the vent port. It can be like the photo with 3 weights in one or they can be individual weights.

Elevation adjustment requires increase of 5 psi pressure.



HOME FOOD PRESERVATION

Activity - Adjusting for Elevation Boiling Water Canning

How to make adjustments in boiling water canning for elevation.

As elevation increases, temperature decreases.

This is true for boiling water and for water under pressure.

**As elevation increases,
increase time in a
Boiling Water Canner.**

Boiling Water Canner

Research tested recipes will have instructions for adding processing time in boiling water canners.



HOW TO

Start by finding the elevation of your location by using a mobile phone or looking it up on the internet. Once you know the elevation, adjust the canning recipe according to an up to date, research tested recipe.

*Boiling water canning is used for fruit, jams & jellies,
fermented and pickled foods.
It can be used for tomatoes that have acid added to each jar.*



HOME FOOD PRESERVATION

Activity - Adjusting for Elevation

Need some examples of how to adjust from elevation? Below is from the USDA Guide to Home Canning.

Using tables for determining proper process times

The following examples show how to select the proper process for each type of canner.

Example A: Boiling Water Canner

Suppose you are canning peaches as a hot-pack in quarts at 2,500 ft above sea level, using a *boiling-water canner*. First, select the process table for boiling-water canner. The example for peaches is given in [Table for Example A](#) below.

From that table, select the process time given for (1) the style of pack (hot), (2) the jar size (quarts), and (3) the altitude where you live (2,500 ft). You should have selected a process time of 30 minutes.

		Process Time at Altitudes of			
Style of Pack	Jar Size	0 - 1,000 ft	1,001 - 3,000 ft	3,001 - 6,000 ft	Above 6,000 ft
Hot	Pints	20 min	25	30	35
	Quarts	25	30	35	40
Raw	Pints	25	30	35	40
	Quarts	30	35	40	45

Example B: Dial Gauge Pressure Canner

Suppose you are canning peaches as a hot-pack in quarts at 2,500 ft above sea level, using a *dial-gauge pressure canner*. First, select the process table for dial-gauge pressure canner. The example for peaches is given in [Table for](#)

[Example B](#) below. From that table, select the process pressure (PSI) given for (1) the style of pack (hot), (2) the jar size (quarts), (3) the process time (10 minutes), (4) the altitude where you live (2,500 ft). You should have selected a pressure of 7 lbs for the 10 minutes process time.

			Canner Pressure (PSI) at Altitudes of			
Style of Pack	Jar Size	Process Time	0 - 2,000 ft	2,001 - 4,000 ft	4,001 - 6,000 ft	6,001 - 8,000 ft
Hot and Raw	Pints or Quarts	10 min	6 lb	7	8	9

Example C: Weighted Gauge Pressure Canner

Suppose you are canning peaches as a hot-pack in quarts at 2,500 ft above sea level, using a *weighted-gauge pressure canner*. First, select the process time for weighted-gauge pressure canner. The example for peaches is given in [Table](#)

[for Example C](#) below. From that table, select the process pressure (PSI) given for (1) the style of pack (hot), (2) the jar size (quarts), (3) the process time (10 minutes), and (4) the altitude where you live (2,500 ft). You should have selected a pressure of 10 lbs for the 10 minutes process time.

			Canner Pressure (PSI) at Altitudes of	
Style of Pack	Jar Size	Process Time	0 - 1,000 ft	Above 1,000 ft
Hot and Raw	Pints or Quarts	10 min	5 lb	10

Source: https://nchfp.uga.edu/how/general/selecting_correct_process_time.html



Adjusting for Elevation - Boiling Water Canning

Pick a town, find it's elevation. Review the recipe to interpret how to make correct adjusts for elevation for boiling water canning.



Grape Jelly

Table 1. Recommended process time for **Grape Jelly** in a Boiling Water Canner.

		Process Time at Altitudes of		
Style of Pack	Jar Size	0 - 1,000 ft	1,001 - 6,000 ft	Above 6,000 ft
Hot	Half-pints or Pints	5 min	10	15

My Town _____

Elevation of My Town _____

Use a boiling water canner to preserve grape jelly in pint jars.

