SAXON MATH™

Stephen
Hake

SAXON MATH™

Intermediate 3

Student Edition

Stephen Hake

SAXON™
A Harcourt Achieve Imprint

www.SaxonPublishers.com
1-800-284-7019

ACKNOWLEDGEMENTS

This book was made possible by the significant contributions of many individuals and the dedicated efforts of talented teams at Harcourt Achieve.

Special thanks to Chris Braun for conscientious work on Power Up exercises, Problem Solving scripts, and student assessments. The long hours and technical assistance of John and James Hake were invaluable in meeting publishing deadlines. As always, the patience and support of Mary is most appreciated.

– Stephen Hake

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ISBN 13: 978-1-6003-2534-2
ISBN 10: 1-6003-2534-3

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Stephen Hake has authored six books in the **Saxon Math** series. He writes from 17 years of classroom experience as an elementary and secondary teacher, and as a math specialist in El Monte, California. As a math coach, his students won honors and recognition in local, regional, and statewide competitions.

Stephen has been writing math curriculum since 1975 and for Saxon since 1985. He has also authored several math contests including Los Angeles County's first Math Field Day contest. Stephen contributed to the 1999 National Academy of Science publication on the Nature and Teaching of Algebra in the Middle Grades.

Stephen is a member of the National Council of Teachers of Mathematics and the California Mathematics Council. He earned his BA from United States International University and his MA from Chapman College.

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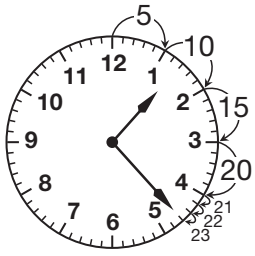
Place Value

Thousands			,	Ones		
Hundred Thousands	Ten Thousands	Thousands	,	Hundreds	Tens	Ones
___	___	___	,	___	___	___

Comparison Symbols

>	greater than
<	less than
=	equal to

Time



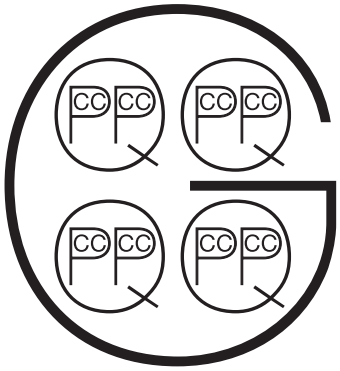
Length

Metric	Customary
1 kilometer = 1000 meters	1 yard = 3 feet
1 meter = 100 centimeters	1 foot = 12 inches

Mass and Weight

Metric	Customary
1 kilogram = 1000 grams	1 ton = 2000 pounds
	1 pound = 16 ounces

Capacity

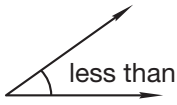


Arithmetic with Two Numbers

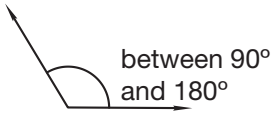
Addition	addend + addend = sum	addend + addend sum
Subtraction	greater − lesser = difference	greater − lesser difference
Multiplication	factor × factor = product	factor × factor product
Division	dividend ÷ divisor = quotient	quotient divisor) dividend

Angles

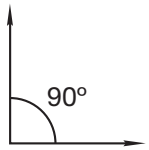
Acute angle



Obtuse angle



Right angle



Straight angle

Lines and Segments

line	segment	parallel lines	perpendicular
A B	D E		

LETTER FROM THE AUTHOR

Dear Student,

We study mathematics because it plays a very important role in our lives. Our school schedule, our trip to the store, the preparation of our meals, and many of the games we play involve mathematics. The word problems in this book are often drawn from everyday experiences.

When you become an adult, mathematics will become even more important. In fact, your future may depend on the mathematics you are learning now. This book will help you to learn mathematics and to learn it well. As you complete each lesson, you will see that similar problems are presented again and again. ***Solving each problem day after day is the secret to success.***

Your book includes daily lessons and investigations. Each lesson has three parts.

1. The first part is a Power Up that includes practice of basic facts and mental math. These exercises improve your speed, accuracy, and ability to do math *in your head.* The Power Up also includes a problem-solving exercise to help you learn the strategies for solving complicated problems.
2. The second part of the lesson is the New Concept. This section introduces a new mathematical concept and presents examples that use the concept. The Lesson Practice provides a chance for you to solve problems using the new concept. The problems are lettered a, b, c, and so on.
3. The final part of the lesson is the Written Practice. This section reviews previously taught concepts and prepares you for concepts that will be taught in later lessons. Solving these problems will help you practice your skills and remember concepts you have learned.

Investigations are variations of the daily lesson. The investigations in this book often involve activities that fill an entire class period. Investigations contain their own set of questions but do not include Lesson Practice or Written Practice.

Remember to solve every problem in each Lesson Practice, Written Practice, and Investigation. Do your best work, and you will experience success and true learning that will stay with you and serve you well in the future.

Temple City, California

HOW TO USE YOUR TEXTBOOK

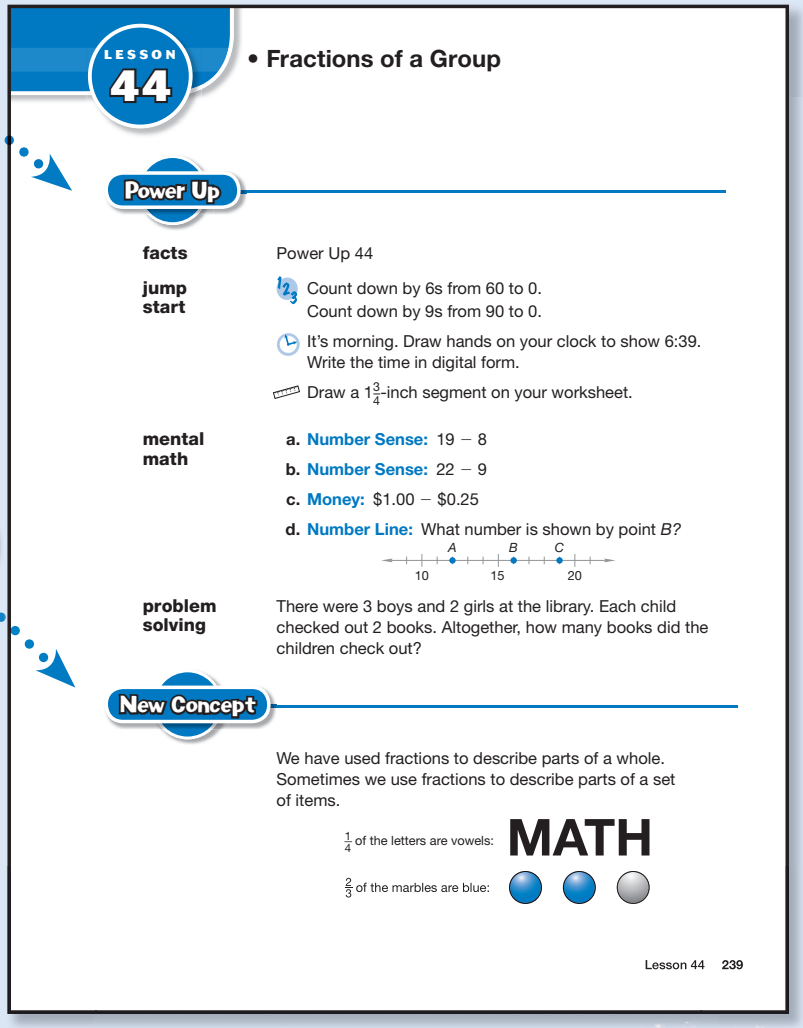
Saxon Math Intermediate 3 is unlike any math book you have used! It doesn't have colorful photos to distract you from learning. The Saxon approach lets you see the beauty and structure within math itself. You will understand more mathematics, become more confident in doing math, and will be well prepared when you take high school math classes.

Power Yourself Up

Start off each lesson by practicing your basic skills and concepts, mental math, and problem solving. Make your math brain stronger by exercising it every day. Soon you'll know these facts by memory!

Learn Something New!

Each day brings you a new concept, but you'll only have to learn a small part of it now. You'll be building on this concept throughout the year so that you understand and remember it by test time.



LESSON 44

• Fractions of a Group

Power Up

facts Power Up 44

jump start
- Count down by 6s from 60 to 0. Count down by 9s from 90 to 0.
- It's morning. Draw hands on your clock to show 6:39. Write the time in digital form.
- Draw a $1\frac{3}{4}$-inch segment on your worksheet.

mental math
- a. **Number Sense:** 19 − 8
- b. **Number Sense:** 22 − 9
- c. **Money:** $1.00 − $0.25
- d. **Number Line:** What number is shown by point *B*?

problem solving There were 3 boys and 2 girls at the library. Each child checked out 2 books. Altogether, how many books did the children check out?

New Concept

We have used fractions to describe parts of a whole. Sometimes we use fractions to describe parts of a set of items.

$\frac{1}{4}$ of the letters are vowels: **MATH**

$\frac{2}{3}$ of the marbles are blue:

Lesson 44 239

You will measure the next two objects or distances in feet. These should be larger objects like the length of a row of desks or the distance from your seat to the chalkboard.

You will measure the final two objects or distances in yards. These should be several yards such as the length or width of the classroom.

Activity

Estimating and Measuring Lengths

Materials: ruler, yardstick

Copy the chart below on a piece of paper. With your partner, decide on six objects to measure and record them in the first column of the chart.

Object to be measured	Estimated length	Measured length
1.	inches	inches
2.	inches	inches
3.	feet	feet
4.	feet	feet
5.	yards	yards
6.	yards	yards

Before you measure with a ruler or yardstick, estimate the measure of each object or distance you choose. We estimate by making a careful guess. You may want to take small steps by placing one foot just in front of another to help you estimate feet. You can take big steps to help you estimate yards. You should discuss your estimates with your partner. Write down your estimate before you measure with a ruler or yardstick.

When measuring yards, you can use three rulers instead of a yardstick. Record the closest whole number of inches, feet, or yards for each object measured.

Analyze Find 2 items in the classroom that would measure about 1 foot together.

Get Active!

Dig into math with a hands-on activity. Explore a math concept with your friends as you work together and use manipulatives to see new connections in mathematics.

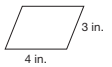
Check It Out!

The Lesson Practice lets you check to see if you understand today's new concept.

Lesson Practice

a. Draw a parallelogram that does *not* have right angles.

b. What is the perimeter of the parallelogram?

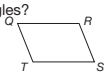


c. **Multiple Choice** Which shape below is *not* a parallelogram?

