

# Time to the Minute

FOCUS COHERENCE RIGOR

## LESSON AT A GLANCE

### FCR Focus:

#### Common Core State Standards

**3.MD.A.1** Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

**MATHEMATICAL PRACTICES** (See *Mathematical Practices in GO Math!* in the *Planning Guide* for full text.)

**MP2** Reason abstractly and quantitatively. **MP3** Construct viable arguments and critique the reasoning of others. **MP6** Attend to precision.

### FCR Coherence:

#### Standards Across the Grades

Before	Grade 3	After
2.MD.C.7	3.MD.A.1	4.MD.A.2

### FCR Rigor:

Level 1: Understand Concepts.....*Share and Show* (✓ Checked Items)

Level 2: Procedural Skills and Fluency.....*On Your Own, Practice and Homework*

Level 3: Applications.....*Think Smarter and Go Deeper*

### Learning Objective

Read, write, and tell time on analog and digital clocks to the nearest minute.

### Language Objective

Students demonstrate on an analog clock how you can tell time to the nearest minute.

### Materials

MathBoard

**FCR** For more about how *GO Math!* fosters Coherence within the Content Standards and Mathematical Progressions for this chapter, see page 559J.

## About the Math

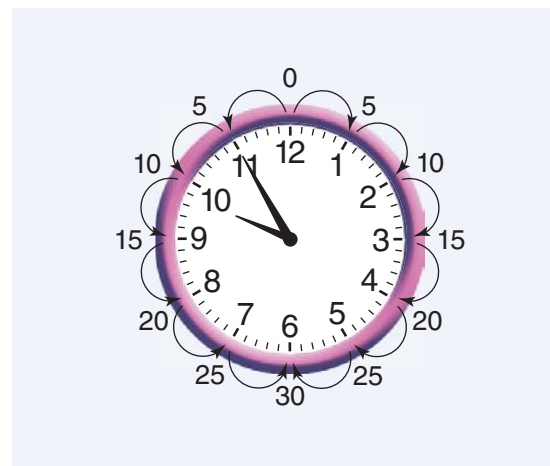
### Professional Development

Analog clocks can pose a challenge for many students. To help students distinguish between clockwise and counterclockwise, explain that the numbers on the face of a clock increase in a clockwise direction.

The numerals 1 to 12 are placed at equal intervals on the face of a clock. Because the minute hand rotates through these 12 sections in 60 minutes, each section corresponds to 5 minutes.

Model 9:55 on a clock and explain that when the minute hand is between the 6 and the 12, students can calculate the time before the next hour. Guide students to see the 11 as 5 minutes before the hour just as the 1 is 5 minutes after the hour, the 10 as 10 minutes before the hour just as the 2 is 10 minutes after the hour, and so on.

 Professional Development Videos



## Daily Routines

Common Core



### Problem of the Day 10.1

Cameron made a pattern by counting back from 60 by fives. First, he says 60. What is the sixth number he says? 35

**Vocabulary** minute



• Interactive Student Edition  
• Multimedia eGlossary

### Vocabulary Builder

**Materials** Semantic Map (see *eTeacher Resources*)

**Minute** Have students use semantic mapping to understand the meaning and uses of the term *minute*. Have students list words or phrases that are related to the term.

## 1 ENGAGE

with the **Interactive Student Edition**

### Essential Question

How can you tell time to the nearest minute?

### Making Connections

Ask students to tell what they know about telling time.

- **Describe the hands of a clock.** The longer hand is the minute hand and the shorter one is the hour hand.
- **Where are the hands pointing when it is 8:00?** The hour hand is pointing at the 8 and the minute hand is pointing at the 12.

### Learning Activity

What is the problem the students are trying to solve? Connect the story to the problem. Ask the following questions.

- **How does a clock show time?** The shorter hand tells the hour and the longer hand tells the minutes.
- **The time is 7:35. Where is the hour hand pointing?** between 7 and 8 **Where is the minute hand pointing?** at the 7

### Literacy and Mathematics

Choose one or more of the following activities.