How minutes would you need to process the grape jelly? _____

Use a boiling water canner to preserve grape jelly in half pint jars.

How minutes would you need to process the grape jelly? _____



Adjusting for Elevation - Boiling Water Canning *ANSWER PAGE*



Grape Jelly

Table 1. Recommended process time for **Grape Jelly** in a Boiling Water Canner.

		Process Time at Altitudes of		
Style of Pack	Jar Size	0 - 1,000 ft	1,001 - 6,000 ft	Above 6,000 ft
Hot	Half-pints or Pints	5 min	10	15

My Town Omaha

Elevation of My Town 1089 feet

Use a boiling water canner to preserve grape jelly in pint jars.

How minutes would you need to process the grape jelly? 10 minutes

Use a boiling water canner to preserve grape jelly in half pint jars.

How minutes would you need to process the grape jelly? 10 minutes



Adjusting for Elevation

Boiling Water Canning and Pressure Canning

Pick a town, find it's elevation. Are you using a boiling water canner, dial gauge or weighted gauge pressure canner? Review the recipe to interpret how to make adjustments for elevation when canning.

Crushed Tomatoes *(with no added liquid)*

Table 1. Recommended process time for **Crushed Tomatoes** in a **Boiling Water Canner**.

		Process Time at Elevation			
Style of Pack	Jar Size	0 - 1,000 ft	1,001 - 3,000 ft	3,001 - 6,000 ft	Above 6,000 ft
Hot	Pints	35 min	40	45	50
	Quarts	45	50	55	60

Table 2. Recommended process time for **Crushed Tomatoes** in a **Dial Gauge Pressure Canner**.

			Canner Gauge Pressure (PSI) at Elevation			
Style of Pack	Jar Size	Process Time	0 - 2,000 ft	2,001 - 4,000 ft	4,001 - 6,000 ft	6,001 - 8,000 ft
Hot	Pints or Quarts	20 min	6 lb	7 lb	8 lb	9 lb
		15	11	12	13	14

Table 3. Recommended process time for **Crushed Tomatoes** in a **Weighted Gauge Pressure Canner**.

			Canner Gauge Pressure (PSI) at Elevation	
Style of Pack	Jar Size	Process Time	0 - 1,000 ft	Above 1,000 ft
Hot	Pints or Quarts	20 min	5 lb	10 lb
		15	10	15
		10	15	Not Recommended

My Town _____

Elevation of My Town _____

Use a boiling water canner to preserve crushed tomatoes in pint jars.
How minutes would you need to process the tomatoes? _____

Use a weighted gauge pressure canner to preserve crushed tomatoes in quart jars.
How many processing minutes and pounds of pressure will you need? _____



Adjusting for Elevation

Boiling Water Canning and Pressure Canning

ANSWER PAGE

Crushed Tomatoes *(with no added liquid)*

Table 1. Recommended process time for Crushed Tomatoes in a [Boiling Water Canner](#).

		Process Time at Elevation			
Style of Pack	Jar Size	0 - 1,000 ft	1,001 - 3,000 ft	3,001 - 6,000 ft	Above 6,000 ft
Hot	Pints	35 min	40	45	50
	Quarts	45	50	55	60

Table 2. Recommended process time for Crushed Tomatoes in a [Dial Gauge Pressure Canner](#).

			Canner Gauge Pressure (PSI) at Elevation			
Style of Pack	Jar Size	Process Time	0 - 2,000 ft	2,001 - 4,000 ft	4,001 - 6,000 ft	6,001 - 8,000 ft
Hot	Pints or Quarts	20 min	6 lb	7 lb	8 lb	9 lb
		15	11	12	13	14

Table 3. Recommended process time for Crushed Tomatoes in a [Weighted Gauge Pressure Canner](#).

