

Practice 2-6

Stem-and-Leaf Plots

Use the stem-and-leaf plot for Exercises 1–6.

1. What is the age of the youngest grandparent? _____
2. How many grandparents are 79 years old? _____
3. How many grandparents are older than 74? _____
4. What is the range of the data? _____
5. What is the median? _____
6. What is the mode? _____

Ages of Grandparents

stem	leaf
6	7 8 8
7	0 1 2 3 4 9 9
8	1 3 3 3 4 7
9	0 2 5

Key: 6 | 7 means 67.

Make a stem-and-leaf plot for each set of data.

7. scores on a history test

84, 93, 72, 87, 86, 97, 68, 74, 86, 91, 64, 83, 79, 80, 72, 83, 76, 90, 77

stem	leaf

Key: 6 | 4 means 64.

8. number of badges earned by local scouts

7, 12, 9, 2, 17, 24, 0, 3, 10, 20, 12, 3, 6, 4, 9, 15

stem	leaf

Key: 1 | 0 means 10.

9. minutes to travel to a friend's house

12, 31, 5, 10, 23, 17, 21, 12, 8, 33, 3, 11, 10, 25, 9, 16

stem	leaf

Key: 3 | 1 means 31.

Identifying Place (A)

In what place is each underlined digit?

8,664,501

1,157,611

7,529,681

2,623,732

7,343,657

4,673,653

7,872,325

1,038,261

8,841,966

2,091,845

5,603,344

4,530,360

2,737,587

8,671,242

2,975,419

5,255,994

Identifying Place (A)

In what place is each underlined digit?

8, 664, 501

1, 157, 611

7, 529, 681

2, 623, 732

7, 343, 657

4, 673, 653

7, 872, 325

1, 038, 261

8, 841, 966

2, 091, 845

5, 603, 344

4, 530, 360

2, 737, 587

8, 671, 242

2, 975, 419

5, 255, 994

Decimal Place Value (I)

What is the value of each underlined digit?

4.532

1.547

9.334

1.384

4.165

1.587

4.497

5.289

9.139

9.817

8.403

2.715

9.822

5.068

5.852

6.002

Prime Factors (E)

Use a tree diagram to find the prime factors of each number.

36

36

46

35

14

46

14

34

26

Long Division No Remainders (K)

$$3 \overline{) 588}$$

$$5 \overline{) 660}$$

$$2 \overline{) 610}$$

$$9 \overline{) 5148}$$

$$8 \overline{) 7472}$$

$$8 \overline{) 4056}$$

$$9 \overline{) 8667}$$

$$3 \overline{) 780}$$

$$3 \overline{) 1647}$$

$$3 \overline{) 369}$$

$$9 \overline{) 5553}$$

$$9 \overline{) 5283}$$

Skills Worksheet

Directed Reading A

Section: Exploring Physical Science

- _____ 1. What two activities are basic to most of science?
- getting good grades and asking questions
 - observing the world and asking questions
 - paying attention in class and memorizing
 - observing science and reading the answers

THAT'S SCIENCE!

2. Science starts with gathering _____ about the natural world.
3. The knowledge obtained by observation and the testing of laws and principles is called _____.

WHAT IS PHYSICAL SCIENCE?

- _____ 4. What is physical science?
- the study of scientific methods
 - the study of knowledge
 - the study of nonliving matter
 - the study of living things
5. The stuff that everything is made of is _____.
6. The ability to do work is called _____.
7. All moving objects have energy of _____.
8. All matter, including matter that isn't moving, has _____.

BRANCHES OF PHYSICAL SCIENCE

9. The two major branches of physical science are _____ and _____.
10. The study of substances made of carbon is called _____.
11. The study of all forms of matter, including how matter interacts with other matter, is called _____.
12. An important part of chemistry is the study of the structure and properties of _____.

