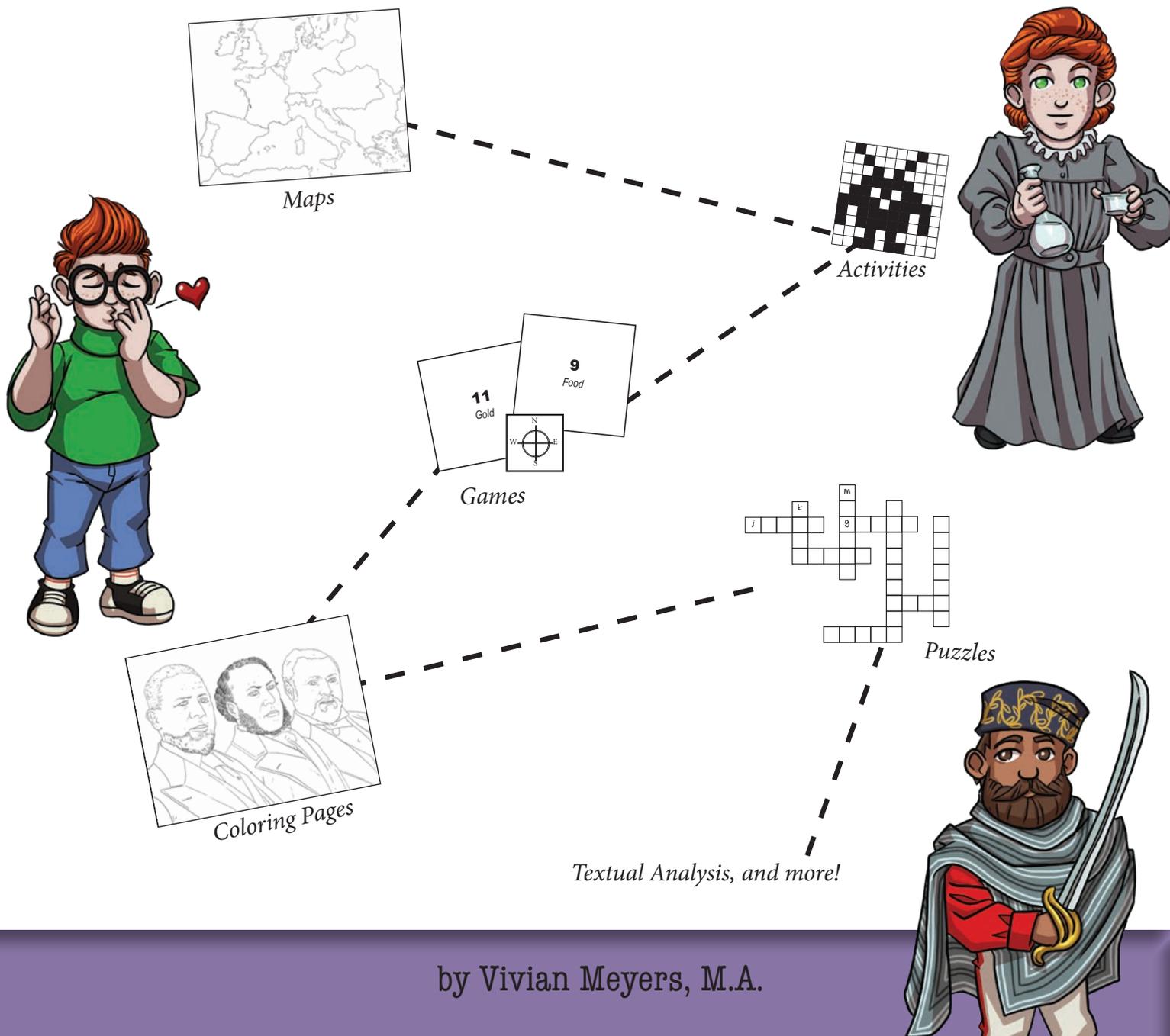


# A Student's Guide to Snapshots of Modern History

## Vol. 1



# A Student's Guide to Snapshots of Modern History Vol. 1

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# Contents

|  |     |
|--|-----|
| <i>Draw What You Hear</i> _____  | 1   |
| Chapter 1: Albert Builds the Crystal Palace _____                          | 6   |
| <i>Jacquard Looms and Binary Numbers Template</i> _____                    | 10  |
| <i>Curation Placards</i> _____   | 11  |
| Chapter 2: Napoleon III Invades Crimea _____                               | 13  |
| Chapter 3: Darwin Classifies Finches _____                                 | 18  |
| <i>Genetics with Punnett Squares</i> _____                                 | 23  |
| <i>Germ Theory Lab Sheet</i> _____   | 25  |
| Chapter 4: The Queen Takes Over India _____                                | 27  |
| Chapter 5: New Zealand and Australia Achieve Self-Rule _____               | 32  |
| Chapter 6: Carnarvon Plans Confederations in Canada and South Africa _____ | 38  |
| <i>Quiz Show Round 1</i> _____   | 43  |
| <i>Topic Review Cards</i> _____  | 45  |
| Chapter 7: The Risorgimento Sweeps Italy _____                             | 47  |
| Chapter 8: The Kaiser Is Crowned _____                                     | 52  |
| <i>National Anthem Analysis</i> _____                                      | 57  |
| Chapter 9: Slavery Divides the Union _____                                 | 58  |
| Chapter 10: The Confederacy Tries to Secede _____                          | 63  |
| <i>Civil War Song Comparison</i> _____                                     | 69  |
| Chapter 11: Napoleon Invades Mexico _____                                  | 71  |
| Chapter 12: Spain Steals Peru's Guano _____                                | 76  |
| <i>Quiz Show Round 2</i> _____   | 81  |
| <i>Topic Review Cards</i> _____  | 83  |
| Chapter 13: Reconstruction Fails _____                                     | 85  |
| Chapter 14: Puerto Rico, Cuba, and Brazil End Slavery _____                | 91  |
| Chapter 15: Forced Marches to Bosque Redondo _____                         | 96  |
| Chapter 16: Poundmaker Sues for Peace _____                                | 102 |
| <i>Excerpt from Geronimo's Story of His Life</i> _____                     | 108 |
| Chapter 17: Emperor Meiji Modernizes Japan _____                           | 109 |
| <i>Political Cartoon Maps</i> _____  | 115 |
| Chapter 18: China Tries to Self-Strengthen _____                           | 117 |
| <i>Quiz Show Round 3</i> _____   | 123 |
| <i>Topic Review Cards</i> _____  | 125 |
| Chapter 19: Napoleon Also Invades Vietnam _____                            | 127 |
| Chapter 20: Chulalongkorn Protects Siam's Independence _____               | 132 |
| <i>Buffer State Game Pieces</i> _____                                      | 137 |
| Chapter 21: Europe Scrambles for Africa _____                              | 145 |
| Chapter 22: Europe Commits Atrocities in Africa _____                      | 150 |
| <i>Williams' Letter to Leopold, Abridged</i> _____                         | 156 |
| Chapter 23: Herzl Dreams of Zion _____                                     | 158 |
| Chapter 24: Immigrants Come to the Americas _____                          | 162 |
| <i>The New Colossus</i> _____  | 168 |
| <i>Quiz Show Round 4</i> _____   | 169 |
| <i>Topic Review Cards</i> _____  | 171 |

|   |     |
|---|-----|
| Chapter 25: Bright Ideas Light the World _____            | 173 |
| Chapter 26: Invention Takes Flight _____                  | 177 |
| Chapter 27: Artists Break the Rules _____                 | 182 |
| Chapter 28: Art Knows No Rules _____                      | 186 |
| Chapter 29: The Bon Marché Opens Its Doors _____          | 191 |
| Chapter 30: Advertisers Sell Desire _____                 | 195 |
| <i>Zoetrope Template</i> _____                            | 199 |
| <i>Quiz Show Round 5</i> _____                            | 207 |
| <i>Topic Review Cards</i> _____                           | 209 |
| Chapter 31: Women Advocate for Their Rights _____         | 211 |
| Chapter 32: Suffragettes Demand Their Rights _____        | 215 |
| <i>Suffrage Cartoons</i> _____                            | 220 |
| <i>Women's Rights Songs</i> _____                         | 223 |
| Chapter 33: Kalākaua Signs the Bayonet Constitution _____ | 225 |
| Chapter 34: Teddy Builds a Canal _____                    | 229 |
| <i>The White Man's Burden Analysis</i> _____              | 235 |
| Chapter 35: China Tries to Become a Republic _____        | 236 |
| Chapter 36: Workers Strike for an Eight-Hour Day _____    | 242 |
| <i>Workers' Songs</i> _____                               | 247 |
| <i>Quiz Show Round 6</i> _____                            | 249 |
| <i>Topic Review Cards</i> _____                           | 251 |

