Exploration – The Explorer's Aid

There are several meanings to the word *explore*. Among these are "to look for," "search carefully," and "to closely examine." But the most familiar meaning of *explore*: is 'to travel in an unknown, or little known, region to learn about its features.

Exploring is an adventure. In many cases it involves a great deal of creativity. Unforeseen circumstances; must be anticipated and obstacles must be overcome to avoid a disaster.

These are many types of technological developments that have been made to help people explore various types of environments. From simple snowshoes to complicated spacecraft, engineers have to make ideas become realities. Various types of vehicles; have been developed to travel across snow move underwater, fly through the air and even ride on the moon.

Suggestions for the Engineer

Try to establish a friendly atmosphere in the classroom.

The activity has been written for teams of three to five middle school students. Although the activities may be edited to be used as problems for individuals, students like to work in teams. You may suggest having a contest. This can stimulate the students and a friendly competition will surely be fun.

If some students prefer not to compete, but want to solve the problems, tell them this is perfectly acceptable.

You may want to offer some kind of reward. A certificate of participation for each student is always popular. In addition, you may consider 1st place, 2nd place and 3rd place certificates, medals or trophies for the champions. Other possible rewards are items related to engineering, such as mechanical pencils, drawing sets or something unique.

The vehicle problem may be assigned one to three weeks before the competition. You can use brainstorming techniques with the class near the beginning. However do not show them how to solve the problem. Let them think about the problem. Possible solutions are endless and you may be impressed by them.

The problem, limitations and scoring are written so you may read them to, or duplicate them for, the students.

You may build a solution to the problems to show the students the day of the competition.

Explorer's Aid

The Problem

Your team's problem is to design, build or adapt a vehicle that will carry materials from each of your teammates. Then each of you will send your vehicle to hit a wall and have it return to you. While the vehicle is traveling it will attempt to pick up something or retrieve it in some way.

The Limitations

1. The vehicle may not be guided by remote control.
2. The vehicle must be self-propelled. You may not assist it except in preparation. (e.g. you may wind rubber bands, turn switches, etc.)
3. The vehicle must be self-contained. It may not drop off parts, etc.
4. The vehicle must come in contact with the wall before its return trip.
5. You may, not alter the competition site.
6. The judge will give the signal to begin. When the last vehicle stops, that round of competition will end.
7. The vehicle may not damage the floor.
8. The materials sent between team members may be anything the team chooses.
9. Materials must be sent using the vehicle, i e., they may not be thrown, rolled or sent in any other way.

The Competition

Each explorer (team member) will take a position in a 4'X4' taped rectangular area (see Figure A). The vehicles may be sent between explorers in any sequence.

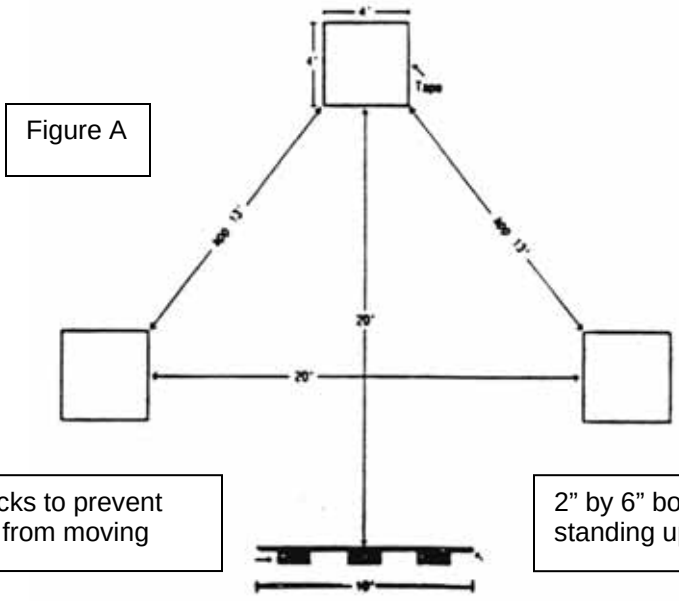
If a vehicle hits the wall and does not return to the correct explorer, that explorer may leave his or her area to retrieve the vehicle. If this happens, the vehicle will not be able to receive a score for both the return and successfully retrieving the item.

Scoring

(may be done in order):

1.	Explorer A sends something to explorer B	2 points
2.	Explorer A sends something to explorer C	2 points
3.	Explorer B sends something to explorer A	2 points
4.	Explorer B sends something to explorer C	2 points
5.	Explorer C sends something to explorer A	2 points
6.	Explorer C sends something to explorer B	2 points
7.	Explorer A release the vehicle, it hits the wall and returns to explorer A	15 points
8.	Vehicle retrieves something	10 points
9.	Explorer B release the vehicle, it hits the wall and returns to explorer B	15 points
10.	Vehicle retrieves something	10 points
11.	Explorer C release the vehicle, it hits the wall and returns to explorer C	15 points
12.	Vehicle retrieves something	10 points

Figure A



Cinderblocks to prevent the board from moving

2" by 6" board(s) standing upright