

Learn
BRIGHT

TIME WORD PROBLEMS



GRADE **3-4**

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Classroom Procedure:

1. Ask students: How much time has passed since you woke up this morning?
2. Allow for responses. How did you determine the exact amount of time that has passed?
3. Allow for responses and discussion. What are other ways to determine the passage of time?
4. Allow for responses. Introduce *Time Word Problems* to the class.
5. Distribute *Time Word Problems* content pages. Read and review the information with the students. Save the final question for the lesson closing. Use the additional resources to enhance understanding.
6. Distribute Activity page. Read and review the instructions. Pair students. Remind students they cannot change the given ending or starting times. This forces students to create a schedule using odd hours/minutes. Allow sufficient time to complete the chart.
7. Once completed, the students will share their daily schedule with another pair of students or with the class. Encourage students to tell why they chose the different places or things to do.
8. Distribute Practice page. Check and review the students' responses.
9. Distribute the Homework page. The next day, check and review the students' responses.
1. In closing, ask students to share: *Share two events in your life. Tell about an event in your life when the passage of time seemed to last forever, and when the passage of time seemed to go by quickly.*
10. Allow for responses and discussion. Students will likely share events that were boring and exciting or fun. Ask students why the passage of time seems to "feel" differently, even though the number of minutes or hours may be the same.
11. Allow for responses and discussion.

Approximate Grade Level: 3 – 4

Objectives:

The students will be able to solve word problems involving addition and subtraction of time intervals in minutes by representing the problem on a number line diagram.

State Educational Standards*

LB.MATH.CONTENT.3.MD.A.1

LB.MATH.CONTENT.4.MD.A.2

Class Sessions (45 minutes):

1 - 2 class sessions.

Teaching Materials/Worksheets:

Time Word Problems content pages (2), Activity page, Practice page, Homework page

Student Supplies:

handouts

Prepare Ahead of Time:

Pair students for activity.

Copy handouts.

Options for Lesson: Students may work alone or in groups for the activity. Include additional ending or starting times for activity events. Students record their daily events on the day you introduce the lesson and the time passage. Students record their events for an entire week showing ending and beginning time along with hours and minutes that passed for each event. Students create word problems to be solved by a partner or the class.

*Lessons are aligned to meet the education objectives and goals of most states. For more information on your state objectives, contact your local Board of Education or Department of Education in your state.



Teacher Notes

Students can tell time by this grade level and can usually determine the passage of hours but struggle with the passage of hours and minutes. The lesson helps students solve word problems involving addition and subtraction of time intervals in minutes by representing the problem on a number line diagram. The lesson may be used in conjunction with other lessons related to time measurement.

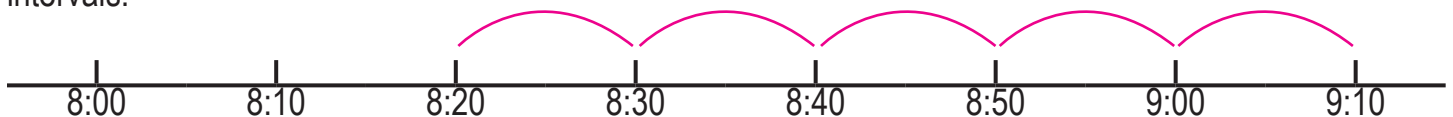
Passage of Time

It is likely that you know how to tell time. You use analog or digital watches or clocks to ensure that you are not late for school, arrive on time for practice, and possibly use an alarm clock to awake each morning. Throughout the day, you are aware of the time because you either want a class to end quickly or wish the class would never end since you are having so much fun. Clocks are found everywhere, and telling the time is probably very easy for you.

However, sometimes it is difficult to determine how much time passes between the events of your day. For example, if you arrive to class at 8:20 AM and leave at 9:10 AM, do you know how much time has passed? The passage of time can be easily determined by using a number line. You recall number lines because you likely used them when you were learning to count plus add or subtract numbers, though you no longer use them today.

Nevertheless, you can now use a number line to determine the passage of time, and then one day after some practice, you will no longer use number lines for time either.

Imagine you do begin a class at 8:20 AM and are there until 9:10 AM. Review the number line that can be used to show how much time has passed. The number line shows the hours on a clock with 10-minute intervals:

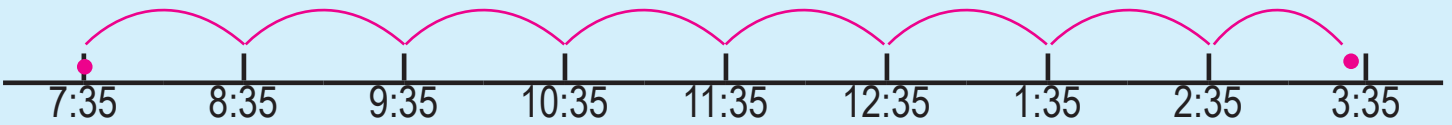


You can count by 10s as shown and determine that 50 minutes have passed between 8:20 and 9:10 AM.