# Draw What You Hear

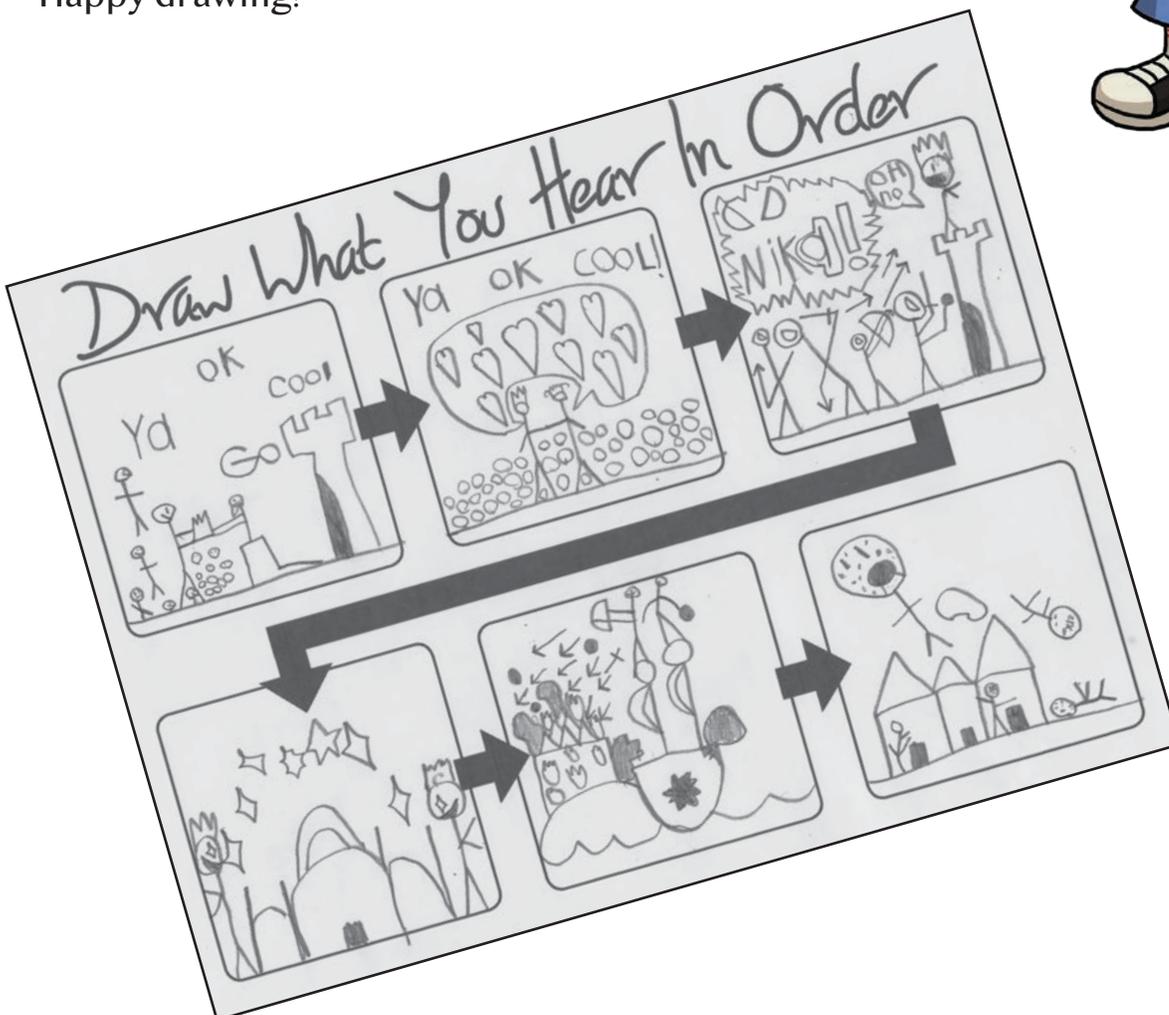
Hey folks! I'm Arty Arthur.

Art is a great way to keep your brain engaged! Some people are great at just listening, but me, well I need to keep my hands busy—it helps me listen better! So I've created Arthur's handy-dandy "Draw What You Hear" pages to help you get the most out of Curiosity Chronicles.

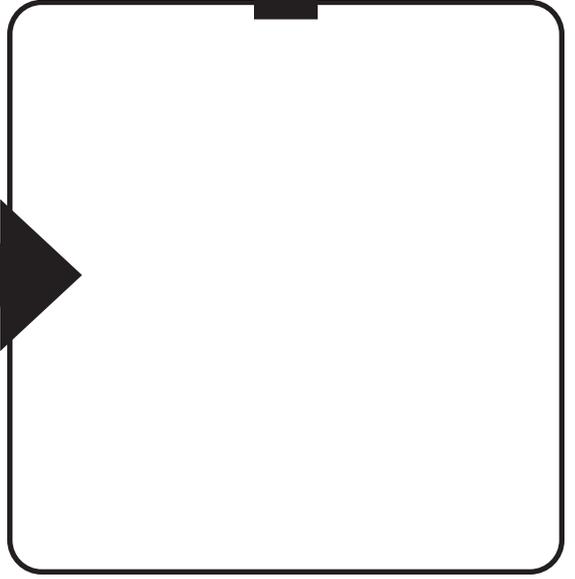
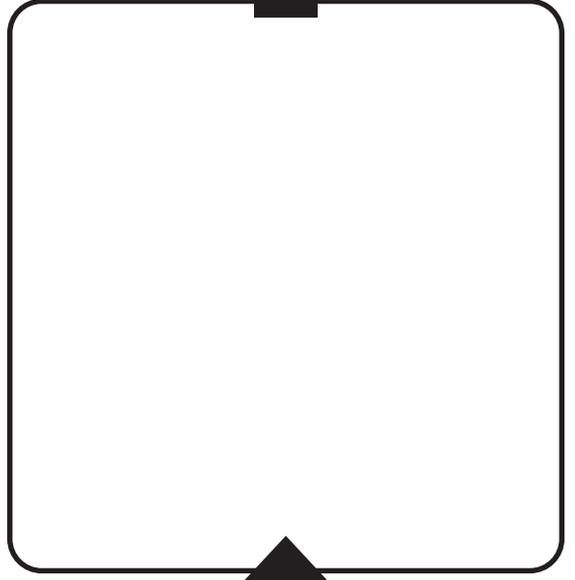
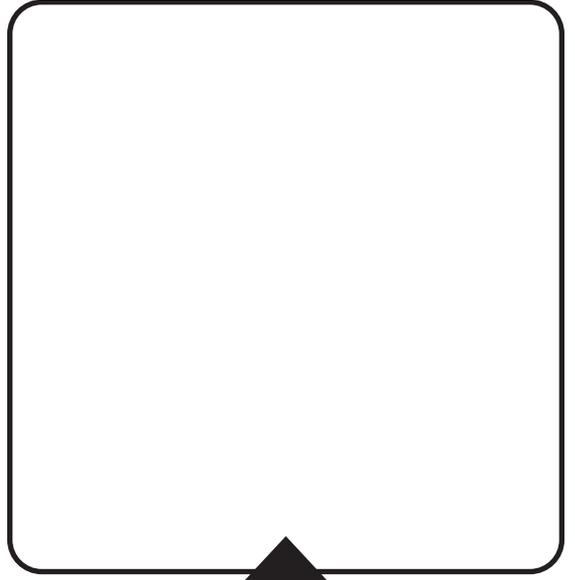
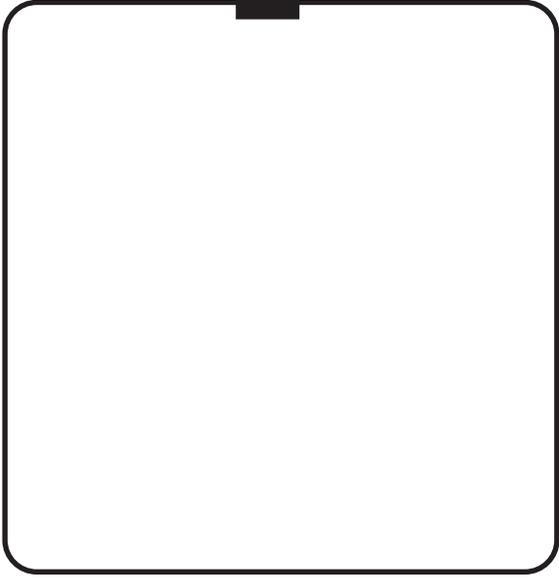
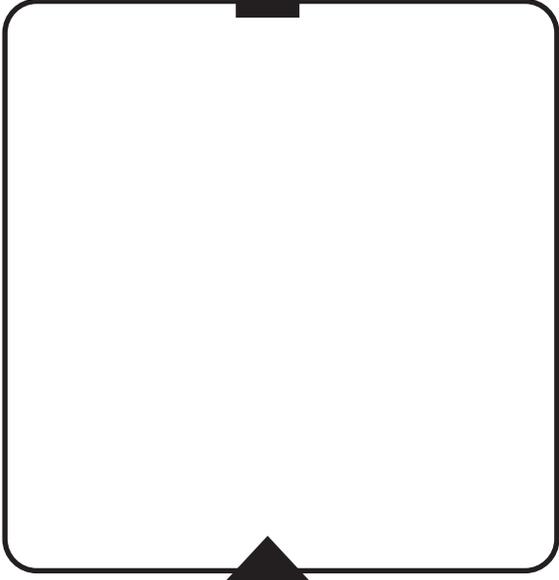
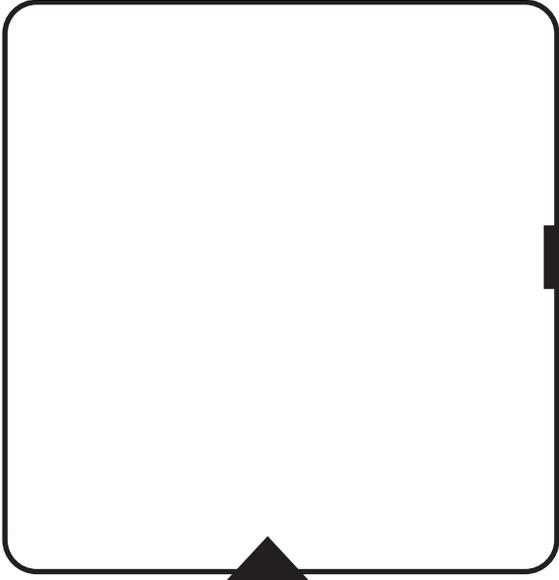
You could draw what's happening in each Snapshot in order. You could draw your favorite parts. You could draw what you have questions about. Draw whatever you want! Make as many copies of these pages as you need to stay engaged all year long.

I've included a sample of my own "Draw What You Hear" below to give you some ideas.

Happy drawing!