A
B
C
D

d. Which shapes in problem **c** are rectangles?

e. Which angles in this parallelogram are obtuse?

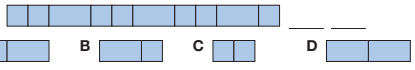


f. Which side of this parallelogram is parallel to side *QT*?

Written Practice *Distributed and Integrated*

1. (60, 64) **Formulate** Gwen has 3 boxes of tiles with 40 tiles in each box. Write a number sentence to show how many tiles are in all 3 boxes.

2. (2) **Multiple Choice** Gwen sees this tile pattern around the edge of a shower. What are the next two tiles in the pattern?



3. (6) Write two addition facts and two subtraction facts using 7, 8, and 15.

4. (66) **Multiple Choice** Which shape is *not* a parallelogram?

A
B
C
D

5. (60, 64) One square yard equals 9 square feet. How many square feet is 9 square yards?

Exercise Your Mind!

When you work the Written Practice exercises, you will review both today's new concept and also math you learned in earlier lessons. Each exercise will be on a different concept — you never know what you're going to get! It's like a mystery game — unpredictable and challenging.

As you review concepts from earlier in the book, you'll be asked to use higher-order thinking skills to show what you know and why the math works.

The mixed set of Written Practice is just like the mixed format of your state test. You'll be practicing for the "big" test every day!

Become an Investigator!

Dive into math concepts and explore the depths of math connections in the Investigations.

Continue to develop your mathematical thinking through applications, activities, and extensions.

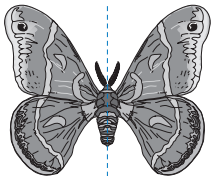
INVESTIGATION 9

Focus on

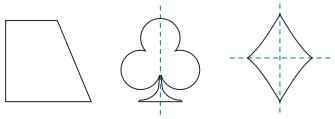
• Symmetry, Part 2

Recall from Investigation 7 that a line of symmetry divides a figure into mirror images.

Visit www.SaxonMath.com/Int3Activities for an online activity.



A figure may have one line of symmetry, two lines of symmetry, or more. A figure may also have no lines of symmetry.



No lines of symmetry | One line of symmetry | Two lines of symmetry

A line of symmetry also shows where a figure could be folded in half so that one half exactly fits onto the other half. In the following activity, you will create shapes with one or two lines of symmetry by folding and cutting paper.

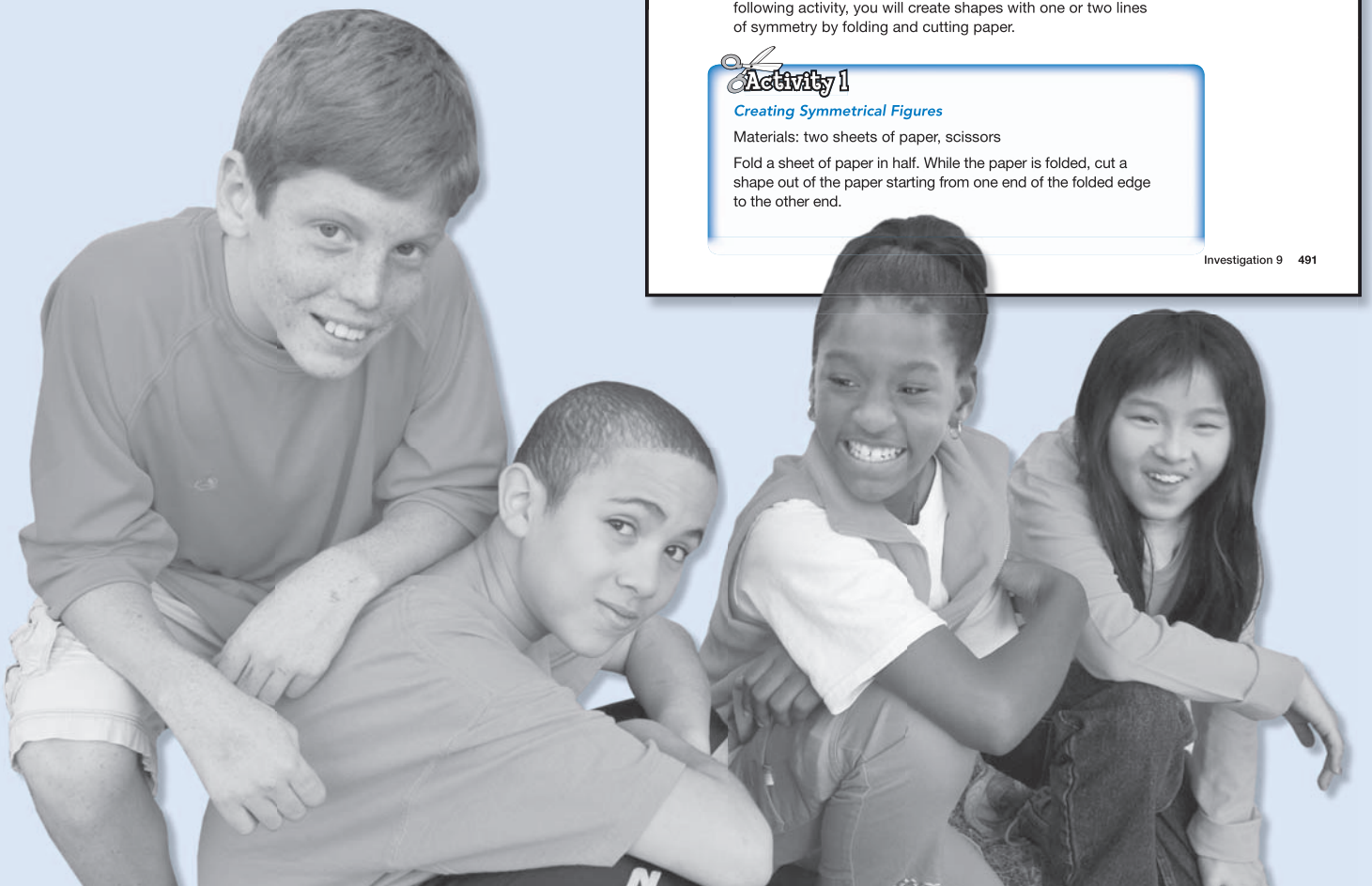
Activity 1

Creating Symmetrical Figures

Materials: two sheets of paper, scissors

Fold a sheet of paper in half. While the paper is folded, cut a shape out of the paper starting from one end of the folded edge to the other end.

Investigation 9 491



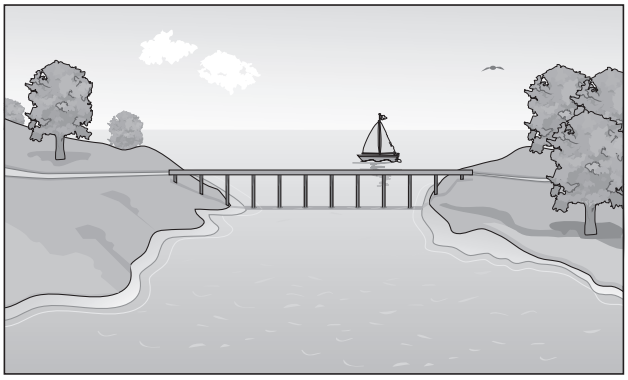
Focus on

• Problem Solving

Problem solving is a part of daily life. We can become powerful problem solvers by using the tools we store in our minds. When we study mathematics we increase the number of tools we can use. In this book we will practice solving problems every day.

Four-Step Problem Solving Process

Solving a problem is like arriving at a new location. So problem solving is similar to taking a trip.



Step	Problem-Solving Process	Taking a Trip
1	**Understand** Know where you are and where you want to go.	We are on the mainland and want to go to the island.
2	**Plan** Decide how you will get to the island. This is your route.	We can walk or ride our bike across the bridge. We can also use the boat.
3	**Solve** Follow your plan.	Go to the island.
4	**Check** Be sure that you have reached the right place.	Verify. We are now on the island.

When we solve a problem, it helps to ask ourselves some questions along the way.

Step	Follow the Process	Ask Yourself Questions
1	**Understand**	What do I know? What do I need to find out?
2	**Plan**	How can I use what I know? What strategy can I use?
3	**Solve**	Am I following my plan? Is my math correct?
4	**Check**	Did I answer the question that was asked? Is my answer reasonable?

The example below shows how we follow the four-step process to solve a word problem.

Example 1

Ms. Tipton's class wanted to pick a color for their class t-shirts. They could choose red, blue, or yellow. The students wrote their votes on slips of paper. Use a tally chart to display the votes. Which color did the class choose?

blue	red	blue	yellow	red	blue
red	blue	yellow	blue	yellow	red
yellow	red	blue	red	blue	yellow

Step 1: Understand the problem. Votes for three t-shirt colors are shown on the slips of paper. I need to **tally** the votes and find which color was chosen.

Step 2: Make a plan. I can make a **table** to tally the votes. Then I can count the tallies to see which color was chosen.

Step 3: Solve the problem. We make one tally mark in the table for each vote. The color blue has the most votes. So, blue was the color chosen by the class.

Our Votes

Color	Tally
red	𝍸 |
blue	𝍸 ||
yellow	𝍸

Step 4: Check your answer. I can check the tallies in the table to be sure they match the slips of paper shown. I can verify that the color blue has the most votes.

Example 2

Four students line up at the water fountain. Eric is behind Katie. Zachary is in front of Katie. Marcela is behind Eric. Who is first in line?

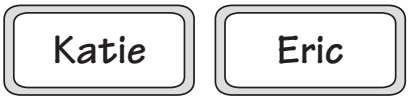
Step 1: Understand the problem. I know the following:

- There are four students.
- Eric is behind Katie.
- Zachary is in front of Katie.
- Marcela is behind Eric.

I need to find who is first in line.

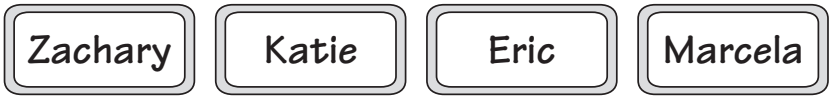
Step 2: Make a plan. I can act out this problem. I can make a nametag for each student—Eric, Katie, Zachary, and Marcela. Then I can use what I know to put the nametags in the correct order.

Step 3: Solve the problem. I put the nametags in order starting with Eric and Katie. Since Eric is behind Katie, I place Katie in front of Eric.



Zachary is in front of Katie. So, I move him to the front.

Marcela is behind Eric. So, I move her to the very back.



