

Oh, the Humanity! 8th grade Human/Robot Showdown

Mr. Fisher
Dr. Ackerson
Dr. Kline
A really cool robot
And you

What does it mean to be human? To be able to think? To move? To respond to the outside world around you? How is that any different that a robot?

Objective:

Each team will be assigned a color and a number. The object of each team is to build and program your robot and for your robot to successfully navigate from your start position to your end position and complete the tasks assigned. Your robot may use any number of programming sequences to accomplish this though the highest score will be given to the teams that can accomplish the entire sequence in 5 lines of program code or less.

Grade Breakdown:

The entire project will count for 75 points: 25 robot points (assessed to your science grade), 25 points specifically for math, and 25 points specifically in science (1 test grade in science).

Robotics Component

Development of Team Charter	5 pts
Successful programming of robot	5 pts
Successful achievement of robot objectives	5 pts
Video documentary of project	5 pts
Team communication	5 pts

Science Component (attached at the end) 25 pts

Math Component (attached at the end) 25 pts

The Rules:

1) You will establish a team charter and adhere to it throughout the project. Each student, in addition to the development and programming of the robot will have to fill one of the following roles:

Project Manager (1): This individual is elected by the group to oversee the progression of the project. The manager will complete the team charter, and submit two reports: An interim report which details the progress of the team and a final report, assessing how the team did together.

Videographer (5): These 5 people are responsible for creating the video documentary of the project for the team. The videographer must have a video camera or still camera available each day (points will be deducted from the team if a camera is not available and a team can share one camera). There must be at least 1 videographer in each science block and math block (Mr. Fisher's students only) and ALL are responsible for reading and adhering to the video guidelines.

Robot Controller (1-2): All members of the team will test the robot in class. However, on the final showdown day, the robot will be controlled by one person (two if you have a team of 9). This person will be responsible for any final preparation in the grid on showdown day and will be responsible for executing the robots final program.

Chief Programmer (1): All members of the team will work in programming one aspect of the robot's path through the obstacle course. All programming notes will be logged in the communications blog. The final programming sequences will be completed and uploaded by the Chief Programmer, who will be required to submit the final sequence to Dr. A and Mr. Fisher for grading.

2) The robot must navigate itself from your starting point to you finish point and complete the task you find there. **You may not measure the grid or obstacles at any time during the project.** Instead, you must use the formulas you have learned in math to determine the distances from each object. You will use the following clues:

1. The grid is a square 10 feet by 10 feet
2. Each square within the grid is 1 foot by 1 foot.
3. You may use all of the math formulas you have learned to this point

3) All team members must participate in the construction of, programming of, and documentation of the robot. All members must communicate together through a team blog.

4) Team members will meet once during G block in the middle of the project and for 3 hours on the final run day. At no other time will you meet face to face with your team. All communication must occur in math (for teams in Mr. Fisher's class) and science class or on the team blog space.

Week 1 Timeline and Objectives:

Day 1 and 2:

- Complete the team charter and submit to Dr. A and Mr. Fisher
- Build the robot and have design approved by Dr. Kline
- Communicate with team twice on team blog space or notebook
- Once robot is assembled, determine the rate of speed of the robot in ft/sec
- Download robotic programming software on computer

Day 3 and 4:

- Learn the programming code for basic robot commands:
 - Move forward
 - Turn right
 - Turn left
 - Back up
 - Drop load
- Finish robot speed calculations, if necessary
- Communicate with team each day

Week 2 Timeline and Objectives:

- Receive specific objectives
- Calculate distances to each objective
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Robotic Judging sheet: 25 pts (this is a team grade)

	1	2	3	4	5
Time to complete entire project	Over 5 min	4:30-5:00	4:30-4:00	4:00-3:30	Less than 3.5 minutes
Robot Design					<ul style="list-style-type: none"> • Robot is designed with all components in the appropriate place. • Robot is set up properly for the final run day
Team Video	Team video				<ul style="list-style-type: none"> • Team video is creative and interesting, adheres to all indicated measures

Team Communication •					All members participate equally, team charter,
Total					

Science Rubric (this is an individual grade)

In the story, ‘The Adoration of Jenna Fox,’ the author tells the story of a girl who loses all but the ‘butterfly’ of the brain, with the rest of her organs, her cerebrum, her heart, her muscles, her bones, reconstructed with biogel, a blue goo fill with nanobots (microscopic robots).

Research the use of nanobots in medicine today. What are they? How do they work? You will complete a small project on nanotechnology.

You are a biomedical researcher in the year 2050. You have perfected the use of nanobots to cure one of the following diseases: Arteriosclerosis, cerebrovascular accident, myocardial infarction or DNA mutation. Using Microsoft Publisher, Brochure Template provided on Edline, create an advertisement

Math Rubric:

Calculations:
Scale Drawing

Team Charter

Team Member	Team position	Initial Signature	Final Signature

By signing the team charter you agree to fulfill the part of the team project agreed upon above. Failure to do so may result in a forfeit of the team's grade, a zero for this project or other consequences determined by Dr. A or Mr. Fisher.

Project Leader's Interim Report:

Project Leader's Final Report: