Station 1:

Name the physical separation technique shown and describe the process. Use the name of the separation technique and the following terms in your description:

Solvent
Mixture
R_f value

Station 2:

Name the physical separation technique shown and describe the process. Use the name of the separation technique and the following terms in your description:

Boiling point
Mixture
Condensate

Station 3:

Name the physical separation technique shown and describe the process. Use the name of the separation technique and the following terms in your description:

Physical property
Mixture

Station 4:

Name the physical separation technique shown and describe the process. Use the name of the separation technique and the following terms in your description:

Heat source
Mixture
Evaporating dish

Station 5:

Name the physical separation technique shown and describe the process. Use the name of the separation technique and the following terms in your description:

Mixture
Residue
Filtrate

Station 6:

Name the physical separation technique shown and describe the process. Use the name of the separation technique and the following terms in your description:

Mixture
Size

Station 7:

At Maine Sea Salt Company, they believe that the cool, mineral -rich saline waters of the Gulf of Maine provide their natural sea salts with a unique flavor.

As the first salt works in Maine in over 200 years, their company brings forward the tradition of harvesting pure and natural sea salt, directly from the source... the ocean! They make our sea salt naturally, in solar green houses and shallow pools.

Based on what you've learned in chemistry class, what physical process does Maine Sea Salt Company most likely use to extract the salt from the sea water?

Station 8:

At Maine Sea Salt Company, they believe that the cool, mineral -rich saline waters of the Gulf of Maine provide their natural sea salts with a unique flavor..

However, before the salt can be isolated from the sea water, other solid impurities must be removed.

Based on what you've learned in chemistry class, what physical process would Maine Sea Salt Company most likely use to remove the solid particles from the sea water?

Station 9:

For many centuries, people believed that the increase in the size of a plant was caused by the intake of material from the soil. It was not until a Belgian physician, Jan Baptista van Helmont (circa 1577-1644), performed an experiment that demonstrated conclusively what we accept today: the increase in the size of a plant is not due simply to the plant obtaining a mystery substance from the soil; plants gain what they require through the process of photosynthesis.

Photosynthesis uses energy from light captured by photosynthetic pigments. Photosynthetic pigments include chlorophyll a, chlorophyll b, and the carotenes.

Based on what you've learned in chemistry class, what physical process would you use to separate the colored pigments found in spinach leaves?

Station 10:

Minerals play an important role in our dietary needs. Some minerals are metals and can be extracted, such as Iron. Some cereals are fortified with iron to meet 100% of the recommended daily value. To determine the iron content of the cereal, simply crush the cereal and use a simple physical separation technique to remove the iron and determine the % composition of iron in a serving of the cereal.

Based on what you've learned in chemistry class, what physical process would you use to remove the iron from the cereal?

Station 11:

When a new food product reaches the market place and sales soar, other competing companies often try to determine the formula so they can replicate the flavor and create a competing brand.

Based on what you've learned in chemistry class, what physical process would a chemist use to isolate the flavor of a new grape soda from the other components of the grape soda mixture?

Station 12:

Ready to strike it rich? Then you'll need to know how to use this separation technique. This physical separation process is used when panning for gold. The tool is used to sift out panning material for further concentration. By sifting the material you reduce the possibility that a pebble or rock will cause a smaller fleck of gold to be bumped out of the pan.

Based on what you've learned in chemistry class, what physical process would you use to separate gold from other particulates when panning?

Station 13:

In a given series of experiments, the following data are observed for two red pigments:

Sample #1: solvent boundary distance = 8.3 cm; front edge of red-1 spot = 4.8 cm;

Sample #2: solvent boundary distance = 7.4 cm; front edge of red-2 spot = 3.2 cm.

Calculate the Rf values of these dyes.

Station 14:

	R_f Value
Yellow —1	0.58
Yellow—2	0.42

A green dye is separated in a chromatogram. The solvent boundary moves 8.9 cm. The front edge of a blue spot appears at 6.1 cm, and that of a yellow spot appears at 3.8 cm. Based on the table shown, is the yellow dye likely to be yellow-1 or yellow-2?

Answer Key:

1. Chromatography (student answers will vary)
2. Distillation (student answers will vary)
3. Magnetism ((student answers will vary)
4. Evaporation (student answers will vary)
5. Filtration (student answers will vary)
6. Sieves (student answers will vary)
7. Evaporation
8. Filtration
9. Chromatography
10. Magnetism
11. Distillation
12. Sieves
13. Sample #1 = 0.58; sample #2 = 0.43
14. Yellow-2