

# WELCOME!



On behalf of Splash! Publications, we would like to welcome you to *Arizona's 5 Cs: Copper*, one of ten lessons in our *Arizona Government and Economy Unit*. This lesson was designed by teachers with you and your students in mind.

## THE FORMAT

Our goal is a lesson that you can use immediately. No comprehension questions to write, activities to create, or vocabulary words to define. Simply make copies of the lesson for your students and start teaching.

## THE VOCABULARY

Our lessons feature words in bold type. We have included a Glossary to help students pronounce and define the words. Unlike a dictionary, the definitions in the Glossary are concise and written in context. Remember, we're teachers! Students will be exposed to these vocabulary words in the comprehension activities. They will also be tested on the vocabulary words at the end of the lesson.

Students will be responsible for filling out and studying their vocabulary cards. You may want to have students bring in a small box for storing their vocabulary cards. We don't have to tell you that incorporating these words into your Reading and Spelling programs will save time and make the words more meaningful for students.

## THE LESSON PLAN

Before reading *Arizona's 5 Cs: Copper*, students will:

- complete Vocabulary Cards for **cardinal directions**, **intermediate directions**, **invention**, **mined**, **mineral**, **monument**, **North America**, **prehistoric**, **produce**, **reference point**, **shafts**, **transport**

After reading *Arizona's 5 Cs: Copper*, students will:

- answer *Arizona's 5 Cs: Copper* Reading Comprehension Questions.
- use cardinal and intermediate directions to plot copper mines on an Arizona map.
- take a Vocabulary Quiz for *Arizona's 5 Cs: Copper*.

**NOTE:** The answers to all activities and quizzes are at the end of the lesson.

## OUR OTHER ARIZONA GOVERNMENT AND ECONOMY LESSONS

*Arizona Government*, *Arizona's Modern Peoples*, *Arizona's Economy*, *The Great Depression*, *World War II*, *Arizona's 5 Cs: Cattle*, *Arizona's 5 Cs: Cotton*, *Arizona's 5 Cs: Climate*, *Arizona's 5 Cs: Citrus*.

# VOCABULARY CARD



word: \_\_\_\_\_

definition: \_\_\_\_\_

\_\_\_\_\_



# VOCABULARY CARD



word: \_\_\_\_\_

definition: \_\_\_\_\_

\_\_\_\_\_



# VOCABULARY CARD



word: \_\_\_\_\_

definition: \_\_\_\_\_

\_\_\_\_\_





# ARIZONA'S SCS: COPPER



Copper was formed millions of years ago beneath the surface of Arizona. The first Spanish explorers in Arizona were searching for gold. A few found gold, but some of the explorers found a **mineral** just as important as gold. They didn't realize it, but this important mineral was copper.

In the late 1800s, Arizona's copper mines helped Arizona grow. The **invention** of the electric motor, the telephone, and the light bulb kept copper in high demand.

Today, Arizona's copper mines still **produce** about one billion dollars worth of copper each year.

How copper is **mined** depends a lot on where and how the mineral is found in the Earth. In the early days of Arizona, copper miners used ordinary picks and knives to dig the copper out of a mountain. They carried the copper by mule trains to other locations where the copper could be made into useful items.



COPPER MINER

## FAST FACTS



- Copper was first found by **prehistoric** people. It was the first metal they used to make useful items.
- Copper is usually found with other metals like gold, silver, and lead.
- Some large chunks of copper weighing as much as 420 tons have been found in northern Michigan.
- The leading copper producing states are Arizona, New Mexico, and Utah.

## OPEN PIT MINING

Today, we have very different ways of mining copper. Bulldozers, cranes, and other special digging machines are used to mine the copper. Large trucks and trains **transport** the copper to other places.

Some copper minerals lie near the surface of the Earth. These copper minerals are mined by using the Open Pit method of mining.

Open Pit mines create connected step-like rock ledges called benches. These benches serve as roadways and railways for trucks and trains carrying the copper minerals out of the mine.

## UNDERGROUND MINING

Other copper minerals lie deep below the Earth's surface. These copper minerals are mined by using the Underground Mining method. Underground mines use tunnels and **shafts** below the Earth's surface so miners can dig the minerals out of the ground.

## GHOST TOWNS

In the early days of Arizona, copper was plentiful in Bisbee, Globe, Miami, Superior, Ajo, Jerome, and Ray. These towns built their entire lives around the production of copper. When all of the copper had been removed, the mines in these towns were permanently closed.

