5.NF,MD Converting Fractions of a Unit into a Smaller Unit

Alignments to Content Standards

- Alignment: 5.MD.A.1
- Alignment: 5.NF.B.3

Tags

• *This task is not yet tagged.*

a. Five brothers are going to take turns watching their family's new puppy. How much time will each brother spend watching the puppy in a single day if they all watch him for an equal length of time? Write your answer
   i. Using only hours,

   ii. Using a whole number of hours and a whole number of minutes, and

   iii. Using only minutes.

b. Mrs. Hinojosa had 75 feet of ribbon. If each of the 18 students in her class gets an equal length of ribbon, how long will each piece be? Write your answer
   i. Using only feet,

   ii. Using a whole number of feet and a whole number of inches, and

   iii. Using only inches.

c. Wesley walked 11 miles in 4 hours. If he walked the same distance every hour, how far did he walk in one hour? Write your answer
   i. Using only miles,

   ii. Using a whole number of miles and a whole number of feet, and

   iii. Using only feet.

Commentary

Note that in each of these problems we are given a set of a specified size and a specified number of subsets into which it is to be divided. The questions ask the student to find out the size of each of the subsets. Students are not expected to know e.g. that there are 5280 feet in a mile. If this is to be used as an assessment task, the conversion factors should be given to the students. However, in a teaching situation it is worth having them realize that they need that information rather than giving it to them upfront; having students identify what information they need to have to solve the problem and knowing where to go to find it allows them to engage in Standard for Mathematical Practice **5, Use appropriate tools strategically.**

Solutions

Solution: Solution 1

The following solutions give a sense of how students might solve the problems, but do not cover all possibilities.

a. Each brother will watch the puppy for $4\frac{4}{5}$ hours, which is also 4 hours 48 minutes or 288 minutes.
   In this problem the whole set consists of a single day and the student must know that there are 24 hours in a day in order to solve the problem. The problem can be solved by drawing a number line of length 24 and separating it into 5 equal parts. To change the $\frac{4}{5}$ hour to minutes, the student needs to know there are 60 minutes in one hour.

b. Each student will get a piece of ribbon that is $4\frac{1}{6}$ feet long, which is also 4 feet 2 inches or 50 inches. In this problem the whole set consists of the ribbon and the number of subsets is 18, namely the number of students in the class. The student must know that there are 12 inches in one foot to complete the problem. See a related task for a similar problem without the conversion aspect in 3.OA.3

c. Wesley walked $2\frac{3}{4} = 2.75$ miles in one hour, which is also 2 miles and 3960 feet or 14,520 feet.
   In this problem the whole consists of 11 miles and we are asked to determine the number of miles walked in each of 4 hours. This problem helps lay the ground work for students to understand ratios and rates in 6th grade and beyond. To complete the conversion for this problem, the student must know that there are 5280 feet in each mile.