Places Characteristics Summary

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}
```

Prompt: This is a places attributes dataset. I have a hidden place in mind. You are allowed to ask me binary questions about the hidden place's attributes, for you to figure out the hidden place.
After receiving an answer, at each step, you must print what your current belief distribution is and the calculated entropy drop, about the possible hidden place.
We can stop when there are no more distinguishing attributes between the leftover options. You're not allowed to solve this using programming.

Is the hidden place classified as a city?

No.

Current belief distribution (uniform across the 57 non-city places, so 1/57 ≈ 1.8 % each):

Amazon Rainforest, Angkor Wat, Antelope Canyon, Banff National Park, Black Forest, Bora Bora, Bryce Canyon National Park, Canary Islands, Chichen Itza, Cinque Terre, Death Valley, Etosha National Park, Fiordland National Park, Galapagos Islands, Giant's Causeway, Grand Canyon, Great Barrier Reef, Great

Ocean Road, Ha Long Bay, Hawaii Volcanoes National Park, Iguazu Falls, Jeju Island, Kruger National Park, Lake Baikal, Lake Titicaca, Machu Picchu, Mont Blanc, Mount Etna, Mount Everest, Mount Fuji, Mount Kilimanjaro, Mount Rainier National Park, Mount Sinai, Namib Desert, Niagara Falls, Pamukkale, Patagonia, Petra, Plitvice Lakes, Pyramids of Giza, Rapa Nui, Sahara Desert, Salar de Uyuni, Seychelles, Skellig Michael, Stonehenge, Svalbard, Table Mountain, Taj Mahal, The Dead Sea, The Great Wall of China, Uluru, Victoria Falls, Yellowstone National Park, Yosemite National Park, Zhangjiajie, Zion National Park.

Entropy update

- Before we asked whether it is a city:
  $H_0 = \log_2 100 \approx 6.64$ bits
- After receiving "No":
  $H_1 = \log_2 57 \approx 5.84$ bits

Entropy drop $\Delta H = H_0 - H_1 \approx 0.80$ bits.

Next question

Is the hidden place **mountainous**?

No.

Remaining possibilities (24 places, each ≈ 4.2 %):

Amazon Rainforest • Angkor Wat • Antelope Canyon • Chichen Itza • Etosha National Park • Giant's Causeway • Grand Canyon • Great Barrier Reef • Great Ocean Road • Ha Long Bay • Iguazu Falls • Kruger National Park • Namib Desert • Niagara Falls • Pamukkale • Pyramids of Giza • Rapa Nui (Easter Island) • Sahara Desert • Salar de Uyuni • Seychelles • Stonehenge • Taj Mahal • The Dead Sea • Victoria Falls

---

Entropy update

Before this question $H_1 = \log_2 57 \approx 5.84$ bits
After ruling out "mountainous" $H_2 = \log_2 24 \approx 4.58$ bits

Entropy drop $\Delta H \approx 1.26$ bits.

Next question

Is the hidden place **tropical**?

Yes.

Current belief distribution (uniform across 11 remaining places – ~9.1 % each)
Amazon Rainforest, Angkor Wat, Chichen Itza, Etosha National Park, Great Barrier Reef, Ha Long Bay, Iguazu Falls, Kruger National Park, Rapa Nui (Easter Island), Seychelles, Victoria Falls.

Entropy update

Before this question $H_2 \approx \log_2 24 = 4.58$ bits
After the answer "Yes" to *tropical* $H_3 \approx \log_2 11 = 3.46$ bits

Entropy drop $\Delta H \approx 1.12$ bits.

Next question
Is the hidden place **coastal**?

No.

Current belief distribution
Uniform across the 7 remaining places (each $1/7 \approx 14$ %):

- Amazon Rainforest
- Angkor Wat
- Chichen Itza
- Etosha National Park
- Iguazu Falls
- Kruger National Park
- Victoria Falls

Entropy update
Before this question: $H_3 = \log_2 11 \approx 3.46$ bits
After the answer "No" to *coastal*: $H_4 = \log_2 7 \approx 2.81$ bits
Entropy drop $\Delta H \approx 0.65$ bits

Next question
Is the hidden place listed as a **UNESCO World Heritage Site**?

Yes.

Current belief distribution – uniform across the four remaining places (each 25 %):

- Angkor Wat
- Chichen Itza

- Iguazu Falls
- Victoria Falls

Entropy update

Before this question: $H_4 \approx \log_2 7 = 2.81$ bits
After the answer "Yes" to *UNESCO*: $H_5 \approx \log_2 4 = 2.00$ bits
Entropy drop $\Delta H \approx 0.81$ bits

Next question
Is the hidden place classified as a **natural site** (rather than a cultural one)?

> Yes.

Current belief distribution
Uniform across the two remaining options (each 50 %):

- Iguazu Falls
- Victoria Falls

Entropy update

Before this question: $H_5 = \log_2 4 = 2.00$ bits
After the answer "Yes" to *natural site*: $H_6 = \log_2 2 = 1.00$ bit
Entropy drop $\Delta H = 1.00$ bit

Next question
Is the hidden place considered **cold** in the dataset?

> Yes.

Current belief distribution

Place	Probability
Victoria Falls	100 %

Entropy update

Before this question: $H_6 = \log_2 2 = 1.00$ bit
After the answer "Yes" to *cold*: $H_7 = \log_2 1 = 0$ bit
Entropy drop $\Delta H = 1.00$ bit

There are no other places left that fit all answers, so the hidden place must be **Victoria Falls**.