

Name: \_\_\_\_\_

# **MYSTERY** science

## 5th Grade

Student Booklet

# **MYSTERY**science

## Worksheets



**Mystery 1**

Could a volcano pop up  
where you live?



**Mystery 2**

Why do some  
volcanoes explode?



**Mystery 1**

How much water is  
in the world?



**Mystery 2**

When you turn on the  
faucet, where does the  
water come from?



**Mystery 1**

Will a mountain  
last forever?



**Mystery 2**

How could you survive  
a landslide?

Name: \_\_\_\_\_

## Volcano Discoveries

1. Suppose you wanted to tell an explorer where to look for volcanoes. Check the box of the sentence you would choose.

- ☐ You can find just as many volcanoes in the middle of a continent as you can near the coast.
- ☐ You can find more volcanoes near the ocean than you can in the middle of the continent.

2. If you had to describe how the volcanoes on your map are arranged, what sentence would you choose?

- ☐ The volcanoes are scattered evenly across the map.
- ☐ The volcanoes are in groups near the coast.

3. What if you **wanted** a volcano to pop up in your backyard? Where would you choose to live and why?  
Use information from your map to explain.

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Name: \_\_\_\_\_

## Volcano Discoveries

1. Suppose you wanted to tell an explorer where to look for volcanoes. Check the box of the sentence you would choose.

- ☐ You can find just as many volcanoes in the middle of a continent as you can near the coast.
- ☐ You can find more volcanoes near the ocean than you can in the middle of the continent.

2. If you had to describe how the volcanoes on your map are arranged, what sentence would you choose?

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3. What if you **wanted** a volcano to pop up in your backyard? Where would you choose to live and why?  
Use information from your map to explain.

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**MYSTERY**  
science

# North America Map: Volcano List

Name: \_\_\_\_\_  
Name: \_\_\_\_\_

- 1). Make sure you have the map that goes with this page.  
It should look like this:



- 2). Read the location of each volcano out loud so your partner can draw them on the map. After each is done, put a checkmark in the box.

Added to map?	Location	Name of Volcano	Country	Year Last Erupted
<input type="checkbox"/>	6, Y	Kilauea	Hawaii, USA	2015
<input type="checkbox"/>	16, R	Lassen Peak	California, USA	1915
<input type="checkbox"/>	17, S	Mammoth Mountain	California, USA	1400
<input type="checkbox"/>	5, K	Mount Aniakchak	Alaska, USA	1931
<input type="checkbox"/>	1, M	Mount Cleveland	Alaska, USA	2014
<input type="checkbox"/>	7, H	Mount Redoubt	Alaska, USA	2009

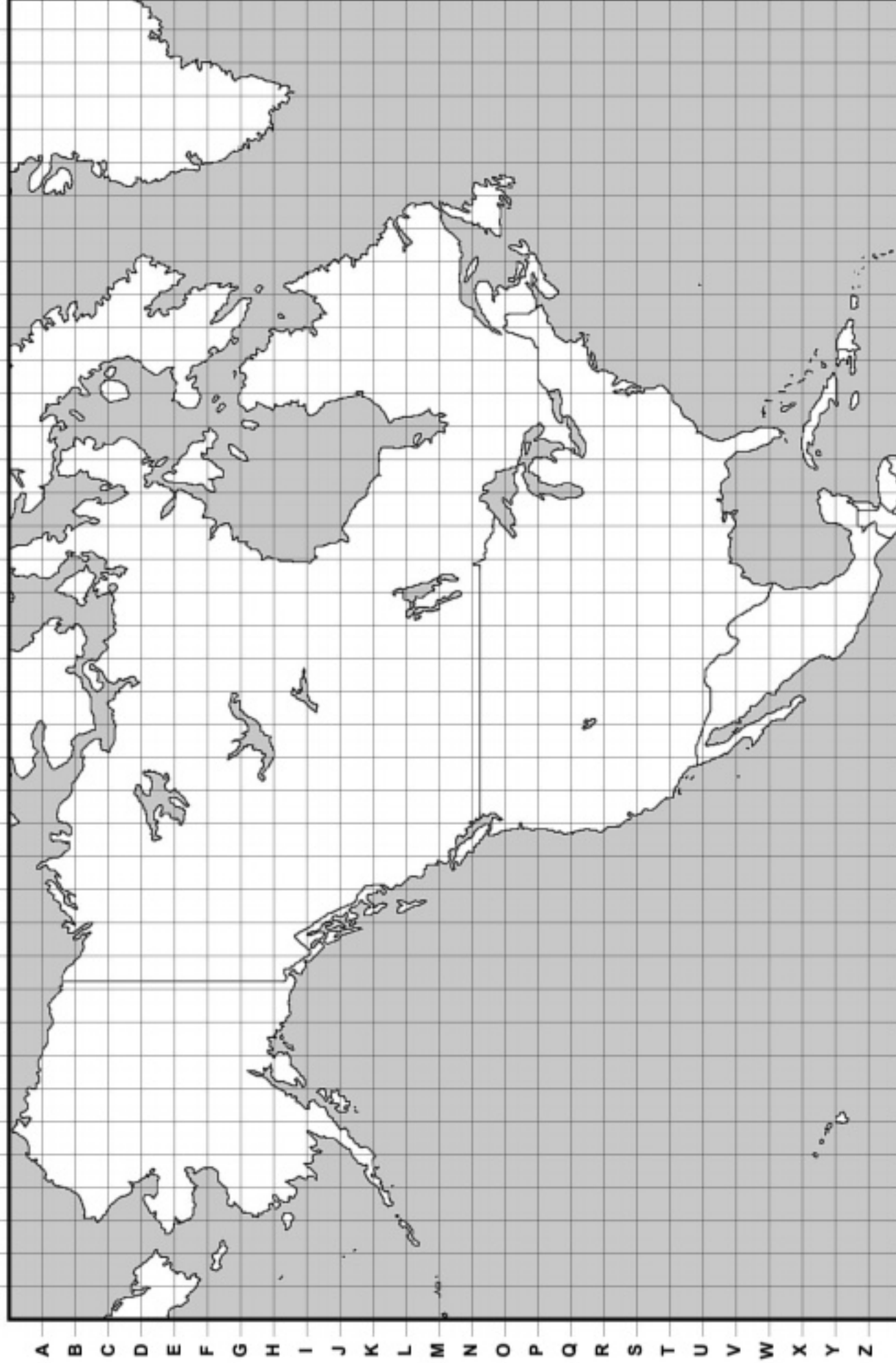
Switch jobs with your partner now so you get a chance to map and they get a chance to announce.

<input type="checkbox"/>	15, O	Mount St. Helens	Washington, USA	2008
<input type="checkbox"/>	9, G	Mount Wrangell	Alaska, USA	1999
<input type="checkbox"/>	24, Z	Pacaya	Guatemala	2013
<input type="checkbox"/>	21, Y	Parícutin	Mexico	1952
<input type="checkbox"/>	22, Y	Popocatepetl	Mexico	2015
<input type="checkbox"/>	18, W	Tres Virgines	Mexico	1857

Name: \_\_\_\_\_  
Name: \_\_\_\_\_

# North America Map

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39



# South America Map: Volcano List

Name: \_\_\_\_\_

Name: \_\_\_\_\_

- 1). Make sure you have the map that goes with this page.  
It should look like this:



- 2). Read the location of each volcano out loud so your partner can draw them on the map. After each is done, put a checkmark in the box.

Added to map?	Location	Name of Volcano	Country	Year Last Erupted
<input type="checkbox"/>	29, V	Burney	Chile	1910
<input type="checkbox"/>	29, Q	Copahue	Chile	2012
<input type="checkbox"/>	29, T	Mount Hudson	Chile	1991
<input type="checkbox"/>	28, C	Nevado del Ruiz	Colombia	2012
<input type="checkbox"/>	29, P	Planchón-Peteroa	Chile	2010
<input type="checkbox"/>	30, L	Pular	Chile	1990

Switch jobs with your partner now so you get a chance to map and they get a chance to announce.

<input type="checkbox"/>	28, D	Reventador	Ecuador	2014
<input type="checkbox"/>	29, I	Sabancaya	Peru	2013
<input type="checkbox"/>	30, K	San Pedro	Chile	1960
<input type="checkbox"/>	26, A	Turrialba	Costa Rica	2015
<input type="checkbox"/>	30, J	Wallatiri	Chile	1985
<input type="checkbox"/>	24, D	Wolf	Galápagos, Ecuador	2015

**MYSTERY**  
S C I E N C E

The Birth of Rocks | Mystery 1

Name: \_\_\_\_\_

Name: \_\_\_\_\_

# South America Map

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39



# Asia Map: Volcano List

Name: \_\_\_\_\_  
Name: \_\_\_\_\_

- 1). Make sure you have the map that goes with this page.  
It should look like this:



- 2). Read the location of each volcano out loud so your partner can draw them on the map. After each is done, put a checkmark in the box.

Added to map?	Location	Name of Volcano	Country	Year Last Erupted
<input type="checkbox"/>	32, N	Chirinkotan	Russia	2013
<input type="checkbox"/>	31, P	Chirpoi	Russia	2013
<input type="checkbox"/>	39, M	Gareloi Volcano	Alaska, USA	1989
<input type="checkbox"/>	23, X	Guishan Island	Taiwan	1795
<input type="checkbox"/>	34, J	Klyuchevskaya Sopka	Russia	2015
<input type="checkbox"/>	33, L	Koryaksky	Russia	2008

Switch jobs with your partner now so you get a chance to map and they get a chance to announce.

<input type="checkbox"/>	34, K	Kronotsky	Russia	1923
<input type="checkbox"/>	26, T	Mount Aso	Japan	2004
<input type="checkbox"/>	28, T	Mount Fuji	Japan	1707
<input type="checkbox"/>	29, Q	Mount Meakan	Japan	2008
<input type="checkbox"/>	26, U	Sakura-jima	Japan	2013
<input type="checkbox"/>	34, L	Zhupanovsky	Russia	2015

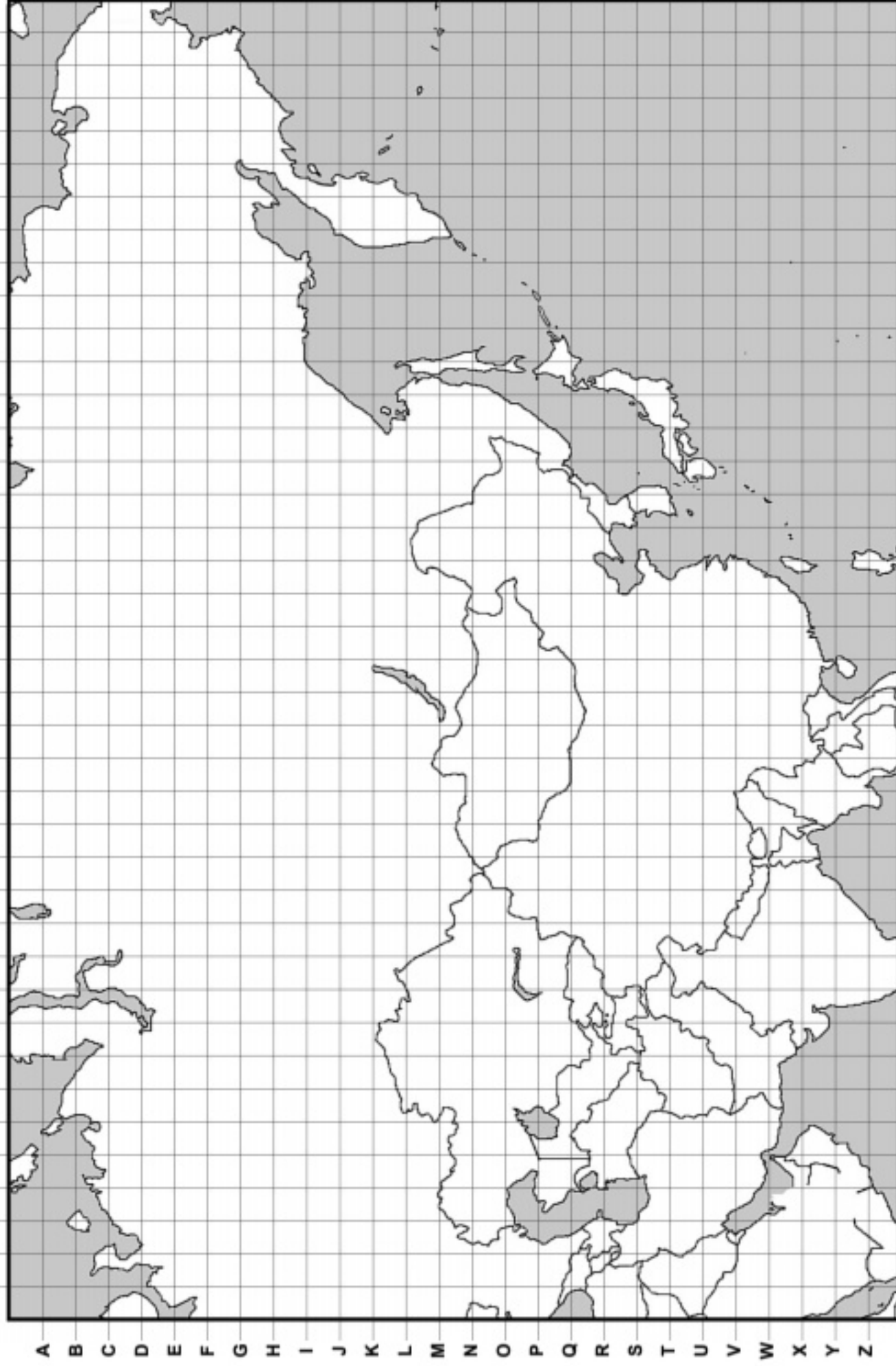


Name: \_\_\_\_\_

Name: \_\_\_\_\_

## Asia Map

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39



# Australia & Nearby Islands Map: Volcano List

Name: \_\_\_\_\_  
Name: \_\_\_\_\_

- 1). Make sure you have the map that goes with this page.  
It should look like this:



- 2). Read the location of each volcano out loud so your partner can draw them on the map. After each is done, put a checkmark in the box.

Added to map?	Location	Name of Volcano	Country	Year Last Erupted
<input type="checkbox"/>	32, F	Bagana	Papua New Guinea	2006
<input type="checkbox"/>	23, G	Egon	Indonesia (Java)	2005
<input type="checkbox"/>	31, F	Garbuna Group	Papua New Guinea	2005
<input type="checkbox"/>	18, E	Kaba	Indonesia (Sumatra)	2000
<input type="checkbox"/>	24, A	Kanlaon	Philippines	2006
<input type="checkbox"/>	30, F	Manam	Papua New Guinea	2006

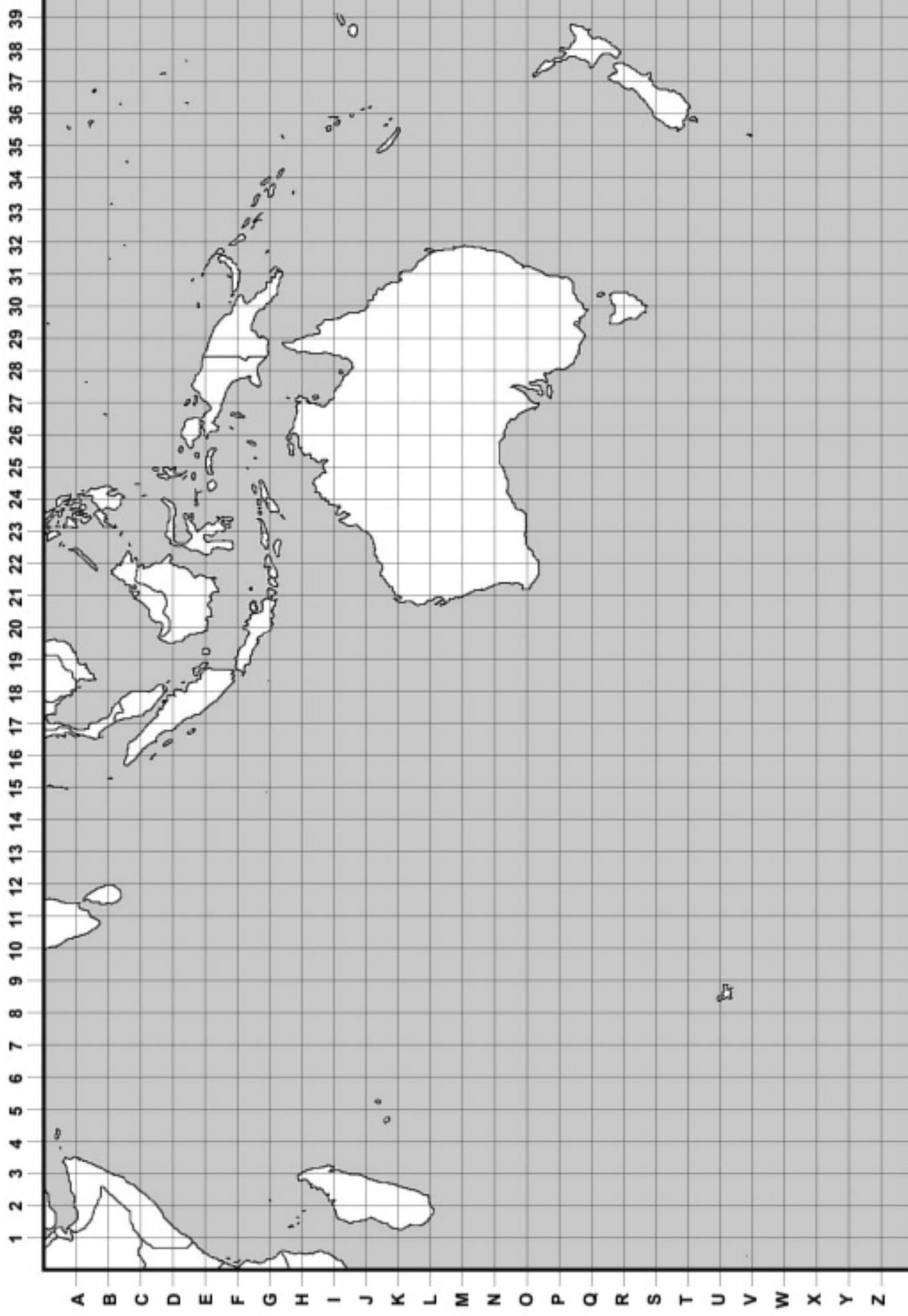
Switch jobs with your partner now so you get a chance to map and they get a chance to announce.

