Lesson Opener

Making Connections
Invite students to tell you what they know about time.

How many minutes are in an hour? (60 min.) In two hours? (120 min.) Which part of the time tells you the hour? (The first part) The minute? (The second part)

Using the Digital Lesson
You may want to set a clock to the times that the family started, ended, and took breaks and ask the students to tell what time the clock shows.

Learning Task
What is the problem the students are trying to solve? Connect the story to the problem.
• What does Doc want to know? (How many minutes the family played golf.)
• What time did the family start golfing? (10:15)
• What time did they finish? (12:06)
• How many breaks did they take? (2 breaks)
• How long were the breaks? (3 minutes each)

Literacy and Mathematics
Choose one or more of the following activities.
• Ask a student to repeat the question in their own words, clarifying the goal for the problem.
• Have the students infer what the family did during their breaks.

Texas Essential Knowledge and Skills

TEKS Geometry and Measurement—3.7.C
Determine the solutions to problems involving addition and subtraction of time intervals in minutes using pictorial models or tools such as a 15-minute event plus a 30-minute event equals 45 minutes

MATHEMATICAL PROCESSES
3.1.A Apply mathematics to problems
3.1.B Use a problem-solving model
3.1.E Create and use representations
3.1.G Display, explain, and justify mathematical ideas and arguments

Are You Ready?
Access Prior Knowledge
Use the Are You Ready? 18.3 in the Assessment Guide to assess students’ understanding of the prerequisite skills for this lesson.

Vocabulary
Multimedia eGlossary at thinkcentral.com

Resources
For the student
Interactive Student Edition provides students with an interactive learning environment!

For the teacher
Digital Management Center organizes program resources by TEKS!
eTeacher Edition
Math on the Spot Video Tutor
iTools Virtual Manipulatives
Soar to Success Math Online Intervention
Unlock the Problem

After students read the problem, discuss the different times that need to be considered when figuring out what time Alec and his family should start getting ready.

- **How does the graphic organizer help you solve the problem?** Possible answer: when I fill in the blanks in the graphic organizer, I know what to consider in order to solve the problem.

Be sure students understand the need to include the time the plane leaves on their number line and to jump back to include the times needed to get to the airport and to get ready before leaving for the airport.

Remind students that when using a number line to find elapsed time, they can add or subtract time to get to an hour to make calculations with elapsed time easier. Point out that on this number line, they are subtracting the times from right to left. It also may help to point out that 60 minutes is 1 hour when students jump back from 9:15 to 8:15.

- **Is there another way to count back on the number line? Explain.** Possible answer: count back 15 minutes to 9:00, then 60 minutes to 8:00, and 30 minutes to 7:30.

- **How could you use a clock face to help you solve the problem?** Possible answer: start with 9:15 and move the hands back 60 minutes to 8:15, then 15 minutes to 8:00, and then 30 minutes to 7:30.

**Math Talk**

Use Math Talk to focus on students’ understanding of when to jump forward and when to jump back on a number line.

**Mathematical Processes**

Unlock the Problem

Alec and his family are going to New York City. Their airplane leaves at 9:15 A.M. They need to arrive at the airport 60 minutes before their flight. It takes 15 minutes to get to the airport. The family needs 30 minutes to get ready to leave. At what time should Alec’s family start getting ready?

**Read**

**What do I need to find?**
I need to find the time the airplane leaves; the time the family needs to arrive at the airport; the time it takes to get to the airport; and the time the family needs to get ready.

**What information am I given?**
- the time the airplane leaves
- the time the family needs to arrive at the airport
- the time it takes to get to the airport
- and the time the family needs to get ready

**Plan**

I will use a ___________ to find the answer.

**Solve**

- Find 9:15 A.M. on the number line. Draw the jumps to show the time.
- Count back __60__ minutes for the time they need to arrive at the airport.
- Count back __15__ minutes for the time to get to the airport.
- Count back __30__ minutes for the time to get ready.

