

Name Key Date _____ Class _____

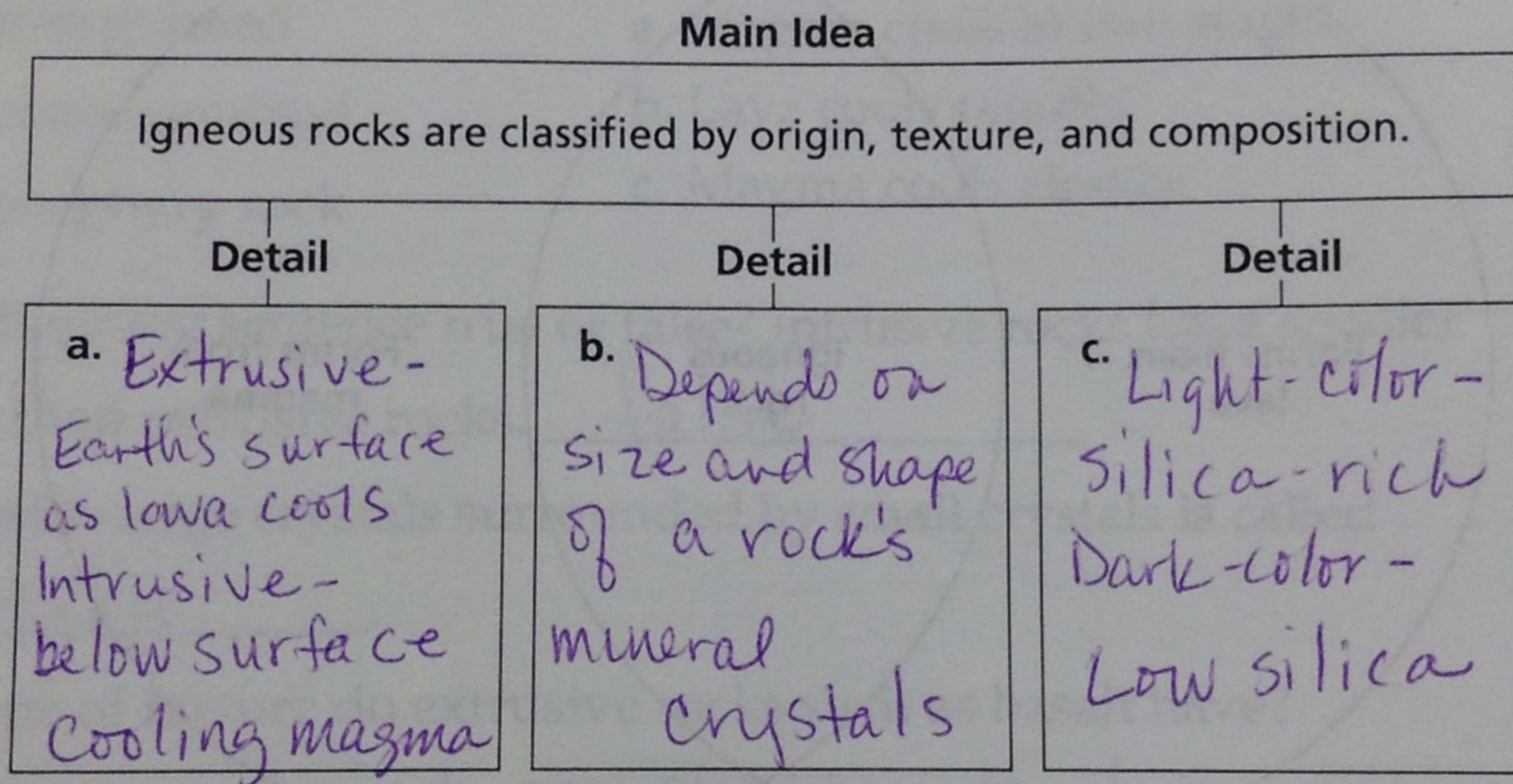
Rocks ▪ Guided Reading and Study

Igneous Rocks

This section describes the characteristics and uses of igneous rocks.

Use Target Reading Skills

As you read about igneous rocks, fill in the detail boxes that explain the main idea in the graphic organizer below.