*Draw What You Hear In Order*

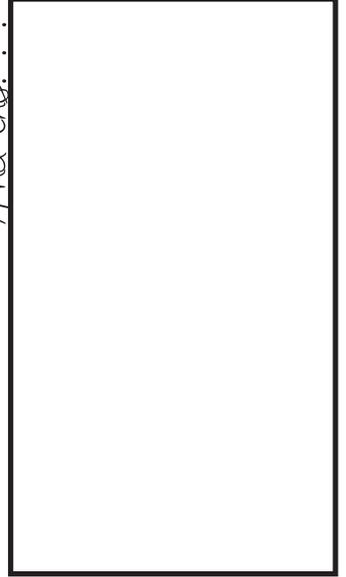


# Draw What You Like

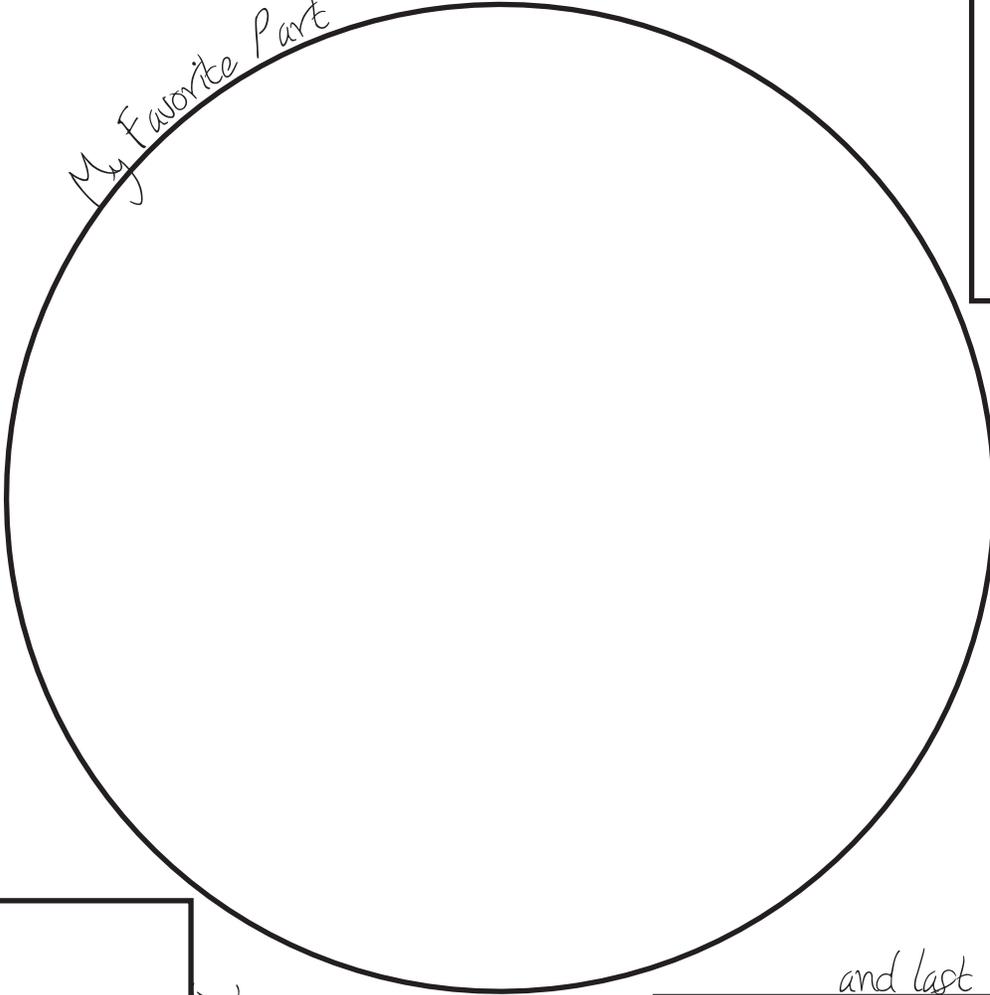
*This was cool too*



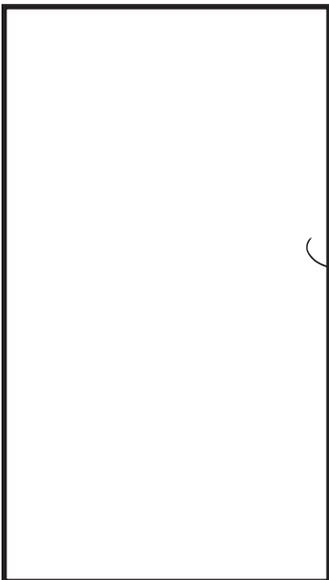
*And this...*



*My Favorite Part*



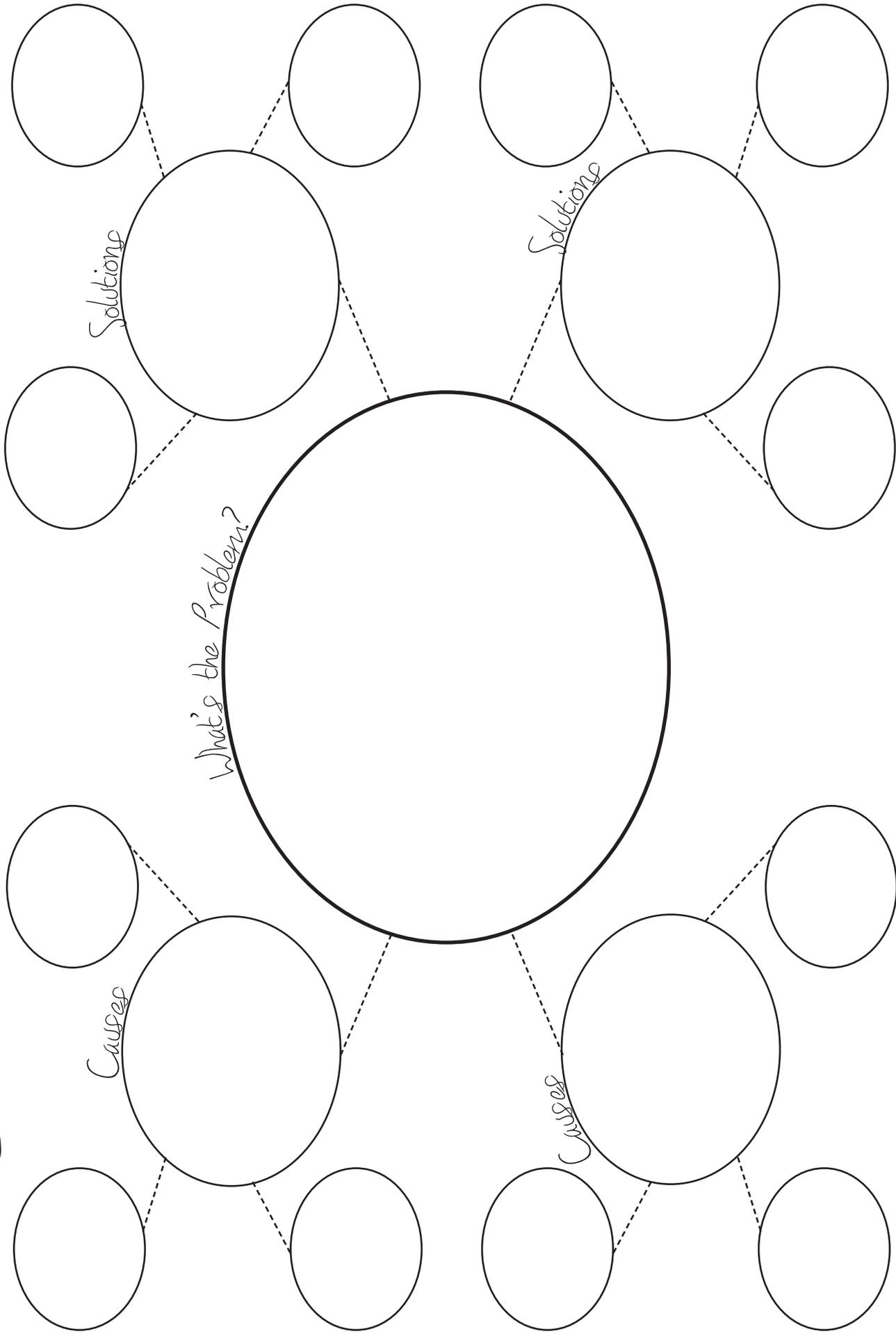
*Don't forget about...*



*and last of all...*



# Draw What Caused What



# Draw What You Hear

|  |  |
|--|--|
|  |  |
|  |  |

# Chapter 1: Albert Builds the Crystal Palace

## Vocabulary

Match the following vocabulary words on the left to the correct definition on the right.

- |                         |   |
|-------------------------|---|
| 1. John Stuart Mill     | A. Husband of Queen Victoria who spearheaded the Great Exhibition.  |
| 2. Classical Liberalism | B. Political philosophy that promotes free trade and business and believes governments ought to preserve individual liberty; based on the principles of utilitarianism. |
| 3. Free Speech          | C. Large international events modeled on the Great Exhibition held around the world to show off cultural and scientific accomplishments.                                |
| 4. Utilitarianism       | D. A spectacular display of power and/or wealth.  |
| 5. Prince Albert        | E. An event in London in 1851 dedicated to showcasing technology and inventions.  |
| 6. Crystal Palace       | F. A large glass building designed and built for the Great Exhibition.  |
| 7. Great Exhibition     | G. 19th century philosopher who codified Classical Liberalism; primary author of <i>On Liberty</i> .  |
| 8. Nationalism          | H. A moral philosophy based on practicality and creating the most amount of good for the greatest number of people without unjustly taking away anyone's liberty.       |
| 9. Pageantry            | I. Political philosophy that involves being extremely proud of a national identity and competitive toward other nations.  |
| 10. World's Fairs       | J. The ability to freely and openly discuss ideas; Mill believed free speech was essential to promote liberty.  |

## Comprehension Questions

Answer the following questions either out loud with a partner or by writing your answers here.

1. How and why do empires use pageantry?

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2. Why was the Great Exhibition held?

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3. What were some of the items displayed at the Great Exhibition?

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### What Do You Think Questions

Discuss the following questions with a partner. There are no right or wrong answers.

1. What are some examples of pageantry from previous eras of history? How did that pageantry help a ruler gain or keep power?
2. Can you think of any examples of pageantry you've personally witnessed? (Answers may include political, sporting, cultural, religious, or other events.)
3. Why do you think pageantry is such an effective tool of empire building?