- Have students write a list of five times not on the hour or half hour. Ask students to draw clocks to show the placement of the hands for each of the five times they wrote.
- Have students use analog clocks to show the times 2:20 and 2:40. Talk about the placement of the hands for each time. Ask students to describe each time as minutes past the hour and minutes before the hour.



# 2 EXPLORE

## Unlock the Problem



Common Core MATHEMATICAL PRACTICES

What does it mean when a groundhog sees its shadow on Groundhog Day?

Check that students understand they are to find the time shown on the clock. Some students may say they have seen clocks without marks for each minute. Help students understand that the minute hand still takes five minutes to move from one number to the next even if there are no marks.

### Example

Guide students in answering the questions and counting by fives.

- Why do you count by fives when finding a time to 5 minutes? It takes 5 minutes for a minute hand to move from one number to the next on a clock.

### MP2 Reason abstractly and quantitatively.

- How could you have found the time more quickly than counting by fives? Possible answer: I know that if the minute hand points to the 6, it is 30 minutes after the hour. So, if it points to the 7, it is 30 + 5 or 35 minutes after the hour.

Remind students that when writing times, a colon is used to separate the hours and the minutes.

**Math Talk** Use Math Talk to focus on students' justification for skip counting by fives when telling time to 5 minutes.

- Skip count for when the minute hand moves from the 4 to the 7, from the 1 to the 6, and from the 3 to the 10. Tell the number of skips and the number of minutes. 3 skips, 15 minutes; 5 skips, 25 minutes; 7 skips, 35 minutes
- MP3 Construct viable arguments and critique the reasoning of others.**
- On a clock without marks for each minute, can you still count by fives to find the minutes? Explain. Possible answer: You can still count by fives, because there are five minutes between each number on the clock.



**3.MD.A.1** Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

## Lesson 10.1

Name \_\_\_\_\_

### Time to the Minute

**Essential Question** How can you tell time to the nearest minute?



Measurement and Data—**3.MD.A.1**

**MATHEMATICAL PRACTICES**  
MP2, MP3, MP6

### Unlock the Problem

Groundhog Day is February 2. People say that if a groundhog can see its shadow on that morning, winter will last another 6 weeks. The clock shows the time when the groundhog saw its shadow. What time was it?

#### Example

Look at the time on this clock face.

- What does the hour hand tell you?

The time is between 7 and 8 o'clock.

- What does the minute hand tell you?

Possible answer: it is after 7:30.

In 1 **minute**, the minute hand moves from one mark to the next on a clock. It takes 5 minutes for the minute hand to move from one number to the next on a clock.

You can count on by fives to tell time to five minutes. Count zero at the 12.

0, 5, 10, 15, 20, 25, 30, 35

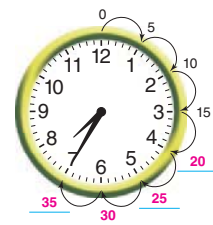
So, the groundhog saw its shadow at 7:35.

**Possible answer: when the minute hand moves from one number to the next number, 5 minutes have passed. So, skip counting by fives around the clock is a quick way to tell time to 5 minutes.**

- Is 7:35 a reasonable answer? Explain. **Yes; possible explanation: because the hour is between 7 and 8 and it is after 7:30, the answer is reasonable.**

- Underline the question.
- Where will you look to find the time?

at the picture of the clock



Write: 7:35

Read:

- seven thirty-five
- thirty-five minutes after seven



**MATHEMATICAL PRACTICES 2**

**Reason Abstractly** How does skip counting by fives help you tell the time when the minute hand points to a number?

### Reteach 10.1



Name \_\_\_\_\_ Lesson 10.1 Reteach

#### Time to the Minute

Tommy wants to know what time the clock shows. He also wants to know one way to write the time.

**Step 1** Where is the hour hand pointing? What is the hour? It points just after the 6, so the hour is 6.

**Step 2** Where is the minute hand pointing? It points just after the 3.

Count the minutes. Count zero at the 12. Count on by fives: 5, 10, 15.

Then count on by ones: 16, 17.

So, the time is 6:17, or seventeen minutes after six.