			Canner Gauge Pressure (PSI) at Elevation	
Style of Pack	Jar Size	Process Time	0 - 1,000 ft	Above 1,000 ft
Hot	Pints or Quarts	20 min	5 lb	10 lb
		15	10	15
		10	15	Not Recommended

My Town Norfolk

Elevation of My Town 1522 feet

Use a boiling water canner to preserve crushed tomatoes in pint jars.
 How minutes would you need to process the tomatoes? 40 minutes

Use a weighted gauge pressure canner to preserve crushed tomatoes in quart jars.
 How many processing minutes and pounds of pressure will you need?
20 minutes @ 10 pounds of pressure OR 15 minutes at 15 pounds of pressure



Adjusting for Elevation Pressure Canning

Pick a town, find it's elevation. Are you using a dial gauge or weighted gauge pressure canner? Review the recipe to interpret how to make adjustments for elevation when pressure canning.



CARROTS, sliced or diced

Table 1: Recommended process time for **Carrots** in a dial-gauge pressure canner.

		Canner Pressure (PSI) at Altitudes of				
Style of Pack	Jar Size	Process Time	0 - 2,000 ft	2,001 -4,000 ft	4,001 -6,000 ft	6,001 -8,000 ft
Hot and Raw	Pints	25 min	11 lbs.	12 lbs.	13 lbs.	14 lbs.
	Quarts	30 min	11 lbs.	12 lbs.	13 lbs.	14 lbs.

Table 2: Recommended process time for **Carrots** in a weighted-gauge pressure canner.

Style of Pack	Jar Size	Process Time	0 - 1,000 ft	Above 1,000 ft
		Canner Pressure (PSI) at Altitudes of		
Hot and Raw	Pints	25 min	10 lbs.	15 lbs.
	Quarts	30 min	10 lbs.	15 lbs.

My Town _____

Elevation of My Town _____

Use a dial gauge pressure canner to raw pack carrots in pint jars.
How many minutes and pounds of pressure would you need? _____

Use a weighted gauge pressure canner to hot pack carrots in quart jars.
How many minutes and pounds of pressure would need? _____



Adjusting for Elevation Pressure Canning ANSWER PAGE



CARROTS, sliced or diced

Table 1: Recommended process time for **Carrots** in a **dial gauge pressure canner**.

		Canner Pressure (PSI) at Altitudes of				
Style of Pack	Jar Size	Process Time	0 - 2,000 ft	2,001 -4,000 ft	4,001 -6,000 ft	6,001 -8,000 ft
Hot and Raw	Pints	25 min	11 lbs.	12 lbs.	13 lbs.	14 lbs.
	Quarts	30 min	11 lbs.	12 lbs.	13 lbs.	14 lbs.

Table 2: Recommended process time for **Carrots** in a **weighted gauge pressure canner**.

Style of Pack	Jar Size	Process Time	0 - 1,000 ft	Above 1,000 ft
		Canner Pressure (PSI) at Altitudes of		
Hot and Raw	Pints	25 min	10 lbs.	15 lbs.
	Quarts	30 min	10 lbs.	15 lbs.

