Clocks & Time WORKBOOK

Hands-On Activities and Games

includes practice clocks

Clocks & Time makes learning how to tell analog and digital time fun and easy. Children will delight in using the accompanying punch-out analog and digital clocks to solve problems involving minutes, hours, and elapsed time in everyday situations.

Activities and Games Develop:

• Time-telling Skills Using Analog and Digital Clocks
• Identifying On the Hour, Half-Hour, Quarter-Hour, Fives and Ones Time Intervals
• Time Estimation
• Investigating Schedules, Timed Instructions and Daily Activities

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By Olga Gonzalez-Granat

Hands-On Activities and Games
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The Hands-On Workbook series is a collection of books aimed at introducing children to mathematics. The goal of the series is to engage children in lively mathematics activities that are fun, interesting, and challenging, but most of all, allow children to feel successful. This series has been developed keeping the most current research in mathematics education in mind. The National Council of Teachers of Mathematics recommends the use of hands-on materials to teach math.

About This Book

In *Clocks & Time*, children investigate time in everyday situations, and develop time-telling skills through the use of a clock and carefully sequenced activities.

Analog clocks, used in conjunction with digital clocks, help children learn about time.

The analog clock included with this book is very user-friendly. The large, blue minute hand and the small, red hour hand make it easy for children to distinguish and identify intervals of time-telling. A digital clock is also included that comes with strips that will slide up and down.

How To Use This Book

To get started you will need to pop out the cardboard punch-outs that can be found in the middle of this book. The clock manipulatives will be used along with the activity pages. When the child is finished, the clocks can be returned to the envelope that is attached to the back of this book for safe storage.

This activity book offers four levels of difficulty, with each level building on the preceding concepts. Look for the stars in the corner of the activity pages to determine what level the activity falls under.

Level 1

*Level 1 reviews the clock and basic time concepts.* It also investigates “on the hour” time in unique ways. Use these pages to help you gauge the child’s skill level in reference to telling time. For some children, this may be a quick and easy review, but for others, it will be an introduction.
**Level 2**

*Level 2 activities explore half-hour and quarter-hour time intervals.* If the child needs more practice on half-hour and quarter-hour time, use these pages as catalysts for similar activities. The activities in Level 1 can also be adjusted to create similar activities for half- and quarter-hours. The game on pages 14 and 15 is geared for hour and half-hour review. You can make this game more challenging by creating your own game board using quarter-hour activities.

**Level 3**

*This level explores 5-minute and 1-minute intervals.* Children count by fives and ones to further their learning of time. Pages 20 and 21 investigate estimation when children look at time as being closer to one hour.

**Level 4**

*Real-world experiences make up Level 4.* Children use time to investigate train and movie schedules, timed instructions, and daily activities. This level involves children in problem solving with everyday activities.

At the end of the book, on pages 30 and 31, you will find *Extension Activities.* These additional ideas will help extend the time activities.

An *Answer Key* for selected pages can be found on page 32.

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**Things You Can Do**

*Work alongside the child as he or she works through each page.* Children love to work with an adult as they explore and discover new ideas.

*Encourage and praise.* Children love to feel successful at whatever they do.

*Don’t overdo it!* Depending on the age and ability of the child, you may want to go through the book slowly.

*Give hints if necessary.* Use each page as a catalyst for similar problems that can be created.

*For older children,* take advantage of the *Extension Activities* found on pages 30 and 31.
Clock Smart

The **long hand** on Sarah’s clock shows **minutes**.
1. **Color the minute hand blue.** There are 60 minutes in one hour.

The **short hand** points to **hours**.
2. **Color the hour hand red.** There are 12 hours shown on a clock. The hour hand goes around the clock twice in one day.

“When the minute hand points to the 12, the hour hand also points to a number. In this picture, the hour hand is pointing to the 4. We read this time as **4 o’clock**, and write it as **4:00**.”

3. Set your clock to look like Sarah’s clock above.

4. If the minute hand points to the 12, and the hour hand points to the 2, what is the correct time?

   12:00  1:00  2:00  3:00  4:00
Showing Time

1. Sarah wakes up at 6:00. Which clock shows 6:00?

Set your clock to 6:00.

2. Sarah eats breakfast at 7:00. Which clock shows 7:00?

Set your clock to 7:00.

