

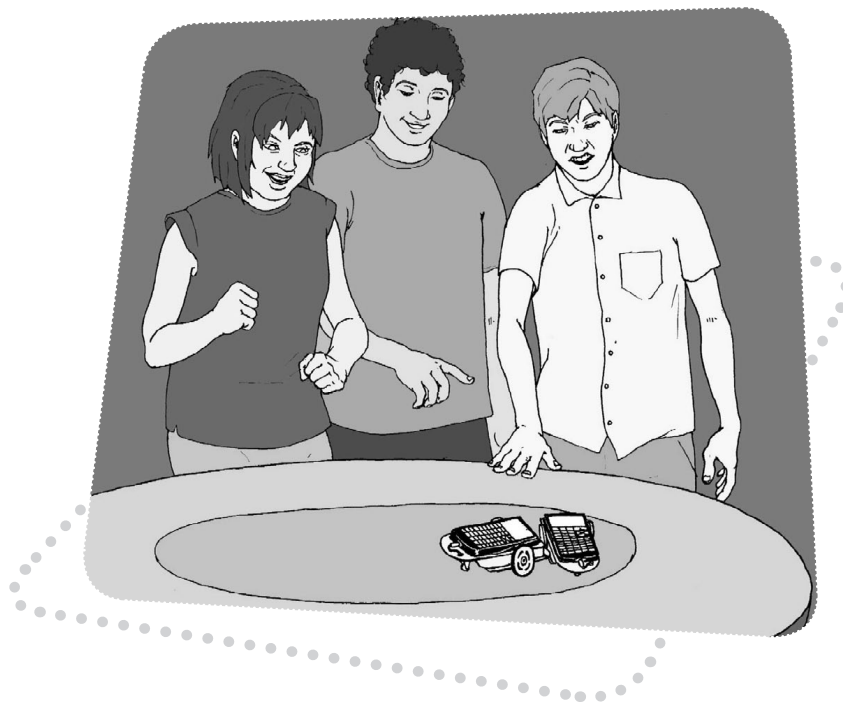
Name:		Date:	
<b>MISSION</b>	<b>6</b>	<b>Game Day!</b>	<b>Materials &amp; Instructions</b>
<p>Congratulations! You've made it to Game Day! If you've gone ahead and skipped the previous lessons, your calculator will not have the necessary programs to make your robot perform these activities. Go back to <b>Mission 1</b> and start over. If you've completed the previous five missions, Great Job! You're ready to start.</p>			

### You need:

- ☐ 1 Norland Calculator Robot
- ☐ 1 Graphing Calculator
- ☐ Varying items, depending which games you play.

### Instructions:

Your teacher will divide you into groups and show you which game to start with. Each group will have a chance to play all six games.



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**1. King Of The Ring** On a large table, use tape to lay out a circular ring approximately one meter in diameter. Remove rubber bands from the robots' wheels and, if appropriate, cover the ring with graphite to reduce friction.

Place two robots, with bumpers facing each other at the center of the ring, about 40-cm apart. Start the contest. The first robot to push any two wheels (back roller included) of his opponent's robot out of the ring WINS!

**2. Robot Race** Use the **GAME1** program on page 50 to randomly cause good and bad things to happen to your robot's forward progress. Start a number of robots three meters away from a wall and see which robot reaches the wall first. Switch the game around and make the last robot to arrive the winner.

Separate into two groups on either side of a room with robots facing each other. All start at **GO**. The group that has the most robots reach the opposing team's wall WINS!

**3. Robot Bowling** Set up ten markers in a triangular shape, one meter away from the robot. Program the robot to knock them down. For more of a challenge, have the robot hit a ball and knock the markers down.

**4. Robot Jousting** With straws and paper, fashion a jousting lance for each robot. Also make a straw flag that sets on the front of the robot and is attached by a piece of clay.

Two robots face each other about one meter away, then charge! The first robot to knock its opponent's flag off WINS!

**5. Topple The Imperial Walker** Obtain a Moon Walker or similar robot. Start your robot one-meter away from the Moon Walker. Start the Moon Walker. The object is to charge after the Moon Walker and topple it in the shortest possible time.

**6. Relay Race** This is a four-meter relay race. Instead of passing a baton, robots tag their partners' bumpers. Use four robots per team, place them one meter apart with the finish line one meter away from the last robot. After the first robot is started, no other robots may be touched. The remaining robots must all be activated by another robot hitting (tagging) their bumpers. The first team to get their fourth robot across the finish line WINS!

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How Did You Do?

Team Members	King of the Ring	Race	Bowling	Jousting	Topple	Relay

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PROGRAM:GAME1

:Lbl A

:randInt(1,10)->X

:Disp X

:If X=3

:Then

:Disp "WAIT"

:Send({111,300})

:Get(R)

:GoTo A

:Else

:If X=5

:Then

:Disp "BACK"

:Send({100,300})

:Get(R)

:GoTo A

:Else

:If X=7

:Then

:Disp "SPIN"

:Send({120,235})

:Get(R)

:Send({102,235})

:Get(R)

:GoTo A

:Else

:Disp "GO"

:X\*100->T

:Disp T

:Send({322,T})

:Get(R)

:If R<T

:Then

:Disp "YOU FINIS  
H"

:STOP

:END

:GoTo A

MISSION	6	Game Day!	<i>Teacher Notes</i>
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For game 5, a Moon Walker or similar walking robot is available at a variety of scientific supply stores.

For the Relay Race the following program might be helpful:

PROGRAM:RELAY

```
:Send({211})
:Get(R)
:Send({100,50})
:Get(R)
:Send({120,92})
:Get(R)
:Send({222})
:Get(R)
```

This program is for a robot waiting to be tagged. Start the program and the robot will wait until its bumper is hit, backup, then turn 180° (as always adjust the time of the turn as necessary), and run forward until it tags the next robot or crosses the finish line. See if students can write a program that cuts time off their run. For instance, the second through fourth robot can simply back up when “tagged.” The starting robot in the relay only needs the commands:

PROGRAM:START

```
:Send({222})
:Get(R)
```

King of the Ring was the most popular game with students. They used strategies of charging, withdrawing, charging again, and turning to knock opponents out of the ring. The Relay Race was also very exciting for the students and graphically demonstrated why scientists test and test again. There are many opportunities for Murphy’s Law to sneak into this activity.