Classifying Igneous Rocks

1. Circle the letter of the definition of igneous rock.

a. Rock that forms from minerals

b. Rock that contains iron

c. Rock that forms from magma or lava

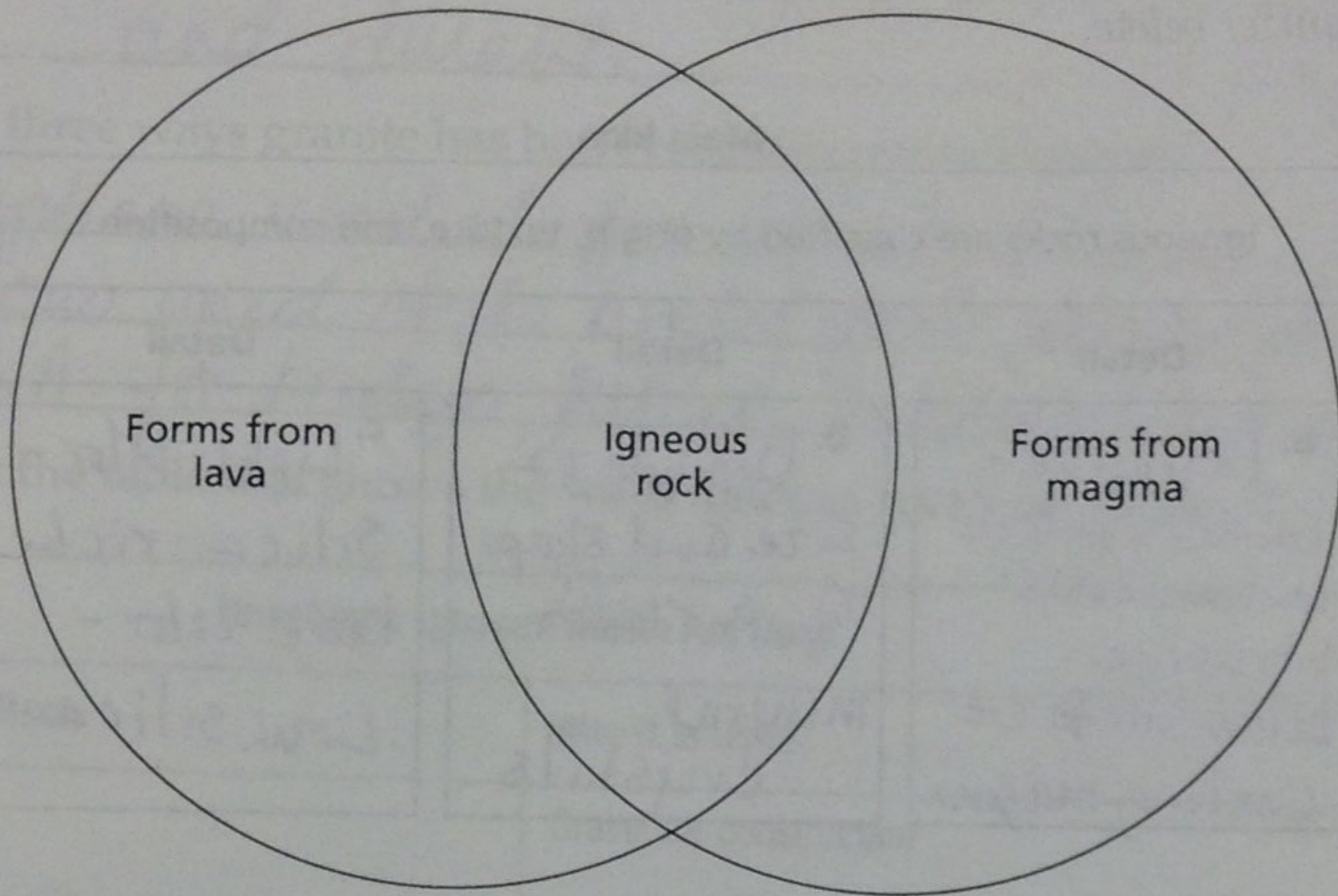
d. Rock that contains crystals

Rocks • Guided Reading and Study

Igneous Rocks (continued)

2. Complete the Venn diagram by labeling each circle with the type of rock it represents.

a. Extrusive rock b. Intrusive rock



c. Use the Venn diagram to explain how the types of rocks shown are alike and different. Different - form in different ways
Alike - both igneous rocks

3. Is the following sentence true or false? Extrusive rock forms beneath Earth's surface. False

4. Circle the letter of each sentence that is true about basalt.

- a. It forms oceanic crust.
- b. It is the most common intrusive rock.
- c. It forms from lava.
- d. It forms beneath Earth's surface.

5. Circle the letter of each sentence that is true about granite. ⁸

- a. It is the most abundant intrusive rock in continental crust.
- b. It forms the core of many mountain ranges.
- c. It forms from magma.
- d. It forms on top of the crust.

6. The texture of an igneous rock depends on the size and shape of its crystals.

Rocks ▪ Guided Reading and Study

7. Is the following sentence true or false? Igneous rocks with similar mineral compositions always have the same textures.

false

Match the type of texture of igneous rocks with how rocks of that texture form.

Type of Texture

How Rocks of That Texture Form

- b 8. fine-grained
- c 9. coarse-grained
- a 10. porphyry rock

- a. Magma cools in two stages.
- b. Lava cools rapidly.
- c. Magma cools slowly.

11. Is the following sentence true or false? Intrusive rocks have smaller crystals than extrusive rocks. false

12. A rock with large crystals surrounded by small crystals is called

porphyry.

