Problem of the Month

Movin ‘n Groovin

Level A:

Maria and Tran each have a pet hamster. They have a maze for the hamsters to run through. Maria says she thinks her hamster can run through the maze faster than Tran’s. They each time their hamster as it runs through the maze. It takes Maria’s hamster 19 seconds to travel through the maze. It takes Tran’s hamster 15 seconds.

Which hamster is faster? Explain how you know.

How much faster is the fastest hamster compared to the slowest hamster at running through the maze? Explain your answer.

Level B:

Lexie wants to have a heel-toe race with her older brother Josh and her sister Hannah. She says, "My feet are smaller so I should only have to go a shorter distance than you two." Her sister says, "That makes sense. Let's race our ages." They measure off 7 feet for Lexie's track, 16 feet for Josh's track and 10 feet for Hannah's track. "Now let's measure our shoes," says Josh. "My shoe is 1/2 of a foot," says Lexie. "Three of my shoes add up to 2 feet," says Hannah. Josh says his shoe is exactly a foot long.

Who needs to take the fewest steps to walk their track? Explain how you found your answer.

How many more steps do the two others need to take to finish their race?

Who do you think will win the race? Who will take the longest to finish? Explain your reasoning.

Level C:

Courtney got a remote control car for her birthday. It is metallic purple with chrome wheels that are 1 1/2 inches in diameter.

She said to her friend Dylan, "my remote control car goes faster than my Mom's car on the freeway." "No way," said Dylan. Courtney said, "I will prove it to you."

Courtney measured off a distance of 115 inches. Dylan said, "Okay, I will time how long it takes your car to travel that distance. I have a stop watch feature on my watch." Courtney raced her remote control car over the 115-inch distance. Dylan said, "Wow, that only took 3.21 seconds. That seems really fast." "See, I told you," said Courtney. "But really how fast is it going?" asked Dylan.

Determine the speed of Courtney's remote control car and compare its speed to that of a regular car traveling on the freeway. Explain how you found your solution.

Why might the manufacturer get away with advertising that the remote control car *Travels Faster Than Life*?

Level D:

You are a highway patrol officer, seated on a motorcycle, on a curvy section of Highway 1. The posted speed limit is 45 miles per hour on this stretch of highway. You are monitoring traffic with a radar gun. The first exit is 3.6 miles up the road. Your radar picks up a speeding car averaging 68 mph. When you try to start your motorcycle to follow the car, it won't start. You try again and again, and soon you fear that you won't be able to catch the speeding car before it can turn off the highway. Finally, your motorcycle starts and you begin your pursuit 30 seconds after the speeding car has passed you on the roadside.

How fast do you need to go to catch up to the speeding car? What is your average speed in pursuit? Illustrate the speed of the speeding car as well as your own motorcycle during this pursuit.

Is your own speed reasonable and safe? Explain why this is or is not a good location at which to monitor traffic

Level E:

Suppose that every hour of every day, an airplane leaves Los Angeles for New York City and at the same instant, an airplane leaves New York City for Los Angeles. Each flight takes 5 hours. In a single day, how many airplanes originating in New York City will pass airplanes originating in Los Angeles in the air?

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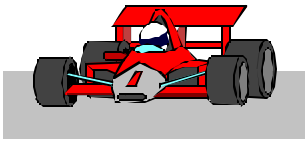

Primary Version Level A

Materials: A maze and hamster (either a picture or the real things). Paper and pencil to write or draw. Color crayons, markers or pencils.

Discussion on the rug:
"Who can tell me, what is a hamster? What do hamsters like to do?" (Teacher asks questions and clarifies answers to help student understand a maze and a race.) "What is a maze? How does a hamster travel through a maze?" (Teacher continues to ask children to clarify how to race two hamsters through a maze using a timer.)

In small groups: (Each group has a picture of the maze)
(Teacher reads the problem to the students).
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1. Which hamster is faster? Explain how you know.

2. How much faster is the fastest hamster compared to the slowest hamster at running through the maze? Explain your answer.

(At the end of the investigation have students either draw a picture or dictate a response to represent their solution.)