However, how can a number line be used to determine a longer passage of time? For example, you leave for school at 7:35 AM and then return home at 3:28 PM. How many hours and minutes were you away from home? There are two methods you can use to determine the passage of time.

Method 1

Create a timeline as shown above but use each hour of the day starting at 7:35 AM:

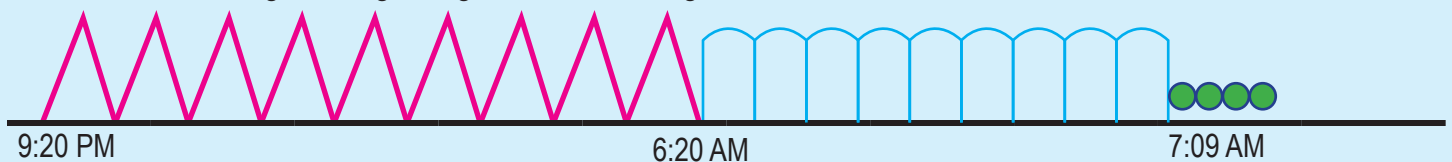


Using the red arcs, you can determine that so far 7 hours have passed. Next, determine the amount of time between 2:35 and 3:28. Subtract 3:28 from 3:25, which equals 7 minutes. Then subtract the 7 minutes from a full 60-minute hour, which equals 53 minutes. The final passage of time between 7:35 AM and 3:28 PM is 7 hours and 53 minutes.

Method 2

You can use a system of *mountains*, *hills*, and *stones*. Imagine going to sleep at 9:20 PM and waking up the next day at 7:09 AM. How many hours and minutes of sleep did you get?

Draw a line showing the beginning time and ending time as shown:



▲ Each mountain counts as 1-hour. 9 hours from 9:20 to 6:20.

▭ Each hill counts as 5-minutes. 45 minutes from 6:20 to 7:05.

● Each stone counts as 1-minute. 4 minutes from 7:05 to 7:09.

The passage of time from 9:20 PM to 7:09 AM was 9 hours and 49 minutes.

There are several other methods you can use with a number line by adding and subtracting hours and minutes to determine the passage of time.

You can create a number line with 30-minute intervals, count past the ending time and then subtract. You can also create a number line using one-minute intervals for short passages of time.

Using a number line to help you determine the passage of time will make it easier to identify the passage of time without using a number line.



Share two events in your life. Tell about an event in your life when the passage of time seemed to last forever, and when the passage of time seemed to go by quickly.



Activity

Name _____ Date _____



You and your partner have a free day from school. You have as much money as you need to go anywhere and visit places in your town. Plan your schedule below using the given times. Include the missing beginning or ending times. You must visit 10 places. There must be a five-minute gap between the ending and beginning time of events.

Event	Start	End	Total Time
	7:05 AM		
		11:07 AM	
	3:25 PM		
		10:45 PM	



Practice

Name _____ Date _____



Solve each time word problem using a method you choose on separate paper.

- 1 Mom began cooking spaghetti at 5:31 PM and was done at 6:10 PM. How long did it take for Mom to prepare dinner?
- 2 The football game began at 3:30 PM and lasted until 5:55 PM. How long did the football game last?
- 3 Jessica planned two time periods for her birthday party. Either from 12:15 PM to 4:50 PM or 6:15 PM to 10:00 PM. Tell how long each planned party would last?
- 4 Noah's drive to his Grandparent's house began at 11:23 AM and lasted until 6:07 PM. How long was Noah's drive?
- 5 Dana walked to the nearest store leaving her house at 5:45 PM and returning home at 6:40 PM. How long was she gone from home?
- 6 The gym class at the school usually lasted 43 minutes. This year the gym class began at 9:55 AM and ended at 10:42 AM. How much more time is this year's gym class?
- 7 Paul went to piano practice at 10:30 AM. He returned home at 1:25 PM. How long was Paul at piano practice, including travel time?
- 8 The TV show began at 5:15 PM and ended at 6:52 PM. How long was the show playing on TV?
- 9 If John leaves the house at 7:00 in the morning and wants to spend 6 hours fishing, what time will it be when he gets home?
- 10 Ava has a dentist appointment at 1:30 PM and soccer practice at 2:30 PM. The dentist appointment will take 1 hour and 15 minutes. How late will she be for soccer practice?