The order is Zachary, Katie, Eric, Marcela. I can look at the line of nametags and see that Zachary is first.

Step 4: Check your answer. I can check the order of the nametags by reading the question again.

- There are four students.
- Eric is behind Katie.

- Zachary is in front of Katie.
- Marcela is behind Eric.

The order is correct. I answered the question asked. Zachary is first in line.

1. List the four steps in the problem solving process.

2. What two questions do we answer to understand the problem?

Refer to the following problem to answer problems **3–8.**

Denzel arranges his rock collection into 5 rows. Each row has one more rock than the row above it. The bottom row has 6 rocks. How many rocks are in Denzel's collection?

3. What do we know?

4. What do we need to find?

5. **Connect** Which step of the four-step process did you complete in problems **3** and **4?**

6. Describe your plan for solving the problem.

7. Solve the problem by following your plan.

8. **Explain** Check your answer.

Problem Solving Strategies

Problem solving **strategies** are types of plans we can use to solve problems. In example 1 we made a table and in example 2 we acted out the problem. The list below shows the problem-solving strategies that we will use in this book.

Draw a Picture. We can use the information in a problem to draw a picture of the problem. Then we can use our picture to help us find the solution.

Look for a Pattern. Sometimes the order of a list of numbers or shapes follows a pattern. If we study the list we can find the pattern. Then we can predict what number or shape will come next.

Make a Table. We can organize what we know in a table. Then we study the table to see a pattern or relationship that will help us solve the problem.

Guess and Check. We can guess a reasonable answer and then check to see if our guess is correct. If the guess is not correct, we use the information we learned from the guess to make a better guess. We continue to guess until we find the correct answer.

Act It Out. We can use objects or people to represent the actions in a problem.

Work a Simpler Problem. Some problems contain large numbers. Sometimes we can use smaller numbers to see how to work the problem. Then we use the same plan to solve the harder problem.

Work Backwards. Some problems are easier to solve if we start at the end of the problem. Then we use what we know to get to the missing information at the beginning of the problem.

Write a Number Sentence. We can solve many word problems by using the numbers in the problem to write a number sentence.

Use Logical Reasoning. All problems require reasoning. However, for some problems we use the given information to rule out certain answer choices. We can use a picture or an organized list to help us as we work.

Make an Organized List. We can organize the given information in a list. Then we use the information in the list to solve the problem.

The chart below shows where each strategy is first introduced in this textbook.

Strategy	Lesson
Draw a Picture	7
Look for a Pattern	1
Guess and Check	18
Act It Out	13
Make a Table	4
Work a Simpler Problem	67
Work Backwards	59
Write a Number Sentence	20
Use Logical Reasoning	30
Make an Organized List	45

Writing and Problem Solving

Sometimes a problem will ask us to explain our thinking or our answer. This helps us measure how well we understand the problem. When we do this, we describe how we solved the problem or why our answer is correct.

LESSON 1

- Months and Years
- Calendar

Power Up

facts

Power Up 1

jump start

Count up by 1s from 0 to 10.

Draw hands on your clock to show 9:00.

mental math

a. **Number Sense:** 1 + 0

b. **Number Sense:** 1 + 1

c. **Number Sense:** 0 + 0

d. **Number Sense:** 0 + 2

problem solving

Focus Strategy: Find and Continue a Pattern

What shape comes next in this pattern?

Understand We are asked to find the shape that comes next in the pattern.

Plan We will find a pattern and then continue it.

Solve The pattern is "triangle, square, triangle, square" and so on. The last shape we see is a triangle, so we expect the next shape to be a square.

Check Our answer makes sense because a square comes after every triangle in the pattern.

New Concepts

Months and Years

The table below shows the months of the year in order. It also shows the number of days in each month. A **common year** is 365 days long. A **leap year** is 366 days long. The extra day in a leap year is always added to February.

Number	Month	Number of days
1	January	31
2	February	28 (29 in leap years)
3	March	31
4	April	30
5	May	31
6	June	30
7	July	31
8	August	31
9	September	30
10	October	31
11	November	30
12	December	31

Notice that February has 28 or 29 days. April, June, September, and November have 30 days. The other months have 31 days. The following rhyme helps us remember which months have 30 days. Then we can easily remember the numbers of days in the other months.

Thirty days hath September,

April, June, and November.

We can write a date several ways. Usually, we name the month first, then the day and year.

July 4, 1776

We can write the number of the month instead of its name. We call this the "month/day/year" form. Since July is the seventh month, we write

7/4/1776

We also can write the day first, then the month and year.

Fourth of July, 1776

When we read a date, we use an ordinal number to name the day of the month. An **ordinal number** names a position or an order. The first ten ordinal numbers are: first, second, third, fourth, fifth, sixth, seventh, eighth, ninth, and tenth.

We read July 4, 1776, as

July fourth, seventeen seventy-six

The word *fourth* is an ordinal number. It refers to the fourth day in the month. We can also write fourth as 4th.

Conclude What ordinal number comes before 4th? What ordinal number comes after 4th?

Calendar

A monthly **calendar** is a chart that relates the days of the month to the days of the week. A calendar has seven **columns,** one for each day of the week. It has five **rows** for the weeks. Not all of the rows are filled with numbers. For example, if the first day of the month is a Saturday, the only number in the first row is 1.

JULY 2006

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

Make a Calendar

Materials: **Lesson Activity 1,** class calendar

1. Write the name of this month at the top of your calendar.
2. Use the class calendar to find the column and the row for the first day of the month.
3. Write the number 1 on your calendar to show the first day.

4. Write the dates for the rest of the month. Use the rhyme you learned or the table to find the number of days in this month. Remember to stop writing when you get to this number.

5. Record on your calendar special events for this month such as holidays and birthdays.

Example 1

How many days are there from the 4th of the month to the 12th of the month? Use your calendar.

We will count up from the 4th through the 12th. When we count up from the 4th, we do not count the 4th. We begin counting with the first day as the 5th and the last day as the 12th. We find there are **8 days** from the 4th through the 12th.

Example 2

What date is one week after the 6th?

First we find the 6th on our calendar. One week after the 6th will be on the same day of the week. The date below the 6th is the 13th. The date one week after the 6th is the **13th.**

Generalize What date is two weeks after the 10th?

Lesson Practice

Answer problems **a–f** aloud as a class.

a. Repeat aloud the rhyme that tells the months that have 30 days.

b. On which day of the week did this month begin?

c. How many days are there in this month?

d. On which day of the week will this month end?

e. How many rows did we need for the calendar this month? Why?

f. How many columns did we need? Why?

For answers **g–k** write your answers.

g. How many days are in a leap year?

h. What month is the tenth month of the year?

i. How many months have 31 days?

j. How many days are there from the 16th of the month through the 21st?

k. What date is two weeks after the 3rd?

Written Practice

Distributed and Integrated

1. How many years old are you?

2. **Represent** Write your birth date in two different ways.

3. What month is the ninth month of the year?

4. Name the four months that complete this rhyme:

Thirty days hath _____,

_____, _____, and _____.

5. A week has how many days?

6. This month has four weeks plus how many days?

7. How many days are there from the 5th through the 11th?

8. **Analyze** You are the seventh person in a line of 12 people.

a. How many people are in front of you?

b. How many people are behind you?

9. Michael is the third person in line and Janet is the tenth person in line. How many people are standing between them?

10. List the missing ordinal numbers.

first, _____, third, fourth, _____, sixth, _____, _____, ninth, _____

11. What date is one week after the 9th?

12. What date is two weeks after the 11th?

13. What date is three weeks before the 27th?

14. Which month has less than 30 days?

15. On what day of the week does next month begin?

Real-World Connection

Bianca takes piano lessons every Wednesday. If the first of March falls on a Thursday, how many days would Bianca have piano lessons for the month of March? What would the dates be?

LESSON 2

• Counting Patterns

Power Up

facts

Power Up 2

jump start

Count up by 2s from 0 to 20.

Count up by 5s from 0 to 30.

Draw hands on your clock to show 11:00.

mental math

a. **Calendar:** What date is 1 week after the 5th?

b. **Calendar:** What date is 7 days before the 9th?

c. **Number Sense:** 2 + 0

d. **Number Sense:** 2 + 1

problem solving

Draw the next two shapes in this pattern.

New Concept

Counting is a math skill we learn early in life. Counting by ones we say, "One, two, three, four, five, …"

1, 2, 3, 4, 5, …

We often count by other numbers. For example, we can count in these ways.

by twos: 2, 4, 6, …

by fives: 5, 10, 15, …

by tens: 10, 20, 30, …

These are examples of **counting patterns.** A counting pattern is a kind of **sequence** that follows a rule. The three dots (…) mean that the counting pattern continues without end.

A counting pattern may count up or down. We may study the pattern to discover its rule. Then we can find more numbers in the sequence.

Example 1

Find the column on the calendar that starts with 7. What are the four numbers in this column?

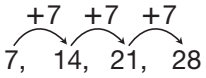
The numbers in the column are **7, 14, 21,** and **28.**

Example 2

Find the next three numbers in this sequence:

7, 14, 21, 28, ____, ____, ____, …

We study the sequence and see this pattern:



To reach each number, we count up by seven. The rule is "Count up by seven."

Counting this way we find the next three numbers:

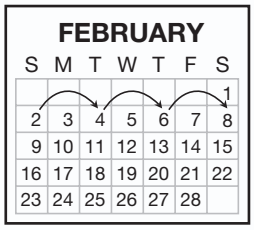
$28 + 7 = \mathbf{35}$ $35 + 7 = \mathbf{42}$ $42 + 7 = \mathbf{49}$

Generalize Will the rule for any column of a calendar be to count up by seven? Why?

Skip Counting

Materials: monthly calendar

We can use a calendar to help us practice skip counting. For example, when we count by twos from 2, we say two, skip over three, then say four, skip over five, then say six …



FEBRUARY

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	

To count by threes we say three, then skip over four and five, then say six, then skip over seven and eight, then say nine. . .

1. Skip count by threes from 3 to 30.
2. Skip count by fours from 4 to 28.
3. Skip count by twos from 30 down to 2.

Lesson Practice

Find the next 3 numbers in each pattern and write the rule.

a. 3, 6, 9, 12, _____, _____, _____, . . .

b. 10, 9, 8, 7, _____, _____, _____, . . .

c. 80, 70, 60, 50, _____, _____, _____, . . .

d. Skip count by sevens from 7 to 35.