### Map Work

- none

### Timeline

- May - October 1851 — The Great Exhibition

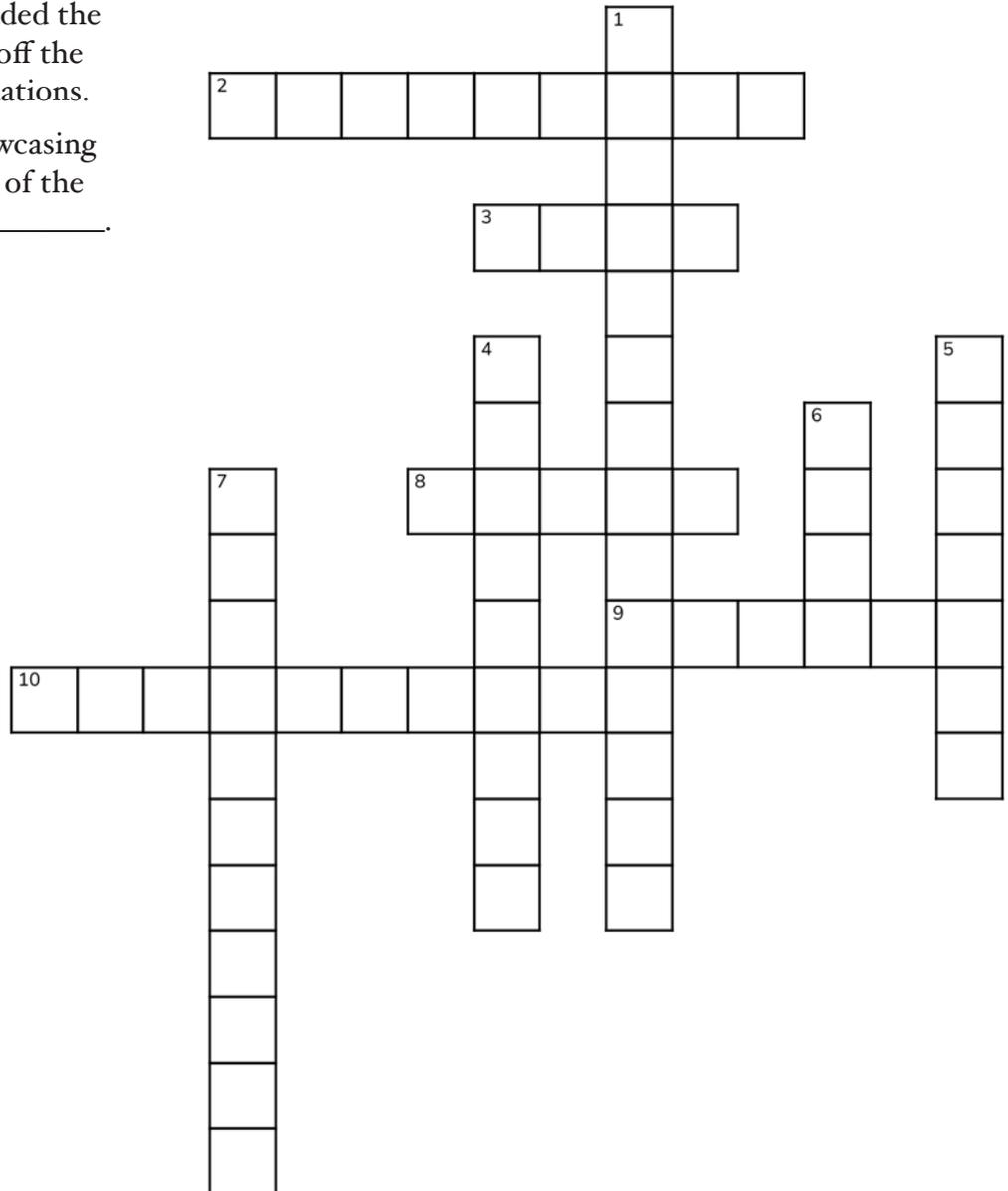
# Crossword

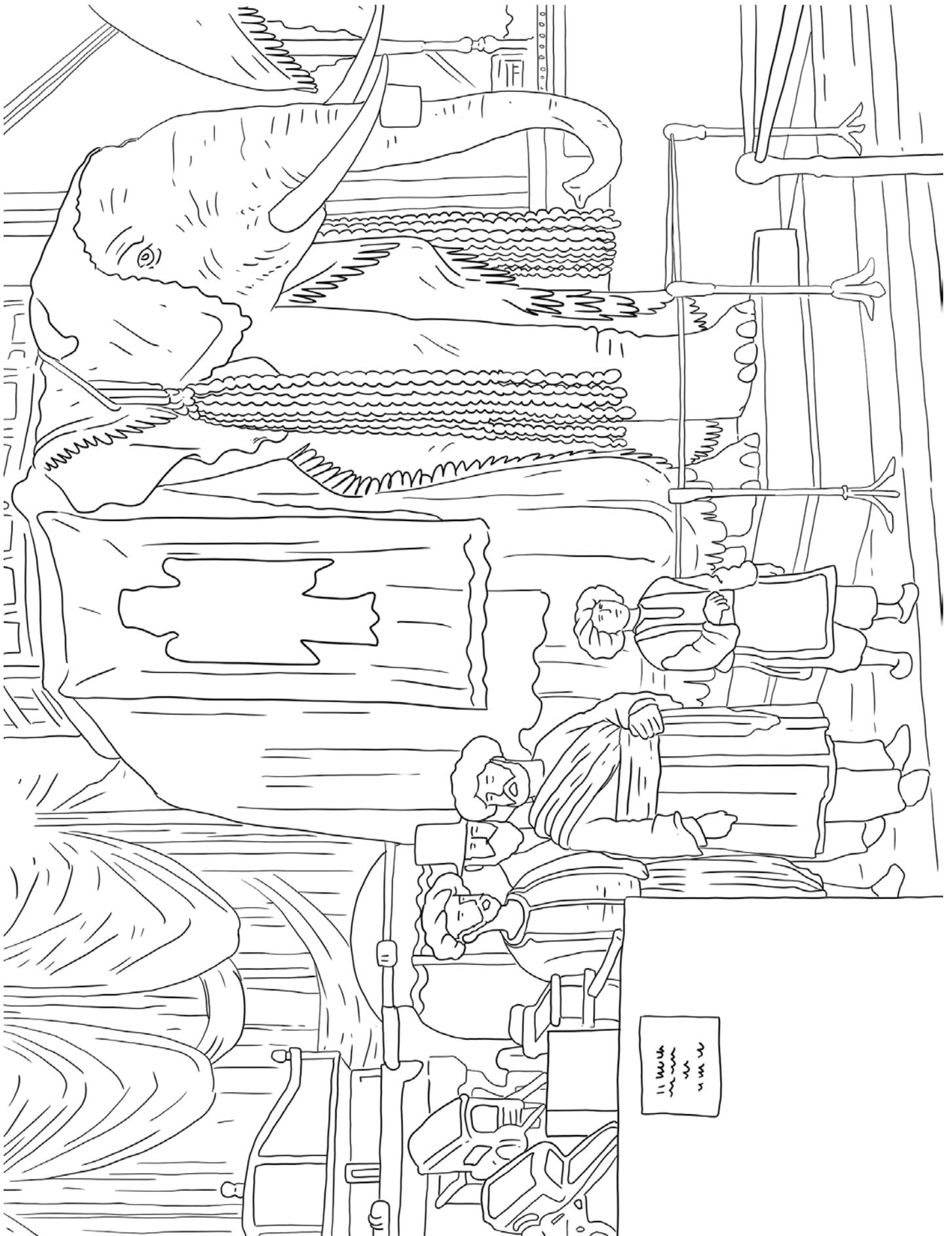
## Down

1. Unlike most moral philosophies, \_\_\_\_\_ is not based on religious or moral traditions but on being practical.
4. Based on the principles of utilitarianism, \_\_\_\_\_ Liberalism promotes free trade and governments preserving individual liberty.
5. The \_\_\_\_\_ Palace was a large glass building designed and built for the Great Exhibition.
6. \_\_\_\_\_ speech is the ability to freely and openly discuss ideas.
7. A political philosophy that involves being extremely proud of a national identity.

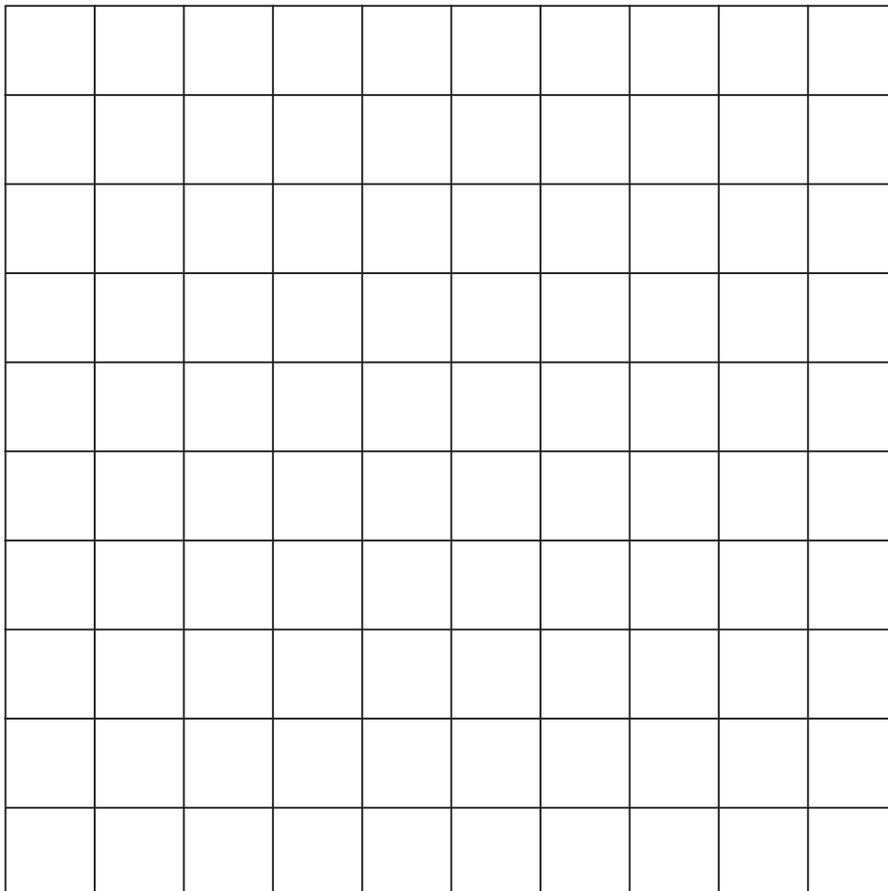
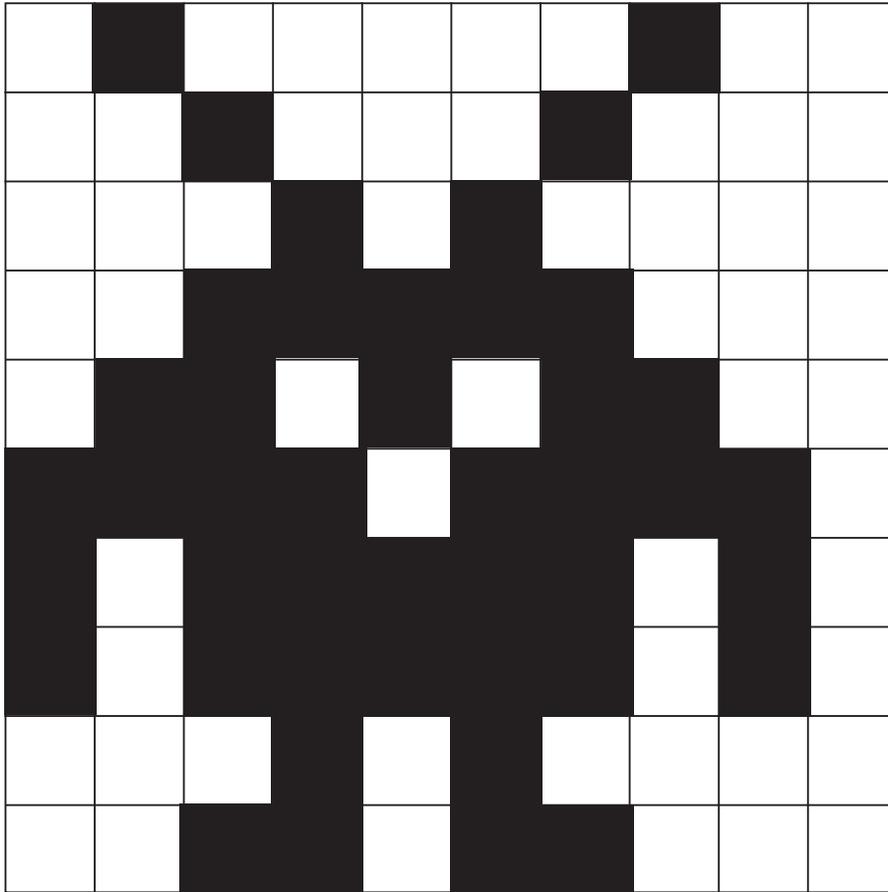
## Across

2. Empires use \_\_\_\_\_ to display their spectacular, power, and/or wealth.
3. The philosopher John Stuart \_\_\_\_\_ was the primary author of *On Liberty*.
8. A World's \_\_\_\_\_ is an event that shows off cultural and scientific accomplishments from around the world.
9. Prince \_\_\_\_\_ spearheaded the Great Exhibition to show off the works and industry of all nations.
10. An 1851 London event showcasing technology and inventions of the time was the Great \_\_\_\_\_.