<input type="checkbox"/>	21, G	Merapi	Indonesia (Java)	2010
<input type="checkbox"/>	38, Q	Mount Tongariro	New Zealand	2012
<input type="checkbox"/>	19, F	Papandayan	Indonesia (Java)	2002
<input type="checkbox"/>	22, G	Rinjani	Indonesia (Java)	2004
<input type="checkbox"/>	17, D	Sinabung	Indonesia (Sumatra)	2014
<input type="checkbox"/>	24, D	Soputan	Indonesia (Java)	2007

Name: \_\_\_\_\_

Name: \_\_\_\_\_

## Australia & Nearby Islands Map



# The Birth of Rocks

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Mystery 1: Could a volcano pop up where you live?

## End of Mystery Assessment

1. When you look at a world map, where are most of the volcanoes located? What pattern do they form?

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2. Why might you find lava rocks so far away from the Ring of Fire?

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3. Is it possible for a volcano to erupt where you live? Why or why not?

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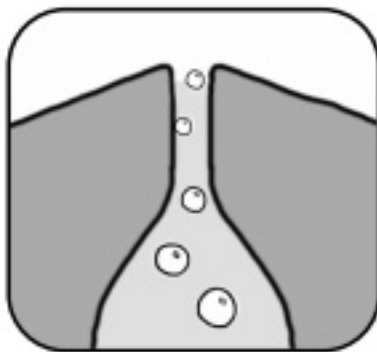
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# Lava Experiment #1

Bubbles form in lava as it rises up from deep underground. With a straw, you can add bubbles to your lava, too.



1. Stir each sample with your straw, then blow bubbles in each cup. Note: bubbles in the thick lava may not look like the bubbles you're used to. Watch for craters when they burst through the surface.
2. Which lava is it **easiest** to blow bubbles in?                      **the thin lava**                      **the thick lava**
3. See if you can blow **just 1 bubble** in each cup.

Can you do it in the thin lava? Explain: \_\_\_\_\_

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Can you do it in the thick lava? Explain: \_\_\_\_\_

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4. How are the bubbles different in the different lavas?

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Name: \_\_\_\_\_

## Lava Experiment #2

5. With your partner, put 1 spoonful of the **THIN** lava on the plate. Try to make it into a mountain-shape. Draw a picture in the box showing how tall it turned out:



6. Repeat step 1 with the **THICK** lava.

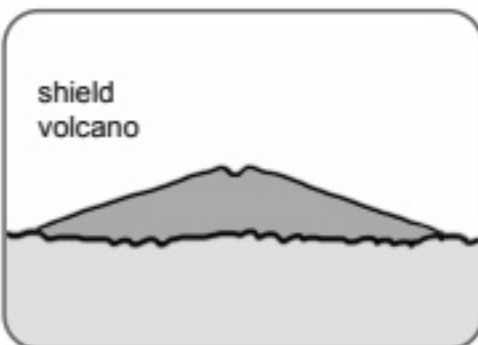


7. What kind of lava do you think **shield volcanoes** have? Why?

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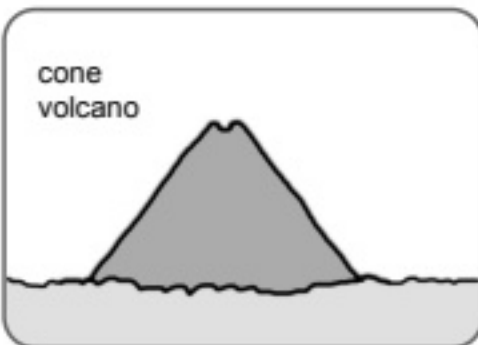


8. What kind of lava do you think **cone volcanoes** have? Why?

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Watch the next video to see which type of bubbles makes volcanoes explode!

# The Birth of Rocks

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Mystery 2: Why do some volcanoes explode?

## End of Mystery Assessment

1. Why are some volcanoes cone-shaped and some shield-shaped?

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2. If you were traveling and found a volcano, how could you figure out if the volcano makes felsite or basalt lava?

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3. Which volcanoes are more likely to explode--the ones with thick lava or thin lava? Why? What evidence do you have?

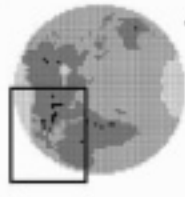
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# Map 1

## MYSTERY SCIENCE

Watery Planet | Mystery 1

Name: \_\_\_\_\_



1

How many squares of salt water are on your map? \_\_\_\_\_ squares



2

How many squares of frozen fresh water are on your map? \_\_\_\_\_ squares



3

How many squares of fresh water are on your map? \_\_\_\_\_ squares



4

I have \_\_\_\_\_ squares of salt water.  
Divide by 50.  
Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_



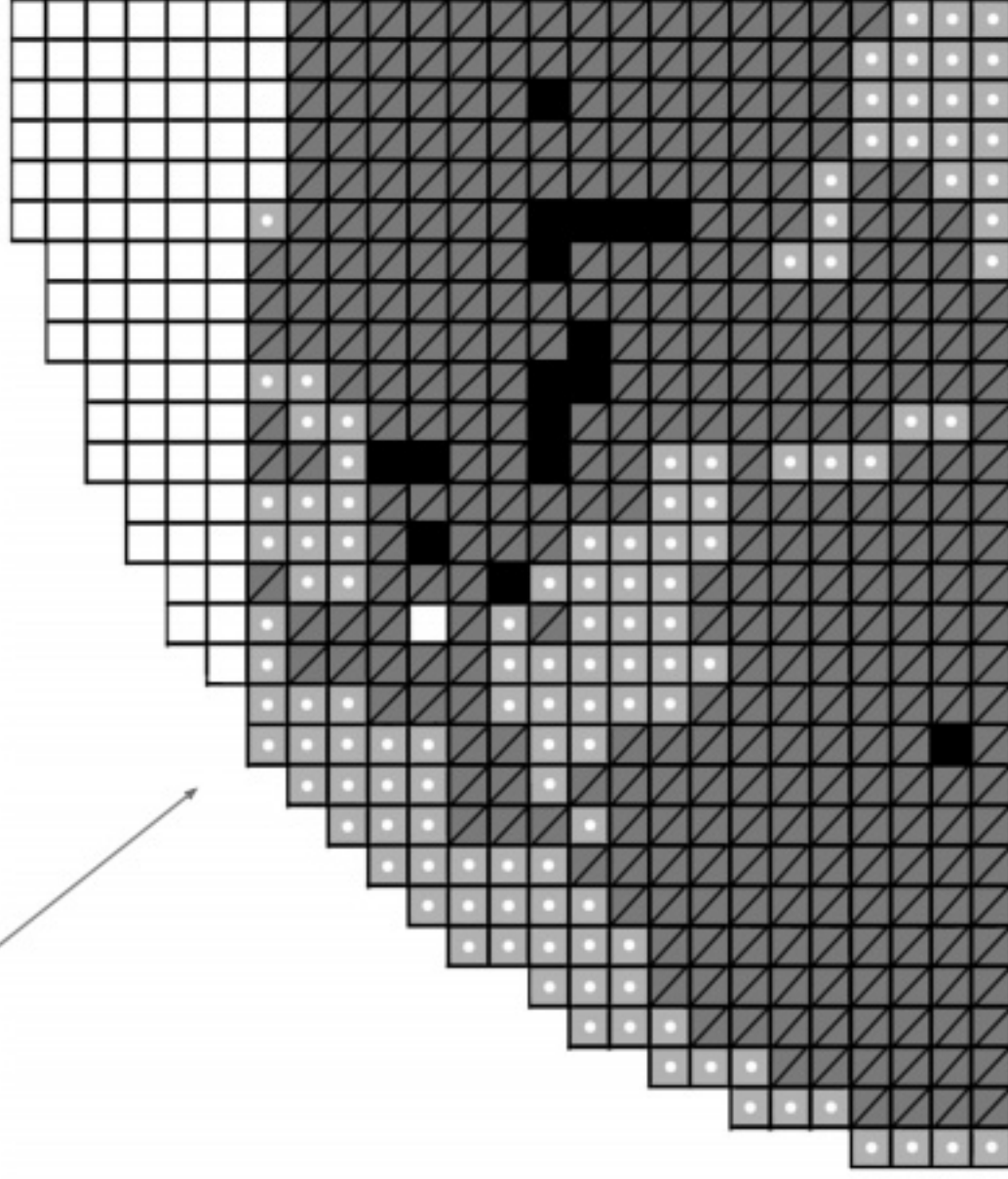
5

I have \_\_\_\_\_ squares of frozen fresh water.  
Divide by 50.  
Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_



6

I have \_\_\_\_\_ squares of fresh water.  
Divide by 50.  
Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_



Fresh Water



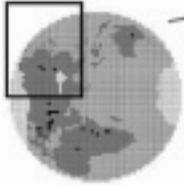
Frozen Fresh Water



Salt Water





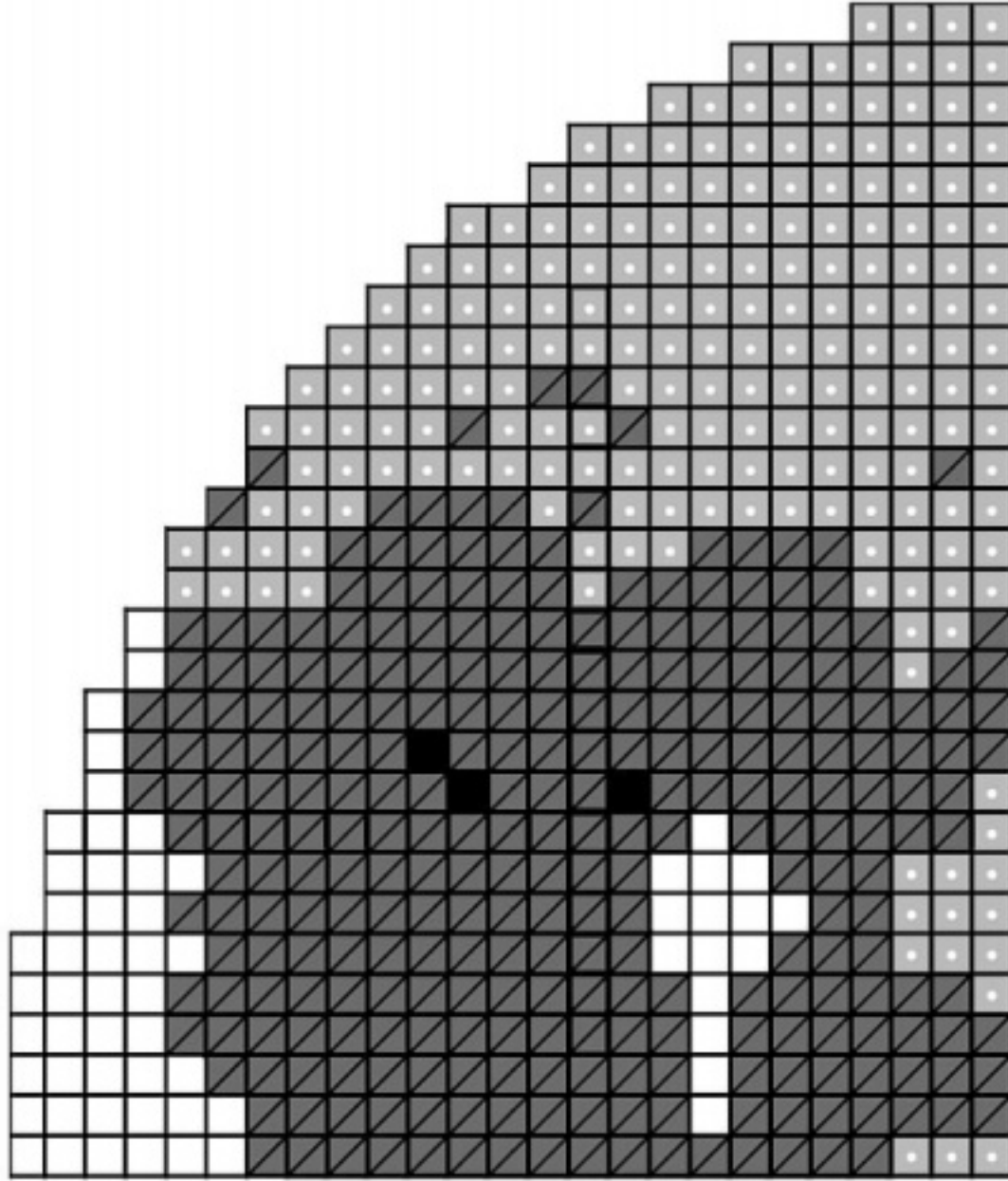


## Map 2

### MYSTERY SCIENCE

Watery Planet | Mystery 1

Name: \_\_\_\_\_



1

How many squares of salt water are on your map? \_\_\_\_\_ squares



2

How many squares of frozen fresh water are on your map? \_\_\_\_\_ squares



3

How many squares of fresh water are on your map? \_\_\_\_\_ squares



4

I have \_\_\_\_\_ squares of salt water.  
Divide by 50.  
Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_



5

I have \_\_\_\_\_ squares of frozen fresh water.  
Divide by 50.  
Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_



6

I have \_\_\_\_\_ squares of fresh water.  
Divide by 50.  
Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_



Fresh Water



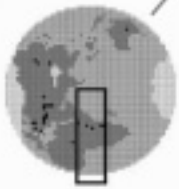
Frozen Fresh Water



Salt Water



Land

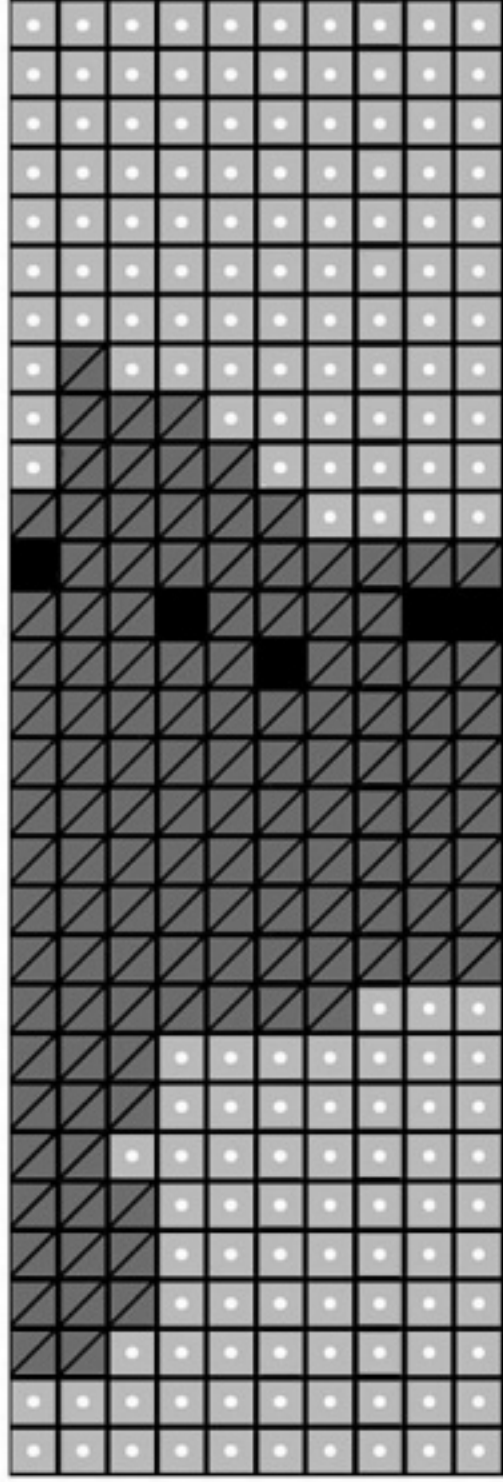


## Map 3

### MYSTERY SCIENCE

Watery Planet | Mystery 1

Name: \_\_\_\_\_



Fresh Water



Frozen Fresh Water



Salt Water



Land

1



How many squares of salt water are on your map?  
\_\_\_\_\_ squares

4



I have \_\_\_\_\_ squares of salt water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_

2



How many squares of frozen fresh water are on your map?  
\_\_\_\_\_ squares

5



I have \_\_\_\_\_ squares of frozen fresh water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_

3

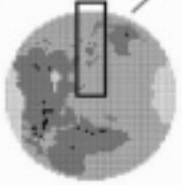


How many squares of fresh water are on your map?  
\_\_\_\_\_ squares

6



I have \_\_\_\_\_ squares of fresh water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_