Written Practice

Distributed and Integrated

1. How many days are in two weeks?
[1](1)

2. What month is the last month of the year?
(1)

3. Which four months of the year have exactly 30 days?
(1)

4. What month is the shortest month of the year?
(1)

5. What month is the seventh month of the year?
(1)

6. What day is the fourth day of the week?
(1)

Conclude Write the next 3 numbers in the sequence and then write the rule.

7. 7, 14, 21, _____, _____, _____, . . .
(2)

8. 5, 10, 15, _____, _____, _____, . . .
(2)

[1] The italicized numbers within parentheses underneath each problem number are called *lesson reference numbers.* These numbers refer to the lesson(s) in which the major concept of that particular problem is introduced. If additional assistance is needed, refer to the discussion, examples, or practice problems of that lesson.

9. (2) 50, 60, 70, _____, _____, _____, . . .

10. (2) 4, 8, 12, _____, _____, _____, . . .

Use the calendar to answer problems **11–14.**

MARCH 2007

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	(13)	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

11. (1) Write the circled date in two ways.

12. (1) On what day of the week did the month begin?

13. (1) Write the date of the first Saturday of the month in month/day/year form.

14. (1) On what day of the week did April, 2007, begin?

15. (1) **a.** Twenty students lined up for a fire drill. Brad was tenth in line. How many students were in front of him? How many students were behind him?

b. John was sixth in line. Beth was fifteenth in line. How many people were between them in the line?

Early Finishers
Real-World Connection

Pablo earned $3 in January for helping do chores around the house. In February he earned $6 and in March he earned $9. If the pattern continues, how much money will Pablo earn in June?

LESSON 3

• Reading a Clock to the Nearest Five Minutes

Power Up

facts

Power Up 3

jump start

Count up by 5s from 0 to 60.
Count up by 10s from 0 to 100.

Draw hands on your clock to show 3:00.

mental math

a. **Calendar:** What date is 7 days before the 11th?

b. **Calendar:** What date is 8 days before the 11th?

c. **Pattern:** Find the missing number: 2, 4, _____, 8, 10

d. **Pattern:** Find the missing number: 10, 9, _____, 7, 6

problem solving

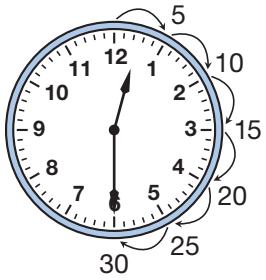
Suzi has 6 nickels. Count up by fives to find the total value of Suzi's nickels.

5¢ 10¢ 15¢ ____¢ ____¢ ____¢

New Concept

Two types of clocks are analog clocks and digital clocks. An analog clock shows time by the position of "hands" on a circular face. The numbers on an analog clock represent hours. The tick marks between the numbers represent minutes.

To tell time on an analog clock, we begin with the shorter hand, which is called the hour hand. On the analog clock below, the hour hand points to the space between 12 and 1. It is after 12:00 but before 1:00.



The longer hand is called the minute hand. The minute hand moves from one small tick mark to the next in one minute. There are 5 minutes between each hour number. We can skip count by fives from the 12 to the 6 to find the minute: 5, 10, 15, 20, 25, 30. The clock above shows twelve thirty.

To write the time of day in digital form, we write the hour followed by the colon sign (:). Then we write the number of minutes after the hour. We can write the time shown above this way.

12:30

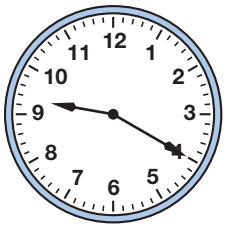
We refer to 12:00 in the middle of the day as **noon.** We refer to 12:00 at night as **midnight.** The abbreviation **a.m.** is for the twelve hours before noon. The abbreviation **p.m.** is for the twelve hours after noon. Noon begins the p.m. hours and is written "12:00 p.m." Midnight begins the a.m. hours and is written "12:00 a.m."

Most digital clocks show a.m. or p.m. in the display to tell if the time is in the morning or afternoon. The digital clock below shows 12:30 p.m.

Verify Is 12:30 p.m. in the morning or in the afternoon?

Example

If it is evening, what time is shown by the clock?



The hour hand is between the 9 and the 10. It is after 9 p.m. We skip count by fives from the 12 to the 4: 5, 10, 15, 20. It is **9:20 p.m.**

Analyze What time will it be in one hour?

Activity

Setting a Clock

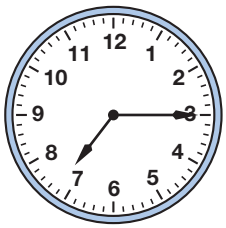
Materials: **Lesson Activity 2**

Read the time on each digital clock. Then draw hands on the analog clock face to show the same time. Write each time in digital form, including either a.m. or p.m.

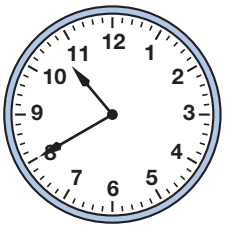
Lesson Practice

If it is morning, what time is shown by each clock?

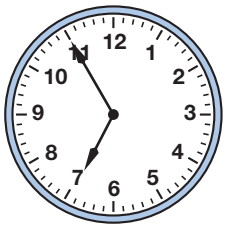
a.



b.



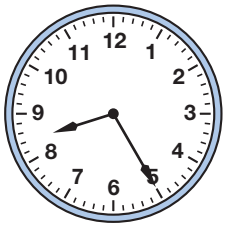
c.



Written Practice

Distributed and Integrated

1. It is morning. Write the time in digital form. *(3)*



2. What month is the eighth month of the year? *(1)*

3. The year 1776 was a leap year. How many days were in the year 1776? *(1)*

4. Which two letters are between the seventh and tenth letters of the alphabet? *(1)*

Write the next four numbers in each sequence. Then write the rule.

5. 7, 14, 21, _____, _____, _____, _____, . . .
(2)

6. 15, 20, 25, _____, _____, _____, _____, . . .
(2)

7. 3, 6, 9, _____, _____, _____, _____, . . .
(2)

***8.** The minute hand of a clock points to what number at 5:45?
(3)

***9.** What month comes just before the tenth month of the year?
(1)

10. How many days are in three weeks?
(1)

Analyze Refer to the clock to answer problems **11–13.**

11. It is evening. Write the time in digital form.
(3)

12. What time will the clock show in 1 hour?
(3)

13. What time will the clock show in 2 hours?
(3)

14. What day is four days after Saturday?
(1)

15. Sam's birth date was 7/15/99. In what month was Sam born?
(1)

Early Finishers
Real-World Connection

Marcus is studying for his math test. He likes to study for 15 minutes, then take a 5-minute break. If Marcus starts studying at 5:00 p.m., what time would he start his first break? What time would he start his second break? What time would he start his third break? Use a clock to help you find the answers.

LESSON 4

- Number Line
- Thermometer

Power Up

facts

Power Up 4

jump start

Count up by 7s from 0 to 35.
Count up by 100s from 0 to 1000.

Draw hands on your clock to show 6:30. It is morning. Write the time in digital form.

mental math

a. **Time:** What is the time 1 hour after 3:00 p.m.?

b. **Patterns:** 10, 20, _____, 40, 50

c. **Patterns:** 10, 15, _____, 25, 30

d. **Money:** Find the value of these coins:

problem solving

Focus Strategy: Make a Table

Find the number of days in one week, two weeks, three weeks, and four weeks.

Understand We are asked to find how many days are in 1 week, 2 weeks, 3 weeks, and 4 weeks.

Plan We can make a two-column table. We will label one column "Weeks" and the other column "Days."

Solve We place the numbers 1 through 4 in the "Weeks" column. We can count by 7s to find the numbers for the "Days" column: 7, 14, 21, 28.

Weeks	Days
1	7
2	14
3	21
4	28

Check The numbers in the "Days" column increase by 7. There are 7 days in a week, so our answers make sense.

New Concepts

Number Line

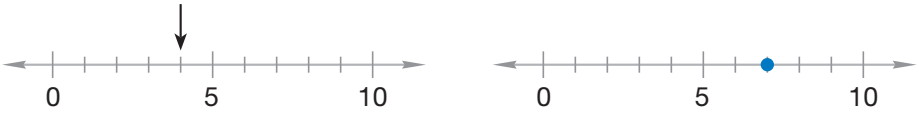
A **number line** shows numbers on a line in counting order. The spaces between the counting numbers are the same. The number line below goes from 0 to 15. Each tick mark represents a number. The tick marks between the 0 and the 5 stand for 1, 2, 3, and 4.

Number Line

What do the tick marks between the 5 and the 10 stand for?

Number lines are a useful tool for measuring and comparing things in our daily lives.

We can use number lines to locate and display numbers, and to see the relationships between numbers. We can use an arrow or a **point** to show a number's location.



On the first number line, the arrow points to 4. On the second number line, the point is on the number 7.

Example 1

What numbers do the points labeled a–c represent?

a. Each tick mark represents one counting number. We can count up from 0 by 1s to find the number: 1, 2, **3.**

b. We can count up from 10 by 1s to find the number: 11, **12.**

c. We can count down from 10 by 1s to find the number: 10, **9.**

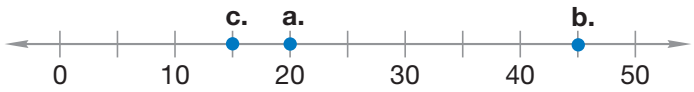
On some number lines, each tick mark represents an increase of more than one counting number.

On this number line, each tick mark represents an increase of 2. We can count up by 2s from 0 to find the value of point *A:* 2, 4, 6. Point *A* represents the number 6.

Generalize How can we find the value of each unlabeled tick mark?

Example 2

What numbers do the points labeled a–c represent?



a. The point is on the tick mark labeled **20.**

b. Each tick mark represents an increase of 5. We can count up by 5s from 40: **45.**

c. We can count up by 5s from 10: **15.**

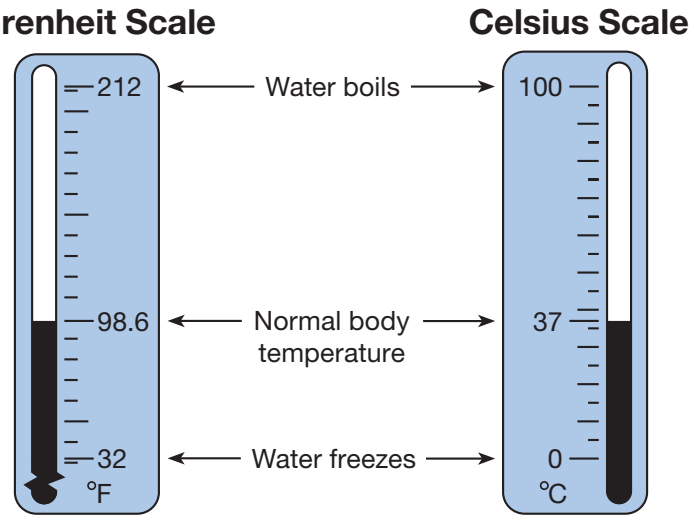
Thermometer

A thermometer uses a type of number line called a **scale.** We use a thermometer to measure temperature.

