ME4-20
Telling Time—Half and Quarter Hours

Set the hands of a play clock in various positions, with the minute hand in one of the positions shown in the diagram. Ask them which hour they should say in each position.

Ask students to explain why the terms “quarter past” and “quarter to” are used when the minute hand is 15 and 45 minutes past the hour. They should see that it is possible to divide the clock face into four parts or “quarters”. When the minute hand is at “15 minutes past” it has moved through on fourth or a quarter of the 60 minutes on the clock face.

Assessment
What time is it?

Extension
There are 15 minutes in a quarter of an hour. How many minutes are in one fifth, three fifths, one sixth, five sixths, one tenth (and so on) of an hour?
ME4-21

Telling Time in Two Ways

GOALS
Students will tell time in 5-minute intervals before and after the hour.

PRIOR KNOWLEDGE REQUIRED
Telling time in 5-minute intervals

VOCABULARY
minute analogue clock
hour digital clock
quarter minute hand
half hour hand

Write the time 9:50 on the board and ask students to name the time in as many ways as they can. They should give answers like: “ten minutes to nine”, “ten minutes before nine”, “fifty minutes after eight”, “eight fifty”, etc.

Draw several analogue clocks on the board. Draw only the minute hand. Ask volunteers to shade the space that is between the minute hand and the 12, so that the shaded part is less than $\frac{1}{2}$ the area of the clock face.

Ask your students to tell you the number of shaded and unshaded minutes.

EXAMPLES:

Ask your students: suppose you know that 20 minutes are shaded. How do you find the number of unshaded minutes? (60 – 20 = 40).

Draw several more analogue clocks on the board and ask them to tell the time in two ways: 12:35 could be “thirty-five minutes past twelve” and “twenty five minutes to one”.

Assessment
What time it is? Write that in two ways.
ME4-22

Telling Time—One Minute Intervals

Tell your students that today they will read the clock as grown-ups do—using one minute intervals. Set the play clock to 10:02. Point out that the arc between the numbers 12 and 1 is divided into 5 parts of 1 minute each. So if the minute hand points at the second division after 12, it means that the time is 2 minutes after 10.

Set the clock to 10:18. Point out that you could count each division to tell the time, but there is a faster way to find the number of minutes past the hour. Count by fives till you get to the number just before the minute hand (in this case, we will count 5, 10, 15), and then count on by ones for each division (16, 17, 18). You might remind your students of a similar problem—you have 3 nickels and 3 pennies. You count first by 5s, then by 1s and get 18¢ in total.

Draw several analogue clocks on the board. Draw only minute hands. Ask the students to tell how many minutes past the hour it is (EXAMPLE: 12, 23, 47, 38, 26, 41). After that, add the hour hand and ask your students to write the exact times both in digital and in verbal form (EXAMPLE: 8:46 should be accepted as forty-six minutes past eight or fourteen minutes to nine).

Assessment

What time is it?

Bonus

Tell the time. The first one was done for you.

7:56—four minutes to eight or seven fifty-six

5:52  3:48  6:41  9:34

ACTIVITY 1

The students will need four dice each, two red and two blue. The player rolls the dice. The multiple of the red numbers gives the position of the minute hand and the sum of the blue dice gives the position of the hour hand. Weaker students can add the red numbers to get the position of the minute hand. The player has to draw the analogue clock, mark the hands and write the time in digital form and verbally.
Extensions

1. How many...
   a) seconds are in a minute?  
   b) minutes are there in an hour?  
   c) hours are in a day?  
   d) days are in a week?  
   e) weeks are in a month?  
   f) years are in a decade?

2. How many...
   a) seconds are in 3 minutes?  
   b) minutes are in 2 hours?

ME4-23
Elapsed Time

Draw a clock on the board, or use a play clock showing 7:15. Say that this is the time Evelyn wakes up. She eats breakfast at 7:40. How much time passes between the time when Evelyn wakes up and eats breakfast? Turn the hand slowly and ask a volunteer to count the minutes on the clock by 5s. Give your students several practice questions such as:

- She brushes her teeth at 7:30 and gets to school at 8:15. How much time elapsed?
- She arrived at school at 8:15. The math lesson started at 9:05. How much time elapsed?

Let your students solve problems counting by 5s or by drawing timelines marked off in 5 minute intervals. For harder questions involving times with two different hours, suggest that students use timelines. Invite volunteers to present their solutions.

Sample Problems

- Evelyn put the cake in the oven at 7:55. The cake should bake for 25 minutes. When should she take the cake out?
- The art lesson starts at 1:30 and lasts for 55 minutes. When does it end?
- The TV show ended at 8:15. It lasted 40 minutes. When did it start?
Assessment
Cyril has to catch a school bus at 8:25. He woke up at 7:40. How much time does he have before the bus leaves?

Bonus
A witch is cooking a potion. Her potion turned purple at 3:45. Twenty minutes after it turns purple, some snake heads should be added. When should the witch add snake heads? Snake heads should stay in the potion for 35 minutes. Then she should stir the potion quickly 7 times clockwise and remove the heads. After that, the potion should boil for 35 minutes, and then it will be ready. When should the witch take the cauldron from the fire?

