Prime Factors (E)

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

36	36	46
35	14	46
14	34	26

Prime Factors (F)

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

15

18

25

18

38

39

27

20

42

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Practice 2-3

Frequency Tables and Line Plots

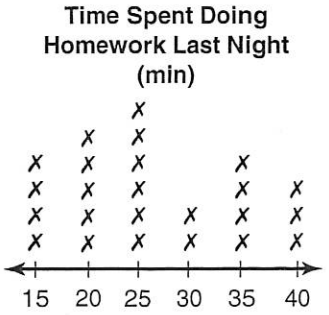
1. a. Choose a page from a book you are reading. Choose 50 words on that page. Using these 50 words, complete the frequency table.

Letter	Tally	Frequency
t		
s		
r		
n		
d		

b. Make a line plot for your frequency table.

c. Which letter occurred most frequently in your sample? least frequently?

Use the line plot at the right for Exercises 2–5.



2. What information is displayed in the line plot?

_____

3. How many students spent time doing homework last night?

_____

4. How many students spent at least half an hour on homework?

_____

5. What is the range of time spent on homework last night?

_____

6. A kennel is boarding dogs that weigh the following amounts (in pounds).

5	62	43	48	12	17	29	74
8	15	4	11	15	26	63	

a. What is the range of the dogs' weights?

_____

b. How many of the dogs weigh under 50 pounds?

_____

Place Value (C)

What is the value of each underlined digit?

5 033

3 710

6 556

3 495

1 712

9 209

9 023

9 607

7 271

9 359

3 106

8 325

2 060

8 252

2 386

7 007

Identifying Place (A)

In what place is each underlined digit?

$\underline{8},664,501$	$1,\underline{1}57,611$
$7,52\underline{9},681$	$2,623,\underline{7}32$
$7,343,65\underline{7}$	$4,6\underline{7}3,653$
$7,872,32\underline{5}$	$1,038,\underline{2}61$
$8,\underline{8}41,966$	$2,091,84\underline{5}$
$5,60\underline{3},344$	$4,5\underline{3}0,360$
$2,737,5\underline{8}7$	$8,671,2\underline{4}2$
$\underline{2},975,419$	$5,255,99\underline{4}$

Division (J)

Find each quotient.

$9\overline{)765}$	$1\overline{)24}$	$1\overline{)62}$	$6\overline{)486}$	$9\overline{)594}$
$8\overline{)96}$	$1\overline{)76}$	$4\overline{)324}$	$2\overline{)46}$	$7\overline{)679}$
$4\overline{)312}$	$9\overline{)198}$	$8\overline{)424}$	$5\overline{)420}$	$4\overline{)288}$
$7\overline{)427}$	$9\overline{)828}$	$8\overline{)496}$	$3\overline{)141}$	$2\overline{)94}$

Multiplying By 3 (J)

Find each product.

3 × 1	2 × 3	12 × 3	6 × 3	3 × 5	4 × 3	10 × 3	8 × 3	9 × 3	7 × 3
3 × 3	7 × 3	3 × 9	3 × 2	3 × 1	3 × 11	4 × 3	12 × 3	8 × 3	10 × 3
3 × 4	3 × 3	9 × 3	3 × 1	3 × 7	12 × 3	3 × 11	3 × 8	5 × 3	10 × 3
3 × 3	9 × 3	3 × 8	6 × 3	2 × 3	3 × 12	3 × 7	3 × 10	3 × 4	3 × 1
3 × 3	6 × 3	4 × 3	3 × 11	2 × 3	3 × 7	10 × 3	3 × 1	9 × 3	12 × 3
5 × 3	8 × 3	3 × 12	6 × 3	3 × 9	4 × 3	3 × 1	7 × 3	2 × 3	11 × 3
8 × 3	3 × 12	3 × 5	3 × 3	9 × 3	3 × 6	1 × 3	2 × 3	3 × 4	3 × 11
4 × 3	12 × 3	3 × 8	2 × 3	3 × 5	11 × 3	3 × 3	3 × 1	3 × 10	3 × 7
3 × 2	4 × 3	3 × 9	5 × 3	3 × 7	10 × 3	3 × 11	12 × 3	3 × 1	3 × 8
3 × 5	3 × 10	3 × 3	11 × 3	2 × 3	3 × 8	3 × 1	3 × 12	3 × 4	3 × 9

Subtraction Facts to 18 (J)

Calculate each difference.