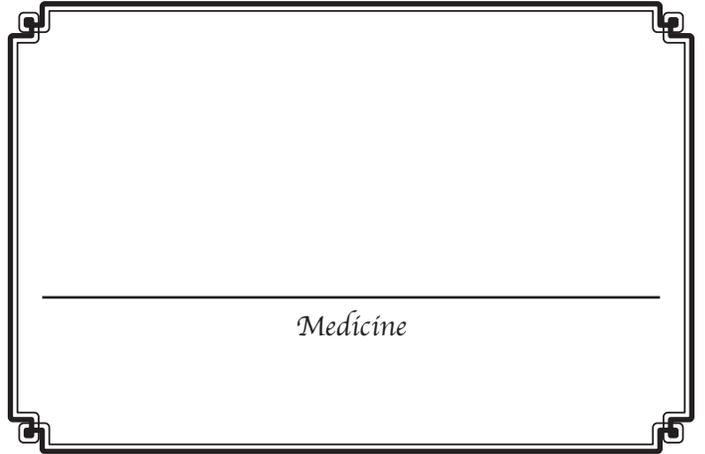
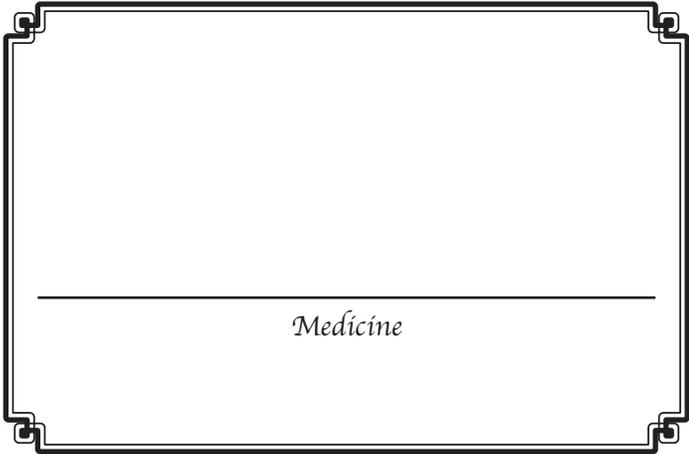
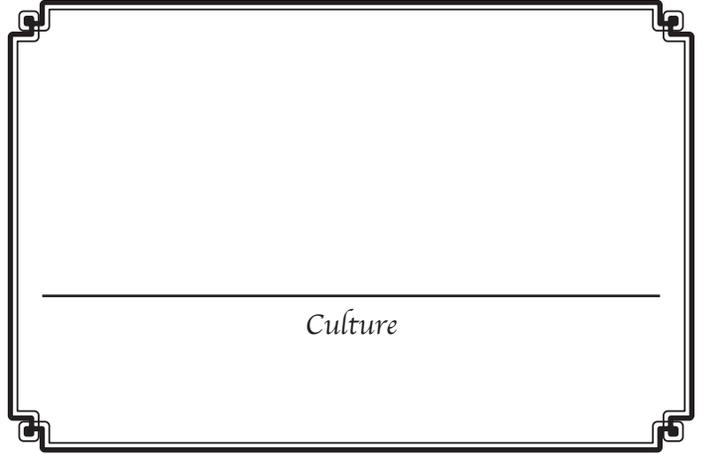
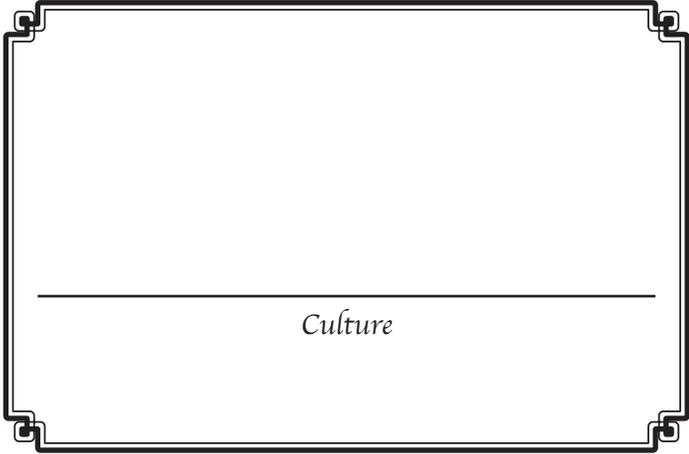
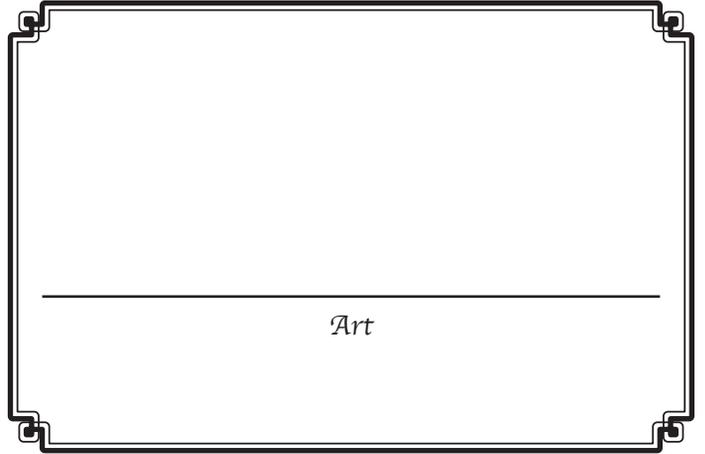
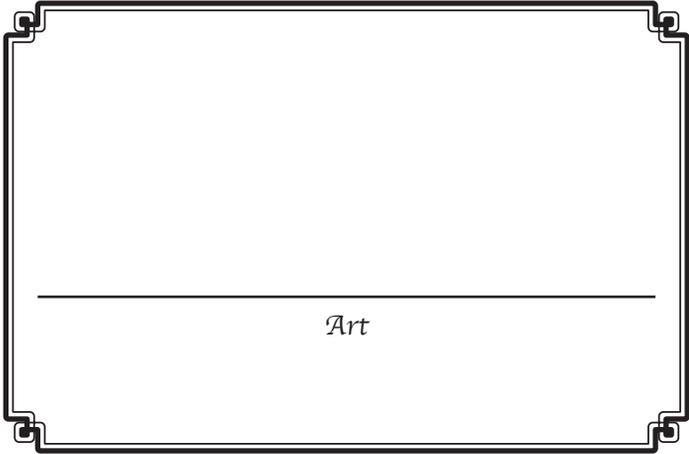
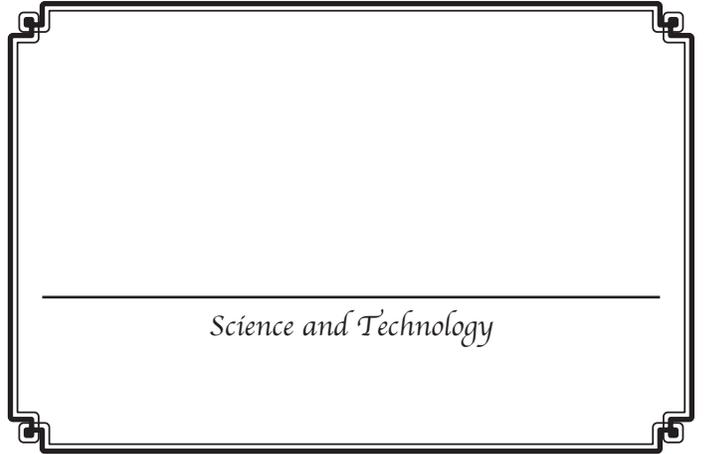
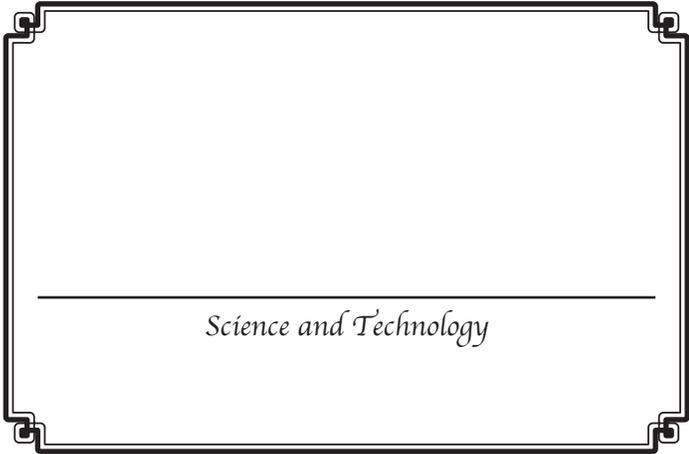




# Jacquard Looms and Binary Numbers Template



# Curation Placards





# Chapter 2: Napoleon III Invades Crimea

## Vocabulary

Match the following vocabulary words on the left to the correct definition on the right.

