

# Science Olympiad National Tournament

## Junkyard Challenge

### -B Division-

**Challenge 1:** Using only materials that you brought in the standard-sized cardboard box (as described in the rules), construct a device to accomplish the following challenge.

Position and tape four unmodified mousetraps to the tabletop or floor space provided by the judges. The mousetraps should be placed 90 degrees apart in a compass-arrangement of North, South, East and West. The center of the compass will be the point where the golf ball is dropped into the device. The distance between the closest point on each mousetrap and the device will be specified at the competition and will range from 25 to 50 cm. Each of the four distances may be different. Nothing may be attached to or touch the mousetraps when the device is started. At the Event Supervisor's signal, a Team member will start the device by dropping a golf ball into the center of the device. The device must trip all four mousetraps without further action by the contestants. The device's maximum operating time is 3 minutes after the golf ball is dropped. Actions occurring after 3 minutes will not be scored.

The following points will be awarded:

- 50 points for each mousetrap tripped.
- 25 points if the North trap is tripped first.
- 50 points if the South trap is tripped second.
- 75 points if the West trap is tripped third
- 100 points if the East trap is tripped fourth.
- 21 points if the first trip occurs at least 5 seconds after the golf ball is dropped.
- 42 points if the East trap is tripped between 28-32 seconds after the golf ball is dropped.

Penalties will be assessed as follows:

- 15 points for each time the device is touched while a trap is in the process of being tripped.
- 30 points each time the device is touched to alter the order of trips.
- 15 points for each centimeter the distance between the mousetraps and the device is less than or greater than specified. (nearest and straight-line distance, rounded to closest cm.)

The order of trips must be plainly obvious to the Event Supervisor for points depending on order to be awarded.

If the angles between any of the mousetraps are off by more than 5 degrees from the specified 90 degrees, the device will score in a lower tier.

Ties will be broken using the shortest time of operation.

# Science Olympiad National Tournament

## Junkyard Challenge

### -B Division-

**Challenge 2:** Using only materials that you brought in the standard-sized cardboard box (as described in the rules), construct a device to accomplish the following challenge.

Position and tape two unmodified mousetraps to the tabletop or floor space provided by the judges. The mousetraps should be placed 180 degrees apart in a North/South compass-arrangement. The center of the compass will be the point where the ping-pong ball is dropped into the device. The distance between closest point on each mousetrap and the device will be specified at the competition and will range from 25 to 50 cm. The distance may vary for each mousetrap. A third mousetrap must be located within the device. Nothing may be attached to or touch the mousetraps when the device is started. At the Event Supervisor's signal, a Team member will start the device by dropping a ping-pong ball into the center of the device. The device must trip the two outside mousetraps. After both outside traps have been tripped, the device must trip the inside mousetrap and launch the ping-pong ball up and out of the device. The device's maximum operating time is 3 minutes after the ball is dropped. Actions occurring after 3 minutes will not be scored.

The following points will be awarded:

- 50 points for each mousetrap tripped.
- 25 points if the North trap is tripped first.
- 50 points if the South trap is tripped second.
- 100 points if the inside mousetrap launches the ball up and out of the device.
- 21 points if the first outside trip occurs at least 5 seconds after the ball is dropped.
- 42 points if the ball is launched up and out of the device between 28-32 seconds after the ball is dropped.

Penalties will be assessed as follows:

- 15 points for each time the device is touched while a trap is in the process of being tripped.
- 30 points each time the device is touched to alter the order of trips.
- 15 points for each centimeter the distance between the mousetraps and the device is less than or greater than specified. (nearest and straight-line distance, rounded to closest cm.)

The order of trips must be plainly obvious to the Event Supervisor for points depending on order to be awarded.

If the angles between the outside mousetraps are off by more than 5 degrees from the specified 180 degrees, the device will score in a lower tier.

Ties will be broken using the shortest time of operation.