Write the time. Write one way you can read the time. Possible answers are given.

1. <u>4:16;</u> <u>sixteen minutes after four</u>	2. <u>8:51;</u> <u>nine minutes before nine</u>
3. <u>5:50;</u> <u>ten minutes before six</u>	4. <u>6:22;</u> <u>twenty-two minutes after six</u>

### Enrich 10.1



Name \_\_\_\_\_ Lesson 10.1 Enrich

#### Time Tester

Solve the problem using the digital clock shown. Then use the analog clock at the right of the digital clock to show your answer.

- Andy ate breakfast when his clock had the time shown. The clock stopped 12 minutes before breakfast. What time did Andy eat breakfast?

7:17



- Tyler left math class 23 minutes before the time shown. What time did Tyler leave math class?

2:25



- Larry knows he has recess 14 minutes after the time shown. What time does Larry have recess?

2:00



- Stretch Your Thinking** Renee arrived at school at the time shown. The clock at school was 4 minutes fast. What time was shown on the clock at school when Renee arrived?

7:35



### Time to the Minute

Count by fives and ones to help you.

#### **One Way** Find minutes after the hour.

Look at the time on this clock face.

- What does the hour hand tell you?

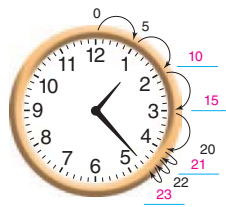
**The time is between 1 and 2 o'clock.**

- What does the minute hand tell you?

**Possible answer: it is before 1:30.**

Count on by fives and ones from the 12 on the clock to where the minute hand is pointing. Write the missing counting numbers next to the clock.

When a clock shows 30 or fewer minutes after the hour, you can read the time as a number of minutes *after* the hour.



Write: **1:23**

Read:

- twenty-three minutes after **one**
- one **twenty-three**

#### **Another Way** Find minutes before the hour.

Look at the time on this clock face.

- What does the hour hand tell you?

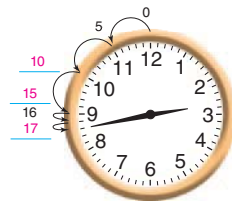
**The time is between 2 and 3 o'clock.**

- What does the minute hand tell you?

**Possible answer: it is after 2:30.**

Now count by fives and ones from the 12 on the clock back to where the minute hand is pointing. Write the missing counting numbers next to the clock.

When a clock shows 31 or more minutes after the hour, you can read the time as a number of minutes *before* the next hour.



Write: **2:43**

Read:

- seventeen **minutes** before three
- two **forty-three**

#### **ERROR Alert**

Remember that time *after* the hour uses the previous hour, and time *before* the hour uses the next hour.

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### Advanced Learners



Verbal / Linguistic  
Individual / Partners

- Have students write and solve problems using time to the minute.
- Present example problems as models for students to solve.

**The band started playing at 9:25. They played for 48 minutes. What time did the band stop playing?**  
**10:13**

**The show ended at 4:23. The show lasted 38 minutes. What time did the show begin?** **3:45**

- Have students write similar problems. Then have them exchange with a partner and solve.  
**Check students' work.**

## Time to the Minute

### One Way

Focus on how to count by fives, and then count on by ones to where the minute hand points. Point out to students that the minute hand tells the time more exactly because it points to the number of minutes after the hour.

- **Why do you count by fives and ones and not all by ones?** **It is faster to count by fives as far as I can.**
- **How do you know when to start counting by ones?** **Possible answer: I look to see where the minute hand is, and I count by fives using the numbers on the clock. If the minute hand is before the next number, I continue counting by ones.**

### Another Way

Guide students to count counterclockwise by fives on the clock starting with zero at 12 and continuing counterclockwise to 11, and then 10, and so on. When students have counted by fives as far as possible, they can count counterclockwise by ones.

- **If it is 3:52, is it also 8 minutes before three? Explain.** **No. If it is 3:52, it is 8 minutes before four. The time is before the next hour.**

### **Strategy:** Cooperative Grouping

Pair students with similar language levels to expand what they know about reading clocks.