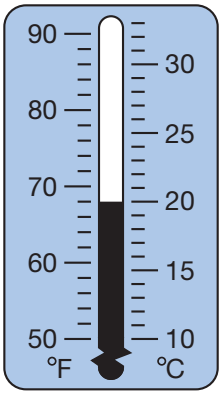
Thermometers measure temperature in units called **degrees.** Some thermometers show the temperature in degrees **Fahrenheit** (°F). Others show the temperature in degrees **Celsius** (°C). Some thermometers show both scales.

When it is hot enough for water to boil, it is 212°F and 100°C. When it is cold enough for water to freeze, it is 32°F and 0°C.

Normal body temperature is about 98.6°F and 37°C.



The thermometer on the right shows the Fahrenheit and Celsius scales. There are five spaces between each number on both scales. On the Fahrenheit scale, there are five tick marks for each increase of 10. If we skip count by twos, we can see that each space equals two degrees. On the Celsius scale, there are five tick marks for each increase of 5. Each space equals one degree.

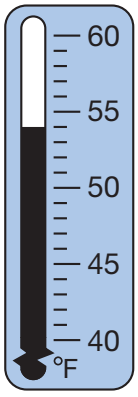


To read a thermometer, we look at the number on the scale next to where the temperature mark ends. The thermometer on the right shows 68°F and 20°C.

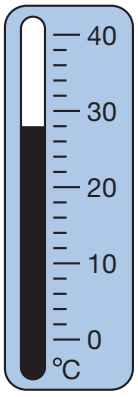
Example 3

What is the temperature on each thermometer?

a.



b.



a. The temperature marker is between 50°F and 55°F. We count up by 1s from 50. The temperature is **54°F.**

b. The temperature marker is between 20°C and 30°C. We count up by 2s from 20: 22, 24, 26, 28. The temperature is **28°C.**

Activity

Reading and Recording Temperature

Materials: **Lesson Activity 3,** classroom thermometer, clock

In this activity we will read an outside temperature in degrees Fahrenheit several times during the day. Each time we will follow these steps to record the temperature on our activity sheet.

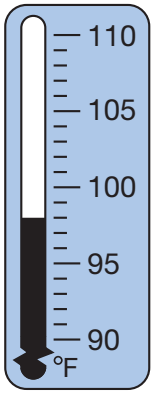
1. Read the temperature on the outside thermometer.
2. Mark the temperature on the activity sheet.
3. Write the temperature.
4. Write the time the temperature is recorded.
5. Write whether the outside temperature feels cold, cool, warm, or hot.

Lesson Practice

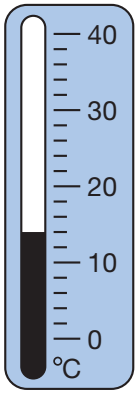
What temperature is shown on each thermometer?

For **a–c,** write the number that each point represents.

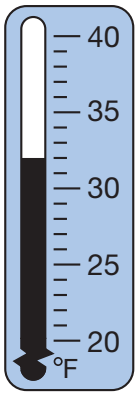
d.



e.



f.



g. The temperature is 35°F. Is it a hot or a cold day?

Written Practice

Distributed and Integrated

1. Name the middle two months of the year.
(1)

2. It is morning. Write the time in digital form.
(3)

3. **Generalize** The clock on the right is a digital clock. Is it 9:30 in the morning or 9:30 in the evening?
(3)

Write the next four numbers in each sequence:

4. 14, 21, 28, _____, _____, _____, _____, ...
(2)

5. 4, 8, 12, _____, _____, _____, _____, ...
(2)

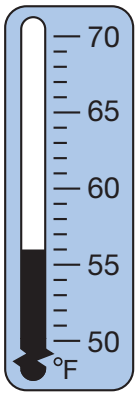
6. What day is six days after Friday?
(1)

7. It is 8:35. The minute hand points to what number?
(3)

8. **Represent** Trevor was born on July 5, 2001. Write this date in month/day/year form.
(1)

9. At what temperature does water freeze on the Fahrenheit scale?
(4)

10. *(4)* What temperature is shown on this thermometer?



11. *(1)* Jan's birthday is May 12. Ivan's birthday is exactly one week after Jan's. What is the date of Ivan's birthday?

12. *(1)* **Analyze** Dan was seventh in line. Jan was twelfth in line. How many people were in line between Dan and Jan?

13. *(4)* Look at the number line. The dot is on what number?

14. *(1)* Name the last three months of the year.

15. *(4)* **Multiple Choice** Which could be the temperature on a cool day?

A 60°F **B** 90°F **C** 100°F **D** 80°F

LESSON 5

• Fractions of an Hour

Power Up

facts

Power Up 5

jump start

Count up by 2s from 0 to 20.
Count up by 5s from 0 to 60.

Draw hands on your clock to show 8:15. It is morning.
Write the time in digital form.

mental math

a. **Time:** What is the time 1 hour after 8:00 p.m.?

b. **Calendar:** What date is 7 days after the 1st?

c. **Patterns:** 10, _____, 14, 16, 18

d. **Number Sense:** 3 + 1

e. **Money:** $1 + $4

f. **Money:** Find the value of these coins:

problem solving

The table shows that the value of one dime is 10¢. Find the value of 2 dimes, 3 dimes, and 4 dimes. Then fill in the missing values in the "Value" column.

Dimes	Value
1	10¢
2	
3	
4	

New Concept

We know how to say the time in words using hours and minutes.

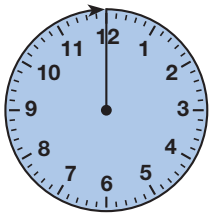
7:00 seven o'clock

7:15 seven fifteen

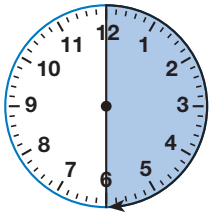
7:30 seven thirty

7:45 seven forty-five

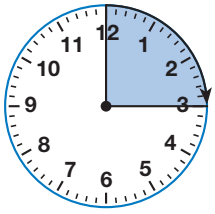
We also use hours and the **fractions** one half and one quarter of an hour to name time.



One Full Hour

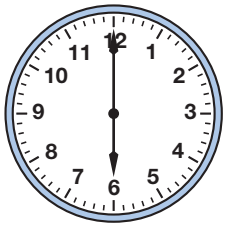


One Half Hour



One Quarter Hour

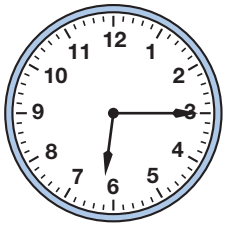
The minute hand moves from 12 all the way around to 12 again in one whole hour. One whole hour is 60 minutes.



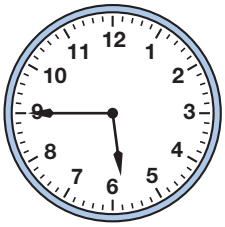
One **half** hour is $\frac{1}{2}$ of 60 minutes, or 30 minutes. If we count the minutes by 5s, we see that when the minute hand points to the 6, it is "half past" the hour.

6:30
"Half past 6"

When we talk about time, we call $\frac{1}{4}$ of an hour "one quarter hour." One **quarter** hour is 15 minutes. When the minute hand points to the 3, it is a "quarter after" or a "quarter past" the hour. When the minute hand points to the nine, it is a "quarter to" or a "quarter of" the hour.



6:15
"A quarter after 6"



5:45
"A quarter to 6"

Example 1

Write each time in digital form.

a. nine o'clock in the morning

b. half past nine in the morning

a. Nine o'clock is the whole hour. Since it is morning, the time is **9:00 a.m.**

b. Half past nine is 30 minutes after nine o'clock. Since it is morning, the time is **9:30 a.m.**

Example 2

Write each time in digital form.

a. a quarter after four in the afternoon

b. a quarter to five in the afternoon

a. A quarter after four is 15 minutes after four. Since it is afternoon, the time is **4:15 p.m.**

b. A quarter to five is fifteen minutes before five. Since it is evening, the time is **4:45 p.m.**

Fractions of an Hour

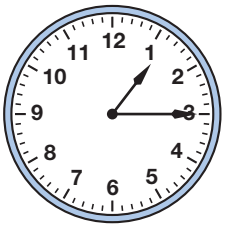
Materials: **Lesson Activity 4**

On your activity sheet, draw hands on the clock faces for these times. Then write each time in digital form.

1. A quarter to three
2. Half past four
3. A quarter after ten
4. A quarter of eight

Lesson Practice

a. The clock says 1:15. Write the time in words using a fraction of an hour.



b. Write a quarter to eight in the evening in digital form.

c. Cory gets up at half past six in the morning. Write that time in digital form.

Written Practice

Distributed and Integrated

1. (5) How many minutes are in half an hour?

2. (1) The date on the letter is 6/23/07. In what month was the letter written?

3. (1) The first day of the week is Sunday. How many days of the week are left after Wednesday?

Write the next four numbers in each sequence. Then write the rule for the sequence.

4. (2) 18, 24, 30, _____, _____, _____, _____, ...

5. (2) 7, 14, 21, _____, _____, _____, _____, ...

6. (2) 50, 45, 40, _____, _____, _____, _____, ...

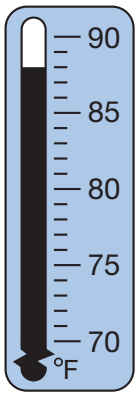
7. (3) It is morning. Write the time in digital form.

8. (4) Look at the number line. The dot is on what number?

9. (2) Write a number sequence with five numbers. Start with the number 5. Use the rule "count up by 5."

10. (5) Ana came home at a quarter past four in the afternoon. Write that time in digital form.

11. (4) What temperature is shown on this thermometer?



12. (4) In degrees Fahrenheit, at what temperatures does water freeze? At what temperatures does it boil?

13. (2) **Multiple Choice** Which counting pattern shows counting by sevens?

A 8, 6, 4, 2

B 5, 7, 9, 11

C 21, 28, 35, 42

D 25, 20, 15, 10

14. (3) It is evening. Write the time on the clock in digital form.

