

### Example 1:

#### **What is the elevation range for the area that the eastern sector of the Colorado orogeny extends into?**

Thought 1: I need to search Colorado orogeny, find the area that the eastern sector of the Colorado orogeny extends into, then find the elevation range of the area.

Action 1: Search[Colorado orogeny]

Observation 1: The Colorado orogeny was an episode of mountain building (an orogeny) in Colorado and surrounding areas. This took place from 1780 to 1650 million years ago (Mya), during the Paleoproterozoic (Statherian Period). It is recorded in the Colorado orogen, a >500-km-wide belt of oceanic arc rock that extends southward into New Mexico. The Colorado orogeny was likely part of the larger Yavapai orogeny.. The Colorado orogen, formerly called the Colorado province, is a >500-km-wide belt of oceanic arc rock (1.78–1.65 Ga) that extends southward into New Mexico and composes a major part of the Proterozoic provinces of southwestern United States.

Thought 2: It does not mention the eastern sector. So I need to look up eastern sector.

Action 2: Lookup[eastern sector]

Observation 2: (Result 1 / 1) The eastern sector extends into the High Plains and is called the Central Plains orogeny.

Thought 3: The eastern sector of Colorado orogeny extends into the High Plains. So I need to search High Plains and find its elevation range.

Action 3: Search[High Plains]

Observation 3: High Plains refers to either of two distinct land regions:. Main  
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Thought 4: I need to instead search High Plains (United States).

Action 4: Search[High Plains (United States)]

Observation 4: The High Plains are a subregion of the Great Plains, mainly in the Western United States, but also partly in the Midwest states of Nebraska, Kansas, and South Dakota, generally encompassing the western part of the Great Plains before the region reaches the Rocky Mountains. The High Plains are located in eastern Montana, southeastern Wyoming, southwestern South Dakota, western Nebraska, eastern Colorado, western Kansas, eastern New Mexico, the Oklahoma Panhandle, and the Texas Panhandle.[5] The southern region of the Western High Plains ecology region contains the geological formation known as Llano Estacado which can be seen from a short distance or on satellite maps.[6] From east to west, the High Plains rise in elevation from around 1,500 to 6,000 ft (460 to 1,830 m).[3]. The term "Great Plains", for the region west of about the 96th or 98th meridian and east of the Rocky Mountains, was not generally used before the early 20th century. Nevin Fenneman's 1916 study, Physiographic Subdivision of the United States,[7] brought the term Great Plains into more widespread usage. Prior to 1916, the region was almost invariably called the High Plains, in

contrast to the lower Prairie Plains of the Midwestern states.[8] Today, the term "High Plains" is usually used for a subregion instead of the whole of the Great Plains..

Thought 5: High Plains rise in elevation from around 1,500 to 6,000 ft, so the answer is 1,500 to 6,000 ft.

Action 5: Finish[1,500 to 6,000 ft]

Observation 5: Episode finished, reward = 0

{'steps': 5, 'answer': '1,500 to 6,000 ft'}

Episode finished, reward = 0

## **Example 2:**

### **Musician and satirist Allie Goertz wrote a song about which Simpsons Character?**

Thought 1: I need to find which Simpsons character Allie Goertz wrote a song about.

Action 1: Search[Allie Goertz Simpsons song]

Observation 1: Could not find allie goertz simpsons song. Similar: ['Allie Goertz', 'List of recurring The Simpsons characters', 'Justin Roiland', 'Deep Space Homer (category The Simpsons season 5 episodes)', 'LGBTQ themes in Western animation (section The Simpsons)'].

Thought 2: I need to search Allie Goertz and find if she wrote a song about Simpsons character.

Action 2: Search[Allie Goertz]

Observation 2: Allison Beth Goertz (born March 2, 1991) is an American comedy musician, writer and former editor for Mad magazine. Goertz is known for her satirical songs based on various pop culture topics.. Goertz grew up in Long Beach, California,[1] the daughter of an elementary school teacher mother and a web graphic designer father.[2]. In December 2015, Goertz released a concept album based on the Adult Swim series Rick and Morty, Sad Dance Songs, with the album's cover emulating the animation and logo of the series.[3][4] The album was made possible through Kickstarter.[5] She is co-host, along with Julia Prescott, of Everything's Coming Up Simpsons (formerly Everything's Coming Up Podcast), a podcast dedicated to The Simpsons.. Subjects of her songs have included the film The Room, the character Milhouse from the television show The Simpsons, and the game Dungeons & Dragons.[6] Her style has been compared to that of Bo Burnham.[7].

Thought 3: Allie Goertz wrote a song about the character Milhouse from the television show The Simpsons.