Directed Reading A *continued*

13. Changes in substances, called _____, take place around us all of the time.

14. List three subjects included in the science of chemistry.

15. An important concern of physics is the way that _____ affects matter.

16. The examination of different forms of energy is part of the study of _____.

17. List some of the things that are parts of physics.

18. Compasses help us find our way because of the existence of _____.

PHYSICAL SCIENCE: ALL AROUND YOU

19. A person who studies the atmosphere is called a(n) _____.

20. Do meteorologists need to have a knowledge of physical science? Explain your answer.

21. The study of the origin, history, and structure of Earth is called _____.

Name _____ Class _____ Date _____

Directed Reading A *continued*

22. A person who studies the chemistry of rocks, minerals, and soil is a(n)

_____.

23. Do geochemists need to have a knowledge of physical science? Explain your answer.

24. A knowledge of physical science will help a biologist understand how animals get _____ from food.

25. How are life science and physical science related? Explain your answer.

Skills Worksheet

Directed Reading A

Section: Scientific Methods

WHAT ARE SCIENTIFIC METHODS?

- _____ 1. What is the series of steps scientists use to answer questions and solve problems?
- a. observations
 - b. formulations
 - c. flowcharts
 - d. scientific methods
2. List the steps that are considered scientific methods.

ASKING A QUESTION

- _____ 3. What does asking questions help scientists to do?
- a. find answers with less investigation
 - b. focus the purpose of an investigation
 - c. ask questions and memorize answers
 - d. know where to look up the answers
4. Any use of the senses to gather information is called _____.

5. Observations made with tools are called _____.

6. Efficiency compares energy output with _____.

7. Explain why the efficiency of a boat is important.

Directed Reading A *continued*

8. What real world question did the two engineers James Czarnowski and Michael Triantafyllou explore?

FORMING A HYPOTHESIS

_____ 9. An explanation that is based on observation and that can be tested is
a. an observation.
b. a hypothesis.
c. efficiency.
d. a conclusion.

_____ 10. After a scientist has asked questions and made observations, she is ready to
a. answer the questions.
b. explain the answers.
c. start a different investigation.
d. form a hypothesis.

11. How are observations related to the process of forming a hypothesis?

12. A good hypothesis should be _____.

13. What is the problem with a hypothesis that can't be tested? Explain your answer.

14. What was the hypothesis that Czarnowski formed?

Directed Reading A *continued*

15. How did Czarnowski form his hypothesis? Explain your answer.

16. A good way to make a prediction about a hypothesis is by stating it in a(n) _____ format.

17. How might Czarnowski and Triantafyllou have stated their prediction in an if-then format?

TESTING THE HYPOTHESIS

_____ 18. Testing a hypothesis helps you determine if the hypothesis is

- a. a reasonable answer to your question.
- b. a controlled experiment.
- c. efficient.
- d. an adaptation.

_____ 19. If your tests show that your hypothesis is way off the mark, you will want to

- a. change the topic you are studying.
- b. buy new measurement tools.
- c. repeat the tests until you get the results you want.
- d. repeat the tests, then change the hypothesis if necessary.

_____ 20. A controlled experiment compares results from experimental groups with

- a. results from other experimental groups.
- b. results from other investigations.
- c. results from a control group.
- d. results from past experiments.

21. The purpose of a controlled experiment is to _____ a hypothesis.

22. In a controlled experiment, the control group and the experimental groups are the same except for a factor in the experimental groups called a(n) _____.

Directed Reading A *continued*

23. Is a controlled experiment always possible? Explain your answer.

24. How did Czarnowski and Triantafyllou decide to test their hypothesis?

25. Pieces of information gathered through observation or experimentation are called _____.

26. What three kinds of the data were collected during the *Proteus* experiment?

ANALYZING THE RESULTS

27. After you run an experiment and collect data, you must _____ the data to see if the results support your hypothesis.

28. Organizing data into _____ and _____ can make information easier to use.

29. What kind of graph can be used to make a comparison?

DRAWING CONCLUSIONS

30. What must you do at the end of an experiment?

- a. Draw a conclusion.
- b. Analyze a graph.
- c. Draw a picture.
- d. Analyze a chart.

Name _____ Class _____ Date _____

Directed Reading A *continued*

31. Give examples of conclusions you might draw after an investigation.

32. What did the two engineers conclude after the trials of the *Proteus*?

COMMUNICATING RESULTS

33. What are some ways to communicate results of a scientific investigation?

34. Why is it important to communicate results of a scientific investigation?