15. (4) Look at the number line. The dot is on what number?

Early Finishers

Real-World Connection

Cori was assigned a book report on Monday. The teacher told the class that their reports were due ten days after the report was assigned. On what day of the week are the reports due? Cori waited three days to start her report after it was assigned. On which day did she start her report? How many days does she have left to work on it? You can use a calendar to help find the answers.

LESSON 6

• Addition

Power Up

facts

Power Up 6

jump start

Count up by 10s from 0 to 100.
Count up by 25s from 0 to 200.

Draw hands on your clock to show 12:45.
It is afternoon. Write the time in digital form.

Mark your thermometer to show 80°F.

mental math

a. **Time:** What is the time 1 hour before 1:00 a.m.?

b. **Number Sense:** 4 + _____ = 10

c. **Patterns:** 50, 60, _____, 80, 90

d. **Money:** Find the value of these coins:

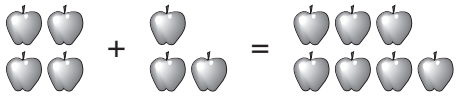
problem solving

Draw the two missing shapes in this pattern:

△ ▽ △ ▽ __ __ △ ▽

New Concept

One way to combine two or more groups is to add.



4 + 3 = 7

This picture shows "Four plus three **equals** seven."

We call 4 + 3 = 7 a number sentence. A **number sentence** is a complete sentence that uses numbers and symbols but not words.

The symbol + is a plus sign. The numbers that are added are called **addends.** The answer or total is called the **sum.** Here we show two ways to add 4 and 3.

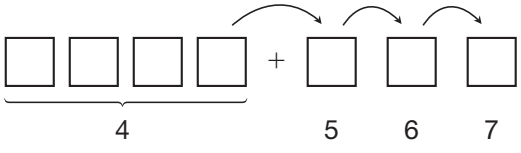
4	addend	3
+ 3	addend	+ 4
7	sum	7

Notice that the two sums above are the same. This is true for any two numbers that are added. **When we add two or more numbers, the numbers can be added in either order and the sum is the same.**

We can write addends side by side or one above the other. To show 4 plus 3 equals 7 we can write:

$$4 + 3 = 7 \quad \text{or} \quad \begin{array}{r} 4 \\ +\ 3 \\ \hline 7 \end{array}$$

One way to add is to count up from one of the addends. For example, to add 4 to 3, we start at 4 and count three more numbers.



When 0 is one of the addends, the sum is the same as the other addend. **Adding 0 to a number does not increase the total.**

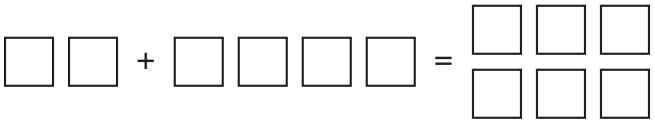
$$6 + 0 = 6$$

Analyze Which numbers are addends in 6 + 0 = 6? What is the sum?

The fastest way to add is to remember the addition facts. The addition facts are all the combinations of one digit numbers from 0 + 0 to 9 + 9. We will practice the addition facts during the Power Ups. This will help you remember them quickly.

Example 1

Use words and numbers to show this addition.

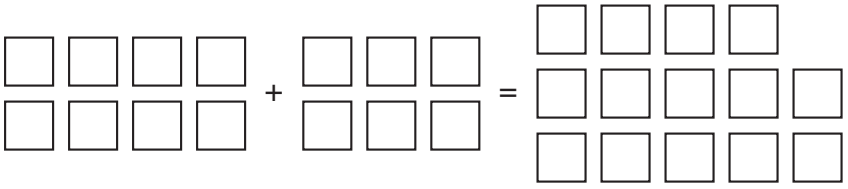


Two plus four equals six. 2 + 4 = 6

Example 2

Use color tiles to show this addition.

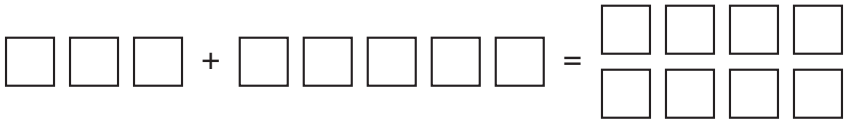
8 + 6 = 14



We combine a group of 8 tiles and a group of 6 tiles to make a group of 14 tiles.

Lesson Practice

a. Use words and numbers to show this addition.



b. Use color tiles to show this addition.

6 + 4 = 10

c. What is the name for numbers that are added?

d. What is the name for the total when we add?

Find each sum.

e. 4 + 0

f. 2 + 8

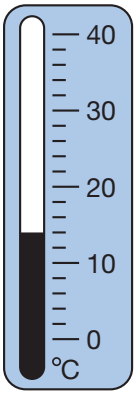
g.
$$\begin{array}{r} 9 \\ +\ 6 \\ \hline \end{array}$$

h.
$$\begin{array}{r} 7 \\ +\ 5 \\ \hline \end{array}$$

Written Practice

Distributed and Integrated

1. (4) **Analyze** What temperature is shown on this thermometer? Would this be a cool day or a hot day?



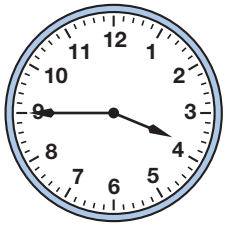
2. (5) Frank left for school at half past seven in the morning. Write that time in digital form.

Write the next four numbers in each sequence:

3. (2) 7, 14, 21, 28, ____, ____, ____, ____, . . .

4. (2) 3, 6, 9, 12, ____, ____, ____, ____, . . .

5. (3) It is the afternoon. Write the time on the clock in digital form.



6. (4) Look at the number line. The dot is on what number?

7. (1) What day is five days after Thursday?

8. (1) What month is five months after July?

9. (5) Jose went to a movie at a quarter to three in the afternoon. Write that time in digital form.

10. (4) **Multiple Choice** Which answer is the freezing point of water in °F?

A 0°F **B** 32°F **C** 212°F **D** 100°F

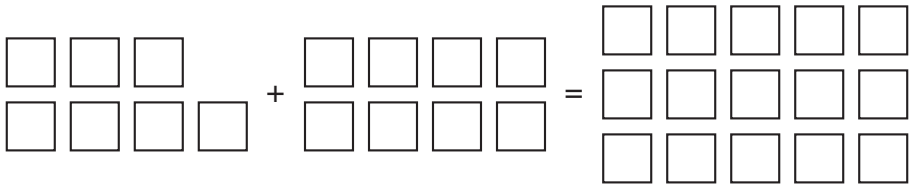
11. (3) Look at your classroom clock or use a student clock to help you answer these questions.

a. The short hand of a clock points between the 2 and the 3. What is the hour?

b. The long hand points to the 5. How many minutes is it past the hour?

c. It is dark outside. Write the time in digital form.

12. *(6)* **Formulate** Write a number sentence that shows this addition.



13. *(6)* **Represent** Draw circles to show this addition.

$$6 + 6 = 12$$

14. *(5)* Cory gets up at half past six in the morning. Write that time in digital form.

15. *(6)* Look at this number sentence.

$$5 + 4 = 9$$

a. Which numbers are the addends?

b. Which number is the sum?

LESSON 7

• Subtraction

Power Up

facts

Power Up 7

jump start

Count up by 2s from 0 to 20 and then back down to 0.

Draw hands on your clock to show "half past 2." It is afternoon. Write the time in digital form.

Mark your thermometer to show 30°C.

mental math

a. **Time:** What is the time 2 hours after 3:30 p.m.?

b. **Number Sense:** 8 + _____ = 10

c. **Number Sense:** _____ + 3 = 10

d. **Calendar:** What date is 7 days before the 17th?

problem solving

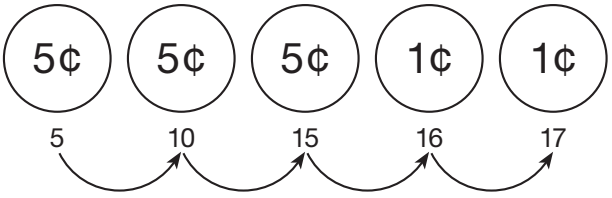
Focus Strategy: Draw a Picture or Diagram

Tina has 3 nickels and her sister has 2 pennies. How much money do they have altogether?

Understand We will combine 3 nickels and 2 pennies.

Plan We can *draw a diagram* of the coins. Then we can count up by fives for the nickels and by ones for the pennies.

Solve We draw a picture of the coins.

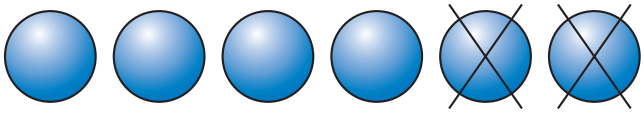


For each nickel, we count up by fives: 5¢, 10¢, 15¢. Then we continue counting by ones for the pennies: 16¢, 17¢.

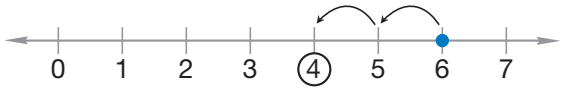
Check We found that **3 nickels and 2 pennies have a total value of 17¢.** We drew a diagram to help us find the value.

New Concept

To subtract we take away a part of the group. For example, if we take 2 marbles from 6 marbles, then 4 marbles are left. Here is one way to show this **subtraction.**



We can also show subtraction on a number line. To subtract $6 - 2$ we start at 6 and count down two numbers.



$$6 - 2 = 4$$

"Six minus two equals four."

The symbol $-$ is a minus sign. The answer when we subtract is called the **difference**.

$$\begin{array}{r} 6 \\ -\ 2 \\ \hline 4 \end{array} \rightarrow \text{difference}$$

Order matters when we subtract.

$2 - 6$ does not equal $6 - 2$.

We can write subtraction side by side or one above the other. To show 6 minus 2 equals 4 we write:

$$6 - 2 = 4 \quad \text{or} \quad \begin{array}{r} 6 \\ -\ 2 \\ \hline 4 \end{array}$$

Connect Why do the arrows on the number line above point to the left?

Example 1

There are 12 months in a year. How many months are left in a year after August? Write a subtraction number sentence that shows the answer.

We can draw a picture to help us solve the problem. We show the first letter of each month.