3. Sarah rides her bike to school at 8:00. Which clock shows 8:00?

Set your clock to 8:00.
On The Hour

1. Sarah meets Stephanie in the park at 3:00.
Set your clock to 3:00, then draw the hour hand on the clock.

2. Anthony meets Luis in the movie theater at 4:00.
Set your clock to 4:00, then draw the hour hand on the clock.

3. The four friends go to the Pizza Palace at 5:00.
Set your clock to 5:00, then draw the hour hand on the clock.
Clockwise

1. Sarah sets her clock to 1:00.
   Set your clock to 1:00, too.
   What number is the minute hand pointing to? _____
   What number is the hour hand pointing to? _____

“It takes 60 minutes, or 1 hour, for the hour hand to move from one number on a clock to the next.”

The hands on a clock move in the direction of increasing numbers. This is called the **clockwise** direction.

2. Remember, the clock is set at 1:00. Starting at the 12, move the blue minute hand clockwise around your clock once. (Be sure to move the hour hand to the next number.)

   What number is the red hour hand pointing to now? _____

   What number is the blue minute hand pointing to now? _____

   Draw the hands on the clock that show the new time.
   Write in the time underneath the clock.
1. Set your clock to 12:00.
   Draw hands on the clock to show what time \textbf{it will be} if you move the blue minute hand clockwise around your clock \textit{two times}.
   
   Move the blue minute hand clockwise around your clock twice, and check your answer. Remember to move the red hour hand to the next hour each time the minute hand moves past the 12.

2. Set your clock to 11:00.
   Draw hands on the clock to show what time \textbf{it will be} if you move the minute hand \textit{clockwise} around your clock \textit{four times}.
   
   Move the minute hand \textit{clockwise} around your clock four times, and check your answer.

3. Set your clock to 10:00.
   Draw hands on the clock to show what time you think \textbf{it will be} if you move the minute hand \textit{clockwise} around your clock
Fun Time in the Future

1. Set your clock to 8:00.
   Stephanie is going to her swimming lesson in 3 hours.
   Move the blue minute hand clockwise three complete turns to show what time she is going swimming. Draw the clock hands and write the time.

2. Set your clock to 2:00.
   Anthony’s soccer team has a game in 6 hours.
   What time will the game be held? Draw the clock hands and write the time.

3. Set your clock to 9:00.
   Luis is going to go skateboarding in 5 hours.
   How many complete turns will the minute hand make to show the time that passes?
   What time will Luis go skateboarding? Draw the clock hands and write the time.
**Half-Hour Mark**

Anthony sets his clock to 3:00. Set your clock to 3:00, too.

Anthony now moves the blue minute hand **halfway around** the clock, to the 6.

Move the blue minute hand on your clock in the same way. You have moved your minute hand **30 minutes past 3:00**.

What time is shown on your clock?

- 3:30
- 3:06
- 4:30

Why do you think 3:30 is called **half past 3**?

How many half-hours are there in one hour?

“It takes 30 minutes, or half an hour, for the minute hand to move from one number on the clock to the number directly across from it.”
Working in Half-Hours

1. Luis practices his guitar for 30 minutes.
   He starts practicing at 4:00.

   Set your clock to 4:00.
   Then move the minute hand **one half-hour** to show how long Luis practices.

   Draw the clock hands that show what time Luis stops practicing.
   Write the time below the clock.

2. Stephanie’s baseball team practices for 30 minutes.
   They start practicing at 5:15.

   Set your clock to 5:15. Then move your minute hand ahead **one half-hour**.

   Draw the clock hands that show what time Stephanie’s team stops practicing.
   Write the time below the clock.

3. Anthony and Sarah ride their bikes for 30 minutes.
   They begin riding at 6:20.

   Set your clock to 6:20. Then move the minute hand ahead **one half-hour**.
   Draw the clock hands that show what time they stop riding.
   Write the time below the clock.
Quarter Hours

Luis sets his clock to 8:00.
Set your clock to 8:00, too.

Luis now moves the blue minute hand one quarter of the way around the clock to the 3.

Move the blue minute hand on your clock in the same way. You have moved your minute hand 15 minutes past 8:00.

Write the correct time that is shown on your clock.

Why do you think 8:15 is called a quarter past 8?
How many quarter hours are there in one hour?
Quarter-Hours of Fun

At the neighborhood block party, children spend 15 minutes at different events. Fill in the missing times below, both in clock hands and in numbers.