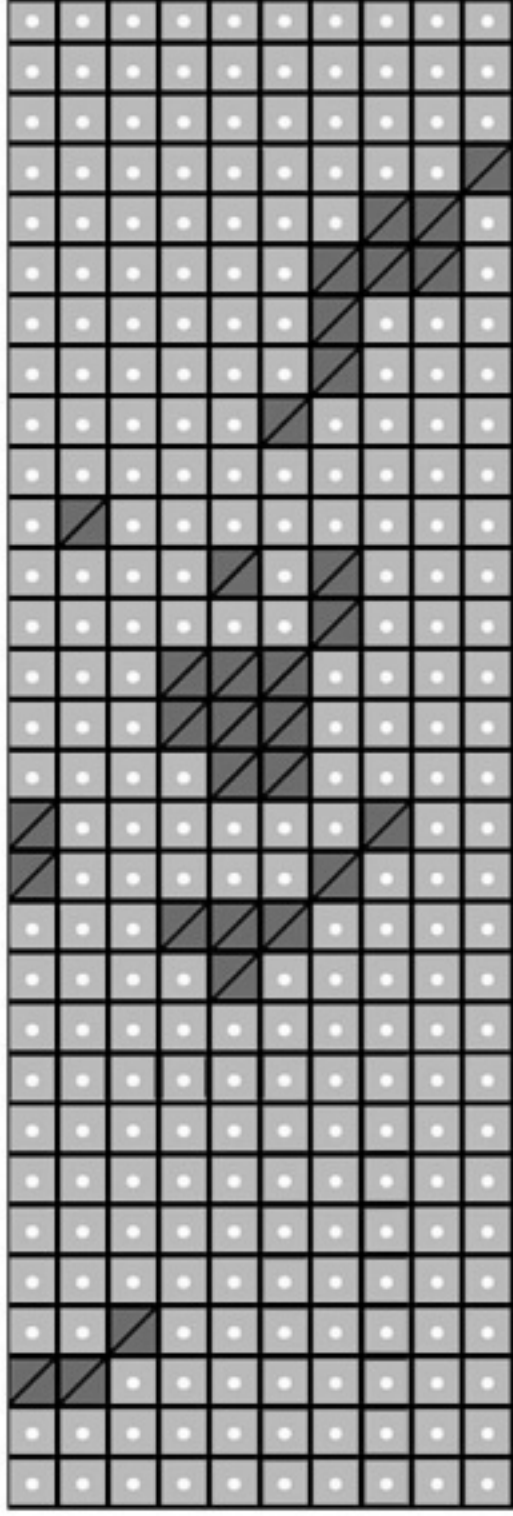


## Map 4

### MYSTERY SCIENCE

Watery Planet | Mystery 1

Name: \_\_\_\_\_



Fresh Water



Frozen Fresh Water



Salt Water



Land



1



How many squares of salt water are on your map?  
\_\_\_\_\_ squares

4



I have \_\_\_\_\_ squares of salt water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_

2



How many squares of frozen fresh water are on your map?  
\_\_\_\_\_ squares

5



I have \_\_\_\_\_ squares of frozen fresh water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_

3

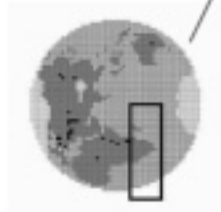


How many squares of fresh water are on your map?  
\_\_\_\_\_ squares

6



I have \_\_\_\_\_ squares of fresh water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_

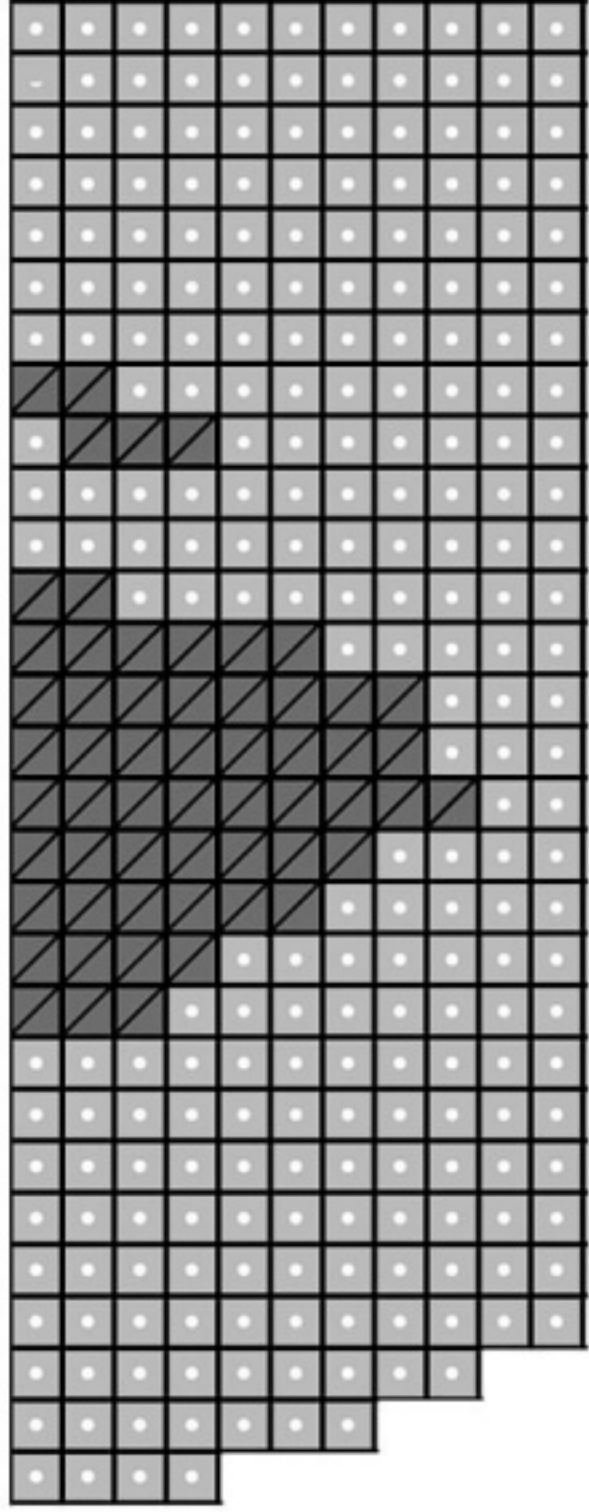


# Map 5

## MYSTERY SCIENCE

Watery Planet | Mystery 1

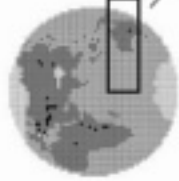
Name: \_\_\_\_\_



-  Fresh Water
-  Frozen Fresh Water
-  Salt Water
-  Land

- 1 How many squares of salt water are on your map?  
\_\_\_\_\_ squares
- 2 How many squares of frozen fresh water are on your map?  
\_\_\_\_\_ squares
- 3 How many squares of fresh water are on your map?  
\_\_\_\_\_ squares

- 4 I have \_\_\_\_\_ squares of salt water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_
- 5 I have \_\_\_\_\_ squares of frozen fresh water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_
- 6 I have \_\_\_\_\_ squares of fresh water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_

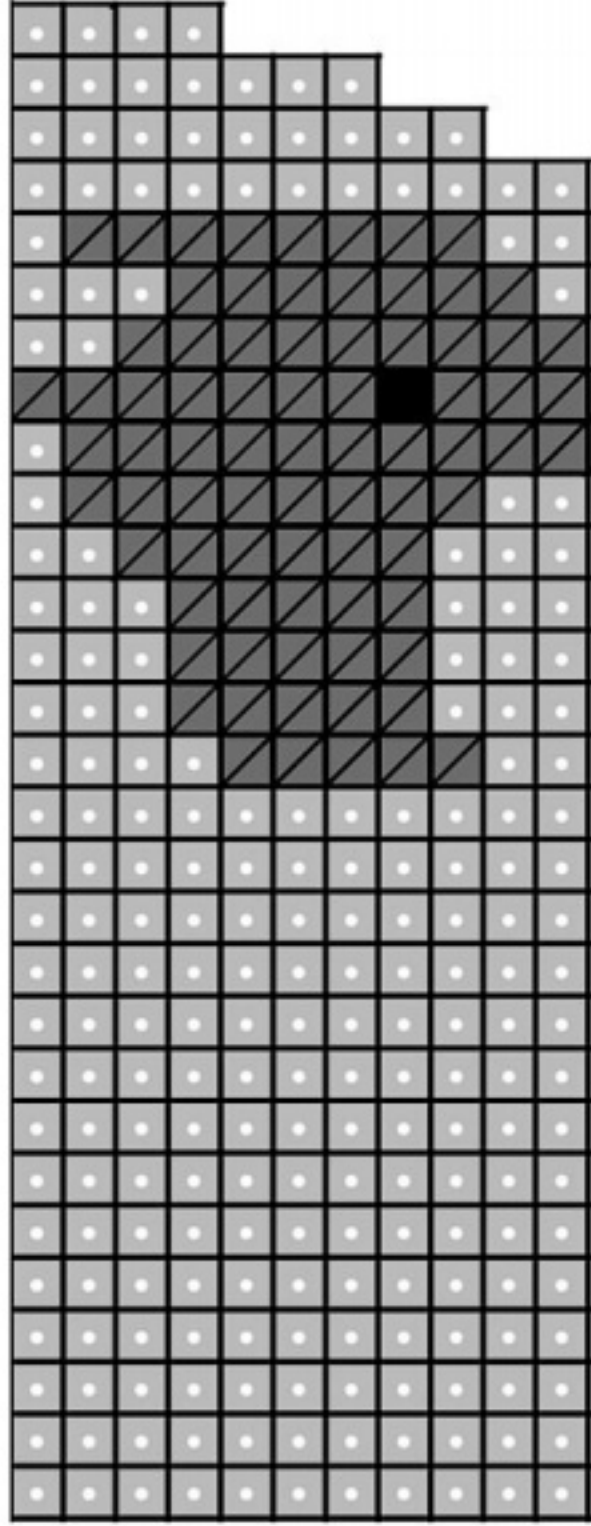



## Map 6

### MYSTERY SCIENCE

Watery Planet | Mystery 1

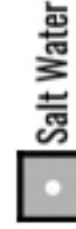
Name: \_\_\_\_\_



 Fresh Water



Frozen Fresh Water



Salt Water



Land

1



How many squares of salt water are on your map?  
\_\_\_\_\_ squares

4



I have \_\_\_\_\_ squares of salt water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_

2



How many squares of frozen fresh water are on your map?  
\_\_\_\_\_ squares

5



I have \_\_\_\_\_ squares of frozen fresh water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_

3

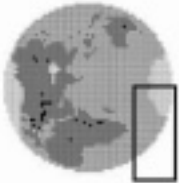


How many squares of fresh water are on your map?  
\_\_\_\_\_ squares

6



I have \_\_\_\_\_ squares of fresh water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_



# Map 7

## MYSTERY SCIENCE

Watery Planet | Mystery 1

Name: \_\_\_\_\_



1

How many squares of salt water are on your map? \_\_\_\_\_ squares



2

How many squares of frozen fresh water are on your map? \_\_\_\_\_ squares



3

How many squares of fresh water are on your map? \_\_\_\_\_ squares



4

I have \_\_\_\_\_ squares of salt water.  
Divide by 50.  
Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_



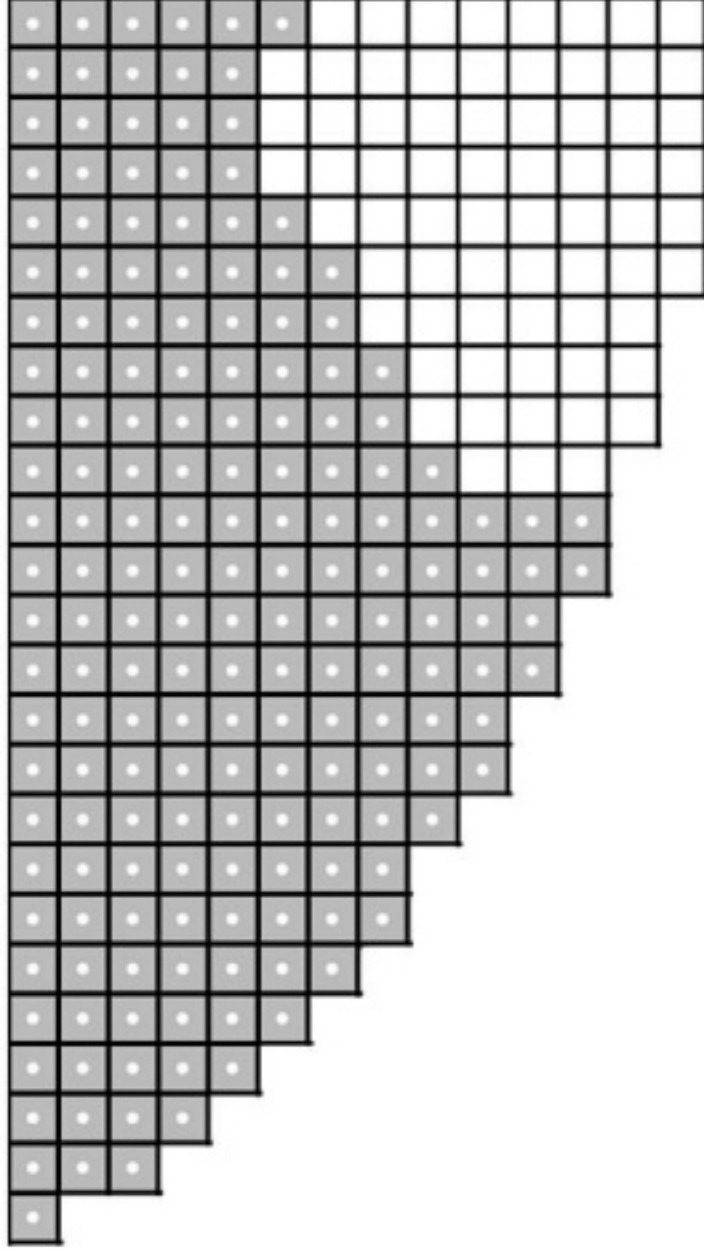
5

I have \_\_\_\_\_ squares of frozen fresh water.  
Divide by 50.  
Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_



6

I have \_\_\_\_\_ squares of fresh water.  
Divide by 50.  
Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_



Fresh Water



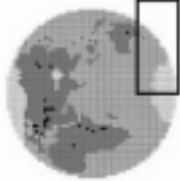
Frozen Fresh Water



Salt Water



Land



# Map 8

## MYSTERY SCIENCE

Watery Planet | Mystery 1

Name: \_\_\_\_\_



1

How many squares of salt water are on your map? \_\_\_\_\_ squares



2

How many squares of frozen fresh water are on your map? \_\_\_\_\_ squares



3

How many squares of fresh water are on your map? \_\_\_\_\_ squares



4

I have \_\_\_\_\_ squares of salt water.  
Divide by 50.  
Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_



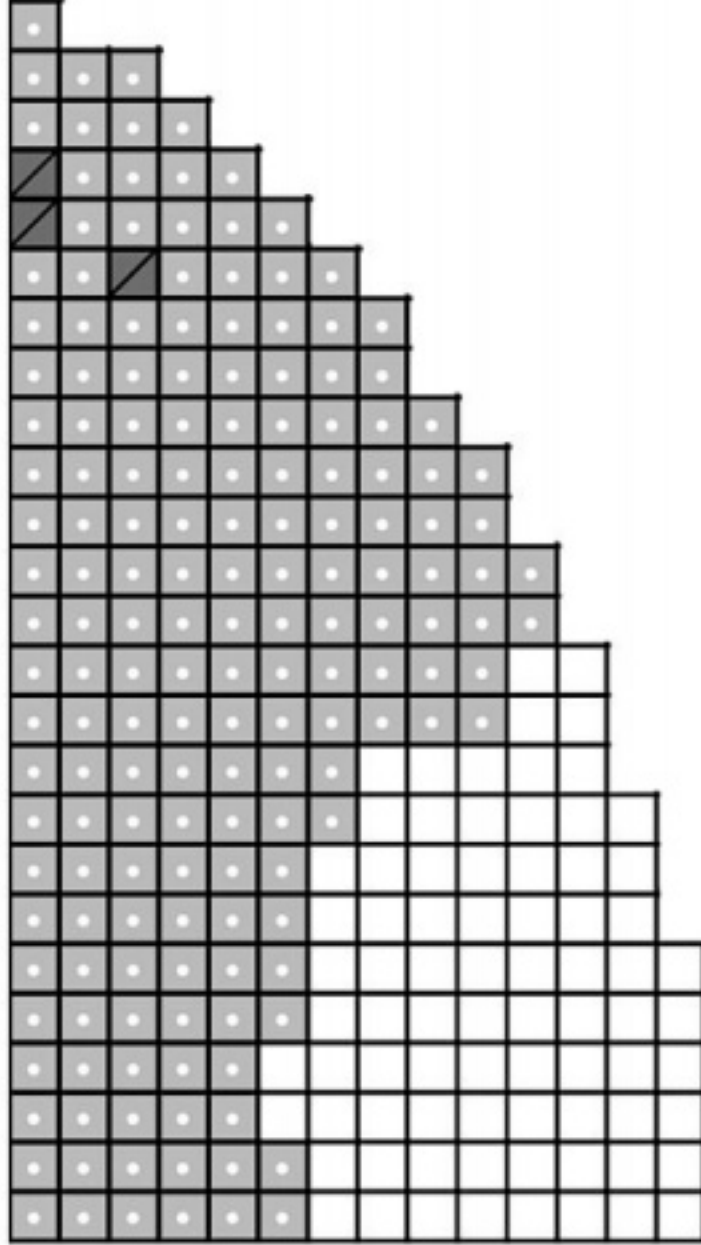
5

I have \_\_\_\_\_ squares of frozen fresh water.  
Divide by 50.  
Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_



6

I have \_\_\_\_\_ squares of fresh water.  
Divide by 50.  
Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_



Fresh Water



Frozen Fresh Water

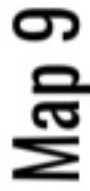


Salt Water



Land





## Watery Planet | Mystery 1

2

3

4



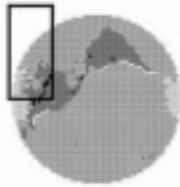
9

I have \_\_\_\_\_ squares of fresh water.  
Divide by 50.  
Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_



## Land





# Map 10

## MYSTERY SCIENCE

Watery Planet | Mystery 1

Name: \_\_\_\_\_



1

How many squares of salt water are on your map? \_\_\_\_\_ squares



2

How many squares of frozen fresh water are on your map? \_\_\_\_\_ squares



3

How many squares of fresh water are on your map? \_\_\_\_\_ squares



4

I have \_\_\_\_\_ squares of salt water.  
Divide by 50.  
Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_