So, Alec’s family should start getting ready at __7:30___ A.M.

**Possible drawing and labels are given.**

**Math Talk**

How can you check your answer by starting with the time the family starts getting ready?

**Possible answer:** start with 7:30 A.M. and count forward 30 min, 15 min, and 60 min, to get the time the airplane leaves, 9:15 A.M.

**Module 18 577**

Go to thinkcentral.com for the ELL Activity Guide containing these leveled activities.

**ELL Language Support**

**Strategy:** Draw

**Materials:** color pencils

- Students can acquire vocabulary by drawing and labeling.
- Have students work through the problems in the lesson. As they complete the problems, have them draw simple illustrations showing the situations described. Each picture should show a different event.
- Make sure students write the time each event occurs.

**Possible answer:**

- 7:25 A.M.
- 7:55 A.M.
- 8:15 A.M.
Try Another Problem

Cory gets out of school at 2:45 P.M. It takes him 10 minutes to walk home. Then he spends 10 minutes eating a snack. He spends 8 minutes putting on his soccer uniform. It takes 20 minutes for Cory’s father to drive him to soccer practice. At what time does Cory arrive at soccer practice?

**Read**

<table>
<thead>
<tr>
<th>What do I need to find?</th>
<th>What information am I given?</th>
</tr>
</thead>
<tbody>
<tr>
<td>I need to find what time Cory arrives at soccer practice.</td>
<td>the time Cory gets out of school; the time it takes to walk home; the time it takes to eat a snack; the time it takes to get dressed; and the time it takes to get to soccer practice.</td>
</tr>
</tbody>
</table>

**Plan**

What is my plan or strategy?

I can start with the time Cory gets out of school and draw a number line to find the time Cory arrives at soccer practice.

**Solve**

Draw a diagram to help you explain your answer.

- Possible drawing and labels are given.

Possible answer: I checked my answer by starting at 3:33 P.M. and counting back on the number line 20 minutes, 8 minutes, 10 minutes, and 10 minutes to get to the starting time of 2:45 P.M.

1. At what time does Cory arrive at soccer practice? 3:33 P.M.

2. How do you know your answer is reasonable? Possible answer: I checked my answer by starting at 3:33 P.M. and counting back on the number line 20 minutes, 8 minutes, 10 minutes, and 10 minutes to get to the starting time of 2:45 P.M.

Math Talk

Use Math Talk to help students recognize that the jumps can be made in any order that makes sense for the problem.

Go Deeper

Tell students that they can add the different amount of times together and then find the time rather than acting out each step.

**COMMON ERRORS**

Error Students might count back to find the ending time instead of counting forward.

Example Students may count back 48 minutes from 2:45 to 1:57 instead of forward to 3:33 to find an ending time.

Springboard to Learning Have students make a diagram using arrows to indicate the direction they should count from a time.

Enrich

- Give students starting and ending times for a class party.
- Have students make a table listing party activities, such as movies, games, or singing, and times for each activity.
- Ask students to use their understanding of elapsed time to write an elapsed time problem that can be solved by using information in the table and acting it out.
- Have students exchange tables and problems and solve the problems. Check students’ work.
Share and Show

The first problem connects to the learning model. Have students use the MathBoard to explain their thinking.

• Why do you jump forward on the number line to solve the first problem? Possible answer: to find a time after 11:30.

Use the checked exercises for Quick Check. Students should show their answers for the Quick Check on the MathBoard.

Problem Solving

H.O.T. Problem

In Problem 3, students have to first subtract 10 minutes from the amount of time Ethan studied for his test. Then they can use a number line to jump back 30 minutes from 4:35 to 4:05, and jump back 20 minutes to 3:45.

Go Deeper

To extend their thinking, have students explain how they could solve Problems 3 and 4 a different way.