- |                              |  |
|------------------------------|--|
| 1. Analytical Engine         | A. Leader of a corps of nurses in the Crimean War. She advocated for hospital reforms and helped pioneer new methods to visually represent statistical data to make it easier to understand. |
| 2. Florence Nightingale      | B. A Jamaican-born nurse during the Crimean War who pioneered modern nursing while running a successful business.  |
| 3. Ada Lovelace              | C. Russian doctor who greatly improved emergency medicine and was the first to perform field surgery.  |
| 4. Imperial Reform Edict     | D. Inventor of punch cards, considered to be the first computer program and author of the first book on computer programming.  |
| 5. Crimean Peninsula         | E. A peninsula in Eastern Europe located at the northern shore of the Black Sea; part of the Russian Empire during this era.   |
| 6. Nikolay Ivanovich Pirogov | F. An era of modernizing reforms in the Ottoman empire.  |
| 7. Tanzimat Reforms          | G. A place where a country can affect change without formal authority.   |
| 8. Sphere of influence       | H. An all purpose calculator invented by Charles Babbage.  |
| 9. Chemical Weapons          | I. Weapons that release dangerous chemicals into the air that can harm or kill people.   |
| 10. Mary Seacole             | J. An order by the Ottoman Sultan that created equality for all people in the empire, regardless of religion.  |

## Comprehension Questions

Answer the following questions either out loud with a partner or by writing your answers here.

1. What types of reforms did the Ottoman Empire make during the Tanzimat Reforms?

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2. Why did the Crimean War start?

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3. How did warfare change during the Crimean War?

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4. Who was Florence Nightingale?

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5. Who was Mary Seacole?

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6. Who was Nikolay Ivanovich Pirogov?

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### What Do You Think Questions

Discuss the following questions with a partner. There are no right or wrong answers.

1. How does pageantry apply to warfare?
2. How do you think modern weaponry changes a soldier's experiences during war? (answers may include fighting feels more impersonal, more fear because bombs/bullets could strike at any time, sounds of explosions increase stress, frequent news from home may feel jarring compared to life in the war, etc.)

### Map Work

- Color the Black Sea blue. Label it.
- Color the Mediterranean Sea blue. Label it.
- Color the Russian Empire a color of your choice. Label it.
- Color the Ottoman Empire a color of your choice. Label it.

### Timeline

- Oct 1853 – March 1856 — Crimean War

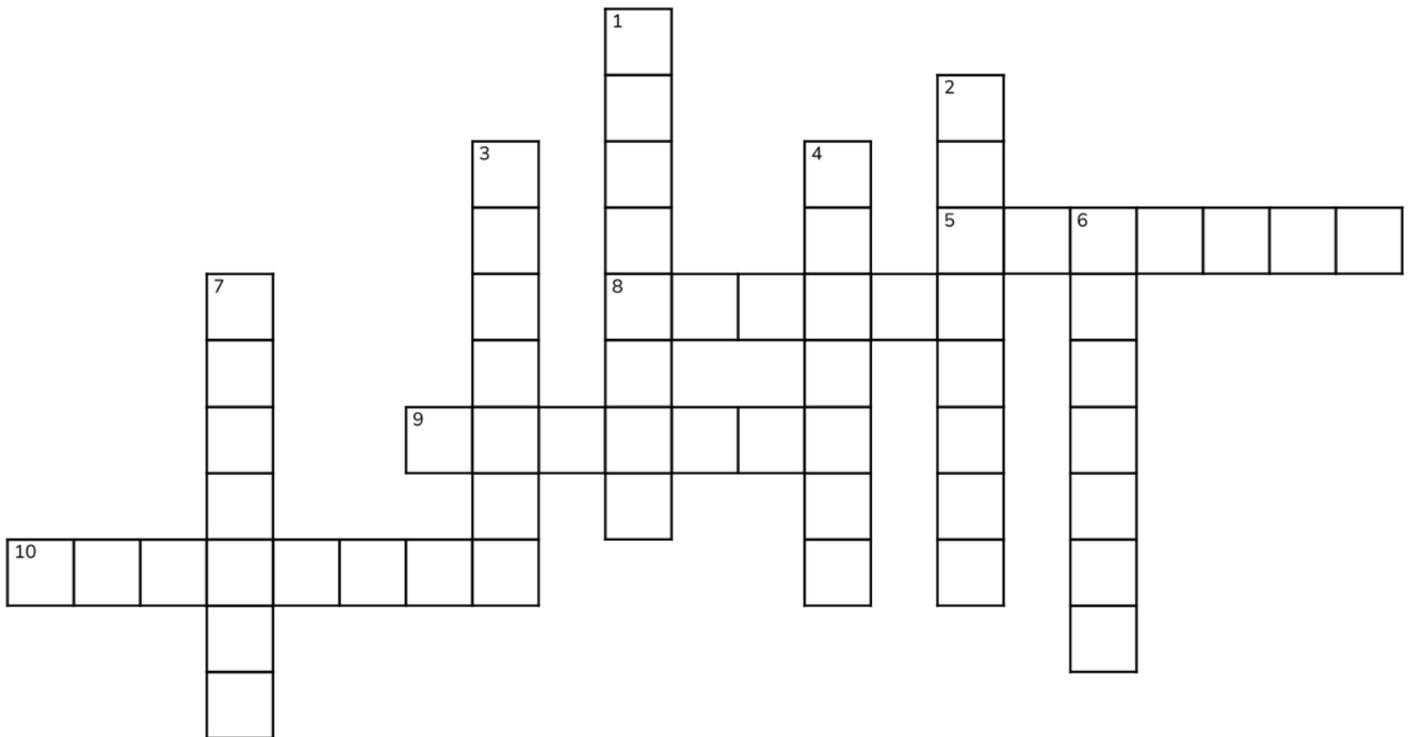
# Crossword

## Down

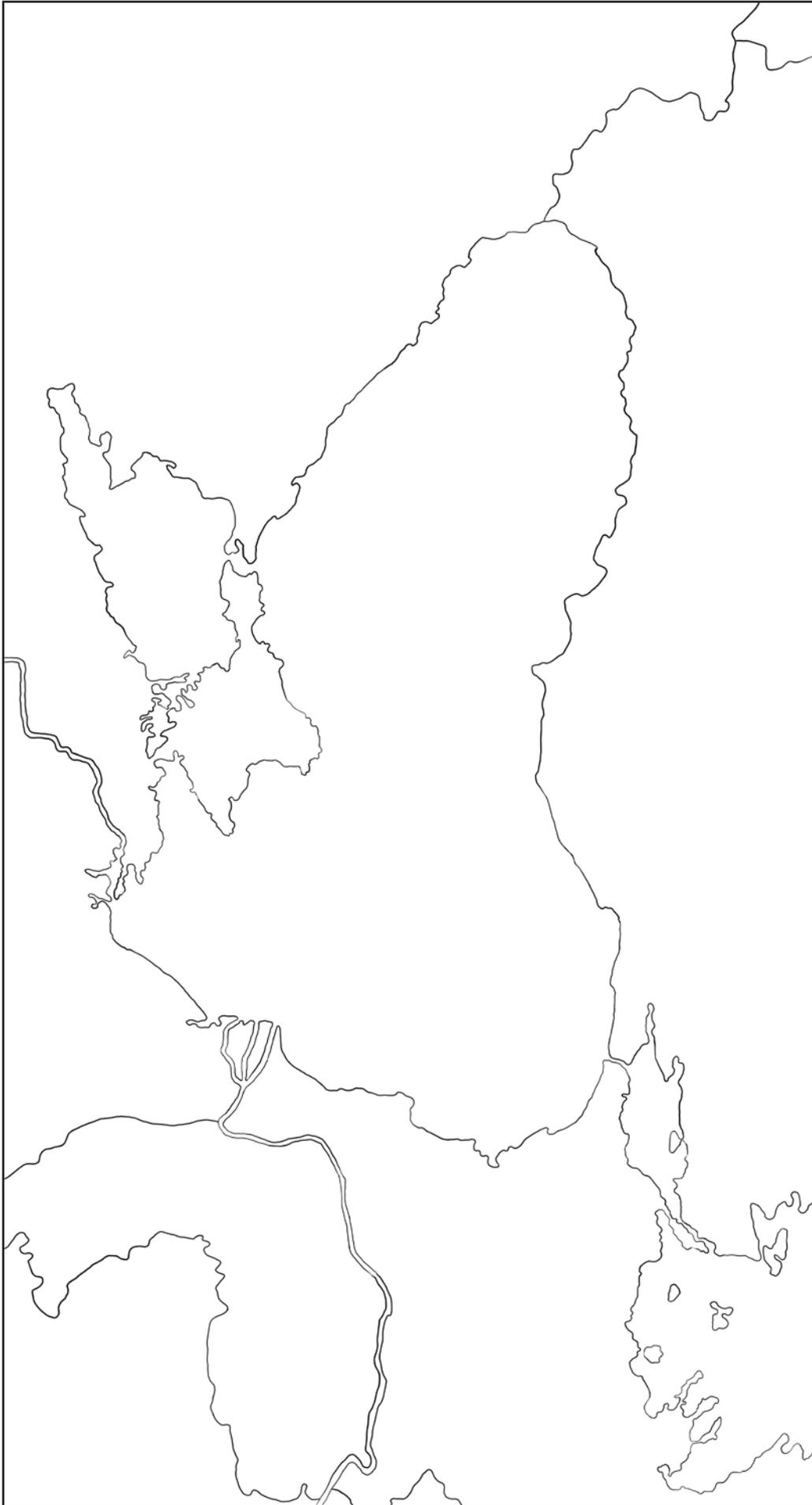
1. As a nurse in the Crimean War, \_\_\_\_\_ Nightingale collected data that showed men were more likely to die in the hospitals than on the battlefield.
2. The Ottoman Sultan issued the \_\_\_\_\_ Reform Edict, which created equality for all people in the empire, regardless of religion.
3. The first-ever war correspondent was an Irish journalist named William Howard \_\_\_\_\_.
4. The \_\_\_\_\_ War was the first war to rely on modern infrastructure like railroads and telegraphs.
6. The process of adding grooves to the inside of a gun's barrel to spin the bullet, increasing its distance and accuracy.
7. In 1839 the \_\_\_\_\_ Empire began an era of reform called the Tanzimat Reforms.

## Across

5. Nikolay Ivanovich \_\_\_\_\_ was the first doctor to perform field surgery.
8. Charles Babbage invented the analytical \_\_\_\_\_, considered to be the first computer.
9. Mary \_\_\_\_\_ was a Jamaican-born nurse during the Crimean War who pioneered modern nursing.
10. \_\_\_\_\_ weapons release dangerous chemicals into the air that can harm or kill people.



Crimean War





# Chapter 3: Darwin Classifies Finches

## Vocabulary

Match the following vocabulary words on the left to the correct definition on the right.

