



MISSION POSSIBLE B

Team Checklist – 2022

Rank: _____
Tier: _____
Final Score: _____

Team Number: B School & Team Name: _____

Student Names: _____

CHECK-IN & SETUP

1. T F 2.a./6.k. The Device and any tools/parts are impounded (State and National only). (For Regional, leave blank.)
2. T F 2.b-c./3.a.vii./6.1./7.d. Team is allowed to compete (e.g. participants wearing proper eye protection; Device has no potential hazards or safety concerns, ≤ 1 meter in all dimension, is not remotely timed/controlled, and does not use electricity).
3. Length: _____ 4. Depth: _____ 5. Height: _____ 3.a.i./6.k. Device dimensions in cm to the nearest 0.1 cm
(For Virtual Tournament: put 60 for each of them)
6. T F 3.a.ii./7.b.ii. The top and at least 2 vertical walls of the Device are open or transparent.
7. T F 3.e.i./6.b.i. The ASL is submitted on time as specified in 3.e.i.
8. T F 3.e.v./6.b.ii. The ASL is legible and uses the format specified on www.soinc.org.
9. T F 3.e.iii./6.b.iii. The ASL is 100% accurate of intended scorable and non-scorable actions.
10. T F 3.e.iv./6.b.iv. The scorable & non-scorable actions within the Device are labeled as in the ASL.
11. T F 3.e.i/6.o.i. The Design Log is submitted on time as specified in 3.e.i.
12. T F 4/6.o.ii. The Design Log is legible and provides the information required in Section 4.
13. T F 6.c.i. Team uses ≤ 30 minutes to set up their Device.

DEVICE OPERATION

Actions are visible/verifiable (3.a.ii.); moveable/adjustable objects are used for only one assigned action (3.a.iv.); actions are not completed by an adjustment (5.e.); actions are completed in order according to the ASL and earn no points if skipped (5.f.); and if a marble is to start the next action, the actual marble (not what is holding or attached to it) must initiate the next action (3.a.viii.)

14. T F 3.b./6.d. The **Start Action** is successfully completed. (Participant drops a marble into the Device from a point completely above the Device. The marble falls into the Device and initiates the next action, and comes to rest on the “base” of the device and does not touch anything other than the “base”. There are no grooves or channels to guide the marble(s) on the “base.”)
15. T F 3.c.i. A falling marble operates a wheel & axle to raise another marble 10 cm that then initiates the next action.
16. T F 3.c.ii. A marble knocks over a series of 3 dominoes so the last domino moves another marble to initiate the next action.
17. T F 3.c.iii. A wedge separates two touching marbles so that one moves 20 cm from its spot and then initiates the next action.
18. T F 3.c.iv. Water raises a marble at least 5 cm that then rolls out of the container to initiate the next action.
19. T F 3.c.v. A falling marble raises a 3rd class lever that raises another marble 5 cm that then initiates the next action.
20. T F 3.c.vi. A 1st class lever raises a cup containing at least 10 marbles 10 cm before the cup initiates the next action.
21. T F 3.c.vii. A single marble hits a chain of 5 touching marbles so that the last marble moves ≥ 10 cm, then initiates the next action.
22. T F 3.c.viii. 5 marbles drop into a cup, one at a time, so that the last marble causes a pulley system with IMA of 3 to raise an object at least 10 cm before it initiates the next action.
23. T F 3.c.ix. A marble is pushed or pulled up an inclined plane with an IMA ≥ 2 so that the marble is vertically raised ≥ 10 cm before it initiates the next action
24. T F 3.c.x. A marble is launched completely out of and above the device so that it reenters the device at least 20 cm away from where it left the device, then it strikes an object which initiates the next action
25. T F 3.c.xi. Falling marbles turn a paddlewheel and the wheel makes at least one full revolution before triggering the next action.
26. T F 3.c.xii. An Archimedes screw raises a marble 20 cm vertically before the marble triggers the next action.
27. T F 3.d.i./6.e. The **Final Action** is successfully completed. (After all other planned scorable actions have been attempted, the marble from the Start Action is struck so that it rolls, unguided, ≥ 30 horizontal cm on the “base” of the device from its original resting position and stops on its own on the “base” and within the device.)
28. T F 3.d.ii./6.f. For the **Final Action**: The first marble from the Final Action strikes a second free-standing marble on the “base” of the device, 30 cm from the first marble, and both stop rolling and stay within the device. Neither marble touches anything other than the “base” once both have started rolling.
29. T F 3.d.iii./6.g. The **Final Action**: A 20 cm diameter circle is drawn with the second marble at its center and the second marble completely leaves the circle after being hit by the first marble and neither marble leaves the device.
30. T F 3.d.iv./6.h. The **Final Action** 3.d.iii. is successfully completed and the first marble remains completely in the 20 cm circle.
31. 5.a. **Target Operation Time** (Invitational/Regional: 47–75 seconds; State: 61–90 s; National: 91–120 s)
32. 5.b./6.i. **Operation time of the Device** (in seconds rounded down to the nearest second) — starts when the participant drops the first marble (3.b.) into the Device and ends when the marble from the Start Action is struck by the Device, or after 180 seconds have elapsed, whichever is first
33. 5.c./6.j. **Bonus**: If the participants designated a sand timer, an action taking > 10 seconds that does not use electricity or spring for power, how many seconds did the timer run before the Target Operation Time? The timer must successfully initiate the next action. For State/National tournaments, and the team must demonstrate how this timer is adjusted to account for the increased length of Target Operation Time.
34. T F 7.c. All solids and liquids stay inside the measured dimensions of the Device.
35. 5.d./7.b.iii. The number of times the Device was adjusted to continue operation..
36. T F General Rule: The team is disqualified. (Notify the team and their coach as soon as possible.)