**Snail Pace**

This problem gives you the chance to:

• work with distances, time and speeds in inches and minutes

These snails move very slowly. Here are their speeds.

*Snail A*

5 inches in 10 minutes

*Snail B*

3 inches in 20 minutes

Snail C

1 inch in 15 minutes

*Snail D*

6 inches in 30 minutes

1. How far can snail D travel in 1 hour?

 inches

2. How far can snail C travel in half an hour? inches

3. How far can snail B travel in 2 hours?

Show how you figured this out.

4. Which snail moves more quickly than the others?

Explain how you figured this out.

inches

**Implications for Instruction**

Students at this grade level should be able to make conversions between rates for different units of time. Students should have a variety of strategies for making conversions, such as: using division to find a unit rate, finding equivalent fractions, and using a ratio table.

Students should draw upon their developing understandings around fractions to look for common multiples or common denominators and working in number theory to find common multiples and common factors to solve new problems. Many students should look at the given times and think, “What might be a convenient unit to make all the times the same.” Students with more experience with rates might think, “Is it more convenient to change all the rates to a common time or a common distance?” Students need to frequently be asked questions like, “How does this solution relate to other topics I have learned? When is one strategy better or more convenient than another?”

Students should think about the idea of comparison as a type of problem, rather than strictly thinking about what calculations should I use with these numbers. Students should learn to recognize that when making a choice or comparison the best choice needs to be compared to all of the other available options. Students need opportunities to

justify their thinking and compare it with the thinking of others in order to develop the skills at making a complete argument. At this grade level students need to think about applying a solution strategy to a type of problem, rather than solving each problem fresh.

**Ideas for Action Research – Comparing and Contrasting Strategies** Students at this grade level need to start thinking about why different strategies work. What do these strategies have in common? How are they different? In order to better manage classroom discussion, teachers need to think about how to present the strategies to the class and facilitate the mathematics of the solutions rather than just presenting variety for varieties sake. One helpful tool is to meet with colleagues and try to anticipate student strategies and discuss these ideas as a learner first.

Consider the following solutions.

• Can you describe which solutions are related?

• How are the strategies different?

• If you were presenting them to the class, what might be the best order to have students share out in order to bring all the students along? Why would you pick that particular order?

Some teachers use seating charts during a lesson to record strategies to help them get ideas out in an order to help everyone follow the discussion. Work below is presented without labels or in a partial condition, to make thinking about more interesting or re- engaging. The idea is for the viewer to really have to think about the mathematics from a new perspective each time.