My Town North Platte

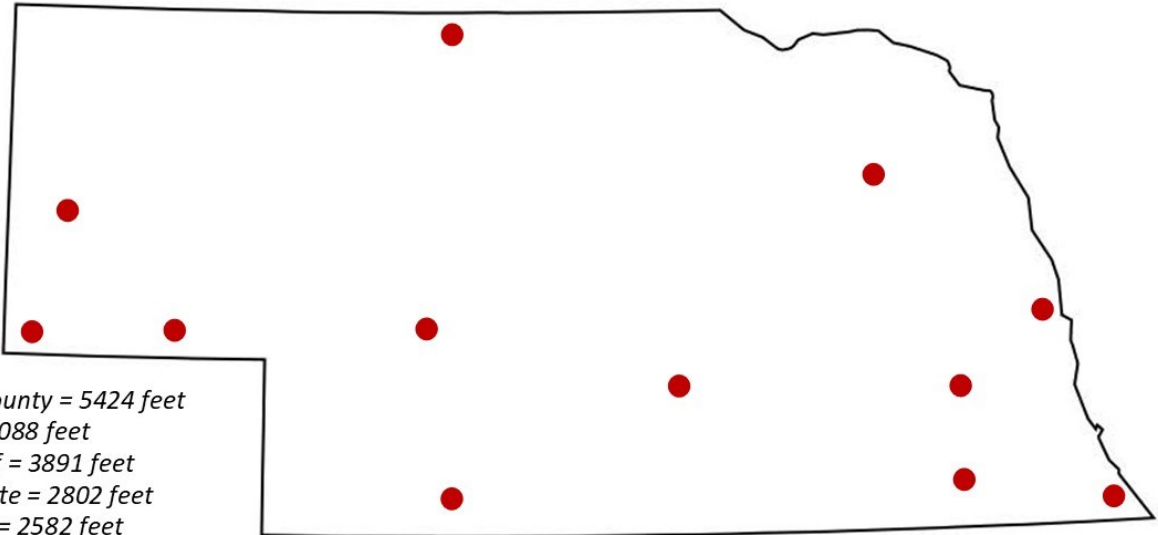
Elevation of My Town 2802 feet

Use a dial gauge pressure canner to raw pack carrots in pint jars. How many minutes and pounds of pressure would you need? 25 minutes @ 12 pounds of pressure

Use a weighted gauge pressure canner to hot pack carrots in quart jars. How many minutes and pounds of pressure would you need? 30 minutes @ 15 pounds of pressure



Adjusting for Elevation



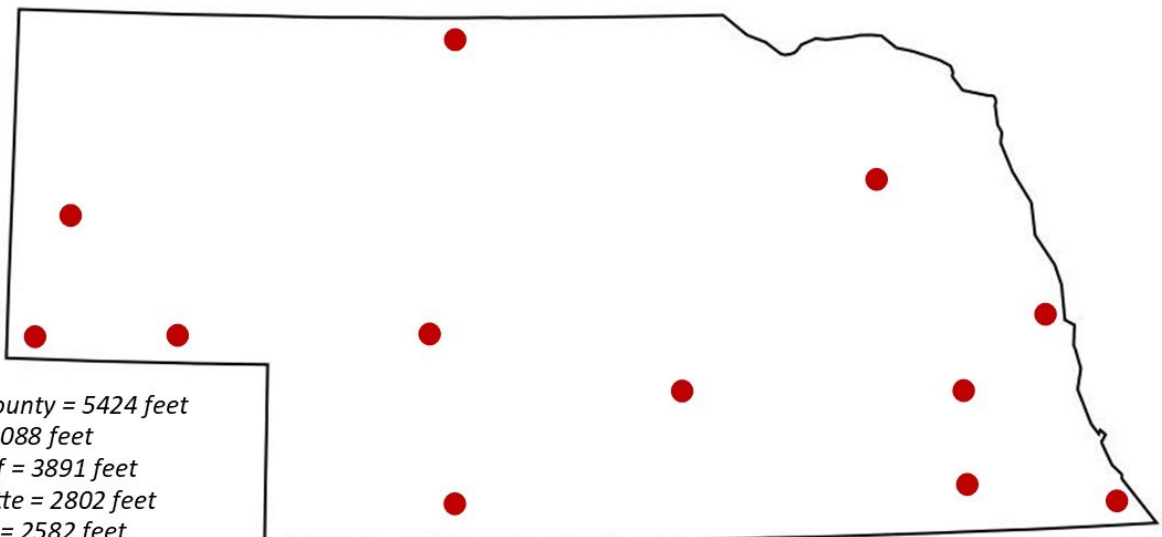
Kimball County = 5424 feet
Sidney = 4088 feet
Scottsbluff = 3891 feet
North Platte = 2802 feet
Valentine = 2582 feet
McCook = 2572 feet
Grand Island = 1860 feet
Norfolk = 1522 feet
Beatrice = 1286 feet
Omaha = 1089 feet
Nebraska State Capitol (ground level) = 1192 feet
Missouri River (Richardson County) = 840 feet

Nebraska Elevations

Match the city & elevation to the correct location.



Adjusting for Elevation



Kimball County = 5424 feet
Sidney = 4088 feet
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Adjusting for Elevation

ANSWER PAGE

Nebraska Elevations