- |                        |   |
|------------------------|---|
| 1. Charles Darwin      | A. Theory that animals have to compete with each other to survive.  |
| 2. Eugenics            | B. Naturalist who developed the theory of evolution and natural selection.  |
| 3. Germ Theory         | C. Scientist who discovered chirality and pasteurization, proved germ theory correct, and invented multiple vaccines. |
| 4. Natural Selection   | D. Scientist who discovered the basic principles of genetics by studying pea plants.                                  |
| 5. Galapagos Islands   | E. Theory that humans could intentionally create “more evolved” and “better” children over several generations.       |
| 6. Gregor Mendel       | F. Theory that disease, mold, etc are spread through microscopic organisms.   |
| 7. Louis Pasteur       | G. Theory proposed by Charles Darwin that explained the origin of plant and animal life on earth.                     |
| 8. Theory of Evolution | H. Study of heredity or how traits are passed from parent to child.   |
| 9. Uniformitarianism   | I. An isolated island group off the coast of South America where Darwin encountered a host of unique animals.         |
| 10. Genetics           | J. Theory that argues that natural processes do not change.   |

## Comprehension Questions

Answer the following questions either out loud with a partner or by writing your answers here.

1. What were some important scientific discoveries before Darwin that paved the way for the theory of evolution?

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2. What are some pieces of evidence that helped Darwin create the theory of evolution?

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3. Why was the theory of evolution controversial?

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4. What were some of the impacts of the theory of evolution?

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### What Do You Think Questions

Discuss the following questions with a partner. There are no right or wrong answers.

1. The theory of evolution didn't just change people's views on the origin of life, but it also shifted how people viewed daily life. The theory made popular the idea that living creatures are in competition and the weak will die. How might an idea like that change how humans interact with each other?
2. How do you think someone's beliefs about the origin of life affect their view of other people?
3. Discuss the theory of eugenics. Why might it attract so many supporters? What are some real-world problems with the theory?

### Map Work

- Label each of the continents.
- Trace the path of Charles Darwin's voyage by copying the map found on page 24 of *Snapshots of Modern History Vol. 1*.

### Timeline

- November 1859 — *On the Origin of Species* published
- 1864 — Pasteurization invented
- July 1885 — First human rabies vaccine

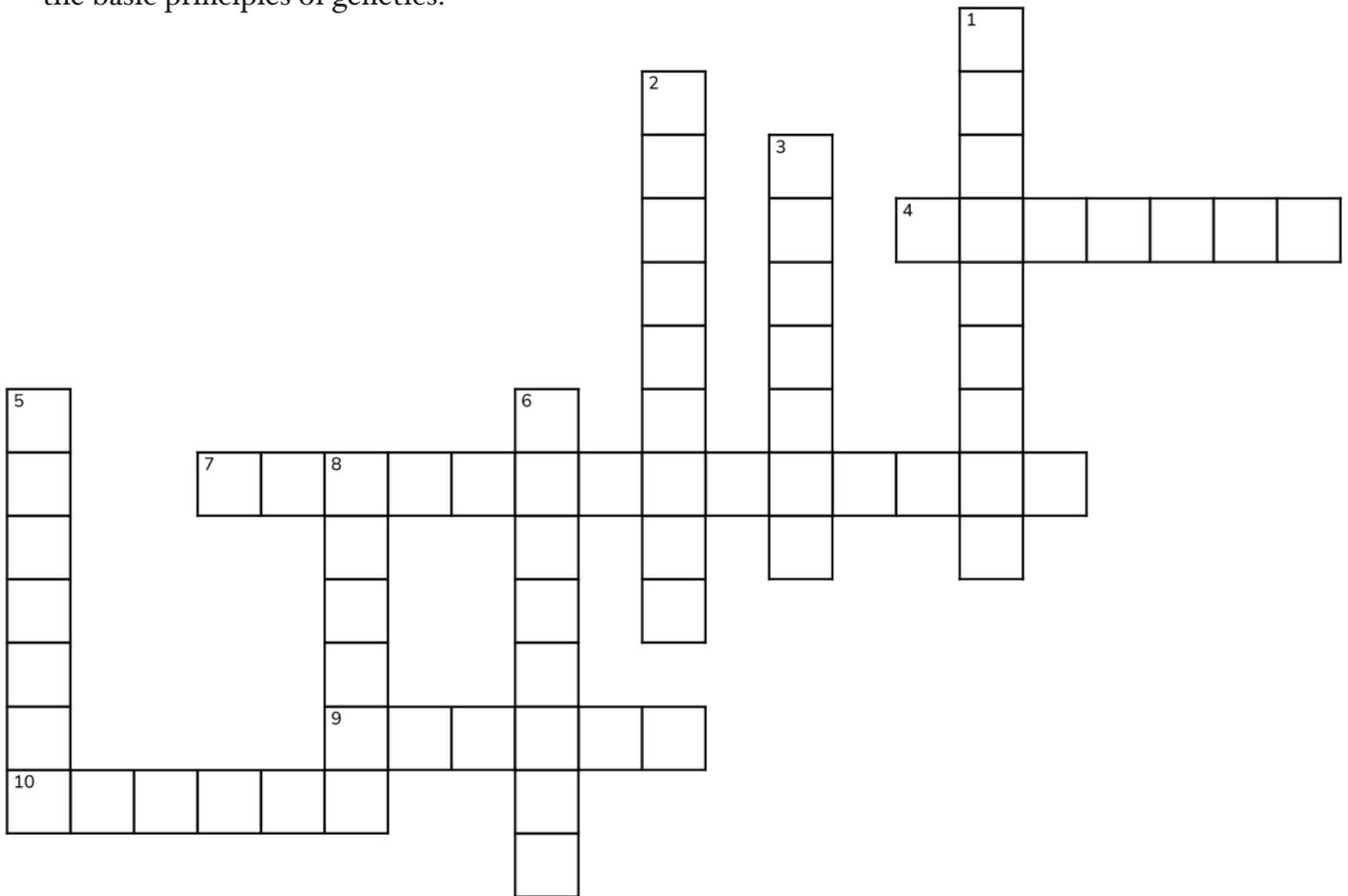
# Crossword

## Down

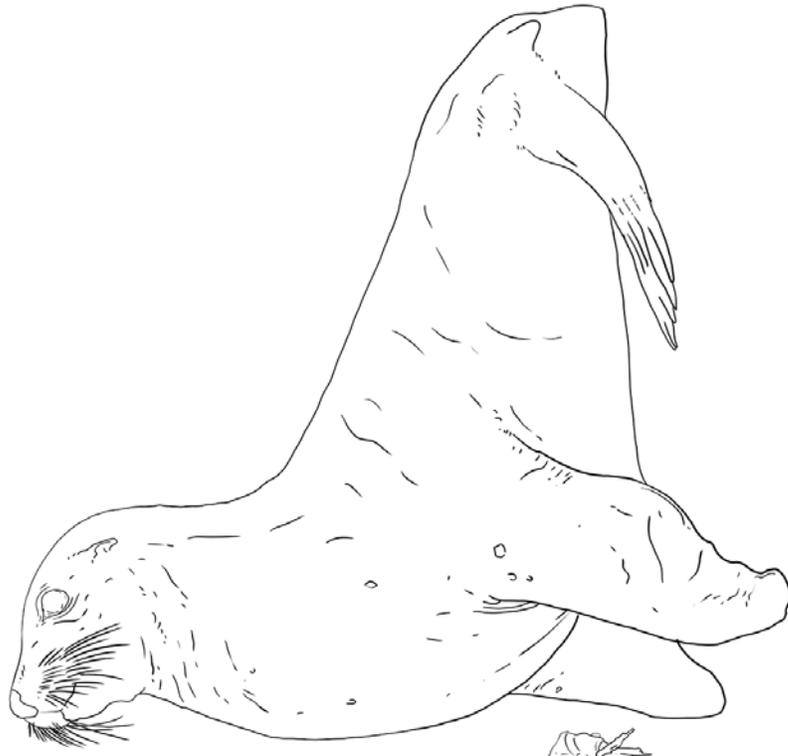
1. Darwin studied finches on the \_\_\_\_\_ Islands.
2. Darwin explained the origin of plant and animal life on earth in his theory of \_\_\_\_\_.
3. The theory that animals have to compete with each other to survive is called \_\_\_\_\_ selection.
5. Uniformitarianism is a theory that natural processes stay \_\_\_\_\_ (do not change).
6. The theory of \_\_\_\_\_ argued that humans could intentionally create “more evolved” and “better” children over several generations.
8. \_\_\_\_\_ Darwinism argued that the upper class worked harder and deserved their benefits, while the lower class was weaker and deserved their challenges.

## Across

4. Charles Darwin and Alfred Russell \_\_\_\_\_ both discovered nearly identical theories and published their findings on the same day.
7. Louis Pasteur discovered \_\_\_\_\_, the process of heating a liquid to kill the germs inside it.
9. The plesiosaurus was discovered by the prolific fossil-hunter Mary \_\_\_\_\_.
10. Gregor \_\_\_\_\_ studied the characteristics of pea plants over several generations to understand the basic principles of genetics.







# Genetics with Punnett Squares

Genetics is the study of genes. Genes are pieces of DNA that determine the characteristics of an organism. Organisms inherit genes from parent organisms. Some traits are created by a single gene and are easy to predict through the study of genetics.

## Genotype and Phenotype:

Each gene is made up of two *alleles*. One allele is inherited from the mother and one from the father. The pair of inherited alleles are called a *genotype*. The *phenotype* is the physical appearance of a trait. Some alleles are *dominant*, so they will always be visible. Some alleles are *recessive*, so they will only be visible if both alleles are recessive. Dominant alleles are written as a capital letter. Recessive alleles are written as a lower case letter. In guinea pigs, short hair is a dominant trait. There are three possible genotypes for guinea pig hair length:

SS   Ss   ss

These three genotypes create two possible phenotypes: short hair (SS or Ss) or long hair (ss).

## Vocabulary:

Match the following vocabulary words on the left to the correct definition on the right.

- |              |   |
|--------------|---|
| 1. Phenotype | A. Genes for a single trait   |
| 2. Dominant  | B. Pair of inherited alleles.   |
| 3. Alleles   | C. Traits that are always visible.  |
| 4. Recessive | D. Traits that are only visible if the child inherits the same allele from each parent. |
| 5. Genotype  | E. Physical appearance of a trait.  |

## Punnett Squares:

Punnett squares were created by Reginald C. Punnett in 1905 to visually demonstrate how traits are passed from parent to child. Punnett squares show the genotype of the parent and child organisms. The parents' genotypes are listed on the top and left side of a Punnett square. The child's possible genotype is created by filling in the squares in the Punnett square based on the parents' alleles. Once a Punnett square is filled in, the probability of each phenotype can be calculated.

The sample Punnett squares below show the possibilities for child guinea pig hair length based on their parents' alleles.