- Explain that reading a clock is called *telling time*.
- Have students draw a clock, label it, and explain what they already know about clocks and telling time.
- Have pairs share with other pairs to maximize cooperative learning.

### **COMMON ERRORS**

**Error** Students may tell the wrong hour.

**Example** In *Another Way*, students might say 17 minutes before two instead of 17 minutes before three.

**Springboard to Learning** Remind students that time after the hour refers to the previous hour while time before the hour refers to the next hour.

# 3 EXPLAIN

## Share and Show



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

Use the checked exercises for **Quick Check**. Ask students to identify the type of clock used in Exercise 4. *a digital clock*



### Quick Check



**If** a student misses the checked exercises

**Then** Differentiate Instruction with

- Reteach 10.1
- Personal Math Trainer 3.MD.A.1
- RtI Tier 1 Activity (online)

## On Your Own

If students complete the checked exercises correctly, they may continue with the On Your Own section. Encourage students to write some times using words and others using numbers, as well as times before the hour and times after the hour.

**MP6 Attend to precision.** Have students write the times for Exercises 6 and 7 in as many ways as possible.

**MP2 Reason abstractly and quantitatively.** To help students answer Exercises 8–11, suggest they draw a clock and display the time given. The visual may help them to write the time a different way. Since several answers are possible for each, you may wish to have students share their answers and make a list of all the possible ways to write the time.

Name \_\_\_\_\_

### Share and Show



1. How would you use counting and the minute hand to find the time shown on this clock? Write the time.

*1:24; Possible answer: count by fives and ones to find the minutes; 5, 10, 15, 20, 21, 22, 23, 24; twenty-four minutes after one, or 1:24.*



Write the time. Write one way you can read the time.

Possible answers are given.

2.



*2:56; four minutes*

*before three*

3.



*6:17; seventeen minutes*

*after six*

4.



*10:45; fifteen minutes*

*before eleven*

Possible explanation: stop counting by fives and start counting by ones when the next five counted would pass where the minute hand is pointing.



### MATHEMATICAL PRACTICES 3

**Apply** How do you know when to stop counting by fives and start counting by ones when counting minutes after an hour?

### On Your Own

Write the time. Write one way you can read the time.

Possible answers are given.

5.



*3:12; twelve minutes*

*after three*

6.



*10:48; twelve minutes*

*before eleven*

7.



*6:10; ten minutes*

*after six*

**MATHEMATICAL PRACTICE 2 Represent a Problem** Write the time another way. Possible answers are given.

8. 34 minutes after 5

*5:34*

9. 11 minutes before 6

*5:49*

10. 22 minutes after 11

*11:22*

11. 5 minutes before 12

*11:55*

**Problem Solving • Applications** 

Use the clocks for 12–13.

12. How many minutes later in the day did the groundhog in Pennsylvania see its shadow than the groundhog in New York?

3 minutes

13. **GO DEEPER** What if the groundhog in Pennsylvania saw its shadow 5 minutes later? What time would this be?

7:33, or 27 minutes before 8

14. If you look at your watch and the hour hand is between the 8 and the 9 and the minute hand is on the 11, what time is it?

8:55, or 5 minutes before 9

15. **THINK SMARTER** What time is it when the hour hand and the minute hand are both pointing to the same number? Aiden says it is 6:30. Camilla says it is 12:00. Who is correct? Explain.

Camilla is correct; possible explanation: when it is 6:30, the minute hand will be at 30, but the hour hand will be between the 6 and the 7.

16. **MATHEMATICAL PRACTICE 3** **Verify the Reasoning of Others** Lucy said the time is 4:46 on her digital watch. Explain where the hands on an analog clock are pointing when it is 4:46.

Possible explanation: the hour hand is pointing between the 4 and the 5, and the minute hand is pointing to the first minute mark past the 9.

17. **THINK SMARTER** Write the time that is shown on the clock. Then write the time another way.

9:23; 23 minutes after 9



Time of Day the Groundhog Saw Its Shadow



**4 ELABORATE**

**Problem Solving • Applications** 

Common Core MATHEMATICAL PRACTICES

**THINK SMARTER**

Exercise 15 requires students to use reasoning to find the time when the hands on a clock are pointing exactly to the same number.