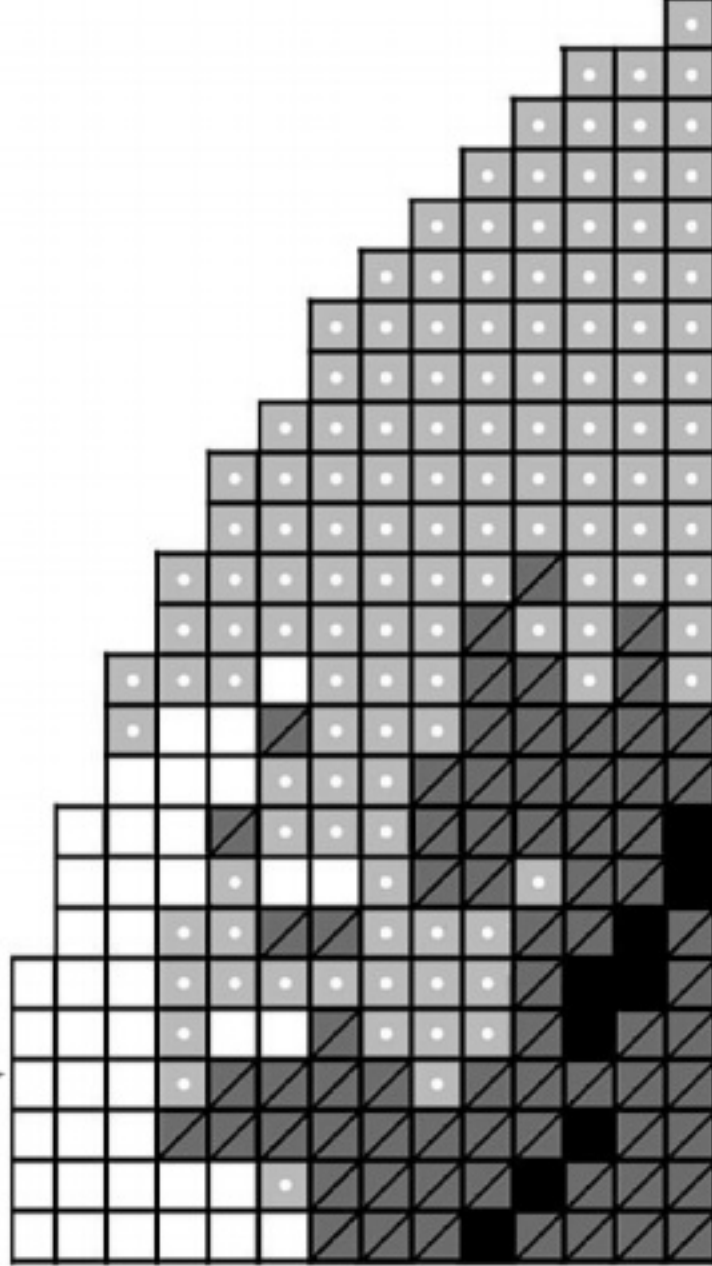
5

I have \_\_\_\_\_ squares of frozen fresh water.  
Divide by 50.  
Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_



6

I have \_\_\_\_\_ squares of fresh water.  
Divide by 50.  
Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_



Fresh Water



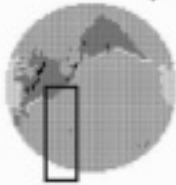
Frozen Fresh Water



Salt Water



Land

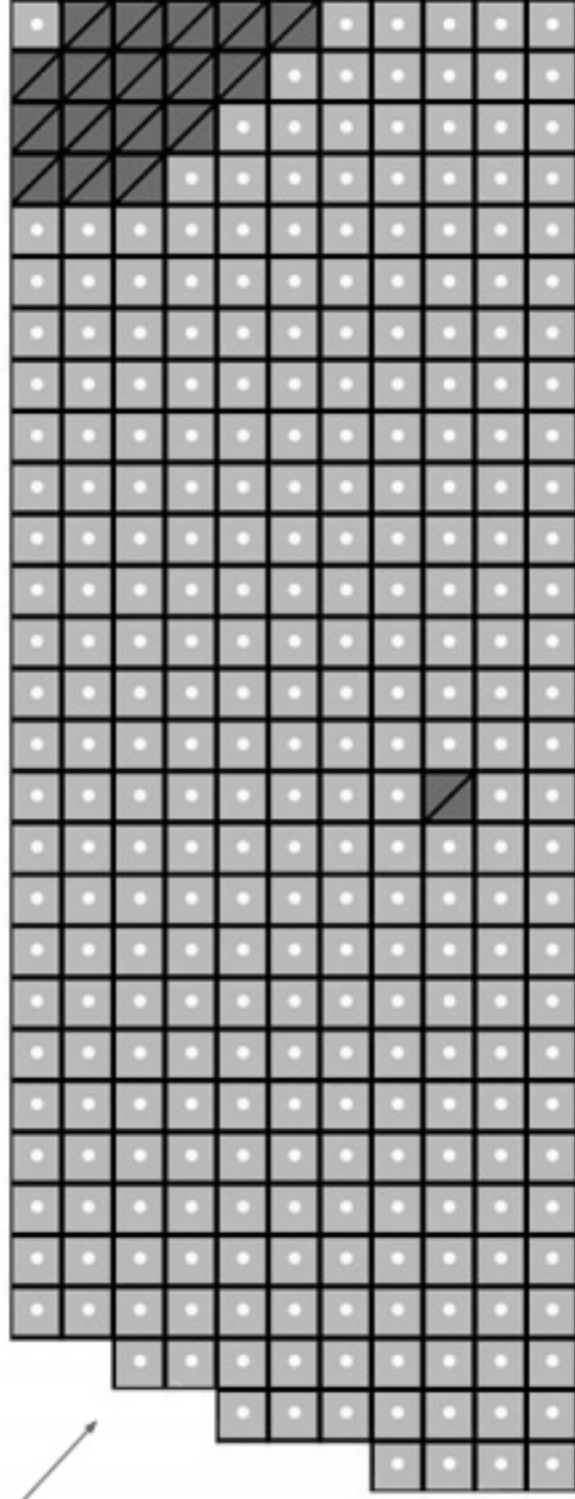


# Map 11

## MYSTERY SCIENCE

Watery Planet | Mystery 1

Name: \_\_\_\_\_



Fresh Water



Frozen Fresh Water



Salt Water



Land

1



How many squares of salt water are on your map?  
\_\_\_\_\_ squares

4



I have \_\_\_\_\_ squares of salt water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_

2



How many squares of frozen fresh water are on your map?  
\_\_\_\_\_ squares

5



I have \_\_\_\_\_ squares of frozen fresh water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_

3

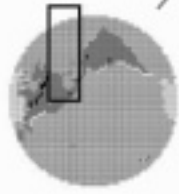


How many squares of fresh water are on your map?  
\_\_\_\_\_ squares

6



I have \_\_\_\_\_ squares of fresh water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_

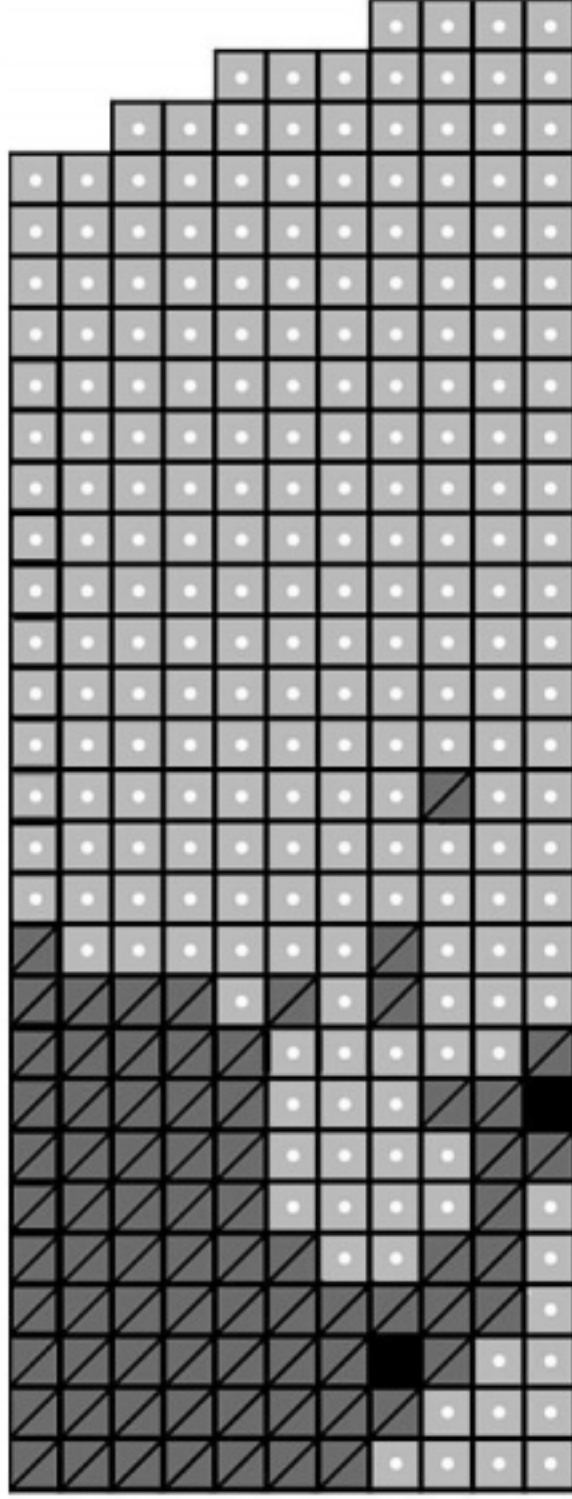


# Map 12

## MYSTERY SCIENCE

Watery Planet | Mystery 1

Name: \_\_\_\_\_



Fresh Water



Frozen Fresh Water



Salt Water



Land

1



How many squares of salt water are on your map?  
\_\_\_\_\_ squares

4



I have \_\_\_\_\_ squares of salt water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_

2



How many squares of frozen fresh water are on your map?  
\_\_\_\_\_ squares

5



I have \_\_\_\_\_ squares of frozen fresh water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_

3

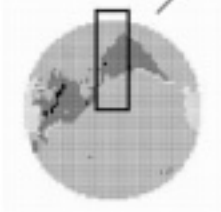


How many squares of fresh water are on your map?  
\_\_\_\_\_ squares

6



I have \_\_\_\_\_ squares of fresh water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_

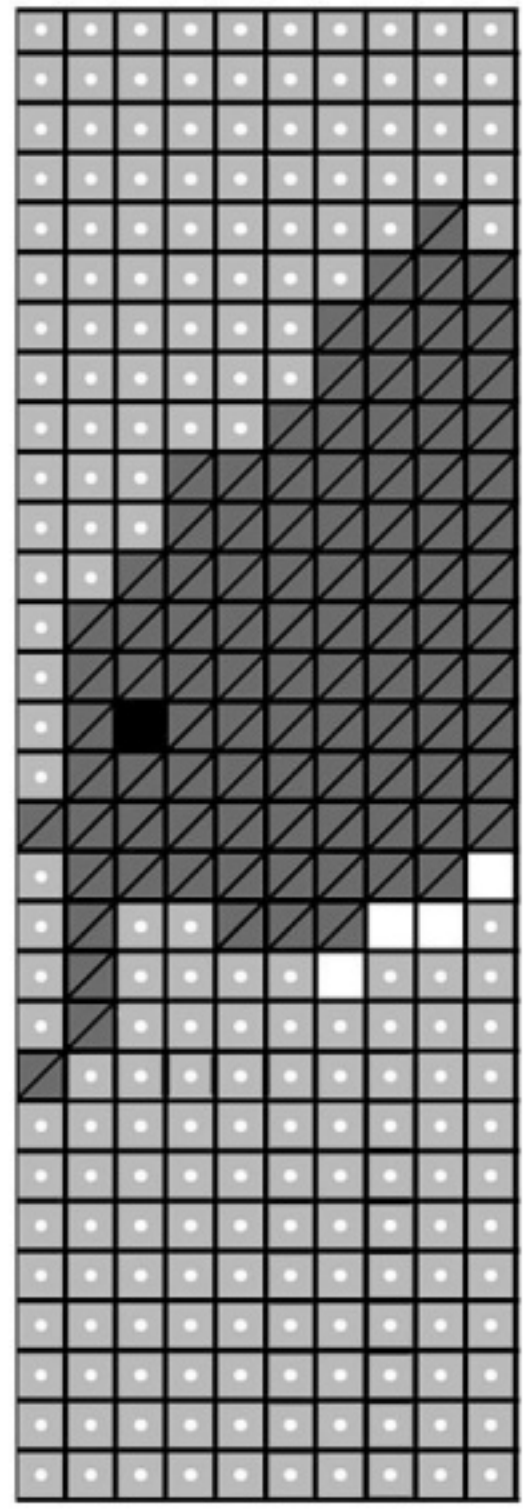


# Map 14


## MYSTERY SCIENCE


Watery Planet | Mystery 1


Name: \_\_\_\_\_




 Fresh Water


 Frozen Fresh Water


 Salt Water

 Land

- 1

 How many squares of salt water are on your map?  
\_\_\_\_\_ squares
- 2

 How many squares of frozen fresh water are on your map?  
\_\_\_\_\_ squares
- 3

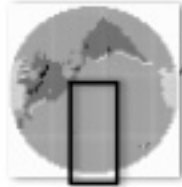
 How many squares of fresh water are on your map?  
\_\_\_\_\_ squares

- 4

 I have \_\_\_\_\_ squares of salt water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_
- 5

 I have \_\_\_\_\_ squares of frozen fresh water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_
- 6

 I have \_\_\_\_\_ squares of fresh water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_

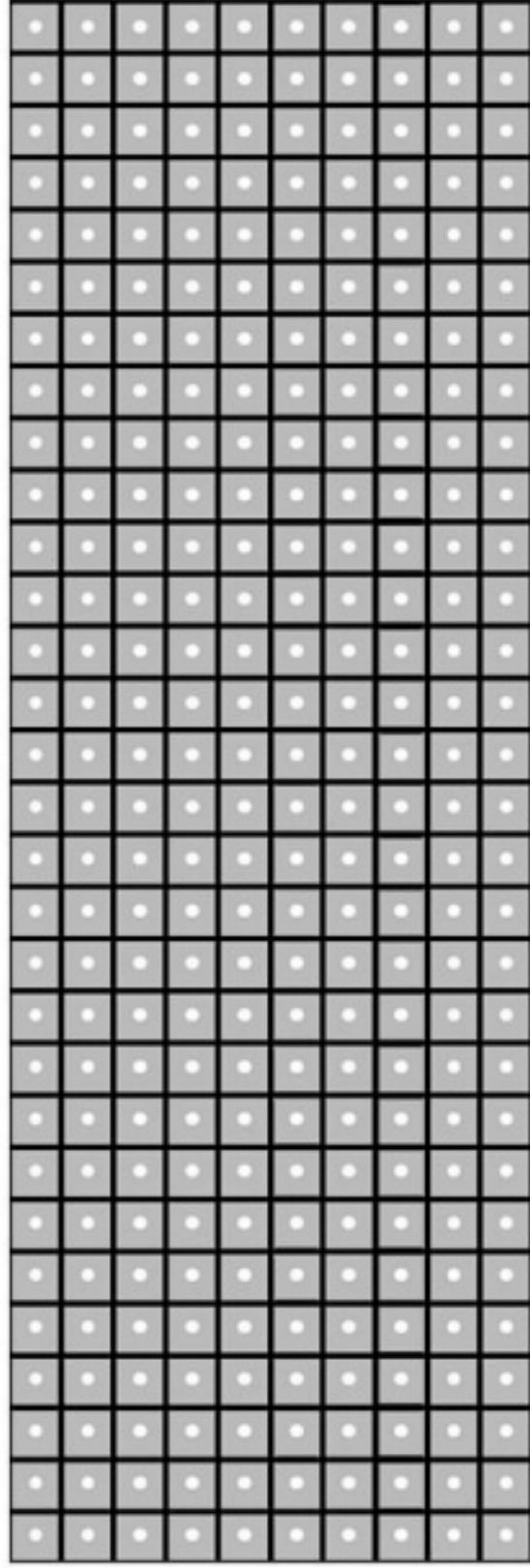


# Map 13

## MYSTERY SCIENCE

Watery Planet | Mystery 1

Name: \_\_\_\_\_



Fresh Water



Frozen Fresh Water



Salt Water



Land

1

How many squares of salt water are on your map?  
\_\_\_\_\_ squares



4



I have \_\_\_\_\_ squares of salt water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_

2

How many squares of frozen fresh water are on your map?  
\_\_\_\_\_ squares



5



I have \_\_\_\_\_ squares of frozen fresh water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_

3

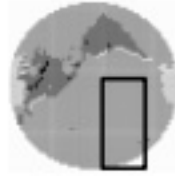
How many squares of fresh water are on your map?  
\_\_\_\_\_ squares



6



I have \_\_\_\_\_ squares of fresh water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_