Extensions
1. Ask students to calculate how much time passed between the given times (assume the times are both am or both pm).
   a) 7:20 and 7:25  
   b) 10:30 and 10:45  
   c) 8:20 and 8:40  
   d) 1:10 and 1:30  
   e) 3:45 and 3:50  
   f) 2:00 and 2:20  
   g) 3:15 and 3:55  
   h) 11:05 and 11:40  
   i) 10:15 and 10:45  
   j) 8:30 and 9:25  
   k) 5:40 and 6:05  
   l) 6:45 and 7:20

HARDER:
   j) 8:30 and 9:25  
   k) 5:40 and 6:05  
   l) 6:45 and 7:20

2. At various times of the day, ask your students to record the time from the classroom analog clock in 12-hour notation. Ask them to calculate the amount of time that passed between each reading.

3. How many...
   a) seconds are in a minute?  
   b) minutes are there in an hour?  
   c) hours are in a day?  
   d) days are in a week?  
   e) weeks are in a month?  
   f) years are in a decade?

http://www.shodor.org/interactivate/activities/ElapsedTime/

The students may use this website as an illustration of skip counting in “See” mode and to check their own skip count in “Guess” mode.
**GOALS**

Students will tell elapsed time using number lines or subtraction without regrouping.

**PRIOR KNOWLEDGE REQUIRED**

Telling time in 5-minute intervals
Skip counting by 5s
Number lines

**VOCABULARY**

minute  digital clock
hour  minute hand
analogue clock  hour hand

---

**ME4-24**

**Elapsed Time (Advanced)**

Draw a time line on the board:

<table>
<thead>
<tr>
<th>Larissa</th>
<th>Brush</th>
<th>Go to</th>
<th>Lessons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wakes up: 7:00</td>
<td>teeth: 7:25</td>
<td>school: 8:00</td>
<td>start: 8:30</td>
</tr>
<tr>
<td>Get dressed: 7:10</td>
<td>Eat breakfast: 7:30</td>
<td>Arrival at school: 8:15</td>
<td></td>
</tr>
</tbody>
</table>

Ask a volunteer to check how much time passed from the moment Larissa dresses to her arrival to school, from the moment she wakes up to the start of the lesson, etc.

Explain that for larger time intervals, you need not draw the timelines to scale.

**FOR EXAMPLE:**

Larissa returns from school at 3:40. She goes to bed at 9:05. How much time passes in between?

Draw a time line:

```
3:40 3:50 4:00 5:00 6:00 7:00 8:00 9:00 9:05
```

Ask your students to count by 5s or 10s until they get to the hour. How much time elapsed?

Draw an arrow between 3:40 and 4:00 and mark it “20 min”. Ask a volunteer to count by hours from 4:00 to 9:00. Draw an arrow from 4:00 to 9:00 and mark it “5 hours”. Ask another volunteer to draw an arrow from 9:00 to the bed time, and to mark the arrow “5 min”. Ask a volunteer to add up the times above the arrows to get the total time Larissa has in the evening.

Give your students more practice questions, like:

Find how much time has passed:
- from 10:30 to 12:05
- from 11:25 to 3:40
- from 7:55 to 1:45

Students could find terms of events in stories or novels (e.g. Alice in Wonderland) and calculate how much time elapsed between the events.

**EXAMPLE:**

Alice jumped down the rabbit hole at 9:35. She fell into the Pool of Tears at 12:10. How long after she entered the rabbit hole did she fall into the Pool of Tears?

Ask several volunteers to skip count by five minutes from 9:35 to 10:00, by whole hours from 10:00 to 12:00, and by five minutes from 12:00 to 12:10. Each volunteer should write down the time elapsed.

The last volunteer should also add the times.
Ask your students if they could find the elapsed time using subtraction. You may show an example where it works well: Lessons start at 8:30, Evelyn wakes up at 7:15. How much time elapsed in between?

Write a subtraction sentence on the board:

\[ 8:30 \]
\[ -\quad 7:15 \]
\[ 1:15 \]

Let your students practice this subtraction with questions like:

\[ \begin{align*}
12:55 & - 9:15 \\
10:45 & - 6:25 \\
6:58 & - 1:32
\end{align*} \]

Ask your students if they think that this method is always convenient. Ask them to find an example when this will be impossible to use. (5:12 – 12:25). What would they do in this case?

**Assessment**

Find the time elapsed:

- From 10:40 to 13:25
- From 1:25 to 3:40
- From 10:55 to 2:35

**Bonus**

The Mad Tea party started at 5:05. Alice left 2 hours and 25 minutes later. When did she leave? (According to her watch. The Mad Hatter’s watch would still show 5:05).

The gardeners Five, Seven and Two started painting the roses at 3:15. The queen arrived at 8:05. How much time did they spend painting the roses?

**Extension**

You can find elapsed time using subtraction with regrouping:

**EXAMPLE:** 5:12 – 3:25

Take one hour from the hours and add instead 60 minutes to the minutes: write 4:72 instead of 5:12. Now subtraction is easy:

\[ \begin{align*}
4:72 & - 3:25 \\
1:47 &
\end{align*} \]