13. What type of texture do extrusive rocks such as basalt have?

Fine-grained or glassy texture

14. What is obsidian? An extrusive rock that cooled very quickly w/out forming crystals.

15. Describe the texture of obsidian. It has the smooth, shiny texture of a thick piece of glass.

16. Circle the letter of each sentence that is true about the silica composition of igneous rocks.

- a. Igneous rocks low in silica are usually dark-colored.
- b. An example of an igneous rock low in silica is granite.
- c. Igneous rocks high in silica are usually light-colored.
- d. An example of an igneous rock high in silica is basalt.

17. Describe the different minerals that determine the color of granite.

Granite rich in reddish feldspar is a speckled pink. Hornblende and ^{dark} mica give color of light gray w/ dark speckles.

18. How do geologists determine the mineral composition of granite?

They make very thin slices of granite and study each type of crystal in the rock under a microscope.

Quantity crystals add light gray or smoky specks.

Rocks ▪ Guided Reading and Study

Igneous Rocks (continued)

Uses of Igneous Rocks

19. Why have people throughout history used igneous rocks for tools and building materials? b/c these rocks are hard, dense and durable

20. Describe three ways granite has been used throughout history.

- a. Egyptians used it for statues
- b. Incas used it to build fortresses near capital city
- c. U.S.A. for bridges, public buildings, streets

21. Complete the table that shows the ways igneous rocks are used.

How Some Igneous Rocks Are Used	
Type of Igneous Rock	Way It Is Used
Basalt	Gravel for construction
a. Pumice	Cleaning and polishing
b. Basalt	Soil mixes

c. Use the information in the table to draw a conclusion about the uses of igneous rocks. You may use more than one sentence.

Different types of igneous rocks have characteristics that make them suitable for specific uses. Igneous rocks are used in a wide variety of ways.

Rocks ▪ Review and Reinforce

Igneous Rocks

Understanding Main Ideas

Fill in the blanks in the table below.

Origin of Igneous Rock	Resulting Texture
Slow cooling of magma far beneath Earth's surface	1. <u>Course-grained</u>
Extremely rapid cooling of lava in which no crystals form	2. <u>Smooth/shiny/no ^{visible} grains</u>
Rapid cooling of lava in which tiny crystals form	3. <u>Fine-grained</u>

Answer the following questions on a separate sheet of paper.

4. What is the most common extrusive rock? Where is it found? basalt; ocean crust, shield lava plateau
5. What is the most common intrusive rock? Where is it found? granite; mountain ranges
6. Explain how the silica content of molten material affects the color of igneous rocks. Lava w/ low silica forms dark rocks
Magma w/ high silica form light-colored rocks
7. What qualities of igneous rocks have long made them useful for tools and building materials? Igneous rocks are hard, dense, and durable.
8. Describe one use each for the igneous rocks granite, basalt, and pumice. Granite - building material; Basalt - construction gravel; Pumice - abrasive w/ polishes

Building Vocabulary

Fill in the blank to complete each statement.

9. Igneous rock formed from lava that erupted onto Earth's surface is called extrusive rock.
10. Igneous rock formed from magma below Earth's surface is called intrusive rock.

Rocks • Enrich

The Same but Different

Can two different rocks with different names have the same mineral composition? The answer is yes. There are six major kinds of igneous rocks: granite, diorite, gabbro, rhyolite, andesite, and basalt. Geologists usually group these six kinds of igneous rocks in pairs, because each pair generally contains the same minerals. Study the table below to see which igneous rocks are the same but different.

Common Igneous Rocks

Intrusive rocks (Coarse-grained)	Granite	Diorite	Gabbro
Extrusive rocks (Fine-grained)	Rhyolite	Andesite	Basalt
Minerals	Quartz, Feldspar, Muscovite, Amphibole	Amphibole, Feldspar, Pyroxene	Feldspar, Pyroxene, Olivine, Amphibole
Color	Light colored	Medium gray or green	Dark gray to black
→ → → → → → → → Silica content of rock decreases → → → → → → → →			
→ → → → → → → → Rock color becomes darker → → → → → → → →			

Answer the following questions on a separate sheet of paper.

- Which of the six major kinds of rock are intrusive and which are extrusive? *Intrusive - granite, diorite, gabbro / Extrusive - rhyolite, andesite, basalt*
- Compare granite with rhyolite. How are they similar? How are they different? *Similar mineral composition and color. Different texture - granite is coarse-grained; rhyolite is fine-grained*
- Compare the mineral composition of diorite with the mineral composition of andesite. *Both contain amphibole, feldspar and pyroxene*
- In what way is gabbro different from basalt? What can you infer from this about how these two kinds of igneous rocks form? *Gabbro is coarse-grained while basalt is fine-grained. Gabbro forms underground (magma), Basalt forms on surface (lava)*
- How is granite like gabbro? *Granite is like gabbro in texture*
- Which rock has more silica in it, granite or basalt? *Granite*
- Is a rock with more silica in it likely to be lighter or darker than a rock with less silica in it? *A rock with more silica is likely to be lighter*