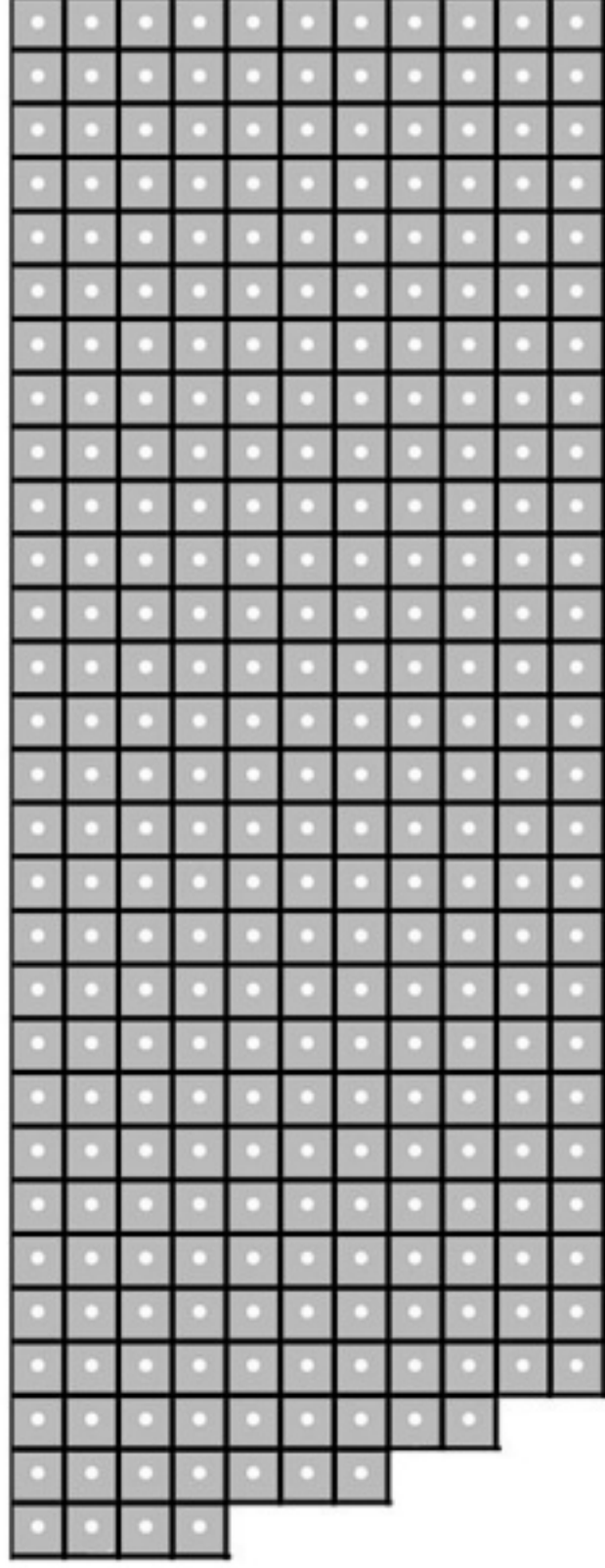


# Map 15

## MYSTERY SCIENCE

Watery Planet | Mystery 1

Name: \_\_\_\_\_



Fresh Water



Frozen Fresh Water



Salt Water



Land

1

How many squares of salt water are on your map?  
\_\_\_\_\_ squares



4

I have \_\_\_\_\_ squares of salt water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_



2

How many squares of frozen fresh water are on your map?  
\_\_\_\_\_ squares



5

I have \_\_\_\_\_ squares of frozen fresh water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_



3

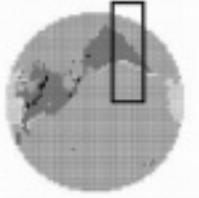
How many squares of fresh water are on your map?  
\_\_\_\_\_ squares



6

I have \_\_\_\_\_ squares of fresh water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_



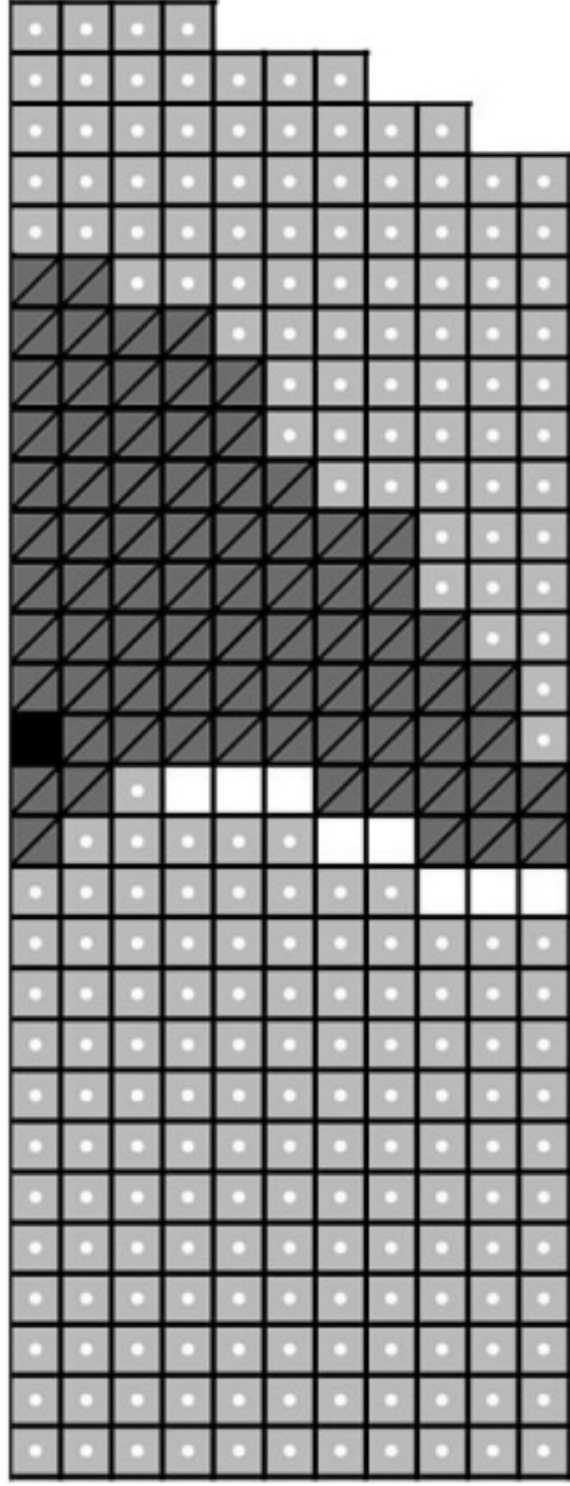


## Map 16

### MYSTERY SCIENCE

Watery Planet | Mystery 1

Name: \_\_\_\_\_



Fresh Water



Frozen Fresh Water



Salt Water



Land

1



How many squares of salt water are on your map?  
\_\_\_\_\_ squares

4



I have \_\_\_\_\_ squares of salt water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_

2



How many squares of frozen fresh water are on your map?  
\_\_\_\_\_ squares

5



I have \_\_\_\_\_ squares of frozen fresh water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_

3



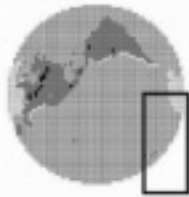
How many squares of fresh water are on your map?  
\_\_\_\_\_ squares

6



I have \_\_\_\_\_ squares of fresh water.  
Divide by 50. Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_





# Map 17

## MYSTERY SCIENCE

Watery Planet | Mystery 1

Name: \_\_\_\_\_



1

How many squares of salt water are on your map? \_\_\_\_\_ squares



2

How many squares of frozen fresh water are on your map? \_\_\_\_\_ squares



3

How many squares of fresh water are on your map? \_\_\_\_\_ squares



4

I have \_\_\_\_\_ squares of salt water.  
Divide by 50.  
Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_



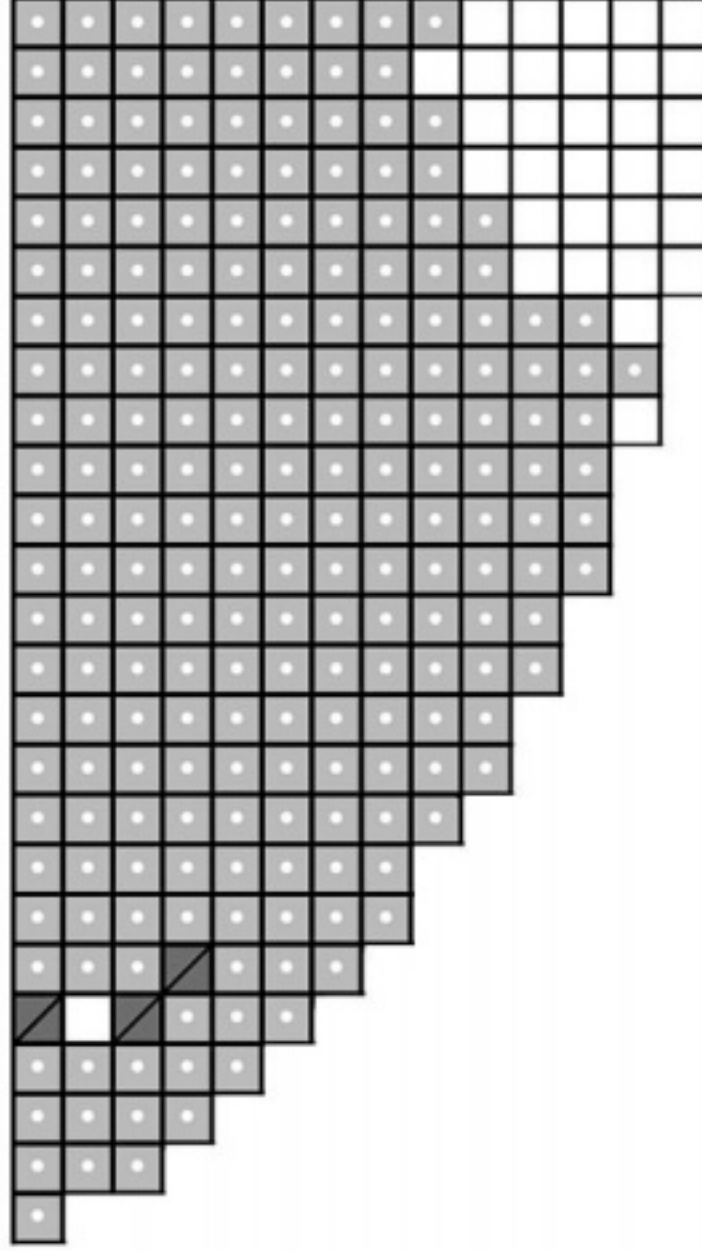
5

I have \_\_\_\_\_ squares of frozen fresh water.  
Divide by 50.  
Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_



6

I have \_\_\_\_\_ squares of fresh water.  
Divide by 50.  
Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_



Fresh Water



Frozen Fresh Water

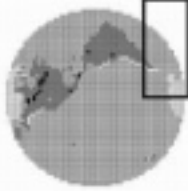


Salt Water



Land



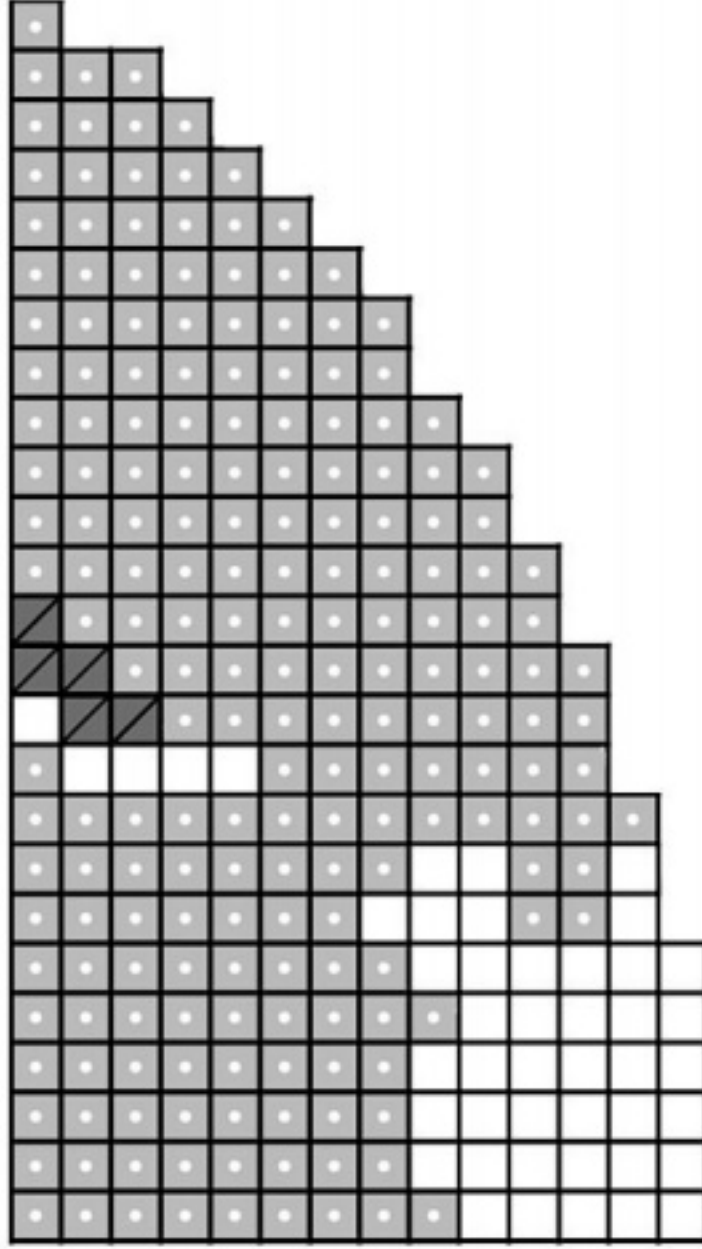


# Map 18

## MYSTERY SCIENCE

Watery Planet | Mystery 1

Name: \_\_\_\_\_



1



How many squares of salt water are on your map? \_\_\_\_\_ squares

2



How many squares of frozen fresh water are on your map? \_\_\_\_\_ squares

3



How many squares of fresh water are on your map? \_\_\_\_\_ squares

4



I have \_\_\_\_\_ squares of salt water.  
Divide by 50.  
Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_

5



I have \_\_\_\_\_ squares of frozen fresh water.  
Divide by 50.  
Stickers: \_\_\_\_\_ Remainder: \_\_\_\_\_

6



I have \_\_\_\_\_ squares of fresh water.  
Divide by 50. Stickers: \_\_\_\_\_  
Remainder: \_\_\_\_\_



Fresh Water



Frozen Fresh Water



Salt Water



Land

# Watery Planet

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Mystery 1: How much water is in the world?

## End of Mystery Assessment

1. Were you surprised at how little fresh water there is compared to salt water? Why or why not?

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2. In the activity, you estimated the amount of water by using little squares to measure area. If a square had mostly water but only a little land, we pretended it was all water. If a square had mostly land but a little water, we pretended it was all land. How could you have made the estimate more exact?

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## Mystery Mountains

Where will you dig a well?  
Your life depends on finding water!

Name: \_\_\_\_\_

Wild West Nickname: \_\_\_\_\_

**A - On a Beautiful Mountainside****1. LAND:** If there's an aquifer here, I think it's:

- ☐
- near the surface.
- ☐
- too far down to reach.

**2. PLANTS:** I think plant roots here get water from:

- ☐
- seasonal rains.
- ☐
- an aquifer (underground water).

**3. ROCKS & SOIL:** I think the soil here will:

- ☐
- be easy to dig in. It's porous. Rain soaks in.
- 
- ☐
- be hard to dig in. It's not porous. Rain won't soak in.
- 
- ☐
- make the water undrinkable due to salt or poison.

**B - Surrounded by Mountains****1. LAND:** If there's an aquifer here, I think it's:

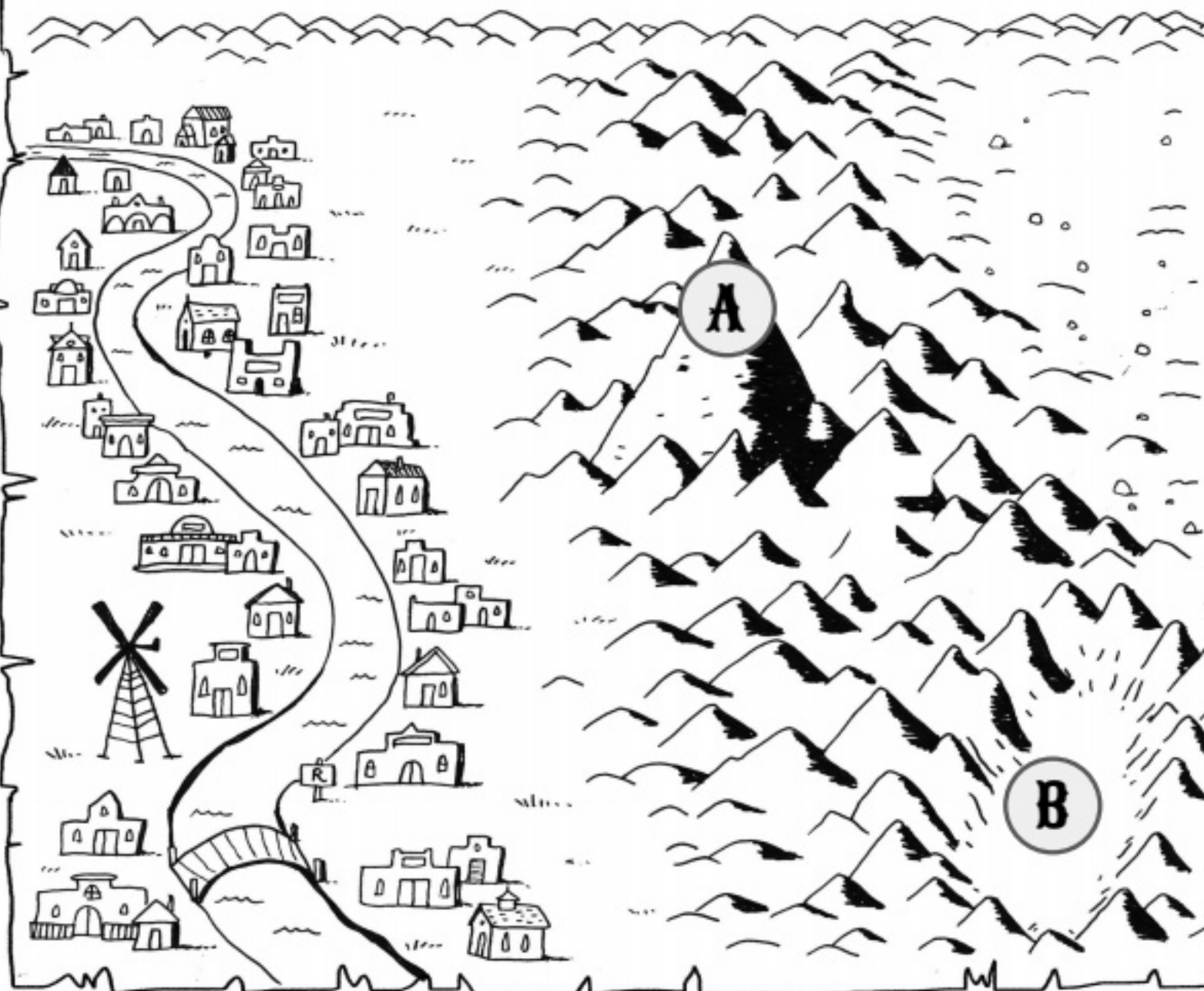
- ☐
- near the surface.
- ☐
- too far down to reach.