Families packed up and moved to find jobs in other towns. Many of these early mining towns became "Ghost Towns." The only people believed to be living in these towns were ghosts.

## TODAY'S COPPER MINES

Today, copper mines are still operating in many cities throughout Arizona. Our state is responsible for producing about half of the nation's copper. The copper mine in Morenci is the largest mine in **North America**. Copper is needed to make electrical wires, cables, roofing materials, copper tubing and piping, motors, appliances, air conditioners, and heating units. Take a look around your own house. You will see that just like in the 1800s, today's copper mines are still supplying important jobs to many people living in Arizona's mining cities and towns.



 ARIZONA'S 5 Cs: COPPER 

Directions: Read each question carefully. Darken the circle for the correct answer.

- 1 What were most explorers looking for when they found copper?
  - A Native Americans
  - B Gold
  - C Farm land
  - D Saguaro cactus
  
- 2 In the early days of Arizona, copper was carried from the mountains to other locations by –
  - F automobile
  - G steamboat
  - H airplane
  - J mule train
  
- 3 Which phrase tells you that copper is still an important part of Arizona's economy today?
  - A ...miners used ordinary picks and knives...
  - B ...didn't realize it, but this important mineral was copper...
  - C ... still produce about one billion dollars worth of copper each year...
  - D ...was formed millions of years ago...
  
- 4 Miners use the Open Pit method of mining when –
  - F the copper lies near the surface of the Earth
  - G they can't easily find the copper
  - H the copper is below the Earth's surface
  - J the copper is stuck in a hole or a pit

- 5 All of these things about Underground Mining are true except –
  - A it is used for copper minerals that lie deep below the Earth's surface
  - B it creates connected step-like rock ledges called benches
  - C it uses tunnels and shafts
  - D miners have to dig the copper out of the ground
  
- 6 After reading about Arizona's Ghost Towns, you get the idea that –
  - F once the copper is removed from the mountain, it does not grow back
  - G all of Arizona's early copper mines are still in business today
  - H people who worked in the mining towns had jobs in other cities at the same time
  - J the towns are really haunted by ghosts
  
- 7 Which of these is not a use for copper?
  - A Electrical wires
  - B Refrigerators
  - C Automobile parts
  - D Leather furniture

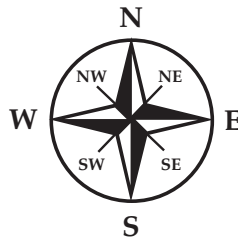
READING

Answers

- |   |                 |   |                 |
|---|-----------------|---|-----------------|
| 1 | (A) (B) (C) (D) | 5 | (A) (B) (C) (D) |
| 2 | (F) (G) (H) (J) | 6 | (F) (G) (H) (J) |
| 3 | (A) (B) (C) (D) | 7 | (A) (B) (C) (D) |
| 4 | (F) (G) (H) (J) |   |                 |

## MAPPING: ARIZONA'S COPPER MINES

Using a map is an important skill that must be learned and practiced. If you have ever been lost or tried to give someone directions, you know it is almost impossible to figure out your location or find your way around if you do not know the four main, or **cardinal directions**. North, south, east, and west are the cardinal directions. On a map these directions are labeled N, S, E, and W.



Compass Rose

Between the four main directions are the **intermediate directions**. Northeast, or NE, is the direction between north and east. Southeast, or SE, is the direction between south and east. Southwest, or SW, is the direction between south and west. Northwest, or NW, is the direction between north and west.

A **reference point** is also important for finding your location. A **reference point** is simply a starting point. It's difficult, for example, to travel southeast if you don't have a starting point.

**Example:** The Globe underground mine is located **southeast** of **Montezuma Castle National Monument**.

This example gives you some very important information. It tells you that your **reference point**, or starting point, will be Montezuma Castle National **Monument**. Locate Montezuma Castle National Monument on your Arizona map. Put your finger on Montezuma Castle and slide it **southeast**. You should see a picture representing the Globe underground mine already placed there for you.



