Meeting Dilemma

The upper grade teachers are trying to arrange a meeting. They are having a bit of a problem because of their hectic schedules. I can meet any day, Mr. G. can meet every other day, Mrs. C. can meet every 3rd day, Mr. A. can meet every 4th day, Mrs. W can meet every 5th day, Mr. M. can meet every 6th day, and Ms. J. can meet every 7th day. You know that your teachers work 7 days a week so you can include weekends. We just had a meeting, so in how many days will we all be free to meet again?

Grade Levels 6 - 8

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Context

We were studying number theory as our introduction to fractions. We had studied some rules for divisibility, factors and multiples. I wanted some problem-solving tasks that would use these, sometimes abstract, ideas. This was one of the problems. I actually was able to give my students a choice of three dilemmas (high, medium and low). I asked them to pick a problem that they thought they could be successful at and still be challenged. I had not realized what a tough assignment making a choice was for them. They took it very seriously. Some kids picked two dilemmas to do just in case one did not work out. Each child had to come to grips with the kind of mathematician they were and how much effort they wanted to put into the assignment. I did not weigh the problems. The other two problems were the "Room Cleaning Dilemma" (from the Volume 1 - January issue of *Exemplars*) and the third was the "Locker Dilemma" (from the Volume 1 - June issue of *Exemplars*).

What This Task Accomplishes

This task gets at divisibility rules and least common multiples. The student has to make the connection between the mathematics and the problem.

What the Student Will Do

Many students started by making a calendar and quickly realized that it might not be the most efficient idea. That made them start thinking about multiples and rules for divisibility.

Time Required for Task

50 minutes

Interdisciplinary Links

This problem can be linked with a social studies unit that considers the nature of work. Why do people meet and how often? Do all kinds of jobs require meetings?

Teaching Tips

I let my students work with another student, but each had to write up their own solution. Sometimes my students work in pairs (I like the thinking that gets verbalized) and sometimes they work alone. I find I can give them more challenging problems if they work in pairs because they can bounce ideas off of each other.

Suggested Materials

Graph paper

Possible Solutions

The least common multiple of 1, 2, 3, 4, 5, 6, 7 is 420 (actually you just have to find the LCM of 4, 5, 6, 7).

Benchmark Descriptors

Novice
I did not find a Novice paper (maybe because I gave a choice in problems). The Novice would not know how to begin to solve the problem. S/he might make a calendar, but would probably give up after trying a few weeks.

Apprentice
These students misunderstood part of the problem. Indeed we will meet on Monday if they start on Monday, but the question wanted to know in how many days. Their strategy may have led them to a solution if the problem was clearer to them.

Practitioner
This student used the rules for divisibility to solve the problem. S/he also recognized it as trying to find a common multiple. There is a clear explanation and the strategy leads to a solution.

Expert
These students tried two strategies before they came up with the most efficient. All of these strategies would work. This solution shows a deep understanding of the problem, including the ability to identify the appropriate concepts to solve the problem efficiently.