1. Bean Bag Throw

Starts Ends

2. Tug Of War

Starts Ends

3. Potato Sack Race

Starts Ends

4. Water Balloon Toss

Starts Ends
What Time Is It?

Use your digital clock to figure out the correct time. Write the digital time next to each analog clock.

- Analog: 11:00  
  Digital: __ : __

- Analog: 11:15  
  Digital: __ : __

- Analog: 11:30  
  Digital: __ : __

- Analog: 11:45  
  Digital: __ : __

- Analog: 12:00  
  Digital: __ : __
What Time Is It? (continued)

Use your digital clock to figure out the correct time. Write the digital time next to each analog clock.

- [ ] 11:30
- [ ] 12:00
- [ ] 11:45
- [ ] 10:30
- [ ] 12:15
- [ ] 10:45
- [ ] 11:15
- [ ] 10:15
- [ ] 12:30
- [ ] 11:30
- [ ] 10:00
- [ ] 11:00
- [ ] 9:45
- [ ] 9:30
- [ ] 8:45
- [ ] 8:30
- [ ] 7:45
- [ ] 7:30
- [ ] 6:45
- [ ] 6:30
- [ ] 5:45
- [ ] 5:30
5-Minute Count

Stephanie sets her clock to 6:00.
Set your clock to 6:00, too.

Stephanie now moves the minute hand to the
Move the blue minute hand on your clock in
the same way. You have just moved the minute
hand 5 minutes past 6:00.

“It takes 5 minutes for
the minute hand to move
from one large number on
the clock to the next
large number.”

Look at your clock.

1. What time does your clock show? __________

2. Count by 5’s until you reach 60.
   5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60.

3. Set your clock to 7:00.
   Move the minute hand clockwise around your clock. Count by
   5’s
   as it touches each number, until you reach 60.
   What time is it now? ____________________
Counting on 5’s

Set your clock to the time shown on the first clock in each pair. As you move the minute hand to the time shown on the second clock, count by 5’s to show how many minutes have passed.

1.  
5, ___, ___, ___ minutes have past.

2.  
5, ___, ___, ___, ___ ___ minutes have past.

3.  
5, ___, ___, ___, ___ ___ ___ ___ minutes have past.

4.  
5, ___, ___, ___, ___ ___ ___ ___ minutes have past.
Each Minute Counts

1. Set your clock to 9:00.
   Move the minute hand to the first line on your clock.
   You have just moved the minute hand **1 minute past** 9:00.

   What time is shown on your clock?
   
   1:00       1:09        9:01

How many blue lines are on your clock face? _____
How many minutes are in one hour? _____

2. Review with Anthony:
   If you move the minute hand from the 4 to the 10,
   how many minutes have passed? _____

3. Review with Luis:
   If you move the minute hand from the 8 to the 11,
   how many minutes have passed? _____

4. Review with Stephanie:
   If you move the minute hand from the 6 to the 7,
   how many minutes have passed? _____
Minute by Minute

1. Set your clock to each time listed below. Start at the “o’clock,” then move the minute hand to the time shown.

   1:13  3:09
   8:57  2:46
   6:42  7:22

2. Draw the hands on each clock below to show the correct time.

   4:52
   7:21
   9:33

3. 5. 12:12
You’re Getting Close…

Write the time in the space below each problem.
Use your clock to check your answers.

1. Luis has baseball practice at 3:15.
   Is 3:15 closer to 3:00 or 4:00?
   
   :  

2. Stephanie leaves the mall at 8:42.
   Is 8:42 closer to 8:00 or 9:00?
   
   :  

3. Anthony goes out to recess at 12:22.
   Is 12:22 closer to 12:00 or 1:00?
   
   :  

4. Sarah finishes riding her bike at 5:32.
   Is 5:32 closer to 5:00 or 6:00?
   
   :  

“Any time in the first half of an hour (from the 1st to the 29th minute) is closer to \emph{that} hour. 12:20 is closer to 12:00.”

“Any time in the last half of an hour (from the 31st to the 59th minute) is closer to the \emph{next} hour. 12:40 is closer to 1:00.”
Clocking In at the Mall

1. Stephanie got to the mall closer to 2:00 than to 3:00.
   Write and show a time that she could have arrived.

   2:☐

   2. Luis went to the arcade closer to 12:00 than to 1:00.
      Write and show a time that he could have gone.

   ☐: 11

   3. Anthony saw a movie at the theater closer to 6:00 than to 7:00.
      Write and show a time that he could have started watching the movie.

