Date: 12.12.2013

Teacher: Gülhan Can

Number of Students: 17

Grade Level: 5

Time Frame: 80 minutes

Measuring Time Problems

1. Goal(s)

- The student will understand the concept of the elapsed time.

2A. Specific Objectives (measurable)

- For given a starting and ending time, students will calculate the elapsed time.
- For given a starting and ending date, students will calculate the elapsed time as a day, month, and year.
- For given a starting time, students will solve word problems by adding hours on the given time.
- For given an ending time, students will solve word problems by subtracting hours from the given time.

2B. Ministry of National Education (MoNE) Objectives

- Zaman ölçü birimlerini tanır, birbirine dönüştürür ve ilgili problemleri çözer.

2C. NCTM-CCSS-IB or IGCSE Standards:

- The students will be calculate times in terms of the 24-hour and 12-hour clock; read clocks, dials and timetables. (IGCSE)

- Students will be able to solve problems involving measurement and estimation of intervals of time(CCSS)

3. Rationale

- The purpose of this lesson is to provide students an understanding of reading time and calculations about it in real life situations. For example the students could have their weekly plan, with the times on it. They can arrange how many hours they will spend on studying mathematics, literature, music etc. in such a way.
- This lesson prepares the ground for an inference/idea about time differences between east and west. So, it can be related with geography or unit of inquiry lessons.

4. Materials

- 17 worksheets

5. Resources

- MEB Ortaokul Matematik 5. Sınıf 1. Kitap
- http://www.egitimhane.com/5-sinif-matematik-zamani-olcme-sunusu-d97092.html

6. Getting Ready for the Lesson

- The worksheet is placed at the end of this plan. Copy them for 17 students. There are 14 questions. Cut them into four parts as the first part will include questions from #1 to #4. The second will include questions from #5 to #8; the third one will include from #9 to #12.
- The fourth part will just include the 13th and 14th questions about to give the finishers who complete any parts early than the rest of the class. These questions are more challenging and students may have problems to understand the last question. Be careful about the students' misconceptions.
- Each student will have his/her own worksheet, but the students will study in pairs with their own desk mates.
- Additionally, a checklist will be used while monitoring the students during the activity.

7. Prior Background Knowledge

- The students have already known about the relations between days, week, month, and year and they are able to transform them to each other. Additionally the students have already known about the relations between day, hour, and minute and they are able to transform them to each other.

Lesson Procedures

Transition: I wonder about something, class. I think, as 5ᵗʰ graders; you can help me about it. Let me tell it to you.

8A. Engage (5 minutes)

- Say "I wonder about your birthdays actually! I want to have a list that how many days left for your birthdays! And I need your help. Is everybody able to calculate it for his/her own birthdays?"
- Take students' responses. And ask them "please tell me how I can calculate mine?" and give time students to think about the operation steps.
- After a while, ask a student to give you the instructions to do this calculation. By the way, ask students to listen to their peer, observe the board, and check the steps as if a mistake might occur.
- Finish the calculation and want students to write it on their notebooks and do their own calculations similarly to find out that how many days left for their own birthdays.

Transition: OK. Thank you guys, I learnt it. But now I am wondering something else. Let's see.

B. Explore (5 minutes)

- Make students to think about this question: "How much time has passed since you give birth on?". Explain to them that they will study with their desk mates in pairs; they will be groups in two actually.
- Express that you want them to discuss this question with their desk mates for one minute and make a plan.
- After that, each student will calculate his/her own answer by his/her own according to the plan on their notebooks. Explain it with short sentences to students. Be clear.
- Then, they will check each other's calculation according to their team plan. You will be monitoring them with a checklist.

Transition: You all behaved such good researchers, Bravo! Now let's do more!