**Math on the Spot Video Tutor**

Use this video to help students model and solve this type of *Think Smarter* problem.



Math on the Spot videos are in the Interactive Student Edition and at [www.thinkcentral.com](http://www.thinkcentral.com).

**MP3 Construct viable arguments and critique the reasoning of others.**

Exercise 16 requires students to describe how a time shown on a digital clock translates to a time shown on an analog clock.

**THINK SMARTER**

This item assesses a student’s ability to read time to the minute on an analog clock. Students should understand that the hour is shown by the shorter hand and the number of minutes by the longer hand. Students who write 4:48 are confusing the hands. Students who write 9:04 likely do not understand that each number on the clock face represents a group of 5 minutes.

**5 EVALUATE** Formative Assessment

**Essential Question**

**Using the Language Objective**

**Reflect** Have students demonstrate on an analog clock to answer the Essential Question.

**How can you tell time to the nearest minute?** Name the hour, and then count by fives and ones to where the minute hand is pointing.

**Math Journal** 

Draw a clock showing a time to the nearest minute. Write the time as many different ways as you can.

**DIFFERENTIATED INSTRUCTION** **INDEPENDENT ACTIVITIES**



**Differentiated Centers Kit**

**Activities**  
**Time After Time**



Students complete blue Activity Card 8 by reading, writing, and showing time to the minute in analog and digital forms.

**Literature**  
**Late for School**



Students read about Kim’s late start and her attempts to get to school on time.

**Games**  
**Matching Time**



Students practice telling time to the minute to match cards.

## Practice and Homework

Use the Practice and Homework pages to provide students with more practice of the concepts and skills presented in this lesson. Students master their understanding as they complete practice items and then challenge their critical thinking skills with Problem Solving. Use the Write Math section to determine student's understanding of content for this lesson. Encourage students to use their Math Journals to record their answers.

Name \_\_\_\_\_

## Practice and Homework Lesson 10.1

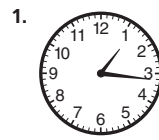
### Time to the Minute

Possible answers are given.

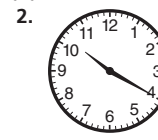


**COMMON CORE STANDARD—3.MD.A.1**  
Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.

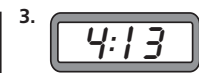
Write the time. Write one way you can read the time.



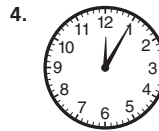
1:16; sixteen minutes  
after one



10:20; twenty minutes  
after ten



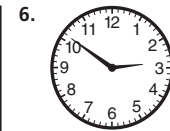
4:13; thirteen minutes  
after four



12:05; five minutes  
after twelve



7:24; twenty-four minutes  
after seven



2:51; nine minutes  
before three

Write the time another way. Possible answers are given.

7. 23 minutes after 4

4:23

8. 18 minutes before 11

10:42

### Problem Solving

9. What time is it when the hour hand is a little past the 3 and the minute hand is pointing to the 3?

3:15

10. Pete began practicing at twenty-five minutes before eight. What is another way to write this time?

7:35

11. **WRITE** Draw a clock showing a time to the nearest minute. Write the time as many different ways you can.

Check students' work.

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Chapter 10 565

## Extend the Math

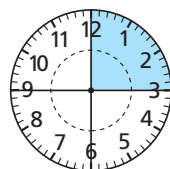
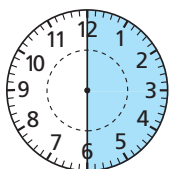
### Activity

### Compare Fractions of an Hour

**Materials** ruler, Analog Clockfaces (see *eTeacher Resources*)

**Investigate** Have students shade clock faces to compare  $\frac{1}{2}$  hour and  $\frac{1}{4}$  hour. Show them how to divide one whole hour, or 60 minutes, into two  $\frac{1}{2}$  hours, and then shade the clock face to show  $\frac{1}{2}$  hour. Then have them do the same for  $\frac{1}{4}$  hour.