   ☐: 6

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All Aboard!

1. Luis decides to take a trip on a train. How long will it take him to get from Grant Road to Third Street? Use your clock and the schedule below to help you.

<table>
<thead>
<tr>
<th>Station</th>
<th>Arrival Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grant Road</td>
<td>4:00</td>
</tr>
<tr>
<td>South Avenue</td>
<td>4:30</td>
</tr>
<tr>
<td>Bell Drive</td>
<td>5:00</td>
</tr>
<tr>
<td>Winding Lane</td>
<td>5:30</td>
</tr>
<tr>
<td>Third Street</td>
<td>6:00</td>
</tr>
</tbody>
</table>

2. Sarah takes a trip on a train. How long will it take her to get from Lincoln Lane to Hudson Lake? Use your clock and the schedule below to help you.

<table>
<thead>
<tr>
<th>Station</th>
<th>Arrival Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lincoln Lane</td>
<td>8:00</td>
</tr>
<tr>
<td>Elm Drive</td>
<td>8:42</td>
</tr>
<tr>
<td>Oak Street</td>
<td>9:17</td>
</tr>
<tr>
<td>Washington Street</td>
<td>9:33</td>
</tr>
<tr>
<td>Hudson Lake</td>
<td>10:11</td>
</tr>
</tbody>
</table>

3. How long would it take to make a trip from Elm Drive to Washington Street?
Scheduling Time

1. According to the schedule, Stephanie’s train leaves at 12:30. 1 hour and 15 minutes later, her train stops at Miller Park. Look at the train schedule. Will she get there before 1:25 or after 1:25? Fill in the schedule with the correct arrival time.

<table>
<thead>
<tr>
<th>Station</th>
<th>Arrival Time</th>
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</thead>
<tbody>
<tr>
<td>Silver Springs</td>
<td>12:30</td>
</tr>
<tr>
<td>Clark Road</td>
<td>12:40</td>
</tr>
<tr>
<td>Ashley Drive</td>
<td>1:00</td>
</tr>
<tr>
<td>Michigan Lane</td>
<td>1:25</td>
</tr>
<tr>
<td>Miller Park</td>
<td></td>
</tr>
</tbody>
</table>

2. Sarah takes a later train to Miller Park. It makes the same stops and takes the same time as Stephanie’s train. Fill in the arrival times on this train schedule.

<table>
<thead>
<tr>
<th>Station</th>
<th>Arrival Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver Springs</td>
<td>1:00</td>
</tr>
<tr>
<td>Clark Road</td>
<td></td>
</tr>
<tr>
<td>Ashley Drive</td>
<td></td>
</tr>
<tr>
<td>Michigan Lane</td>
<td></td>
</tr>
<tr>
<td>Miller Park</td>
<td>2:15</td>
</tr>
</tbody>
</table>
Timing is Everything

1. Sarah and Anthony are helping their parents with the laundry. The directions on the laundry detergent are below.

   **Soak dirty clothes for 10 minutes.**

   If they start soaking the clothes at 6:00, what time should they stop?

   :  

2. Stephanie is making popcorn. The directions on the popcorn bag read:

   **Pop on full power for 7 minutes.**

   If she starts at 3:12, what time will the popcorn be ready?

   :  

3. Luis is baking cookies with his mother. The recipe says:

   **Bake cookies for 12 minutes.**

   If they put the cookies in at 7:15, what time will the cookies be ready?

   :  

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Spending Time

1. The following table shows some of the things Sarah does during a day in the summer. Use your clock to keep track of the time she spends on each activity. Fill in the missing blanks.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Starts</th>
<th>Ends</th>
<th>Time Spent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eats breakfast</td>
<td>8:30</td>
<td>9:00</td>
<td></td>
</tr>
<tr>
<td>Takes a shower and</td>
<td>9:00</td>
<td>9:30</td>
<td></td>
</tr>
<tr>
<td>gets dressed</td>
<td></td>
<td>10:00</td>
<td>30 minutes</td>
</tr>
<tr>
<td>Watches TV</td>
<td>10:00</td>
<td>11:15</td>
<td></td>
</tr>
<tr>
<td>Reads</td>
<td>11:15</td>
<td>12:00</td>
<td></td>
</tr>
<tr>
<td>Uses her computer</td>
<td>12:00</td>
<td></td>
<td>30 minutes</td>
</tr>
<tr>
<td>Eats lunch</td>
<td></td>
<td>3:30</td>
<td>3 hours</td>
</tr>
<tr>
<td>Visits Stephanie</td>
<td>3:30</td>
<td>4:00</td>
<td></td>
</tr>
<tr>
<td>Eats lunch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swims</td>
<td>4:00</td>
<td>6:00</td>
<td></td>
</tr>
<tr>
<td>Baseball practice</td>
<td>6:00</td>
<td>6:30</td>
<td></td>
</tr>
</tbody>
</table>