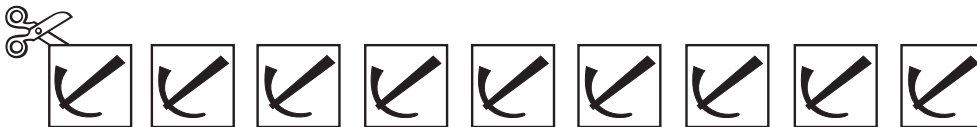
In this activity, you will use **reference points**, **cardinal directions**, and **intermediate directions** to plot some of Arizona's famous copper mines on a map.

**Directions:**

1. Use your scissors to carefully cut out the copper symbols at the bottom of the page.
2. Label the cardinal and intermediate directions on the compass rose drawn for you on the Arizona map.
3. Use the written descriptions and your compass rose to correctly locate these famous copper mines on your map.
4. Glue the copper symbols in their proper places on your map. (Glue the symbols right over the dots.)
5. Neatly write the name of the mine under its symbol.
6. When you are finished, use your coloring pencils to add color to your map.

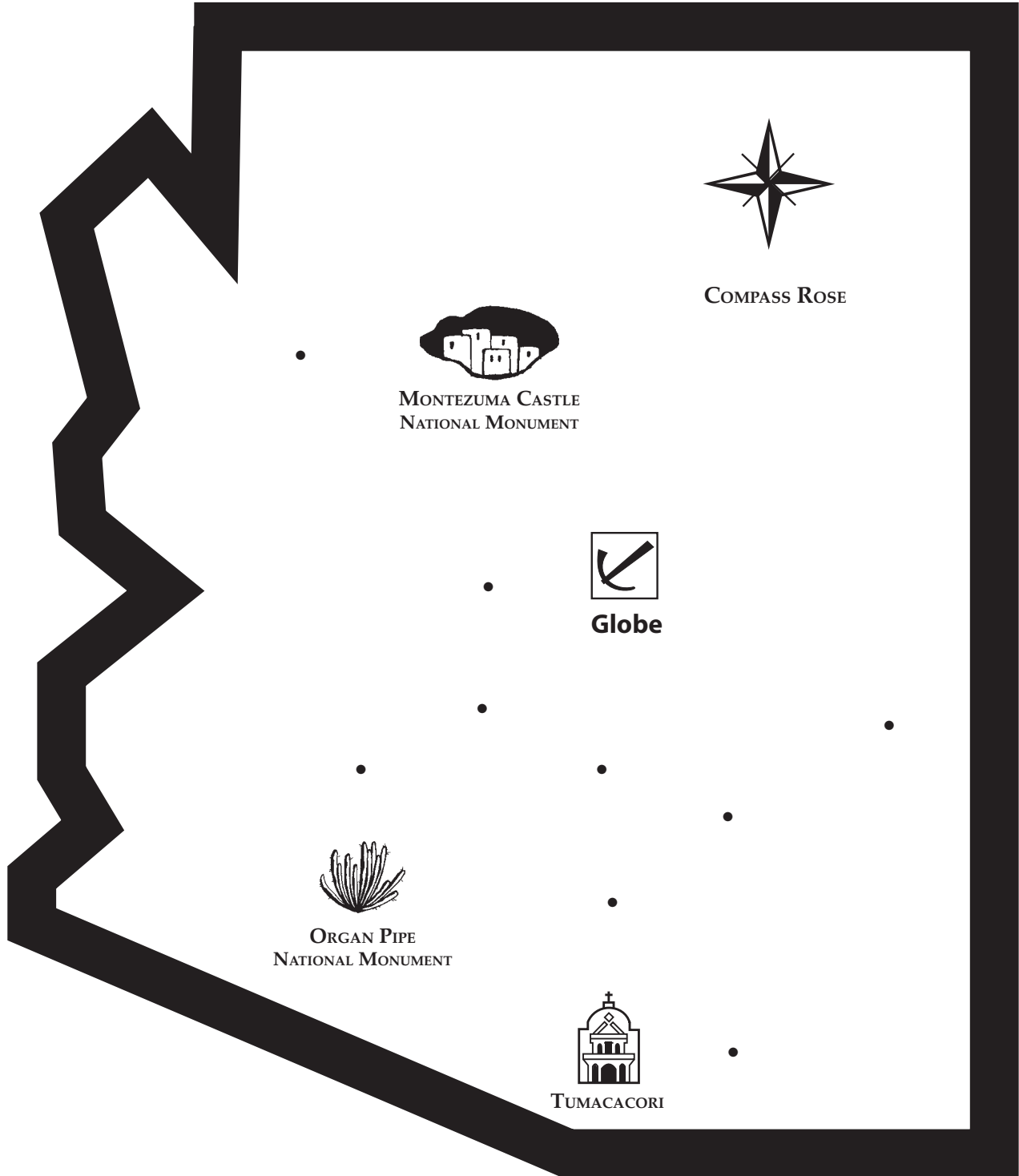


1. The open pit mine of Bisbee is east of the Tumacacori National Monument.
2. The open pit mine of Ajo is north of the Organ Pipe Cactus National Monument.
3. The open pit mine of Tucson is north of the Tumacacori National Monument.
4. The Miami underground mine is south of Montezuma Castle National Monument.
5. Jerome's open pit mine is west of Montezuma Castle National Monument.
6. The open pit mine of Ray is north of the Tucson open pit mine.
7. Morenci's open pit mine is northeast of the Ray open pit mine.
8. San Manuel's underground mine is southwest of Morenci's open pit mine.
9. Superior's open pit mine is south of the Miami underground mine.



Name \_\_\_\_\_

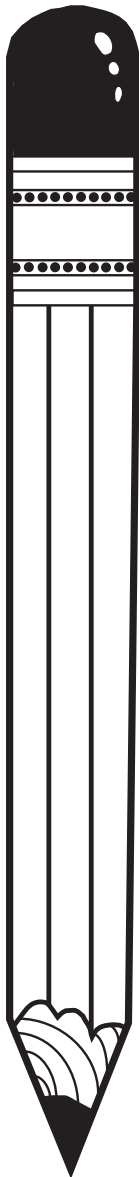
# ARIZONA'S COPPER MINES




**VOCABULARY QUIZ**
  
**ARIZONA'S 5 Cs: COPPER**

**Directions:** Match the vocabulary word on the left with its definition on the right. Put the letter for the definition on the blank next to the vocabulary word it matches. Use each word and definition only once.

1. \_\_\_\_\_ intermediate directions
2. \_\_\_\_\_ prehistoric
3. \_\_\_\_\_ mined
4. \_\_\_\_\_ monument
5. \_\_\_\_\_ invention
6. \_\_\_\_\_ North America
7. \_\_\_\_\_ transport
8. \_\_\_\_\_ produce
9. \_\_\_\_\_ reference point
10. \_\_\_\_\_ shafts