**2. PLANTS:** I think plant roots here get water from:

- ☐
- seasonal rains.
- ☐
- an aquifer (underground water).

**3. ROCKS & SOIL:** I think the soil here will:

- ☐
- be easy to dig in. It's porous. Rain soaks in.
- 
- ☐
- be hard to dig in. It's not porous. Rain won't soak in.
- 
- ☐
- make the water undrinkable due to salt or poison.



## Thirsty Hills

Where will you dig a well?  
Your life depends on finding water!

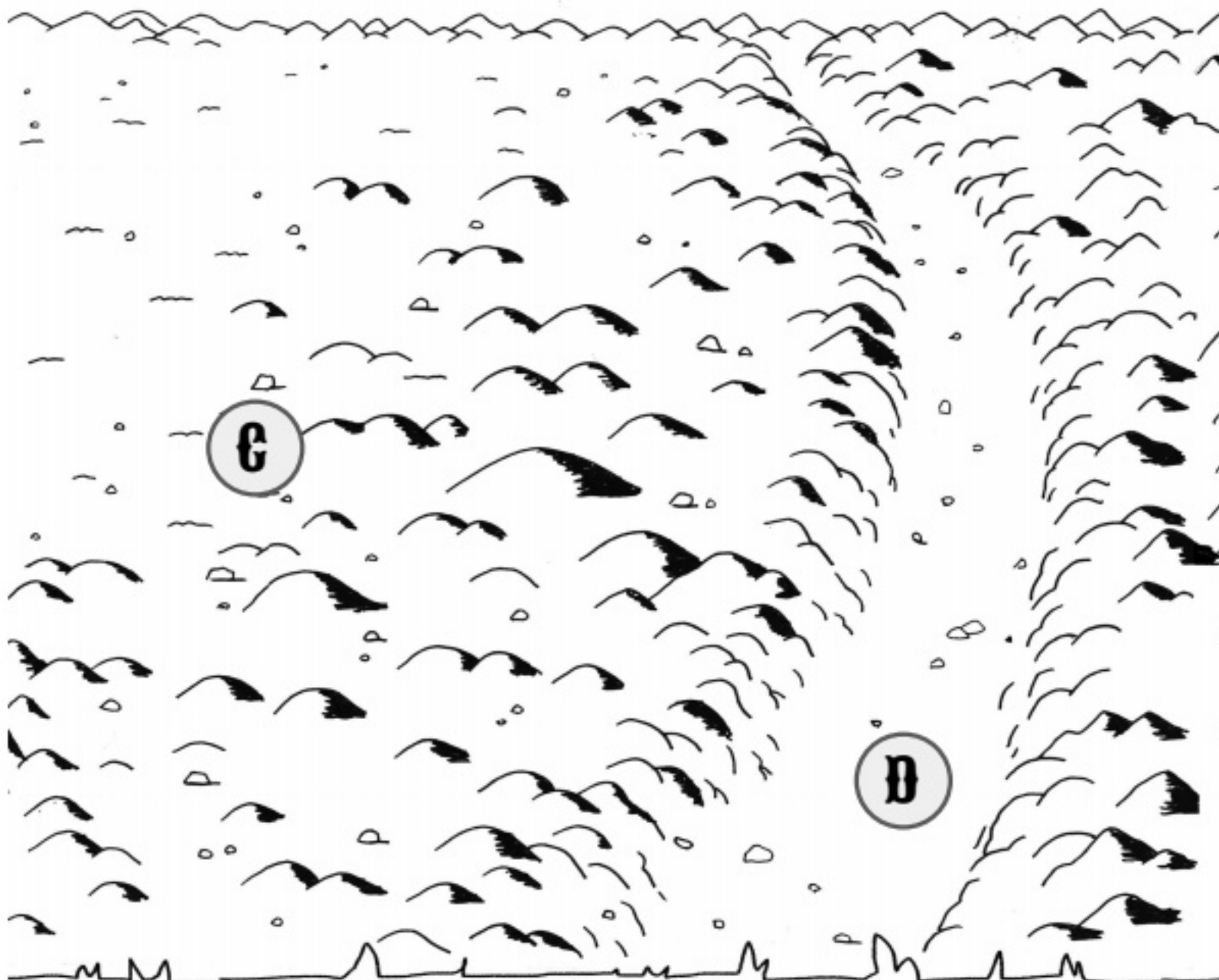
Name: \_\_\_\_\_

Wild West Nickname: \_\_\_\_\_

## C - In the Rolling Hills

**1. LAND:** If there's an aquifer here, I think it's:☐ near the surface. ☐ too far down to reach.**2. PLANTS:** I think plant roots here get water from:☐ seasonal rains. ☐ an aquifer (underground water).**3. ROCKS & SOIL:** I think the soil here will:☐ be easy to dig in. It's porous. Rain soaks in.  
☐ be hard to dig in. It's not porous. Rain won't soak in.  
☐ make the water undrinkable due to salt or poison.

## D - Down in the Valley

**1. LAND:** If there's an aquifer here, I think it's:☐ near the surface. ☐ too far down to reach.**2. PLANTS:** I think plant roots here get water from:☐ seasonal rains. ☐ an aquifer (underground water).**3. ROCKS & SOIL:** I think the soil here will:☐ be easy to dig in. It's porous. Rain soaks in.  
☐ be hard to dig in. It's not porous. Rain won't soak in.  
☐ make the water undrinkable due to salt or poison.

## Dusty Flats

Where will you dig a well?  
Your life depends on finding water!

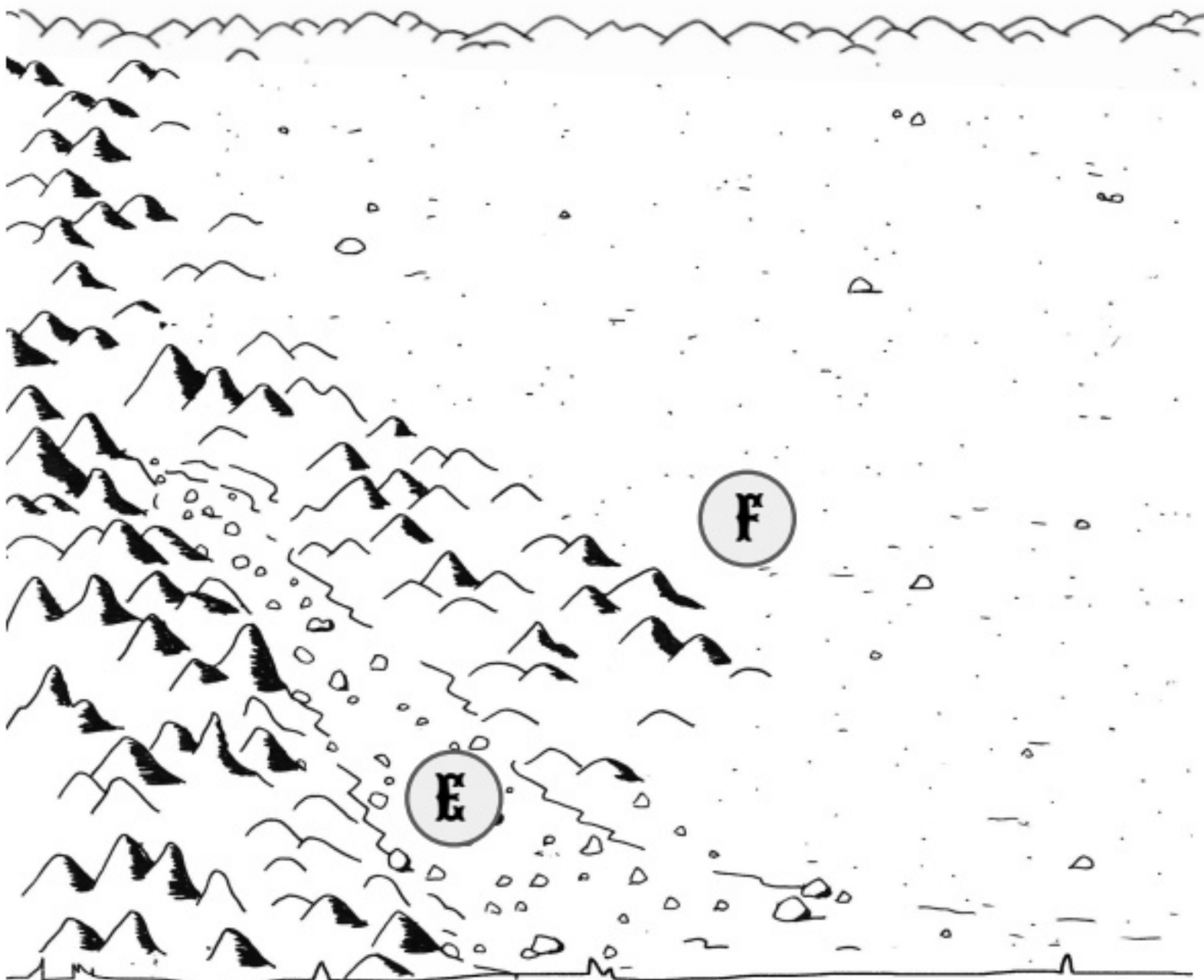
Name: \_\_\_\_\_

Wild West Nickname: \_\_\_\_\_

## E - In the Dry Streambed

**1. LAND:** If there's an aquifer here, I think it's:☐ near the surface. ☐ too far down to reach.**2. PLANTS:** I think plant roots here get water from:☐ seasonal rains. ☐ an aquifer (underground water).**3. ROCKS & SOIL:** I think the soil here will:☐ be easy to dig in. It's porous. Rain soaks in.☐ be hard to dig in. It's not porous. Rain won't soak in.☐ make the water undrinkable due to salt or poison.

## F - In the Flats near the Hills

**1. LAND:** If there's an aquifer here, I think it's:☐ near the surface. ☐ too far down to reach.**2. PLANTS:** I think plant roots here get water from:☐ seasonal rains. ☐ an aquifer (underground water).**3. ROCKS & SOIL:** I think the soil here will:☐ be easy to dig in. It's porous. Rain soaks in.☐ be hard to dig in. It's not porous. Rain won't soak in.☐ make the water undrinkable due to salt or poison.

## Sandy Canyon

Where will you dig a well?  
Your life depends on finding water!

Name: \_\_\_\_\_

Wild West Nickname: \_\_\_\_\_

## G-In the Plains

**1. LAND:** If there's an aquifer here, I think it's:

- ☐
- near the surface.
- ☐
- too far down to reach.

**2. PLANTS:** I think plant roots here get water from:

- ☐
- seasonal rains.
- ☐
- an aquifer (underground water).

**3. ROCKS & SOIL:** I think the soil here will:

- ☐
- be easy to dig in. It's porous. Rain soaks in.
- 
- ☐
- be hard to dig in. It's not porous. Rain won't soak in.
- 
- ☐
- make the water undrinkable due to salt or poison.

## H-Down in the Canyon

**1. LAND:** If there's an aquifer here, I think it's:

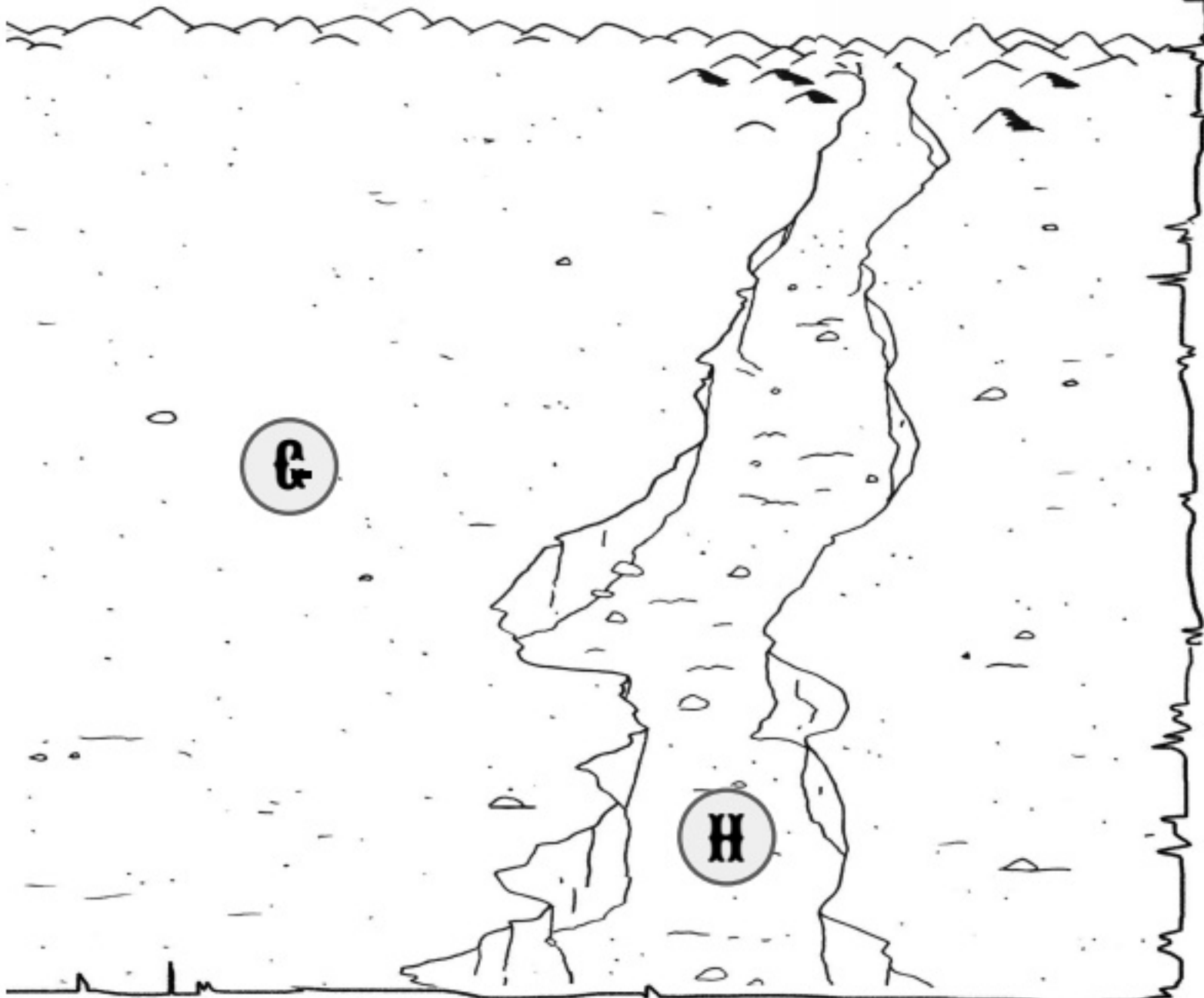
- ☐
- near the surface.
- ☐
- too far down to reach.

**2. PLANTS:** I think plant roots here get water from:

- ☐
- seasonal rains.
- ☐
- an aquifer (underground water).

**3. ROCKS & SOIL:** I think the soil here will:

- ☐
- be easy to dig in. It's porous. Rain soaks in.
- 
- ☐
- be hard to dig in. It's not porous. Rain won't soak in.
- 
- ☐
- make the water undrinkable due to salt or poison.



Group members: \_\_\_\_\_

# WANTED: A Well

1. For a well, you need a place where water is **close** to the surface. Look at the map. Remember that water flows downhill. **Cross out** all the spots where your team thinks water will be too far underground.

A   B   C   D   E   F   G   H

2. Look at the naturalist's guide to **plants**. Does this information help you choose where to put your well? **Cross out** spots where you think the plants just use water from seasonal rains.

A   B   C   D   E   F   G   H

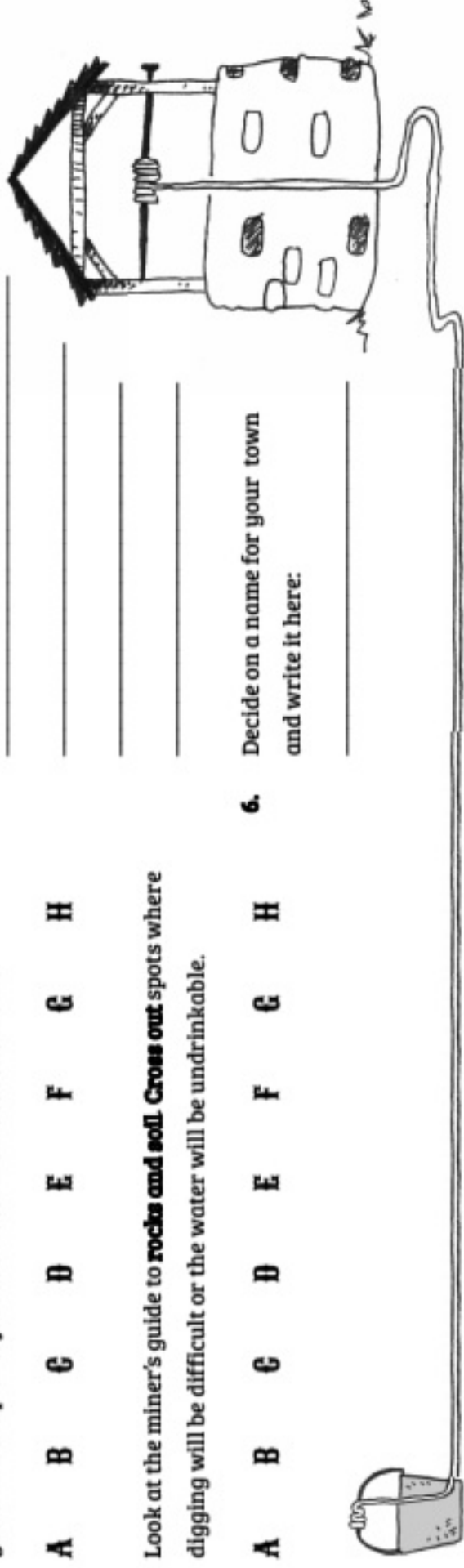
3. Look at the miner's guide to **rocks and soil**. **Cross out** spots where digging will be difficult or the water will be undrinkable.

