Team Name:

"Out of Sight" Student Worksheet

Calibration Tests:

Using a stopwatch and measuring tool, record the time or distance of the remote vehicle during the following tests. Make sure that all measurements are taken the same way each time and from the same starting place to insure they are accurate. Mark the starting place with a piece of masking tape.

Calibration Test	Distance or Time
How far did the remote vehicle travel in 5 seconds?	Distance trial # 1= meters
How far did the remote vehicle travel in 5 seconds?	Distance trial # 2= meters
How far did the remote vehicle travel in 5 seconds?	Distance trial # 3= meters
Add the three distances together and divide by 3 (the number of distance trials) to get the average distance the remote vehicle traveled in 5 seconds =	meters
Divide the average distance (answer in box above) by 5 seconds to get the distance per second =	meters/seconds
Time needed to turn 45° = Time needed to turn 90° =	seconds seconds
Time needed to turn 135° = Time needed to turn 180° =	seconds seconds
Time needed to turn 225° = Time needed to turn 270° =	seconds seconds
Time needed to turn 315° = Time needed to turn 360° =	seconds seconds
Time needed to come to a full stop =	seconds
Other remote vehicle test data: What else do you want to know? Invent your own test. My test is:	

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"Out of Sight"
Mission Planning Sheet

Directions:

Using your data from the remote vehicle calibration tests and the measurements made by the calibration team, design a mission plan that will get your remote vehicle to each of the targets (waypoints) on the driving course. Use the average speed (meter/second) and the measured course distances (meters) to plan how long your rover will run in each direction to reach each waypoint. Also figure out how many degrees the rover must turn (how many seconds it takes to turn the right distance from the calibration tests) to go to the next waypoint. List your moves on this sheet.

Remote Vehicle Mission Plan

1) Distance to waypoint #1 = _____meters
   Remote vehicle time to waypoint #1 =_____seconds

2) Turn_____degrees for next waypoint
   Remote vehicle time to turn_____degrees = _____seconds

3) Distance to waypoint #2 =_____meters
   Remote vehicle time to waypoint #2 =_____seconds

4) Turn_____degrees for next waypoint
   Remote vehicle time to tum_____degrees =_____seconds

5) Distance to waypoint #3 = _____meters
   Remote vehicle time to waypoint #3 =_____seconds

6) Turn_____degrees for next waypoint
   Remote vehicle time to turn_____degrees = _____seconds

7) Distance to waypoint #4 = _____meters
   Remote vehicle time to waypoint #4 =_____seconds

8) Turn_____degrees for next waypoint
   Remote vehicle time to turn_____degrees = _____seconds

9) Distance to waypoint #5 = _____meters
   Remote vehicle time to waypoint #5 =_____seconds

10) Turn_____degrees for next waypoint
    Remote vehicle time to turn_____degrees = _____seconds

11) Distance to waypoint #6 = _____meters
    Remote vehicle time to waypoint #6 =_____seconds

Team Name:

Student Name:

Student Course Calibration and Actual Results of Remote Vehicle Tests

Directions: Fill in the chart with the data your team collected:

1. Record the waypoint measurements taken along the course before the remote vehicle driving test;
2. Record the actual data collected as the remote vehicle runs the course. Were there any differences between the two measurements? If so, record the difference (in feet, inches, meters, or centimeters) in the "Difference in Results" box.

Actual Measurements to Waypoints	Actual Distance Traveled by Remote Vehicle	Difference in Results
Waypoint #1 measurement		
Waypoint #2 measurement		
Waypoint #3 measurement		
Waypoint #4 measurement		
Waypoint #5 measurement		
Waypoint #6 measurement		

Name:

"Out of Sight"
Student Questions

Directions: Answer the questions using the results from you remote vehicle test.

1) Did your actual test results differ from the calculated distance results? If so, how and why?

2) What were the differences in operating the remote vehicle this way (not being able to see the course that the vehicle would have to drive on) versus just driving the remote vehicle the regular way?

3. What changes could you have made that would have given you better results?

4. What do you think would be the hardest challenge about driving a remote vehicle on another planet?