Math on the Spot Video Tutor

Through the Math on the Spot Video Tutor, students will be guided through an interactive solving of this type of H.O.T. problem. Use this video to also help students solve the H.O.T. problem in the Interactive Student Edition. With these videos and the H.O.T. problems, students will build skills needed in the TEXAS assessment.

Math on the Spot videos are in the Interactive Student Edition and at thinkcentral.com.
Fill in the bubble completely to show your answer.

5. Nathalie leaves work at 5:15 P.M. It takes her 7 minutes to walk to the train station. The train ride takes 21 minutes. Then she walks for 19 minutes to get home. At what time does Nathalie arrive home?

A 5:22 P.M.  B 6:01 P.M.  C 5:43 P.M.

6. Liam has a lunch break from 1:05 P.M. to 1:50 P.M. He reads a book for 10 minutes and plays soccer for 19 minutes. He spends the rest of the time eating. How much time does Liam spend eating?

A 29 minutes  B 16 minutes  C 35 minutes  D 26 minutes

7. Multi-Step Kate and Victor film four scenes for a movie. They take a break between each scene. The start time and end time of each scene is shown in the table. How long is the movie?

<table>
<thead>
<tr>
<th>Scene</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4:30 P.M.</td>
<td>4:40 P.M.</td>
</tr>
<tr>
<td>2</td>
<td>5:05 P.M.</td>
<td>5:14 P.M.</td>
</tr>
<tr>
<td>3</td>
<td>5:27 P.M.</td>
<td>5:33 P.M.</td>
</tr>
<tr>
<td>4</td>
<td>5:56 P.M.</td>
<td>6:00 P.M.</td>
</tr>
</tbody>
</table>

A 29 minutes  B 30 minutes  C 26 minutes  D 37 minutes

8. When Naomi arrived at the library, she spent 40 minutes reading a book. Then she spent 15 minutes reading a magazine. She left the library at 4:15 P.M. At what time did Naomi arrive at the library?

A 3:20 P.M.  B 4:00 P.M.  C 5:10 P.M.  D 3:35 P.M.

Texas Test Prep Coach

Test Prep Coach helps teachers to identify common errors that students can make.

In the Test Prep exercise, if students selected:

B They chose a time 15 minutes earlier.
C They chose a time 55 minutes later.
D They chose a time 40 minutes earlier.

Essential Question

How can you use the strategy draw a diagram to solve problems about time? Possible answer: I can draw a number line to find the solution to an elapsed time problem.
Lesson Check

1. Multi-Step Reading group begins at 10:15 a.m. and lasts for 25 minutes. Math class begins 8 minutes after reading group ends. What time does Math class begin?
   A 10:40 a.m.  B 10:58 a.m.  C 10:48 a.m.  D 10:45 a.m.

2. Multi-Step A ballgame starts at 7:10 p.m. The Lewis family needs 45 minutes to get to the stadium and 12 minutes to walk to their seats. At what time should the Lewis family leave for the ballgame?
   A 6:10 p.m.  B 6:20 p.m.  C 6:10 p.m.  D 6:13 p.m.

3. Multi-Step When Elston got to day camp, he played kickball for 15 minutes. Then he went to play rehearsal for 33 minutes. He finished the rehearsal at 10:18 a.m. What time did Elston get to day camp?
   A 9:30 a.m.  B 2:15 p.m.  C 2:13 p.m.  D 9:35 a.m.

4. Multi-Step Danielle gets on the subway at 1:40 p.m. She rides for 17 minutes. Then she walks to her apartment for 18 minutes. At what time does Danielle arrive at her apartment?
   A 4:57 p.m.  B 4:36 p.m.  C 4:52 p.m.  D 4:41 p.m.

5. Multi-Step Evan begins homework at 4:05 p.m. He works on math for 16 minutes and spelling for 15 minutes. Then he works on an art project for 21 minutes. What time does Evan finish his homework?
   A 4:57 p.m.  B 4:36 p.m.  C 4:52 p.m.  D 4:41 p.m.