- Which is longer,  $\frac{1}{2}$  hour or  $\frac{1}{4}$  hour? How do you know?  
 $\frac{1}{2}$  hour; Possible explanation: more of the clock face is shaded.



- How many minutes are in  $\frac{1}{4}$  hour? What fraction of an hour is 45 minutes? 15 minutes;  $\frac{3}{4}$  hour
- How many minutes are in  $\frac{1}{2}$  hour? 30 minutes

Have students write and discuss problems about fractions and time.

**Summarize** Describe two different strategies you can use to compare fractions of an hour. Possible answer: I can shade clock faces, or I can think about how much time each fraction represents.

**Lesson Check** (3.MD.A.1)

1. What is another way to write 13 minutes before 10?

9:47

2. What time does the clock show?



2:20

**Spiral Review** (3.OA.A.1, 3.OA.A.2, 3.OA.A.4, 3.OA.B.6)

3. Each bird has 2 wings. How many wings do 5 birds have?

10 wings

4. Find the unknown factor.

$$8 \times \square = 56$$

7

5. Mr. Wren has 56 paintbrushes. He places 8 paintbrushes on each of the tables in the art room. How many tables are in the art room?

7 tables

6. What number completes the equations?

$$4 \times \triangle = 20 \quad 20 \div 4 = \triangle$$

5

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Continue concepts and skills practice with Lesson Check. Use Spiral Review to engage students in previously taught concepts and to promote content retention. Common Core standards are correlated to each section.

**S.T.E.M. Connecting Math and Science**

**Measure It!**  
Measuring uses numbers to describe the world around you. Many kinds of data are measured.

**Active Reading** As you read the next page, circle the main idea.

A balance has a pan on either side. Put the object you want to measure on one pan and add masses to the other pan until they are balanced. The basic unit of mass is the gram.

The units on measuring tapes can be centimeters and meters or inches and feet.

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Name \_\_\_\_\_ S.T.E.M. Activity Chapter 10  
Use with ScienceFusion pages 20-21.

**Measure It!**  
**Develop Vocabulary**  
1. Write the definition using your own words.  
gram: A gram is one of the basic units of measurement. A tool that it can be used to measure liquid volume.

**Develop Concepts**  
2. When you look at a recipe, how do you know how much of that it can be used to measure liquid volume?  
The recipe tells you how much of each ingredient to measure.

3. What is a good tool to use if you want to measure the length? What are some units of measurement that this tool uses?  
A ruler would be helpful. A ruler can use centimeters, inches, or millimeters.

**Do the Math!**  
4. Complete the table by thinking about what you are measuring on the left column and filling in what would be a good tool used to measure it and a possible unit of measurement you could use.

Measure	Tool used to measure it	Unit of measurement
Time	stopwatch	second
Length	ruler	inch
Liquid	measuring cup/spoon	ounce
Weight	balance	gram

5. How many millimeters are in one centimeter? How many centimeters are in one meter?  
There are ten millimeters in one centimeter. There are one hundred centimeters in one meter.

6. What are some uses of a graduated cylinder?  
A graduated cylinder is useful in measuring the volume of a liquid or even the volume of some solids such as sugar or salt.

**Summarize**  
7. Name a tool to measure each of the following: length, liquid volume, mass.  
Length can be measured using a ruler. Liquid volume can be measured using a graduated cylinder. Mass can be measured using a balance.

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In Chapter 10 students extend their understanding of time, length, liquid volume, and mass by choosing appropriate units and tools to measure different quantities. These same topics are used often in the development of various science concepts and process skills.

Help students make the connection between math and science through the S.T.E.M. activities and activity worksheets found at [www.thinkcentral.com](http://www.thinkcentral.com). In Chapter 10, students connect math and science with the S.T.E.M. Activity *Measure It!* and the accompanying worksheets (pages 115 and 116).

Through this S.T.E.M. Activity, students will connect the *GO Math!* Chapter 10 concepts and skills with various units of measure, including choosing the appropriate tool to measure a given quantity. It is recommended that this S.T.E.M. Activity be used after Lesson 10.8.