Use mountains, hills, and stones to show the passage of time from 6:05 AM to 1:57 PM.

6:05 AM

1:57 PM



Homework

Name _____ Date _____



Use the chart to answer each question related to a family reunion schedule for the day. Use other paper to show the method you used to solve the problem.

Event	Begin	End
Breakfast on the hotel patio	7:30 AM	9:15 AM
Family photos and videos on the beach	9:45 AM	11:00 AM
Swimming and surfing at the beach	11:30 AM	1:15 PM
Lunch and free time to visit each other	1:30 PM	4:00 PM
Dinner in the banquet hall	5:00 PM	6:45 PM

- How much time is given to families to eat breakfast? _____
- How much total time will the families spend on the beach? _____
- How much total time is scheduled for breakfast and lunch? _____
- How much total time passes between the scheduled events? _____
- How much time is given to families to eat dinner? _____
- How much time will the families have for free time and to visit each other? _____
- A family goes to sleep at 10:00 PM the night before, how much time passes before breakfast? _____
- Following dinner, how much time will pass if a family stays awake until 11:15 PM? _____

Complete the chart below using the schedule for your day.

Event	Start	End	Total Time
Time you went to sleep and woke up today			
Leave the house for school/arrive			
Start and end of the school day			
Dinner start and end			
Time you start and end doing homework			



Solve each time word problem using a method you choose on separate paper.

- 1 Mom began cooking spaghetti at 5:31 PM and was done at 6:10 PM. How long did it take for Mom to prepare dinner? **39 minutes**
- 2 The football game began at 3:30 PM and lasted until 5:55 PM. How long did the football game last? **2 hours, 25 minutes**
- 3 Jessica planned two time periods for her birthday party. Either from 12:15 PM to 4:50 PM or 6:15 PM to 10:00 PM. Tell how long each planned party would last? **4 h, 35 m and 3 h, 45 m**
- 4 Noah's drive to his Grandparent's house began at 11:23 AM and lasted until 6:07 PM. How long was Noah's drive? **6 hours, 44 minutes**
- 5 Dana walked to the nearest store leaving her house at 5:45 PM and returning home at 6:40 PM. How long was she gone from home? **55 minutes**
- 6 The gym class at the school usually lasted 43 minutes. This year the gym class began at 9:55 AM and ended at 10:42 AM. How much more time is this year's gym class? **4 minutes**
- 7 Paul went to piano practice at 10:30 AM. He returned home at 1:25 PM. How long was Paul at piano practice, including travel time? **2 hours, 55 minutes**
- 8 The TV show began at 5:15 PM and ended at 6:52 PM. How long was the show playing on TV?
1 hour, 37 minutes
- 9 If John leaves the house at 7:00 in the morning and wants to spend 6 hours fishing, what time will it be when he gets home? **1:00 PM**
- 10 Ava has a dentist appointment at 1:30 PM and soccer practice at 2:30 PM. The dentist appointment will take 1 hour and 15 minutes. How late will she be for soccer practice? **15 minutes**

Use mountains, hills, and stones to show the passage of time from 6:05 AM to 1:57 PM.

6:05 AM

1:57 PM

7 hours, 52 minutes



Homework

Name _____ Answer Key Date _____



Use the chart to answer each question related to a family reunion schedule for the day. Use other paper to show the method you used to solve the problem.

Event	Begin	End
Breakfast on the hotel patio	7:30 AM	9:15 AM
Family photos and videos on the beach	9:45 AM	11:00 AM
Swimming and surfing at the beach	11:30 AM	1:15 PM
Lunch and free time to visit each other	1:30 PM	4:00 PM
Dinner in the banquet hall	5:00 PM	6:45 PM

- How much time is given to families to eat breakfast? **1 hour - 45 minutes**
- How much total time will the families spend on the beach? **3 hours - 30 minutes**
- How much total time is scheduled for breakfast and lunch? **4 hours - 15 minutes**
- How much total time passes between the scheduled events? **2 hours - 15 minutes**
- How much time is given to families to eat dinner? **1 hour - 45 minutes**
- How much time will the families have for free time and to visit each other? **2 hours - 30 minutes**
- A family goes to sleep at 10:00 PM the night before, how much time passes before breakfast? **9 h, 30 m**
- Following dinner, how much time will pass if a family stays awake until 11:15 PM? **4 hours - 15 minutes**

Complete the chart below using the schedule for your day. (will vary)

Event	Start	End	Total Time
Time you went to sleep and woke up today			
Leave the house for school/arrive			
Start and end of the school day			
Dinner start and end			
Time you start and end doing homework			