~~J~~	~~F~~	~~M~~	~~A~~	~~M~~	~~J~~	~~J~~	~~A~~	S	O	N	D

August is the eighth month, so after August there are **4 months.** We write the number sentence this way.

$$12 - 8 = 4$$

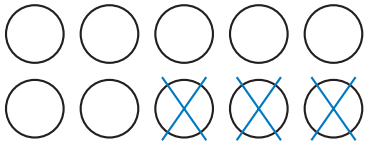
Example 2

Find the difference.

$$10 - 3$$

Here are 2 ways to subtract 3 from 10. In each example we start with 10.

1. Draw 10 circles and mark out 3 circles.

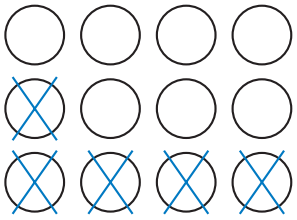


2. Find 10 on the calendar and count back 3 days.

S	M	T	W	T	F	S
4	5	6	(7)	8	9	10

Example 3

Use words and numbers to write the subtraction shown.



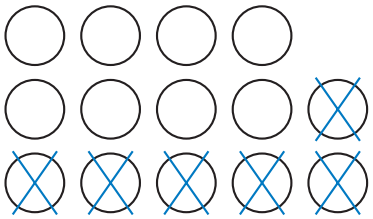
Twelve minus five equals seven: 12 − 5 = 7.

Example 4

Draw circles to show this subtraction.

$$14 - 6 = 8$$

We draw 14 circles and cross out 6 circles. There are 8 circles left.



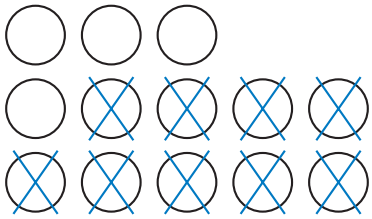
The fastest way to subtract is to remember the subtraction facts. We will practice the subtraction facts during the Power Ups. This will help you remember the facts quickly.

Lesson Practice

a. There are 7 days in a week. Five days have passed. How many days of the week are left?

b. There are 12 months in a year. How many months are left in a year after February? Write a subtraction number sentence that shows the answer.

c. Use words and numbers to write the subtraction shown.



d. Draw circles to show this subtraction.

11 − 5 = 6

Find each difference.

e. 5 − 1

f. 10 − 2

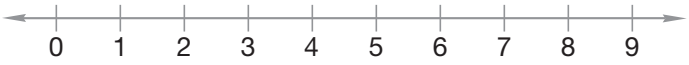
g. 4 − 3

h. 6 − 4

Written Practice

Distributed and Integrated

1. (7) **Explain** How would you use this number line to find 8 − 2?



2. (6) **Represent** Draw circles to show the addition 7 + 5.

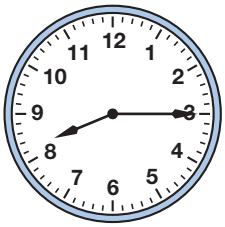
Write the next four numbers in each sequence:

3. (2) 18, 24, 30, _____, _____, _____, _____, . . .

4. (2) 18, 27, 36, _____, _____, _____, _____, . . .

5. (1) What month has an extra day in leap years?

6. (3) It is morning. Write the time on the clock in digital form.



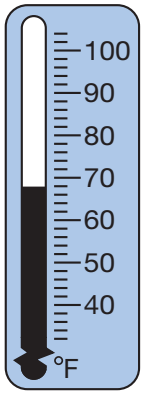
Find each sum and name the addends.

7. (6) 7 + 3

8. (6) 8 + 5

9. (4) Draw a number line from with one tick mark for each number from 0–10. Label 0, 5, and 10. Draw a point to represent the number 8.

10. (4) What temperature is shown on this thermometer?



11. (5) If the time is a quarter to noon, how do we write the time in digital form?

12. (5) Yesterday afternoon, Tamara's mom picked her up from the movie at half past four. Write that time in digital form.

13. (4) Look at the number line. The dot is on what number?

14. *(3)* The clock shows the time Ashlee leaves for school every morning. Write the time in digital form.

15. *(5)* Jamal goes to football practice at 6:15 p.m. Write the time in words using a fraction of an hour.

Early Finishers

Real-World Connection

Jade is reading a 14-page book. If she reads 4 pages before dinner and seven pages after dinner, how many pages does she need to read to get to the end of the book?

LESSON 8

• Addition and Subtraction Fact Families

Power Up

facts

Power Up 8

jump start

Count up by 5s from 0 to 60.
Count up by 10s from 0 to 100.

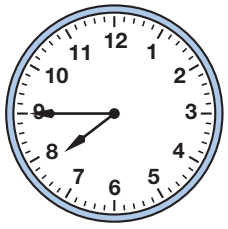
Draw hands on your clock to show 1:15. It is morning. Write the time in digital form.

Mark your thermometer to show 100°F.

mental math

a. **Number Sense:** Use a calendar to add: 14 + 7

b. **Time:** It is night. What time will it be 3 hours after the time on this clock?



c. **Patterns:** 20, 18, _____, 14, 12

d. **Number Sense:** 10 + 3

problem solving

Berto has 3 dimes, 1 nickel, and 3 pennies. How much money does he have in all?

New Concept

The three numbers that make an addition fact also make a subtraction fact.

$$3 + 4 = 7 \qquad 7 - 4 = 3$$

Using 3, 4, and 7 we can write another addition and subtraction fact.

$$4 + 3 = 7 \qquad 7 - 3 = 4$$

Together, these four facts are called an addition and subtraction fact family. A **fact family** is a group of related facts.

Discuss How are the four facts shown related?

Example 1

Write two addition facts and two subtraction facts with the numbers 3, 7, and 10.

Addition facts: The addends 3 and 7 equal 10. We can write the addends in either order.

$$3 + 7 = 10$$

$$7 + 3 = 10$$

Subtraction facts: We start with the sum above, 10. We can subtract 7 or we can subtract 3.

$$10 - 7 = 3$$

$$10 - 3 = 7$$

Example 2

Which of these sets of numbers *cannot* be used to make a fact family?

A 1, 2, 3 **B** 2, 4, 6 **C** 2, 3, 4

Choice A	Choice B	Choice C
$1 + 2 = 3$ $2 + 1 = 3$ $3 - 2 = 1$ $3 - 1 = 2$ fact family	$2 + 4 = 6$ $4 + 2 = 6$ $6 - 4 = 2$ $6 - 2 = 4$ fact family	$2 + 3$ does not equal 4 $3 + 2$ does not equal 4 $4 - 3$ does not equal 2 $4 - 2$ does not equal 3 *not* a fact family

We see that **choice C** is not a fact family.

Lesson Practice

a. Write two addition facts and two subtraction facts using the numbers 2, 5, and 7.

b. Write two addition facts and two subtraction facts using the numbers 4, 6, and 10.

c. Three months plus 9 months total 12 months. Write two addition facts and two subtraction facts using 3, 9, and 12.

d. **Multiple Choice** Which of these sets of numbers can be used to make an addition and subtraction fact family?

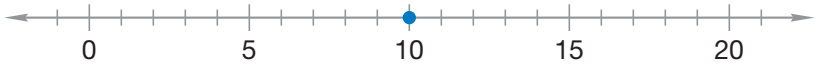
A 3, 4, 5 **B** 3, 6, 9 **C** 6, 8, 10

Written Practice

Distributed and Integrated

1. How many months of the year are left after September? (1)

2. Look at the number line. The dot is on what number? (4)



3. Jenny's alarm went off at a quarter to seven in the morning. Write the time in digital form. (5)

Find the next four numbers in each sequence.

4. 60, 55, 50, ____, ____, ____, ____, … (2)

5. 4, 8, 12, ____, ____, ____, ____, … (2)

Find each answer.

6. $7 + 8$ *(6)*

7. $9 + 9$ *(6)*

8. $10 - 1$ *(7)*

9. $8 - 7$ *(7)*

10. **Conclude** Bob came home from school at a quarter after four. His sister came home at half past four. Who came home first? *(5)*

11. Write two addition facts and two subtraction facts using 1, 4, and 5. *(8)*

12. **Multiple Choice** Which of these sets of numbers **cannot** be used to make a fact family? *(8)*

A 2, 7, 9 **B** 3, 5, 8 **C** 2, 4, 7 **D** 2, 9, 11

13. Mariah got home from school at the time shown. Write the time in digital form. *(3)*

14. Andrew was born on 7/11/01. In what month was Andrew born? *(1)*

15. **Justify** The temperature outside is 32°F. Dave said that it is a hot day. Do you agree? Why or why not? *(4)*

Early Finishers
Real-World Connection

Tyrone had three baseball cards and bought four more from the card shop. Brittany had four baseball cards and bought three from the card shop. Who had more baseball cards?

LESSON 9

• Unknown Addends

Power Up

facts

Power Up 9

jump start

Count up by 2s from 0 to 30.
Count up by 100s from 0 to 1000.

Draw hands on your clock to show "quarter to 11."
It is night. Write the time in digital form.

Mark your thermometer to show 10°C.

mental math

a. **Time:** What is the time 3 hours after 8:15 p.m.?

b. **Number Sense:** Use a calendar to add: 8 + 7

c. **Number Sense:** Use the numbers 2, 4, and 6 to write two addition facts and two subtraction facts.

d. **Money:** Find the value of these coins:

problem solving

There are six chairs at a table in the school library. Each chair has four legs. Find the total number of legs on all six chairs.

New Concept

Some of the addition examples in this book will have an addend missing. We can use a letter or a box to represent the missing number.

$$3 + m = 8$$

$$3 + \square = 8$$

When an addend is missing and the sum is given, the problem is to find the missing addend.

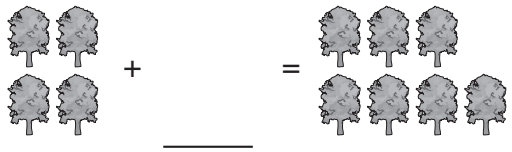
Example 1

Find each missing addend.

a. $4 + m = 7$

b. $\square + 4 = 9$

a. Think "Four plus what number equals seven?"

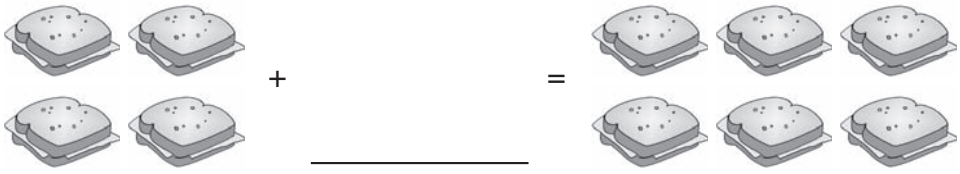


Since $4 + 3 = 7$, $\boldsymbol{m = 3}$.

b. Since $5 + 4 = 9$, $\boldsymbol{\square = 5}$.