A   B   C   D   E   F   G   H

4. As a team, choose a spot to dig a well and build a town. If you choose wisely, your town will have plenty of water. Write the letter of the spot you chose here: \_\_\_\_\_

5. Why did you choose that spot? What clues did you use? \_\_\_\_\_

6. Decide on a name for your town and write it here: \_\_\_\_\_





# PLANTS

## MYSTERY science

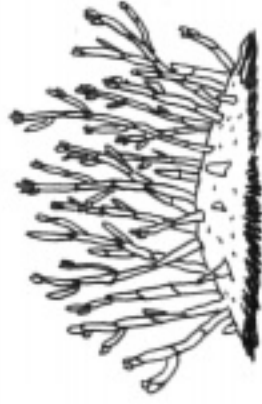
Watery Planet | Mystery 2

A



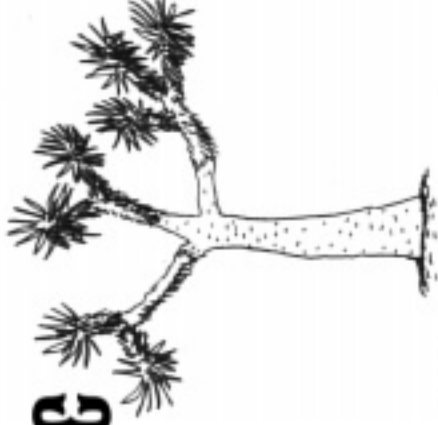
**SPOT A:** Bristlecone pine trees grow high in the Mystery Mountains. These twisted trees do just fine with very little rain.

B



**SPOT B:** Pickleweed is the only plant that grows in this dry lake bed. It grows well where water is just below the surface of the soil.

C



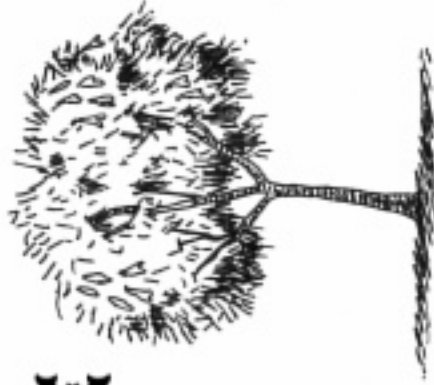
**SPOT C:** Joshua trees grow in these dry desert hills. They have long roots to gather what little water there is.

D



**SPOT D:** Greasewood fills this sunny valley. This plant has long roots and stays green when other plants wilt.

E



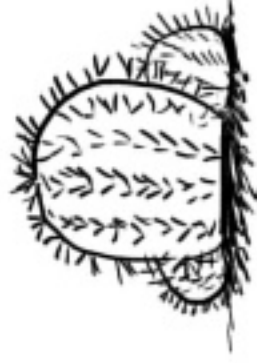
**SPOT E:** Willow trees flourish in this dry wash. The trees' long roots reach deep underground.

F



**SPOT F:** Wildflowers cover this plain. These flowers grow quickly after a rainstorm, but they don't live long.

G



**SPOT G:** Cactus live where it's dry. Whenever there's rain, they soak up the water and store it in their thick stems.

H



**SPOT H:** The palm trees in this canyon can be seen from miles away. In the desert, palm trees are often found near water holes.

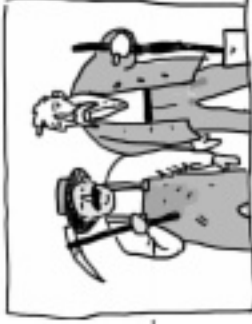




# ROCKS AND SOIL

**MYSTERY**science

Watery Planet | Mystery 2



**SPOT A:** Lots of rocks and very little dirt high in the mountains makes digging a challenge.

**B**



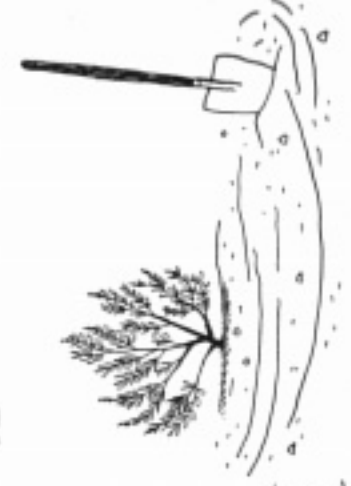
**SPOT B:** This soil is full of salt that washes down from the mountains. (Pickleweed is one of the few plants that can grow in salty soil.)

**C**



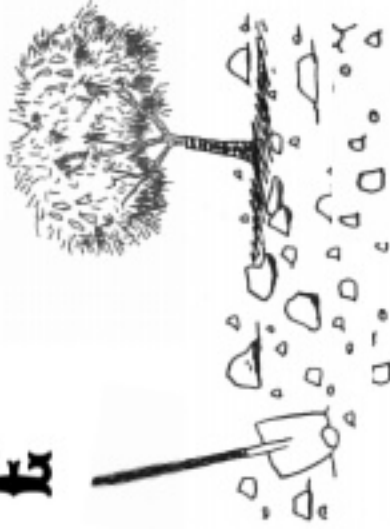
**SPOT C:** Sandstone boulders cover the hillsides, making digging difficult.

**D**



**SPOT D:** The sandy soil here filled with alkali, a poisonous kind of salt. Greasewood grows here, but not much else can.

**E**



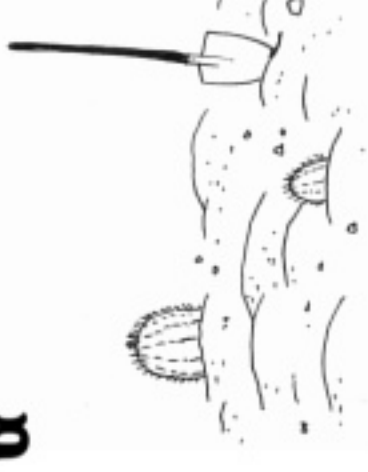
**SPOT E:** Gravel and soil fill this dry wash. Easy digging here.

**F**



**SPOT F:** Loose soil lies on top of a layer of clay that's as hard as brick.

**G**



**SPOT G:** Sandy soil with patches of gravel. Easy digging here.

**H**



**SPOT H:** Sandy soil makes digging easy in this canyon.

# Watery Planet

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Mystery 2: When you turn on the faucet, where  
does the water come from?

## End of Mystery Assessment

1. How do most people who don't live near lakes and rivers get their water? Explain.

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2. Pretend you have x-ray vision. You can see above and under the ground at the spot your team has chosen to dig a well. In the space below, draw these three things:

1. The land — Is it flat? Hilly?
2. The plants — Above ground and the roots underneath
3. Your well — Include the water you think is underground

Name: \_\_\_\_\_

# Sugar Shake Data Sheet

**1**

Draw what your sugar cube looks like here:


**2**

 What will it look like after 200 shakes?  
Draw your best guess here:

**3**

How many edges does a sugar cube have? \_\_\_\_\_

**4**

Trial #	Shake this many times:	Describe the shape of the sugar cubes you shook. How did they change?	How many edges still have some color?
#1	40		
#2 switch jobs	40		
#3 switch jobs	40		
#4 switch jobs	40		
#5 switch jobs	40		

**5**

 You've done 5 trials of 40 shakes each. That's 200 shakes!  
What do the sugar cubes look like now? Draw one in the box:

**6**

Does your drawing match your guess in question 2? Yes No

- 7 What happened to the sugar cubes when they bashed together in the container?  
How are they different from the one you didn't shake?

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- 8 When you take the sugar cubes out of the container, what's left in the container?  
Where did that come from?

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- 9 What do you think would happen if you shook rocks instead of sugar cubes?

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- 10 How many more shakes do you think it would take to make the sugar cubes **really** round  
(like a marble)? \_\_\_\_\_ If you have time, try it out!

# The Birth of Rocks

Mystery 3: Will a mountain last forever?

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## End of Mystery Assessment

1. Do mountains last forever? Why or why not?

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2. How does solid rock break into smaller pieces?

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3. How are rocks at the top of a mountain different than the ones at the bottom?

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Name: \_\_\_\_\_

# Saving My Slide-City Home

What's the name of your plan? \_\_\_\_\_

Explain how your plan will protect your house or prevent a landslide:

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Draw your plan in this box.

# The Birth of Rocks

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Mystery 4: How could you survive a landslide?

## End of Mystery Assessment

1. What are landslides?

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2. What causes landslides?

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3. Imagine that you are camping in a hilly area. How can you figure out if it's a safe place to camp?

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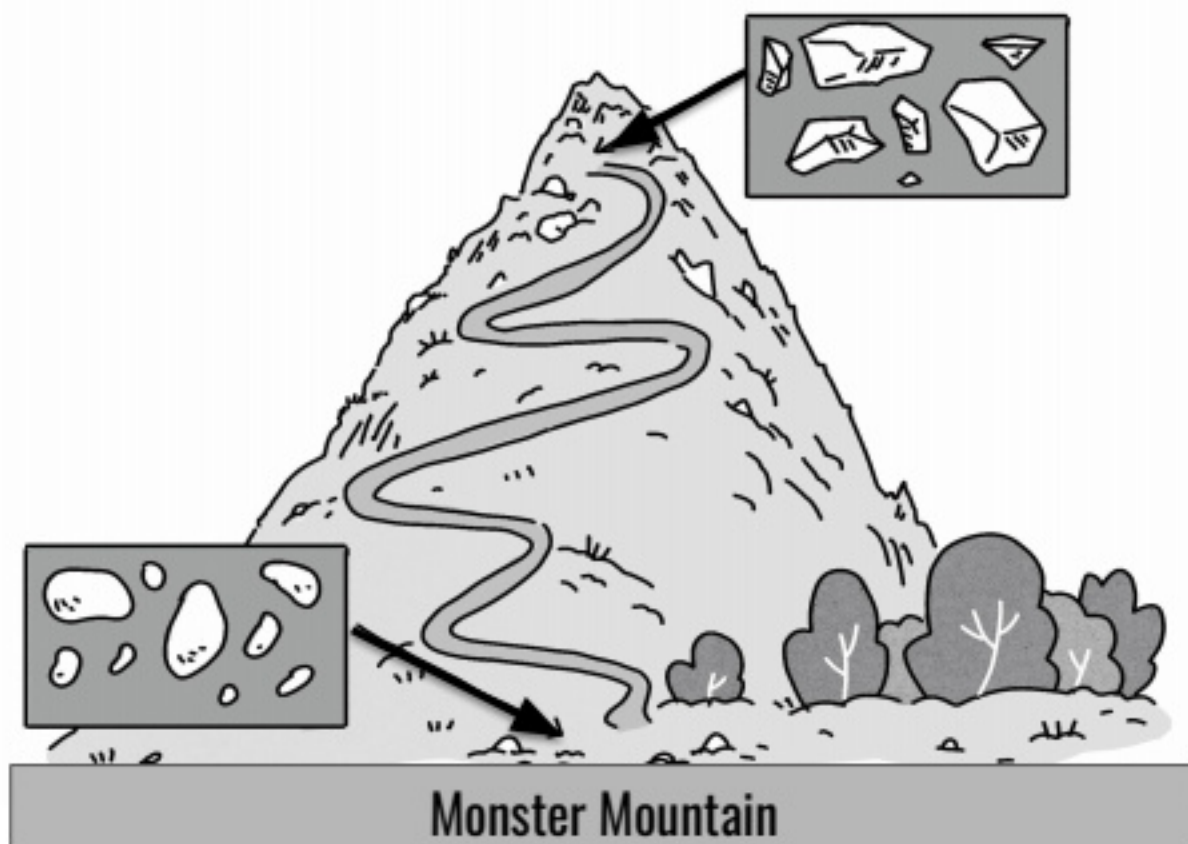
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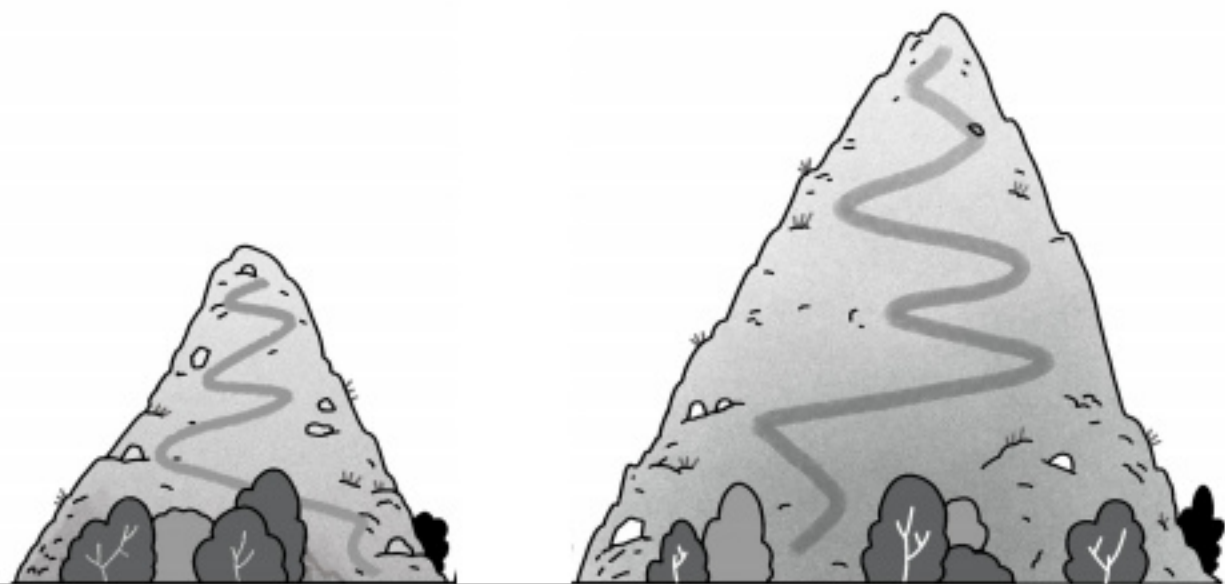
## Unit Assessment



1. Alessandra recently learned that mountain rocks can break into smaller pieces (weathering) and can then be moved from one location to another by water, wind, or gravity (erosion). But she is curious if rocks continue to break down as they move from the top of mountains to the bottom. Alessandra takes photos of rocks at the top and at the bottom of Monster Mountain. Some of her photos are shown above. What evidence do you see in Alessandra's photographs that the rocks have continued to break down as they moved from the top of Monster Mountain to the bottom of Monster Mountain? There may be more than 1 correct answer. Circle all the correct answers.

- a. The rocks at the bottom of the mountain have smoother edges compared to the rocks at the top of the mountain.
- b. There are more trees at the bottom of the mountain compared to the top of the mountain.
- c. There are more small rocks at the bottom of the mountain compared to the rocks at the top of the mountain.
- d. The rocks at the bottom of the mountain are darker in color compared to the rocks at the top of the mountain.





Mini Mountain

Monster Mountain

2. In Alessandra's town there is another mountain called Mini Mountain. Mini Mountain is right next to Monster Mountain. What would **most likely** cause the rocks at the bottom of Mini Mountain to be less eroded than rocks at the bottom of Monster Mountain? Pick the best answer.

- a. There are more rivers flowing down Monster Mountain compared to Mini Mountain.
- b. There is more distance for rocks to fall down Monster Mountain compared to Mini Mountain.
- c. There is more wind blowing across Monster Mountain compared to Mini Mountain.
- d. There are more trees on Monster Mountain compared to Mini Mountain.

3. Monster Mountain is twice as tall as Mini Mountain. Alessandra wonders: **"Would rocks halfway down Monster Mountain look the same as rocks at the bottom of Mini Mountain?"**

Describe what observations or measurements Alessandra could make to answer her question.

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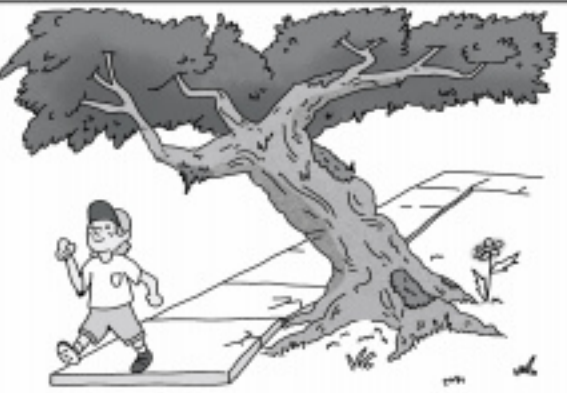
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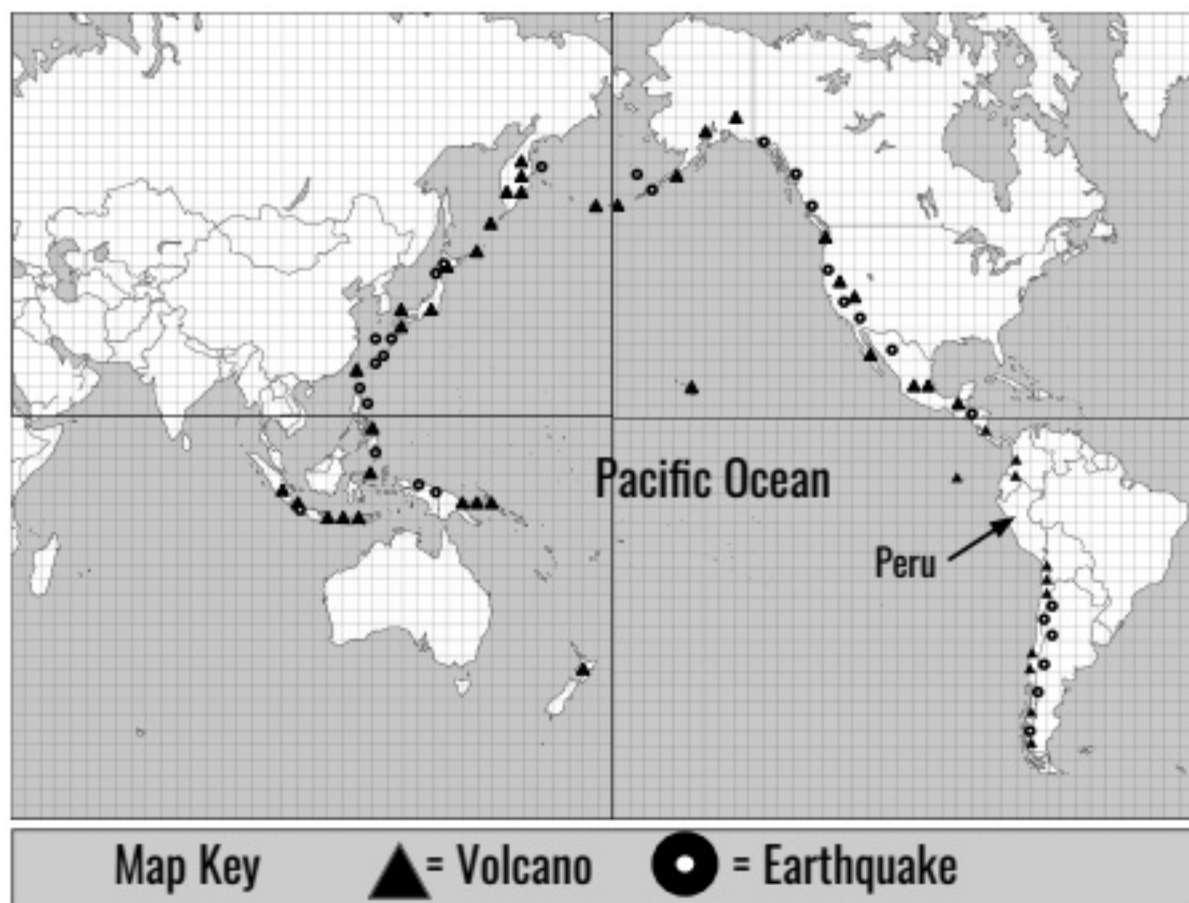
	
New Jersey	Florida
<p>Jayla lives in New Jersey. During the winter, snow and ice cover the ground. The sidewalks in Jayla's neighborhood have lots and lots of cracks.</p>	<p>Aiden lives in Florida. During the winter, it never snows. The sidewalks in Aiden's neighborhood have a few little cracks.</p>

4. Aiden and Jayla recently learned that weathering (root wedging and ice wedging) breaks down rocks. They think that root wedging and ice wedging have caused the cracks in the sidewalks where they live. Why do sidewalks in New Jersey have so many more cracks than the sidewalks in Florida?