7	8	12	2	8	4	10	9	10	6
- 1	- 2	- 6	- 0	- 0	- 1	- 9	- 4	- 3	- 2
12	16	15	14	11	13	11	4	6	16
- 7	- 8	- 8	- 5	- 7	- 6	- 9	- 0	- 3	- 7
12	12	10	10	10	6	7	6	12	9
- 3	- 5	- 1	- 5	- 2	- 4	- 6	- 0	- 9	- 2
9	10	7	14	4	6	8	6	10	10
- 7	- 4	- 7	- 7	- 4	- 1	- 3	- 6	- 6	- 8
7	12	9	5	2	5	1	13	12	2
- 4	- 4	- 1	- 2	- 1	- 1	- 0	- 8	- 8	- 2
16	8	10	11	7	7	3	9	5	17
- 9	- 1	- 7	- 3	- 2	- 0	- 2	- 5	- 5	- 9
5	4	8	3	15	5	14	9	4	11
- 3	- 3	- 5	- 1	- 6	- 0	- 8	- 9	- 2	- 5
8	8	9	11	6	7	3	3	13	14
- 8	- 6	- 6	- 8	- 5	- 3	- 0	- 3	- 7	- 9
8	17	15	13	14	11	13	11	0	11
- 4	- 8	- 7	- 5	- 6	- 2	- 4	- 4	- 0	- 6
15	13	1	18	7	9	8	9	5	9
- 9	- 9	- 1	- 9	- 5	- 8	- 7	- 3	- 4	- 0

Adding with No Regrouping (J)

Find each sum.

3 + 4	1 + 1	3 + 1	3 + 2	6 + 1	4 + 1	2 + 3	1 + 5	2 + 6	4 + 5
6 + 3	2 + 2	1 + 8	1 + 2	2 + 4	5 + 2	3 + 6	3 + 3	6 + 2	1 + 5
2 + 4	2 + 3	5 + 3	2 + 7	1 + 2	1 + 7	4 + 2	5 + 4	3 + 4	6 + 3
6 + 1	7 + 1	3 + 6	2 + 7	3 + 5	1 + 2	1 + 8	8 + 1	3 + 2	5 + 3
1 + 3	6 + 1	3 + 3	7 + 2	3 + 4	4 + 4	2 + 2	4 + 2	3 + 6	8 + 1
5 + 1	3 + 3	6 + 2	6 + 3	1 + 5	7 + 1	1 + 8	5 + 4	2 + 6	4 + 5
3 + 6	3 + 4	2 + 6	3 + 2	5 + 4	1 + 7	2 + 3	1 + 4	2 + 5	2 + 7
6 + 2	6 + 3	7 + 2	3 + 2	1 + 5	5 + 3	2 + 3	7 + 1	5 + 2	8 + 1
1 + 6	6 + 1	7 + 2	6 + 3	4 + 1	2 + 2	1 + 3	2 + 4	7 + 1	5 + 2
3 + 5	2 + 6	5 + 1	5 + 4	7 + 2	1 + 6	6 + 2	7 + 1	1 + 8	2 + 3

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Skills Worksheet

Directed Reading A

Section: Exploring Physical Science

_____ **1.** What two activities are basic to most of science?
- **a.** getting good grades and asking questions
- **b.** observing the world and asking questions
- **c.** paying attention in class and memorizing
- **d.** 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?
- **a.** the study of scientific methods
- **b.** the study of knowledge
- **c.** the study of nonliving matter
- **d.** 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 _____.

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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 _____.

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.

_____

_____

_____

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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.

_____

_____

_____

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?

_____

_____

_____

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) _____.

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.

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?