Action 3: Finish[Milhouse]

Observation 3: Episode finished, reward = 0

{'steps': 3, 'answer': 'milhouse'}

Episode finished, reward = 0

### **Example 3 (using both wikipedia and wolfram Alpha API):**

**If the Eiffel Tower is in the capital of France, and I multiply the number of letters in that capital's name by 4, what do I get?**

Thought 1: I need to find the capital of France, count the number of letters in its name, and multiply that number by 4.

Action 1: Search[capital of France]

Observation 1: This is a chronological list of capitals of France. The capital of France has been Paris since its liberation in 1944.[1]. Provisional seats of the government:.. Main pageContentsCurrent eventsRandom articleAbout WikipediaContact us. HelpLearn to editCommunity portalRecent changesUpload fileSpecial pages.

plugin switched from wikipedia to WolframAlpha

Thought 2: The capital of France is Paris. I need to count the number of letters in Paris and multiply that number by 4.

Action 2: Compute[{"input": "length of Paris \* 4"}]

Observation 2: Wolfram|Alpha could not understand: length of Paris \* 4.

Things to try instead:

length of Pari \* 4

Paris 4

Thought 3: I need to count the number of letters in Paris and multiply that number by 4.

Action 3: Compute[{"input": "5 \* 4"}]

Observation 3: Query:

"5 \* 4"

Input:

5×4

Result:

20

Number line:

image:

<https://www6b3.wolframalpha.com/Calculate/MSP/MSP29913i31914a8g2ecef00004febd708gg6ia5b7?MSPStoreType=image/png&s=8>

Wolfram Language code: NumberLinePlot[20]

Number name:

twenty

Visual representation:

\*\*\*\*\*

Illustration:

image:

<https://www6b3.wolframalpha.com/Calculate/MSP/MSP30013i31914a8g2ecef000039gh2ahdfb0911dd?MSPStoreType=image/png&s=8>

Wolfram|Alpha website result for "5 \* 4":

<https://www6b3.wolframalpha.com/input?i=5+%2A+4>

plugin switched from WolframAlpha to wikipedia

Thought 4: The result of  $5 * 4$  is 20.

Action 4: Finish[20]

Observation 4: Episode finished, reward = 0

{'steps': 2, 'answer': '20'}

Episode finished, reward = 0

## Example 4:

**Example with maintaining memory of previous interactions within the session.**

### What's the population of Japan?

Thought 1: I need to find the population of Japan.

Action 1: Search[Population of Japan]

Observation 1: The demographics of Japan include birth and death rates, age distribution, population density, ethnicity, education level, healthcare system of the populace, economic status, religious affiliations, and other aspects regarding the Japanese population. According to the United Nations, the population of Japan was roughly 126.4 million people (as of January 2020), and peaked at 128.5 million people in 2010. It is the 6th-most populous country in Asia,

and the 11th-most populous country in the world.. In 2023, the median age of Japanese people was projected to be 49.5 years, the highest level since 1950, compared to 29.5 for India, 38.8 for the United States and 39.8 for China. Japan has the second highest median age in the world (behind only Monaco).

Thought 2: The population of Japan was roughly 126.4 million people (as of January 2020).

Action 2: Finish[126.4 million]

Observation 2: Episode finished, reward = 0

{'steps': 2, 'answer': '126.4 million'}

Episode finished, reward = 0

### **What was the population of Japan again?**

Thought 1: The question is asking for the population of Japan again. I remember the previous answer was approximately 126.4 million people as of January 2020.

Action 1: Finish[approximately 126.4 million people as of January 2020]

Observation 1: Episode finished, reward = 0

{'steps': 1, 'answer': 'approximately 126.4 million people as of january 2020'}

Episode finished, reward = 0

### **If the population of Japan is 10 times the population of France, what is the population of France?**

Thought 1: The population of Japan is 126.4 million. I need to divide this number by 10 to find the population of France.

Action 1: Compute[{"input": "126.4 million / 10"}]

Observation 1: Query:

"126.4 million / 10"

Input:

126400000/10

Exact result:

12640000

Scientific notation:

$1.264 \times 10^7$

Number line:

image:

<https://www6b3.wolframalpha.com/Calculate/MSP/MSP56815314di7d8b1fg1300005c2b310937agd3g0?MSPStoreType=image/png&s=16>

Wolfram Language code: NumberLinePlot[12640000]

Quotient and remainder:

$$126400000 = 12640000 \times 10 + 0$$

Number name:

12 million 640 thousand

Wolfram|Alpha website result for "126.4 million / 10":

<https://www6b3.wolframalpha.com/input?i=126.4+million+%2F+10>

plugin switched from WolframAlpha to wikipedia

Thought 2: The result of the calculation is 12,640,000, which is 12.64 million.

Action 2: Finish[12.64 million]

Observation 2: Episode finished, reward = 0

{'steps': 1, 'answer': '12.64 million'}

Episode finished, reward = 0