

EXPANDED LESSON

Telling time and elapsed time "Don't Be Late!"

Content and Task Decisions

Grade Level: 2nd

Description of Task: Students will use practice clocks to identify times on analog clocks and with elapsed time problems. Bar models will be used to model elapsed time problems. They will also apply these skills to story problems.

Indiana Mathematics Content Standard:

Indiana State Standard 2.M.5: Tell and write time to the nearest 5 minute interval from analog clocks, using a.m. and p.m. Solve real-world problems involving addition and subtraction of the intervals on the hour or half hour.

Indiana Mathematics Process Standard:

P.S.1: Make sense of problems and persevere in solving them. Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway, rather than simply jumping into a solution attempt. They consider analogous problems and try special cases and simpler forms of the original problem in order to gain insight into its solution. They proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" and "Is my answer reasonable?" They understand the approaches of others to solving complex problems and identify correspondences between different approaches. Mathematically proficient students understand how mathematical ideas interconnect and build on one another to produce a coherent whole.

Mathematics Content Goals:

- Use manipulatives to explore the process for solving telling time and elapsed time problems.
- Use invented strategies to identify times on an analog clock and calculate elapsed time.
- Students will explain their solutions through pictures, models, and words to others.
- Students will become familiar with using bar models to calculate elapsed time problems.

Language Objectives:

- Students will correctly use comparative language and understand the concepts of telling time with words such as; hour, minute, elapsed, after, before, earlier, later, and the phrase how long.

Materials: Each student will need

- an individual practice clock
- a set of time/task cards
- recording sheet
- example of a bar model – if desired by student

Lesson

Before

Important: Your students should be familiar with a bar models and how to use them before this lesson. If you have not used them earlier in class find a way to incorporate bar model lesson into a math activity prior to this lesson. If your students feel comfortable with this strategy, a review of bar models might still be helpful.

Present the task to the class:

- Read the problems to the class.
- Check for understanding of the information by asking questions. You are not asking for a solution to the problem but gauging correct knowledge of the specific information and situation given in the problem.
- List "what you know" on the board that can be used as a reference during group work time.
- Have a number talk (sharing time) with students about their ideas on how to solve the problem, emphasizing different approaches that arrive at the same answer.
- Summarize the different ideas.
- Direct students to explore the problem with their group using bar models to check their answers.
- They will finish the activity by sharing how they solved the problems, things they learned, and any questions they might still have.

Provide clear expectations:

- Give instructions for group assignments and responsibilities to ensure cooperation.
- Explain they are to "show what you know". Students will be writing and drawing an explanation to share with classmates that will show how they solved the problem. (Words, bar models, or equations may be used.)
- Remind students to make their presentation complete enough that someone looking at it for the first time will understand their idea.
- Instruct groups to move to the second problem when they have completed the first problem.

During

Initially:

- Observe student engagement and check for understanding of the task and the information given in the problem.
- Monitor students to ensure participation with their group and involvement with strategies.

Ongoing:

- Observe the students at work. Encourage and assist anyone struggling and support the cooperative efforts of the groups. Notice students who would be good candidates for sharing in the "after" part of the lesson.
- Reinforce student thinking and the need to model their process and ideas so they can share with others.
- Assist students who appear "stuck" by restating the problem and given information. (Allow independent work time and check back later for progress.)
- Ask students to demonstrate how they arrived at their answer if you believe they don't understand or have an incorrect answer. They may catch their error or recognize and correct themselves as they share their thoughts out loud.

After

Bring the class together to share and discuss the task:

-Begin by asking each group to share individual ideas of each with each other.

-Bring the entire class together and select students with unique and different approaches to share. Record their ideas on the board with models, words, and equations. Student work can be displayed or projected with a document camera.

-Give discussion and explanation time for the different strategies.

-Repeat the process for the additional problems.

Assessment

Observe

-Create a checklist of skills/strategies you wish to observe. Ideas could include: understanding of key vocabulary, telling time to the hour, half hour, and five minute intervals, ability to solve elapsed time problems

-Check to see if students have found their own method to solve the problem or did their group all use the same strategy.

-Monitor student use of comparative language during activity.

Ask

-“How did you get your answer?” “What strategy did you use?”

-“Show me how you got your answer.” “Show me using a bar model how you got your answer.”

-“Can you model that problem on the practice clock?”

-“Can you create a problem like the ones we just solved?”