

Mass Driver 2015

Objective: To project three pieces of clay with the greatest accuracy toward three targets while competing against another opponent.

Construction

The projecting device including all of its parts:

1. must not mass more than 1.5 kg.
2. must use only stored mechanical energy to propel the clay.
3. may be made only from wood, paper, cardboard, rubber, string, bungee cord, cloth, all types of fasteners (nails, screws, glue and tape). Metal hinges are permitted.
4. must fit into a 50 cm x 50 cm x 50 cm box in its starting position just prior to launch.

Competition

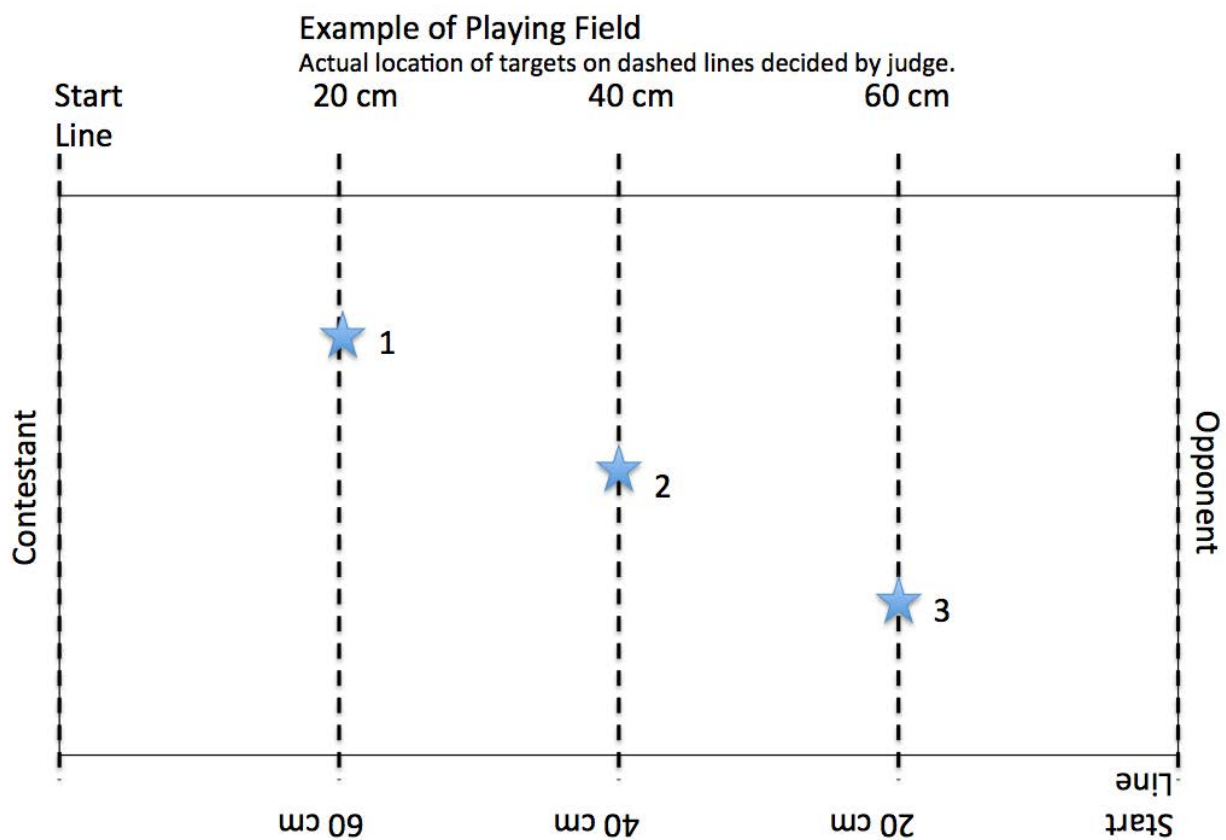
1. The competing surface will be an area on a Formica table divided in half by a center line. The two start lines will be 40 cm away from the center line on either side.
2. The contestant will be given three clay masses to project at three targets. Each piece of clay is launched singly to land on one specific target designated by the judge. The three targets will be 20 cm, 40 cm, and 60 cm from the start line of each contestant.
3. Simultaneous to the contestant's launch, the opponent will project their mass to the same target, which would correspondingly be at 60 cm, 40 cm, and 20 cm. Hence, the masses will be projected toward the same designated target both by the contestant and the opponent. This targeting will happen once for each of the three class masses.
4. The three targets will not be in line which may require the contestant to move the device between firings. Two students per team will be allowed to handle the device in the competition area.
5. Each piece of clay (plasticene) will be 120 gm of standard children's modeling clay supplied by the judges.
6. The clay masses may be formed into any shape but must remain as one piece of clay.
7. Each of the two competitors will set up their devices at opposite ends of the competing surface behind their start line. Tape may not be used to hold the device down but one of the two competitors may push down on the base of the device to hold it in place. Competitors may not support or hold up the device in any way.
8. Each competitor will be given three pieces of clay and 3 minutes to prepare the device. The clay and the device must start behind the start line.
9. At the judge's signal, all clay projectiles will then be fired within a 30 second time period.
10. Each competitor attempts to land all three of his/her pieces of clay closer to their dedicated targets than their opponents three pieces of clay within this 30 second firing period. During this time, the competitors may move their device to a new location behind the start line as desired to make each shot.

11. The competitors may touch or move the clay and the device to load, reload and trigger the device, but **may not touch** the clay or device, and **cannot supply energy to the clay pieces** while the device is projecting the clay toward the targets. The **device must supply all the energy to propel the clay** toward the targets. The competitors may only launch the three pieces clay once each.
12. Only the clay may be propelled onto the competing surface. At no time may any part of the device or the competitors pass beyond the vertical plane containing the start line.

Judging

1. At the end of the launching period, the judges will measure the distance of the center of mass of each piece of clay from its designated target. Any piece of clay that is disqualified or comes to rest off of the table will be assigned a distance of 1 meter.
2. The total distance of all three pieces of clay will be added and the smallest total distance will be declared the winner.
3. If time permits 2 out of 3 trials will be run to determine who will advance to the next level in a tournament style competition.

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Website:

<http://www.montgomeryschoolsmd.org/schools/woottonhs/academics/finalfront/finalfront.aspx>