**3.MD Dajuana's Homework**

Alignments to Content Standards: 3.MD.A.1

**Task**

a. It usually takes Dajuana 45 minutes to do her homework. If she starts her homework at 5:30 PM, what time will she finish?

b. One day Dajuana started her homework at 6:45 PM and finished her homework at 7:20 PM. How long did Dajuana spend on her homework?

c. Another day, Dajuana finished her homework at 5:05 PM after spending 40 minutes on her homework. What time did Dajuana start her homework?

**IM Commentary**

The purpose of this task is for students to work on elapsed-time questions. This task includes three different elapsed time situations: end-time unknown, elapsed time unknown, and start-time unknown. In each of these situations, an open number line can be a useful tool to help students visualize and organize the information. In order to do this effectively, students must be able to decompose time into strategic chunks. For example, in part (a), students might find it helpful to decompose 45 minutes into 30 minutes plus 15 minutes. This decomposition allows students to understand that it will take Dajuana 30 minutes to reach 6:00 PM and the additional 15 minutes of homework will take her to 6:15 PM.

This type of reasoning will serve students well when they work with more complex elapsed time problems. There are many different ways that students will approach these problems with open number lines, so teachers should anticipate allowing for multiple solution methods in class. For example, on part (a), a struggling learner might want to break 45 minutes into 4 sets of 10 minutes and 1 set of 5 minutes on their
open number line. A more advanced student might reason that if Dajuana spent 1 hour on her homework, she would finish at 6:30 PM. If she only spent 45 minutes on her homework, then we would need to adjust our open number line by moving backwards 15 minutes from 6:30 PM to 6:15 PM.

Open number lines are also helpful because they can visually represent the change within the problem. Students often learn to solve elapsed time problems by adding or subtracting hours and minutes, but using addition or subtraction does not help students differentiate between start-unknown, elapsed time unknown or end-time unknown problems.

Edit this solution

Solution

Note: there are many different ways that students might use open number lines to solve these problems. The highlighted value in each problem represents the part of the open number line that represents the solution to the problem.

a.

Dajuana would finish her homework at 6:15 PM.

b.
Dajuana spent 35 minutes on her homework.

c.

Dajuana started her homework at 4:25 PM.