*A short haired (Ss) mother mates with a short haired (Ss) father.*

|   |    |    |
|---|----|----|
|   | S  | s  |
| S | SS | Ss |
| s | Ss | ss |

*A long haired (ss) mother mates with a short haired (Ss) father.*

|   |    |    |
|---|----|----|
|   | S  | s  |
| S | Ss | Ss |
| s | ss | ss |

*A short haired (Ss) mother mates with a short haired (SS) father.*

|   |    |    |
|---|----|----|
|   | S  | s  |
| S | SS | Ss |
| S | SS | Ss |

| Genotype | Phenotype  | % Chance |
|----------|------------|----------|
| SS       | short hair | 25%      |
| Ss       | short hair | 50%      |
| ss       | long hair  | 25%      |

Short hair 75%      Long hair 25%

| Genotype | Phenotype  | % Chance |
|----------|------------|----------|
| Ss       | short hair | 50%      |
| ss       | long hair  | 50%      |

Short hair 50%      Long hair 50%

| Genotype | Phenotype  | % Chance |
|----------|------------|----------|
| SS       | short hair | 50%      |
| Ss       | short hair | 50%      |

Short hair 100%      Long hair 0%

**Genotype and Phenotype Practice:**

For each genotype below, determine the phenotype.

Round peas (*R*) are dominant to wrinkled (*r*).

*Rr* Round

*RR* \_\_\_\_\_

*rr* \_\_\_\_\_

White wings (*W*) are dominant to yellow (*w*)

*WW* \_\_\_\_\_

*Ww* \_\_\_\_\_

*ww* \_\_\_\_\_

Long tails (*T*) are dominant to bobtails (*t*)

*TT* \_\_\_\_\_

*tt* \_\_\_\_\_

*Tt* \_\_\_\_\_

White flowers (*p*) are recessive to purple (*P*)

*pp* \_\_\_\_\_

*Pp* \_\_\_\_\_

*PP* \_\_\_\_\_

For each phenotype below, determine the genotypes.

Red flowers (*R*) are dominant to white (*r*).

\_\_\_\_\_ Red

\_\_\_\_\_ Red

\_\_\_\_\_ White

Type A blood is dominant to Type O blood

\_\_\_\_\_ A

\_\_\_\_\_ A

\_\_\_\_\_ O

**Punnett Square Practice:**

Fill in the Punnett squares below and calculate the probability of each phenotype.

Tail spikes are dominant to plain tails.

|          |          |          |
|----------|----------|----------|
|          | <i>t</i> | <i>t</i> |
| <i>T</i> |          |          |
| <i>T</i> |          |          |

What percent of offspring will have tail spikes? \_\_\_\_\_

Tall plants are dominant to short plants.

|          |          |          |
|----------|----------|----------|
|          | <i>t</i> | <i>t</i> |
| <i>T</i> |          |          |
| <i>t</i> |          |          |

What percent of offspring will be short? \_\_\_\_\_

Tongue-curling in humans is a dominant trait.

|          |          |          |
|----------|----------|----------|
|          | <i>T</i> | <i>t</i> |
| <i>T</i> |          |          |
| <i>t</i> |          |          |

What percent of offspring will be able to curl their tongue? \_\_\_\_\_

Curly hair is dominant over straight hair.

|          |          |          |
|----------|----------|----------|
|          | <i>C</i> | <i>c</i> |
| <i>C</i> |          |          |
| <i>C</i> |          |          |

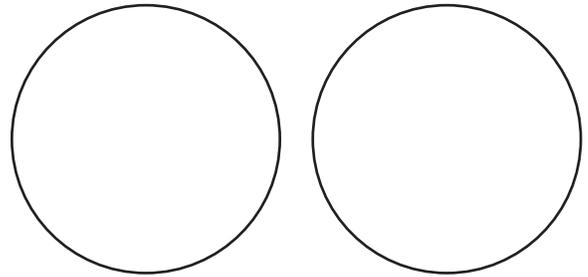
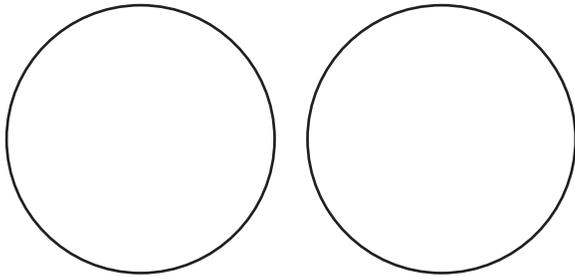
What percent of offspring will have curly hair? \_\_\_\_\_

# Germ Theory Lab Sheet

Label each of the samples you took below. Check on your bacteria growth four and seven days after taking the samples. Draw what the bacterial growth looks like on each day in the circles below.

Sample 1: \_\_\_\_\_

Sample 2: \_\_\_\_\_



Day 4

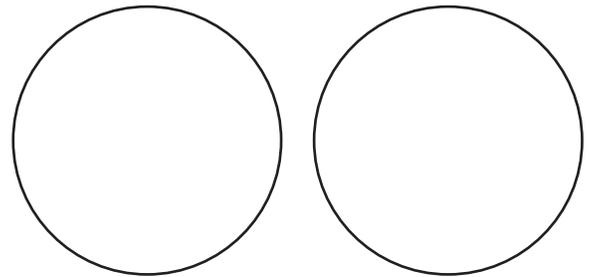
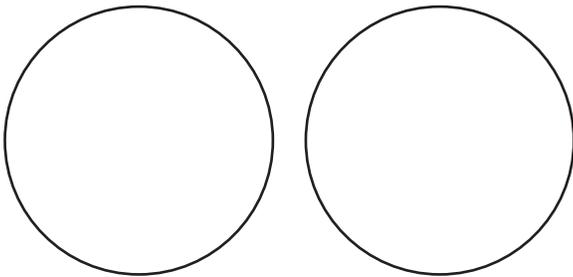
Day 7

Day 4

Day 7

Sample 3: \_\_\_\_\_

Sample 4: \_\_\_\_\_



Day 4

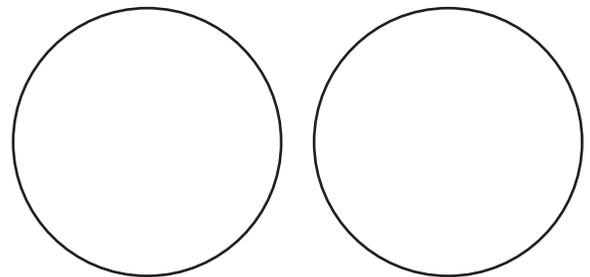
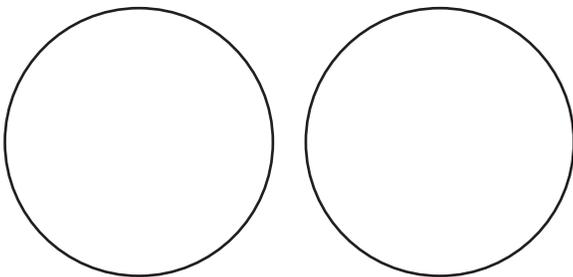
Day 7

Day 4

Day 7

Sample 5: \_\_\_\_\_

Sample 6: \_\_\_\_\_



Day 4

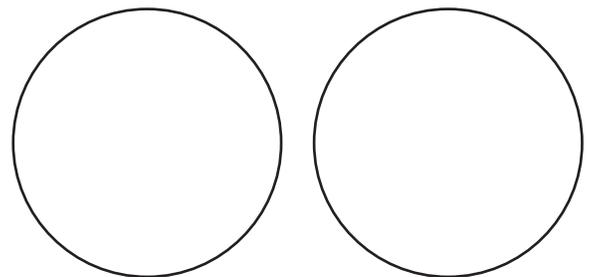
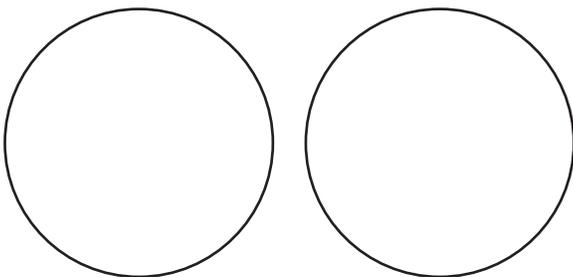
Day 7

Day 4

Day 7

Sample 7: \_\_\_\_\_

Sample 8: \_\_\_\_\_



Day 4

Day 7

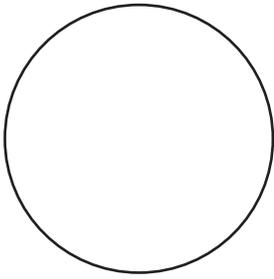
Day 4

Day 7

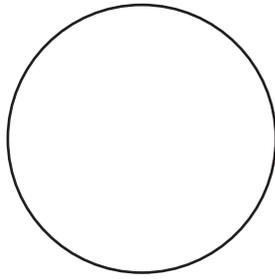
Optional, if you chose to sample multiple types of masks.

Sample 9: \_\_\_\_\_

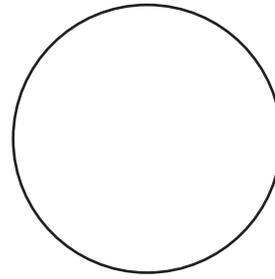
Sample 10: \_\_\_\_\_



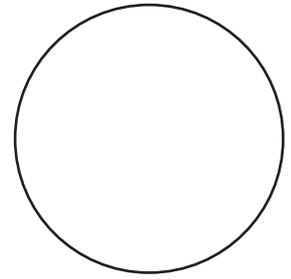
Day 4



Day 7



Day 4



Day 7

### Follow-up Questions:

1. Which sample grew the most bacteria?
2. Which sample grew the least bacteria?
3. Compare the bacterial growth for the three knife samples.
  - What conclusions can you draw about the importance of cleaning and sanitizing cooking equipment?
  - What do you think the bacterial growth would look like if you never cleaned your knife but just wiped it off after using it?
  - What do you think might happen if surgeons didn't sanitize their equipment and reused it on multiple patients?
4. Compare the bacterial growth for the three hand samples.
  - Was there a significant difference in bacterial growth between your regular hand washing routine and a thorough hand washing?
  - What do you think the bacterial growth would look like if you never washed your hands?
  - What do you think might happen if people growing, preparing, or packaging food never washed their hands?
5. Compare the bacterial growth from the mask samples.
  - What impact did using a mask (and different types of masks) have on bacterial growth?
  - What do you think the bacterial growth would look like if the person breathing on it were sick with a serious illness, like tuberculosis?
  - What do you think would happen if surgeons didn't wear masks during surgery?