

Games Machines Play

Activity 4: Grades 5-8 **Frontiers Pop Quiz**

Enter correct quizzes in the FRONTIERS T-shirt drawing [see below!](#)



STUDENT :

TEACHER :

1. How do the wheeled soccer playing robots know where they are in relation to their teammates, their competitors, the ball and the goal?
2. What is the difference between the wheeled-robot soccer players and the robotic dog players?
3. Which of the following is NOT a useful innovation demonstrated at the 2001 RoboCup competition?
 - a) More efficient kicking styles.
 - b) Whistling to let teammates know each other's location.
 - c) A spinning bar that puts backspin on the ball, allowing players to "dribble" the ball backwards.
 - d) The use of sports psychology to "psyche out" the other team.
4. How are the submarines powered?
 - a) Combustion engines.
 - b) Electric engines.
 - c) Human pedaling.
 - d) Solar power.

5. List two factors that allowed the sub *Omer-4* to set a new world record.
6. How do these submarines come to a stop once they cross the finish line?
 - a) The pilots step on the break.
 - b) The subs run out of gas.
 - c) Navy divers "catch" the subs.
 - d) The subs are captured in a huge net.
7. What do the MIT students' robots have to do to win?
 - a) Destroy their opponent's robot.
 - b) Pull their own side of the balance beam down.
 - c) Knock their opponent off of the balance beam.
 - d) Push their own side of the balance beam up.
8. List the two design constraints on the machines the students may build.
9. Which design strategy is the ultimate winner?
 - a) A piston that jacks up the beam.
 - b) A carpet grabber that pulls the beam down.
 - c) A car with a telescoping arm.
 - d) A bulldozer that knocks off its competitors.

NOTE: Quizzes with 100% correct answers can be entered by teachers only into our T-shirt drawing. FRONTIERS randomly selects 20 names after each program. Send all correct quizzes in one envelope, along with teacher's name, grade and course, school name and address, where the students watched the show (home or school), and the students' favorite segment. Mail to: FRONTIERS Quiz, Chedd-Angier Production Company, 70 Coolidge Hill Rd., Watertown, MA 02472.

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Answers:

- 1) An overhead camera sees the whole field, sending information to a central computer which in turn directs the players as to what moves to make.
- 2) The wheeled robots are directed by a central computer. The dogs are completely autonomous.
- 3) d
- 4) c
- 5) A sleek hull that minimizes drag and a computer-controlled variable pitch propeller.
- 6) c
- 7) b
- 8) The robot can weigh no more than ten pounds and must fit in the box the parts came in.
- 9) a.