- Only ice wedging is causing the sidewalk cracks in New Jersey. Both root wedging and ice wedging are causing the sidewalk cracks in Florida.
- Only ice wedging is causing the sidewalk cracks in Florida. Both root wedging and ice wedging are causing the sidewalk cracks in New Jersey.
- Only root wedging is causing the sidewalk cracks in New Jersey. Both root wedging and ice wedging are causing the sidewalk cracks in Florida.
- Only root wedging is causing the sidewalk cracks in Florida. Both root wedging and ice wedging are causing the sidewalk cracks in New Jersey.

5. Jayla and Aiden wonder: ***“Do the cold New Jersey winters affect how many cracks appear in the sidewalk?”*** To answer their question, Jayla and Aiden decide to carry out a science investigation. They first need to find evidence that there are more sidewalk cracks in New Jersey compared to sidewalks in Florida. Which of the following could be used as evidence to answer their question? There may be more than 1 correct answer. Circle all the correct answers.

- They can make observations and count how many sidewalk cracks they notice along 3 streets in their neighborhoods. Then they can compare their observations.
- They can make observations and count the number of houses they notice along 3 streets in their neighborhoods. Then they can compare their observations.
- They can take measurements of the cracks that they notice along 3 streets in their neighborhoods. Then they can compare their measurements.
- They can use rulers to take measurements of the mushrooms that they notice along 3 streets in their neighborhoods. Then they can compare their measurements.



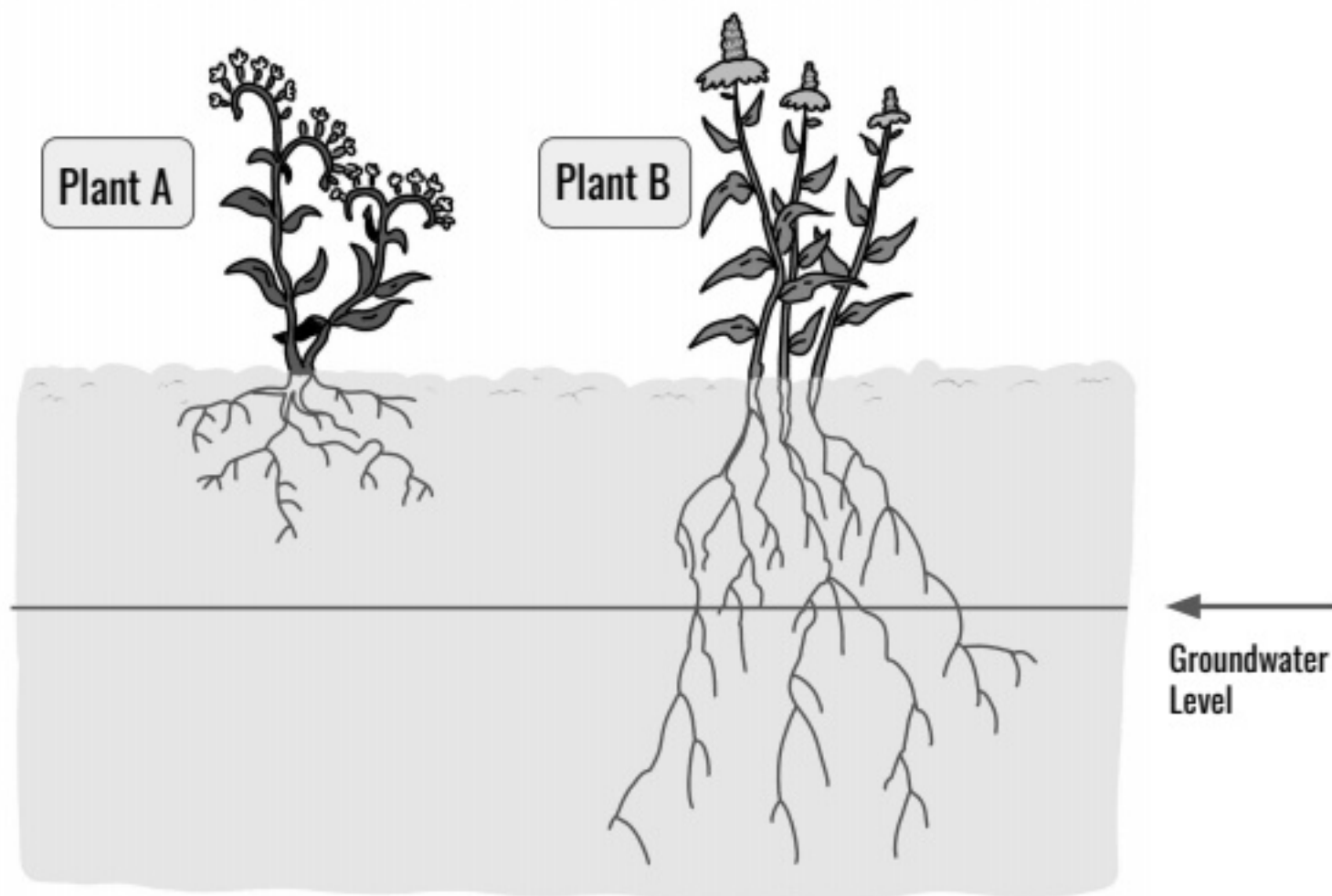
The map above shows the locations of active volcanoes and recent earthquakes. Use the information from this map to answer Questions 6 and 7.

6. Isabella lives in Peru. The arrow on the map shows where Peru is located. Do you think a volcano could pop up where Isabella lives?
- No, I do not think a volcano could pop up where Isabella lives. The pattern of volcanoes on the map shows that it's not possible for a volcano to pop up in this location.
  - No, I do not think a volcano could pop up where Isabella lives. The map shows that there isn't a volcano where she lives so it could never happen.
  - Yes, I think a volcano could pop up where Isabella lives. The pattern of volcanoes shows that it's possible for a volcano to pop up in this location.
  - Yes, I think a volcano could pop up where Isabella lives. The map shows that there is already a volcano where she lives.

7. What observations can you make from the map of volcanoes and earthquakes?

Circle **True** or **False** for each sentence.

- |      |       |  |
|------|-------|--|
| True | False | Volcanoes form a pattern around the Pacific Ocean. The pattern is in the shape of a ring or horseshoe. |
| True | False | Earthquakes do not form any kind of pattern.   |
| True | False | Volcanoes and earthquakes have similar patterns of where they are located.                             |



3. Jayden is trying to grow a flower garden in his town. He wants to grow two types of plants, Plant A and Plant B. Plant A has short, shallow roots and Plant B has long, deep roots. It hasn't rained in a very long time in Jayden's town. There is groundwater below the line shown in the picture above. Draw arrows and add words to the picture above to show how each plant does or does not interact with the groundwater.

4. Jayden wants to plant more flowers in his garden, but he also wants to conserve water. He wants to choose plants that won't need to be watered with a hose. Which plant, Plant A or Plant B, is a better option for Jayden's garden? Why? Use evidence from the model above to support your answer.

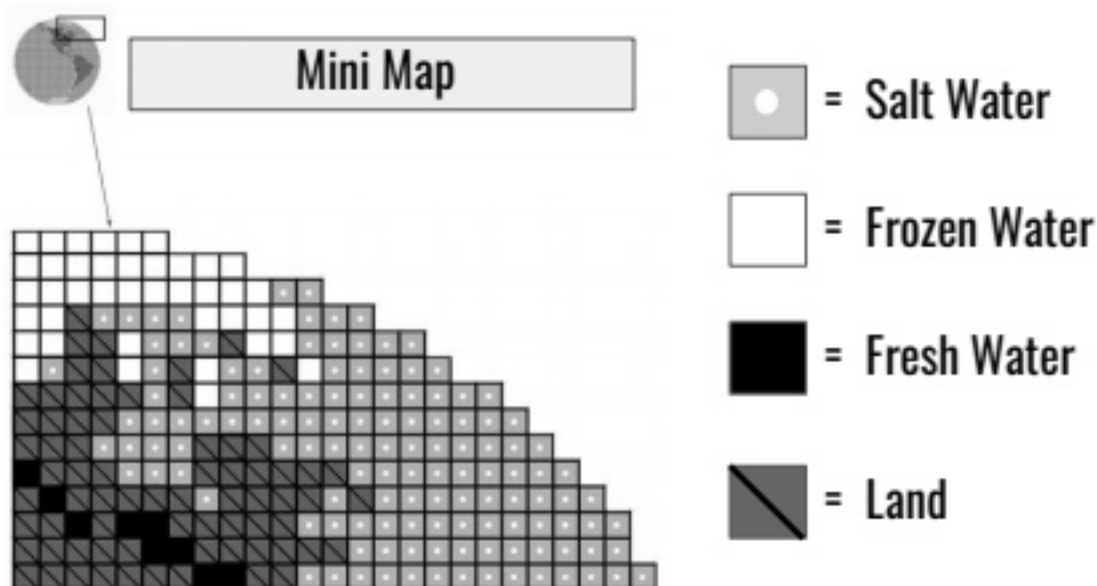
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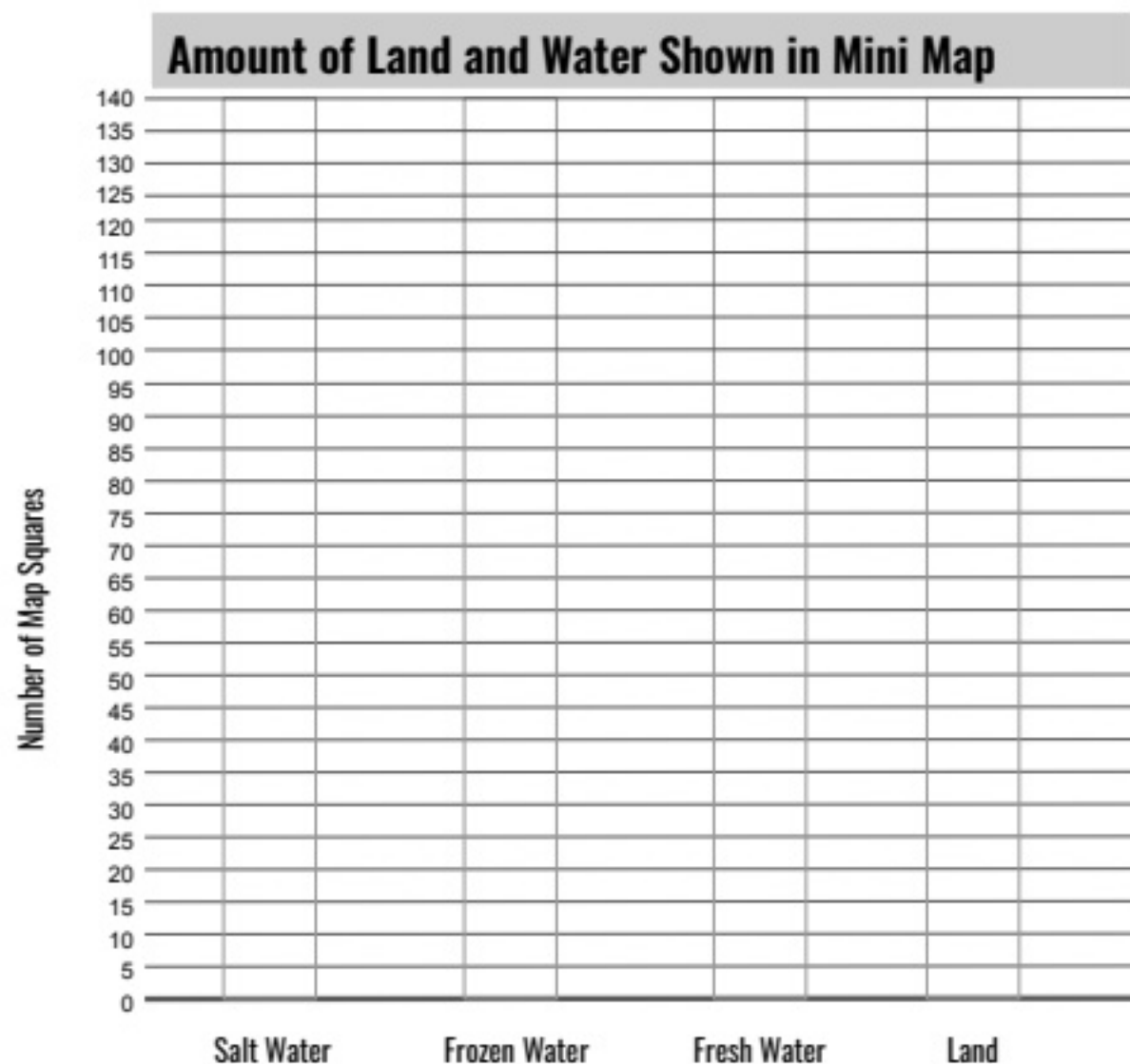
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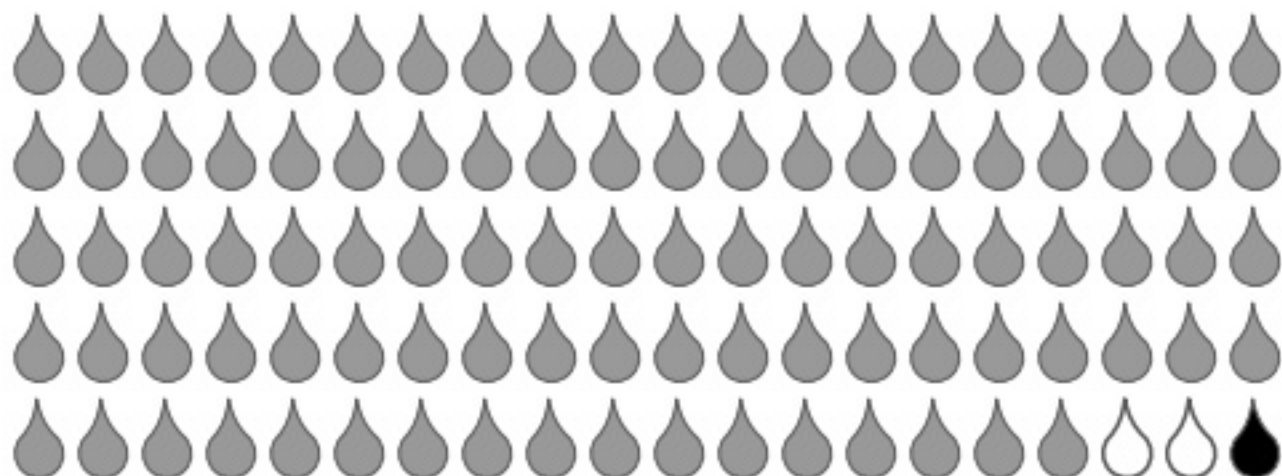


10. The Mini Map above shows the land and types of water in a small part of the world. There are 130 squares of salt water, 41 squares of frozen water, 9 squares of fresh water, and 72 squares of land. Use this information to complete the bar graph below, adding gray bars to compare the types of water and the land in this area.





## The Amount of Water on Earth



### KEY

1 drop = 1 percent



= Salt Water



= Frozen Water



= Fresh Water

The picture above is a type of graph that shows information about the amount of water on Earth. There are 100 drops to represent 100% of the water on Earth. Use this graph to help you answer Questions 7, 8, and 9.

7. How would you describe the Earth's water?

- a. Most of Earth's water is salt water. The little bit of fresh water on Earth is mostly frozen.
- b. Most of Earth's water is fresh water. The little bit of salt water on Earth is mostly frozen.
- c. Most of Earth's water is salt water. The little bit of fresh water on Earth is not frozen.
- d. Most of Earth's water is fresh water. Most of the salt water is frozen.

8. What percentage of Earth's water is NOT salt water?

- a. 1%
- b. 2%
- c. 3%
- d. 97%

9. Describe why it's important to protect the Earth's fresh water resources. Use the graph above and any other information that you know about Earth's water to support your reasoning.

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