2. The following table shows some of the things Luis does during a day in the summer.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Starts</th>
<th>Ends</th>
<th>Time Spent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eats breakfast</td>
<td>8:30</td>
<td>8:50</td>
<td></td>
</tr>
<tr>
<td>Takes a shower and gets dressed</td>
<td>8:50</td>
<td>9:20</td>
<td></td>
</tr>
<tr>
<td>Plays basketball</td>
<td>9:20</td>
<td>10:30</td>
<td></td>
</tr>
<tr>
<td>Rides his bike</td>
<td>10:30</td>
<td>12:30</td>
<td></td>
</tr>
<tr>
<td>Eats lunch</td>
<td></td>
<td>1:00</td>
<td>30 minutes</td>
</tr>
<tr>
<td>Plays checkers with his grandmother</td>
<td>1:00</td>
<td>1:45</td>
<td></td>
</tr>
<tr>
<td>Plays a video game</td>
<td>1:45</td>
<td>2:05</td>
<td></td>
</tr>
<tr>
<td>Rides his skateboard</td>
<td>2:05</td>
<td>3:15</td>
<td></td>
</tr>
<tr>
<td>Helps at his dad’s store</td>
<td>3:15</td>
<td>6:00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6:00</td>
<td></td>
<td>35 minutes</td>
</tr>
</tbody>
</table>
Movie Time

Look at the theater marquee. The schedule lists the times the movies start and how long they run.

1. What time should Stephanie’s mother pick her up if she is going to see “Best of the Berries”? 

2. What time should Luis’ parents pick him up if he is going to see “Turquoise Turtle Part 15”? 

3. Anthony is going to see “Jumping Jacks.” What time should his father pick him up? 

4. What movie would you be seeing if it ended at 2:25?
Working Backward
Stephanie, Sarah, Anthony, and Luis were timing each other at the track.

   Fill in her starting time.

2. Sarah started running at 3:35.
   Fill in her finish time.

3. Anthony stopped running at 4:50.
   Fill in his starting time.

4. Luis started running at 5:15.
   Fill in his finish time.

Circle the answers below each question.

5. Who ran for the longest time?
   Stephanie       Sarah       Anthony       Luis

6. If they each ran the same distance, who ran the fastest?
   Stephanie       Sarah       Anthony       Luis

How do you know? _______________________________________

<table>
<thead>
<tr>
<th>Runner</th>
<th>Starting Time</th>
<th>Running Time</th>
<th>Finish Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stephanie</td>
<td>3:35</td>
<td>16 minutes</td>
<td>2:20</td>
</tr>
<tr>
<td>Sarah</td>
<td>5:15</td>
<td>12 minutes</td>
<td></td>
</tr>
<tr>
<td>Anthony</td>
<td>5:15</td>
<td>18 minutes</td>
<td>4:50</td>
</tr>
<tr>
<td>Luis</td>
<td>5:15</td>
<td>14 minutes</td>
<td></td>
</tr>
</tbody>
</table>
Tic-Tac Time: 30-Minute Count

You Need: 25 pennies, 2 Game Boards

How to Play: One player is heads, the other is tails. Player 1 places a penny on a square, heads- or tails-up, depending on what he or she has chosen. The player then makes up a half-hour problem whose answer will be the time on that square. For example, if a player places a penny on the time 12:30, he or she might say, “I will practice my violin for 30 minutes. I will start at 12:00.” The player then sets the clock at 12:00 and moves the minute hand ahead one half hour. If the time on the clock matches the time under the penny, the player leaves the penny on the square. Otherwise he or she removes it.