Example 2

John and Monica made a total of 6 sandwiches for the picnic. John made 4 of the sandwiches.



How many sandwiches did Monica make?

We want to find out how many sandwiches Monica made. We know that there are a total of 6 sandwiches and that John made 4 of them.

Think "Four plus what number equals 6?"

We write $4 + \square = 6$. The $\square$ stands for the number of sandwiches Monica made.

Since 4 + 2 = 6, we know that Monica made **2 sandwiches.**

Formulate What subtraction number sentence could we use to solve example 2?

Lesson Practice

Find the missing addend:

a. 3 + ☐ = 7

b. 5 + *a* = 9

c. 9 + ☐ = 16

d. 2 + *n* = 7

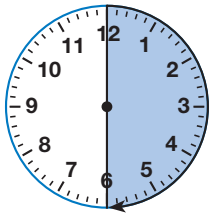
e. Maria had 5 pencils. Her friend gave her some more. Then she had 9 pencils. How many pencils did Maria's friend give her?

Written Practice

Distributed and Integrated

1. (8) Use the numbers 3, 3, and 6 to write an addition fact and a subtraction fact.

2. (5) **Analyze** What fraction of an hour is shaded on this clock?



Add:

3. (6) 6 + 3

4. (6) 2 + 5

5. (8) **Evaluate** Amy wrote an addition fact and a subtraction fact.

7 + 4 = 11 7 − 4 = 3

She said the facts belong in the same fact family. Is she correct? Explain your answer.

Find the missing addend:

6. (9) 6 + ☐ = 10

7. (9) 3 + *m* = 12

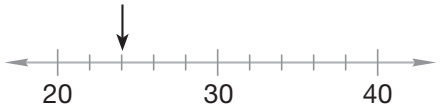
8. (3) At what number does the minute hand point when it is 7:10 p.m.?

Subtract:

9. (7) 9 − 3

10. (7) 4 − 4

11. To what number is the arrow pointing?
(4)



12. One whole hour is equal to how many minutes?
(5)

13. Danielle was born on February 24, 1992. Show how to write this date in month/day/year form.
(1)

14. Show how to write noon in digital form.
(3)

15. **Predict** If you counted by nines starting with 9, what is the fourth number you would say?
(2)

Early Finishers
Real-World Connection

At the beginning of the week Shannon had 15 pencils. She gave one each to four of her friends and lost two. How many pencils did she give to her friends altogether? How many pencils does she have left?

LESSON 10

• Adding Three Numbers

Power Up

facts

Power Up 10

jump start

Count up by 5s from 0 to 60 and then back down to 0.

Draw hands on your clock to show "quarter past 3." It is afternoon. Write the time in digital form.

Mark your thermometer to show 20°C.

mental math

a. **Number Sense:** Write a number sentence using the numbers 3, 7, and 10.

b. **Number Sense:** _____ + 2 = 10

c. **Number Sense:** Use a calendar to subtract: 10 − 7

d. **Money:** Find the value of these coins:

problem solving

The table shows the value of one quarter. Find the value of 2 quarters, 3 quarters, and 4 quarters and fill in the table with the correct values.

Quarters	Value
1	25¢
2	
3	
4	

New Concept

To add three numbers we use two steps.

Step 1: We add two of the numbers.

Step 2: We add the third number to the sum of the first two numbers.

Here we use these steps to add $4 + 3 + 5$.

Step 1: Add $4 + 3$. $\underbrace{4 + 3}_{7} + 5$

Step 2: Add $7 + 5$. $7 + 5 = 12$

We can add 4, 3, and 5 in any order. The sum is always 12.

$4 + 3 + 5 = 12$ $\quad 3 + 5 + 4 = 12$ $\quad 5 + 4 + 3 = 12$

Represent Draw circles to show all three number sentences.

Example 1

Show three ways to add 3 + 6 + 5.

We show all three ways using the two-step method we learned above.

First way:

Step 1: Add $3 + 6$.

Step 2: Add $9 + 5$.

$\underbrace{3 + 6}_{9} + 5$

$9 + 5 = \mathbf{14}$

Second way:

Step 1: Add $6 + 5$.

Step 2: Add $3 + 11$.

$3 + \underbrace{6 + 5}_{11}$

$3 + 11 = \mathbf{14}$

Third way:

Step 1: Add $3 + 5$.

Step 2: Add $8 + 6$.

$\underbrace{3 + 6}_{8} + 5$

$8 + 6 = \mathbf{14}$

Example 2

Sara walked for 5 minutes, jumped rope for 1 minute, and jogged for 4 minutes. How many minutes did Sara exercise?

We add the minutes in two steps

Walked	5	
Jumped	+ 1	5
Jogged	+ 4	
Total	10 minutes	

For step 1 we add $1 + 4 = 5$.

For step 2 we add $5 + 5 = 10$.

Sara exercised for **10 minutes.**

Lesson Practice

Add.

a. $1 + 3 + 2$

b. $4 + 4 + 4$

c. $6 + 5 + 4$

d. $5 + 4 + 1$

e. Carol has 8 sheets of orange paper, 5 sheets of black paper, and 2 sheets of blue paper on her desk. How many sheets of paper does she have in total?

Written Practice

Distributed and Integrated

1. (1) Name the last three months of the year. Which of these three months has only 30 days?

2. (3) **Analyze** The short hand of a clock points between the 1 and the 2. The long hand points to the 8. It is dark outside. What time is it?

Write the next four numbers in each sequence.

3. (2) 7, 14, 21, 28, ____, ____, ____, ____, ...

4. (2) 3, 6, 9, 12, ____, ____, ____, ____, ...

Analyze Write the missing numbers in this sequence.

5. (2) 6, 12, 18, ____, 30, ____, 42, ____, ...

Find each missing addend in problems **6** and **7.**

6. (9) $8 + n = 14$

7. (9) $1 + \square = 9$

8. (1) How many days are in five weeks?

Add.

9. (10) $9 + 2 + 7$

10. (10) $6 + 3 + 5$

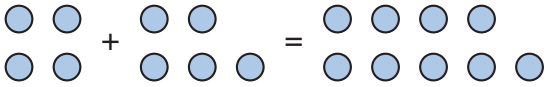
Find each answer.

11. (7) $8 - 3$

12. (7) $7 - 1$

13. (8) Write two addition facts and two subtraction facts using the numbers 1, 5, and 4.

14. (6) Use words and numbers to write the addition shown.



15. (6, 10) **Analyze** Look at this number sentence.

$$5 + 4 + 3 = 12$$

a. Which numbers are the addends?

b. Which number is the sum?

Early Finishers

Real-World Connection

Kaycie scored 8, 11, and 9 points in her first three basketball games. She scored 7, 6, and 10 points in her last three games. What is the total number of points she scored in the first three games? What is the total number of points she scored in the last three games?

Focus on

- **Pictographs and Bar Graphs**

A meteorologist is a person who studies the weather. Meteorologists measure the weather and keep careful records. The records help them predict the weather.

Jan wants to be a meteorologist. She recorded information about the weather near her home for many months. For example, she counted the number of sunny days in each month of the year. She made a tally mark for each sunny day. Here is her tally for the first three months.

Sunny Days

Month	Tally
January	𝍸 𝍸 ||
February	𝍸 |||
March	𝍸 𝍸 ||||

The information Jan collected is called **data.** To display this data, she made a type of **graph** called a pictograph. A **pictograph** uses a small image on the graph to show data. Jan chose a picture of the sun to stand for sunny days. Here is Jan's pictograph.

Sunny Days	
January	☀ ☀ ☀ ☀ ☀ ☀
February	☀ ☀ ☀ ☀
March	☀ ☀ ☀ ☀ ☀ ☀ ☀

Key
☀ = 2 days

The **key** shows us that each sun picture stands for 2 days. To count the number of sunny days we count by 2.

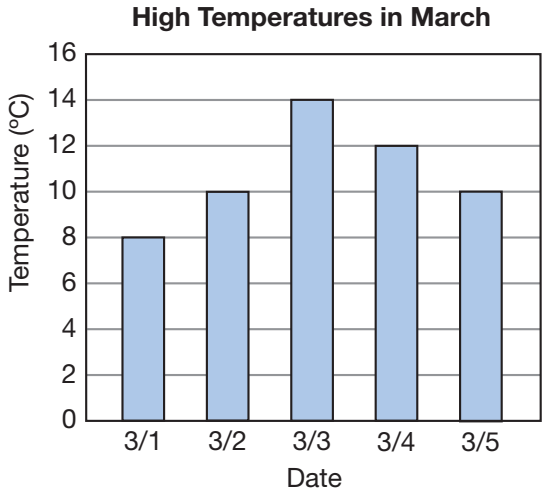
1. The row for March shows how many sun pictures?
2. How many sunny days did Jan count in March?
3. **Conclude** If Jan counts 10 sunny days in April, how many suns will she draw?

Jan recorded the high temperature in degrees Celsius every day during the first five days of March.

High Temperatures in March

Date	1st	2nd	3rd	4th	5th
°C	8	10	14	12	10

To display her data Jan made a **bar graph.**



4. What is the title of the graph?
5. Read the labels on the bottom and the side of the bar graph. What two kinds of information does the graph show?
6. What was the high temperature on March 4? How do you know?
7. Looking at the graph, how can you tell which day was warmest?

Activity

Pictograph and Bar Graph

Materials: **Lesson Activity 5**

Pictograph: Create a pictograph titled *Rainy Days* from this data.

Rainy Days

Month	Number of Days
January	9
February	12
March	6

Use the symbol to stand for 3 rainy days.

Bar Graph: Make a graph titled *Sunny Days in Spring.*

8. Label the bottom of the graph *Months*.
9. Write April, May, and June in order.
10. Label the scale going up the left side *Number of Days.*
11. Look at the scale. There is a 0 at the bottom and a 30 at the top. Count by 5s from zero to label the other five tick marks.
12. Use the following data to make your graph.

Sunny Days in Spring

Month	Number of Days
April	10
May	15
June	25

a. In November, Jan recorded 16 sunny days, 8 rainy days, and 6 cloudy days. Follow the models in this lesson to sketch a bar graph to display this data using three bars and a scale that increases by twos.

b. Jan counted 8 cloudy days in October, 6 cloudy days in November, and 10 cloudy days in December. Follow the models in this lesson to make a pictograph to display this data. Draw a picture of a cloud to represent two days.