Name _____ Class _____ Date _____

Section 2.1 Classifying Matter

(pages 38–44)

Analyzing Mixtures

Content and Vocabulary Support

Mixtures

A mixture is a combination of more than one substance. Unlike a **compound**, which always has exactly the same makeup, the composition of a mixture may vary. For example, soil is a mixture of small bits of rocks and minerals and tiny pieces of dead leaves and other organic matter. Most soils contain all of these components but in different proportions. Some soils contain more rocks and minerals, others more organic matter.

Heterogeneous and Homogeneous Mixtures

Mixtures also vary in how evenly their components are distributed. Consider a pot of vegetable soup. One bowl of soup from the pot may contain more carrots and less green beans than another bowl of soup taken from the same pot. This is because the ingredients are not evenly distributed throughout the soup. When the parts of a mixture are noticeably different from one another, it is called a **heterogeneous mixture**. Another example of a heterogeneous mixture is sand on a beach, which is a mixture of different types and sizes of rock and shell particles.

Other mixtures have their components more evenly distributed. As a result, the parts of the mixture are not noticeably different from one another. Such a mixture is called a **homogeneous mixture.** An example of a homogeneous mixture is lemonade. Lemonade is a mixture of water, lemon juice, and sugar. If the lemonade in a pitcher is well mixed, each glass of lemonade poured from the pitcher has about the same composition. You also cannot distinguish the lemon juice, water, and sugar from each other in the mixture, so the lemonade appears to contain only one substance. Another example of a homogenous mixture is sterling silver, which is a mixture of silver and copper.

Name _____ Class _____ Date _____

Section 2.1 Classifying Matter

Data

To reduce lawn care, a landscaper suggests planting part of a public park with a mixture of prairie grasses that need to be cut only once a year. Table 1 shows the composition of two different prairie grass seed mixtures the landscaper is considering.

Table 1. Prairie Grass Seed Mixtures

Type of Grass Seed (growing conditions)	*Mass in Seed Mixture A (g)*	*Mass in Seed Mixture B (g)*
Buffalo grass (sun, dry)	32	181
Indian grass (sun, dry)	78	209
Porcupine grass (sun, dry)	86	86
Prairie cordgrass (sun, dry)	34	129
Rattlesnake grass (shade, wet)	275	35
Silky wild rye (shade, wet)	124	40
Slender wheat grass (sun, dry)	91	166
Sweet grass (sun, wet)	52	49
Switch grass (sun, dry)	38	77
Virginia wild rye (shade, wet)	190	28

Claire has an allergy to monosodium glutamate, and Dillon is on a sodium-restricted diet. Both are trying to decide which brand of canned chicken broth to buy. Table 2 shows the composition of two different brands of broth.

Table 2. Chicken Broth Brands

Ingredient	*Percent by Mass of Brand A*	*Percent by Mass of Brand B*
Water	94.55	95.15
Salt	2.22	0.53
Monosodium glutamate	1.01	0.10
Wheat and soy protein	0.43	1.12
Onion flakes	0.42	0.86
Garlic powder	0.39	0.51
Sugar	0.38	0.15
Spices	0.21	0.32
Powdered cooked chicken	0.15	1.28
Turmeric	0.09	0.08
Disodium inosinate	0.08	0.05
Disodium guanylate	0.07	0.03

Name _____ Class _____ Date _____

Questions

1. a. **Identifying** In Table 1, identify the type of seeds with the greatest mass in mixture A and in mixture B.

   b. **Calculating** How many grams of seeds in 1,000 grams of mixture A grow in sunny, dry conditions? How many grams of mixture B?

   c. **Inferring** The area where the seeds would be planted is shady and wet. Explain which seed mixture would probably grow better there.

2. a. **Identifying** In Table 2, identify the brand of chicken broth that contains less monosodium glutamate.

   b. **Calculating** Find the percent of salt and other sodium-containing ingredients in each brand of broth.

   c. **Concluding** Conclude which brand of broth Claire and Dillon should choose.

3. a. **Classifying** Which type of mixture, seeds or broth, is an example of a heterogeneous mixture? Of a homogeneous mixture? Explain your choices.

   b. **Applying Concepts** Explain why all four mixtures are not compounds.