The first player to place 5 pennies up, down, across, or diagonally

<table>
<thead>
<tr>
<th>6:15</th>
<th>4:00</th>
<th>2:45</th>
<th>12:05</th>
<th>6:10</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:35</td>
<td>9:40</td>
<td>7:15</td>
<td>7:20</td>
<td>8:20</td>
</tr>
<tr>
<td>5:25</td>
<td>3:25</td>
<td>12:00</td>
<td>11:30</td>
<td>1:35</td>
</tr>
<tr>
<td>8:30</td>
<td>1:40</td>
<td>5:05</td>
<td>4:10</td>
<td>10:45</td>
</tr>
<tr>
<td>10:50</td>
<td>3:50</td>
<td>2:55</td>
<td>11:55</td>
<td>12:10</td>
</tr>
</tbody>
</table>
Tic-Tac Time: 15-Minute Count

You Need: 25 pennies, 2 Game Boards

How to Play: One player is heads, the other is tails. Players play this game like 30-Minute Bingo, but make up 15-minute problems to match the times on the squares. For example, if a player places a penny on the 12:30 square, he or she might say, “I will play basketball for 15 minutes. I will start at 12:15.”

The first player to place 5 pennies up, down, across, or diagonally in a row, wins!
Extension Activities

1) Obtain train and bus schedules. Make up your own time problems like those on pages 22-23.

2) Use recipes and cooking instructions to make up time problems like those shown on page 24.

3) Cut out movie schedules from the newspaper. Make up your own time problems like those on page 26.

4) Explore the similarities between a compass face and a clock face. Label four walls of a room North, South, East, and West. Set your clock to 12:00, and face North. What time would it be if you turned the minute hand “South”? (12:30) “East”? (12:15) “West”? (12:45)

5) Use a stopwatch to time how quickly you can do different activities. For example, run a certain distance, clean up your room, or finish your homework. Challenge yourself to break your “record.”
Extension Activities (continued)

6) *Create a schedule of your day’s events.* Figure out how much of the day is spent sleeping, eating, playing, working, etc. Compare a weekday schedule to a weekend schedule. How do you spend your time differently?

7) *Go on a Time Trek.* Collect or write down the various timepieces we use. What are their differences? What are their similarities? How have time pieces changed over the years?
Answer Key

p. 7
1. 12:12
2. 2:12

p. 8
1. 
2. 
3. 

p. 9
1. 
2. 
3. 

11:00 8:00 2:00

p. 10
3:30
3:30 is called half past 3, because it is half an hour after 3:00.
There are two half hours in one hour.

p. 11
1. 
2. 
3. 

4:30 5:45 6:50

p. 12
8:15
8:15 is called a quarter past 8 because it is one quarter hour after 8.
There are four quarters in one hour.

p. 13
1. 8:30
2. 9:15
3. 10:30
4. 11:00

p. 16
1. 6:05; 3. 8:00

p. 17
1. 10, 15, 20
2. 10, 15, 20, 25, 30
3. 10, 15, 20, 25, 30, 35
4. 10, 15, 20, 25, 30, 35, 40, 45

p. 18
1. 9:01; 60 minutes
2. 30; 3. 15; 4. 5

p. 19
1. 
2. 
3. 
4. 
5. 

p. 20
1. 3:00; 2. 9:00; 3. 12:00; 4. 6:00

p. 22
1. 2 hours; 2. 2 hours, 11 minutes; 3. 51 minutes

p. 23
1. after 1:25; Miller Park 1:45

<table>
<thead>
<tr>
<th>Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:10</td>
<td>Clark Road</td>
</tr>
<tr>
<td>1:30</td>
<td>Ashley Drive</td>
</tr>
<tr>
<td>1:55</td>
<td>Michigan Lane</td>
</tr>
</tbody>
</table>

p. 24
1. 6:10; 2. 3:19; 3. 7:27

p. 25
1. 30 minutes
2. 30 minutes
3. 30 minutes
4. 30 minutes
5. 1 hour, 15 min.
6. 45 minutes
7. Starts: 9:30
8. 1 hour, 15 min.
9. 45 minutes
10. Ends: 12:30

p. 26
1. 3:05; 2. 2:20; 3. 3:35
4. Monster Mashmania

p. 27
1. 2:04; 2. 3:47; 3. 4:32; 4. 5:29
5. Anthony
6. Sarah ran the fastest. Her running time was the shortest.