11. \_\_\_\_\_ mineral
12. \_\_\_\_\_ cardinal directions



- A. one of seven continents in the world. Bounded by Alaska on the northwest, Greenland on the northeast, Florida on the southeast, and Mexico on the southwest.
- B. the period of time before recorded history.
- C. the four directions between the main directions: northeast, southeast, northwest, and southwest.
- D. long, narrow openings dug into the Earth.
- E. to move products or people from one place to another.
- F. to make.
- G. the first time creation of a product, method, or process.
- H. removed minerals from the ground.
- I. a starting point on a map.
- J. building, stone, or statue created to remember a person or event.
- K. the four main directions: north, south, east, and west.
- L. substance found below ground that is useful to humans, including ore, coal, natural gas, water, and gems.

# GLOSSARY



**car•di•nal di•rec•tions** the four main directions: north, south, east, and west.

**in•ter•me•di•ate di•rec•tions** the four directions between the main directions: northeast, southeast, northwest, and southwest.

**in•ven•tion** the first time creation of a product, method, or process.

**mined** removed minerals from the ground.

**min•er•al** substance found below ground that is useful to humans, including ore, coal, natural gas, water, and gems.

**mon•u•ment** building, stone, or statue created to remember a person or event.

**North A•mer•i•ca** one of seven continents in the world. Bounded by Alaska on the northwest, Greenland on the northeast, Florida on the southeast, and Mexico on the southwest.

**pre•his•tor•ic** the period of time before recorded history.

**pro•duce** to make.

**ref•er•ence point** a starting point on a map.

**shafts** long, narrow openings dug into the Earth.

**trans•port** to move products or people from one place to another.

# ANSWERS



## ANSWERS TO COMPREHENSION QUESTIONS

1. B
2. J
3. C
4. F
5. B
6. F
7. D

## ANSWERS TO VOCABULARY QUIZ

1. C
2. B
3. H
4. J
5. G
6. A
7. E
8. F
9. I
10. D
11. L
12. K

## ANSWERS TO ARIZONA'S COPPER MINES MAP