C. Explain (15 minutes)

- Write a question on board "How much time has it passed that the Turkish Republic was founded by M.Kemal Atatürk and his friends?" Give time to students to think and understand about it.
- Explain the process step by step and make sense of it.
- Ask for the next step to students, briefly sum up their responses and go on explaining until the solution comes.
- Follow the same process for these questions, too: "Mert is a basketball player in school team. He practices 50 minutes in a day. Hence how many minutes would have Mert been practiced in one week and two days?" "Azra begins to study mathematics at 16:45. As we know that Azra studied for 1.5hours, then what time did Azra finish her homework?"

Transition: I will distribute you worksheets and we will solve all the questions.

D. Extend (15 minutes)

- Before distributing the first part of the worksheet, explain the students about running; they will work with their desk mates. There will be three parts at first (The fourth one is optional). They will have five minutes for each part to solve and explain their solutions in a few words.
- Tell the students that they will discuss the problem with their desk (team) mates for the first minute and make a team plan. Then they will work this plan, and check their solution at the end.
- Support them by your questions/clues etc. Be aware of all the students during the group work.

Transition: Now I want you to write a single sentence on your notebook about what you learned today and where do you use this learning in your daily life.

E. Evaluate (throughout the lesson)

- The checklist has already used during the group work while monitoring students individually and as a group.

9. Closure & Relevance for Future Learning

- Ask the students about what was the interesting parts or key points that they learned during this class. Give each of them a right to tell their ideas with a few words.

10. Specific Key Questions:

- Can you calculate how many days left to your birthday? (Application)
- How much time has it passed that Turkish Republic was founded by M.Kemal and his friends? (Application)
- What happens when I try to subtract from 16.35 to 3 hours and 55 minutes? (Analysis)
- May I subtract from 35 to 55? (related with the previous question) (Evaluation)
- What could be done to subtract from 16.35 to 3 hours and 55 minutes? (Synthesis)
- What happens when I try to find out the elapsed time between 2013.12.19 and 2002.04.20? (Analysis)
- How many days are there in a month? (related with the previous question) (Knowledge)
- So, what do you mean by saying *give one month to 19?* (related with the previous question) (Comprehension)

11. Modifications

- Be ready for any misconceptions of the students at first. Give them more concrete examples by showing the time on the clock if necessary. The students may have some difficulties during the calculations. In such a situation, conduct your questions step by step and adjust it by considering on their responses/questions. Make the students do the calculations step by step by giving clear instructions if they had still problems.
- During the group work, you can face some struggling students at the back part of the classroom. Support/encourage them to participate into the activity.

PROBLEMLER

1) 19.01.2001 yılında doğan Mehmet'in bugünkü yaşını hesaplayın.	**2)** Ömer Can'ın annesi 28.04.1978 tarihinde doğmuş. 26.10.2011 tarihinde Ömer Can'ın annesi kaç yaşında olacak?
3) Türkiye'nin doğu ucundaki Van ile batı ucundaki Edirne arasındaki zaman farkı 85 dakikadır. Edirne'de saat 05.55'da güneş doğduğuna göre Van'da saat kaçta güneş doğar?	**4)** Bugün siz doğalı kaç yıl, kaç ay, kaç gün oldu? Hesaplayın.
5) Ulu önderimiz Mustafa Kemal Atatürk, aramızdan ne kadar süre önce ayrılmıştır?	**6)** TBMM ne kadar süre önce açılmıştır?
7) Bugün Cumhuriyet ilan edileli ne kadar zaman olmuştur?	**8)** Samsun'dan Amasya'ya 3 saat 5 dakikada gidebilen bir yük treni saat 07.20 de Samsun'dan hareket ediyor. Buna göre bu tren saat kaçta Amasya'ya varır?
9) Hatay'dan 08:40 'da yola çıkan bir otobüs, 11:25'te Adana'ya ulaşmıştır. Otobüs Hatay-Adana arasını ne kadar sürede gitmiştir?	**10)** Gülcan kardeşiyle birlikte 14:30'da sinemaya gitmiş. Film bittiğinde saat 17:15 olduğuna göre film ne kadar sürmüştür?
11) Günde 50 dakika spor yapan Mert, bir hafta	**12)** Saat 15:45'te ders çalışmaya başlayan Dicle