



## Science Olympiad 2021 National Tournament

### Mission Possible Additional Information

- For the 2021 National Tournament, Mission Possible self-scheduled Trial Event not counting towards overall team standing conducted over Zoom. The link will be available to the participants through Scilympiad.
- Anyone interested in competing will do so on Saturday, May 22<sup>nd</sup>.
- Participants do not need to be physically together during this event. If the participants are together in the same location they should follow all public health guidelines in effect for their community.
- An adult (parent, coach, etc.) should be in the room with the participant and the device during their competition time. This adult may be asked to answer questions about the device, help measure and verify operational features of the device, and should refrain from being an advocate for the team's performance or coaching the team.
- Participants should be prepared to talk about the materials used and the building process; though Event Supervisors may ask to speak to the adult if needed.
- To receive the 25 points for 5.b.i., teams must submit their ASL along with pictures of each action using the link provided in Scilympiad by than 11:59 PM PDT/MST on May 19<sup>th</sup>.
- As participants login to the Zoom Room, please ensure your name on the Zoom Room is as follows: Team No – School Name (e.g., C11 – Empire). All teams should use their school name and not an abbreviation (Charlottesville not CHS) to ensure your team is credited appropriately.
- All rules published in the 2021 Science Olympiad Division B Rules Manual for Mission Possible apply, except that the teams will not earn not earn additional points for having a device that is smaller than 60 cm. in a dimension (5.i.) and teams will be providing measuring devices and doing the measurements on video to demonstrate compliance.
- Teams will have a link to access the video conference on May 22<sup>nd</sup> provided to them through Scilympiad.
- For the video conference teams will need:
  - a mobile device (i.e.; cell phone or tablet) with video call capability; multiple mobile devices/cameras are allowed
  - a meter-stick
  - a ruler
- The adult with the participant(s) may help hold the mobile device to allow the participant(s) to operate the Mission Possible device.
- The participant(s), or adult, is/are responsible for pointing their mobile device(s) so that

the Event Supervisors are able to see the running of the Mission Possible device. Event Supervisors will use their discretion to determine the success of an action in the case that the action is not visible over video.

- Teams will learn the exact Target Operation Time once they have logged into the video conference. Teams ready to run within the 30 minutes of being told the Target Operation Time to receive the 50 points in 5.c.i.
- Participant(s) should let the Event Supervisors know when they're ready to run their device.
- Teams should use the Mission Possible checklist found in these resources (or on the National website, [soinc.org](http://soinc.org)) to prepare for the event.



# MISSION POSSIBLE B

Team Checklist – 2021

Rank: \_\_\_\_\_  
Tier: \_\_\_\_\_  
Final Score: \_\_\_\_\_

Team Number:   B   School & Team Name: \_\_\_\_\_

Student Names: \_\_\_\_\_

## CHECK-IN & SETUP

- |                           |  |                         |  |
|---------------------------|--|-------------------------|--|
| <u>1. T</u> <u>  F  </u>  | 2.a./5.k. The Device and any tools/parts are impounded (State and National only). (For Regional, leave blank.)   |                         |  |
| <u>2. T</u> <u>  F  </u>  | 2.b-c./3.a.vii./5.l. Team is allowed to compete (e.g. participants wearing proper eye protection; Device has no potential hazards or safety concerns, is not greater than 1 meter in any dimension, and is not remotely timed/controlled). |                         |  |
| <u>3. Length:</u> _____   | <u>4. Depth:</u> _____   | <u>6. Height:</u> _____ | 3.a.i./5.i./6.b.i. Dimensions of the Device in centimeters to the nearest 0.1 cm |
| <u>6. T</u> <u>  F  </u>  | 3.a.ii./6.b.ii. The top and at least 2 vertical walls of the Device are open or transparent.   |                         |  |
| <u>7. T</u> <u>  F  </u>  | 3.e.i./5.b.i. The ASL is submitted on time at Device impound (State and National only). For Regional, choose "False."  |                         |  |
| <u>8. T</u> <u>  F  </u>  | 3.e.v./5.b.ii. The ASL is legible and uses the format specified on www.soinc.org.  |                         |  |
| <u>9. T</u> <u>  F  </u>  | 3.e.iii./5.b.iii. The ASL is 100% accurate of intended scorable and non-scorable actions.  |                         |  |
| <u>10. T</u> <u>  F  </u> | 3.e.iv./5.b.iv. The scorable & non-scorable actions within the Device are labeled as in the ASL.   |                         |  |
| <u>11. T</u> <u>  F  </u> | 5.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 (4.e.); actions are completed in order according to the ASL and earn no points if skipped (4.f.); and golf balls are standard and unmodified, with only nicks, scratches, marks from normal use with the ball and not attachments starting the next action (3.a.viii.)*

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|---------------------------|--|
| <u>12. T</u> <u>  F  </u> | 3.b./5.d. The <b>Start Action</b> is successfully completed. (Participant drops a golf ball into the Device from a point completely above the Device. The golf ball falls into the Device and initiates the next action, then comes to rest.)  |
| <u>13. T</u> <u>  F  </u> | 3.c.i. A 3:1 or 1:3 ratio gear system is used to initiate the next action.   |
| <u>14. T</u> <u>  F  </u> | 3.c.ii. A wheel and axle are rotated to raise a golf ball ≥ 10 cm vertically so that the golf ball at the end of the lift initiates the next action. (Either wheel to axle or axle to wheel in direction.)   |
| <u>15. T</u> <u>  F  </u> | 3.c.iii. Four free-standing, standard, non-magnetic, commercial dominos are knocked over in series with the fourth domino in the sequence initiating the next action.  |
| <u>16. T</u> <u>  F  </u> | 3.c.iv. Plain water is added to a container to raise a golf ball ≥ 5 cm so that the golf ball rolls out of the top of the container and initiates the next action.   |
| <u>17. T</u> <u>  F  </u> | 3.c.v. A screw is rotated to move a wingnut threaded on the screw ≥ 2 cm horizontally. After moving ≥ 2 cm horizontally, the wingnut contacts an object which initiates the next action.   |
| <u>18. T</u> <u>  F  </u> | 3.c.vi. A golf ball is pushed or pulled up an inclined plane with an IMA ≥ 2. After rising ≥ 10 cm vertically, the golf ball initiates the next action.  |
| <u>19. T</u> <u>  F  </u> | 3.c.vii. A Pulley (system) with an IMA ≥ 2 is used to lift a golf ball ≥ 10 cm vertically after which the golf ball initiates the next action.   |
| <u>20. T</u> <u>  F  </u> | 3.c.viii. A 3 <sup>rd</sup> class lever is used to raise a golf ball ≥ 5 cm vertically after which the golf ball initiates the next action.  |
| <u>21. T</u> <u>  F  </u> | 3.c.ix. A wedge is pulled from under a golf ball so that it rolls 20 cm in any direction after which the golf ball initiates the next action.  |
| <u>22. T</u> <u>  F  </u> | 3.c.x. No more than 9 V is used to power a stationary fan that uses moving air to push a floating object. After moving ≥ 10 cm horizontally on water, the floating object initiates the next action.   |
| <u>23. T</u> <u>  F  </u> | 3.c.xi. A wedge is pushed between two golf balls that are touching so that one golf ball moves. After moving ≥ 20 cm in any direction, the golf ball(s) initiate the next action.  |
| <u>24. T</u> <u>  F  </u> | 3.c.xii. A pendulum clock is started so that after running for ≥ 10 seconds, it initiates the next action.   |
| <u>25. T</u> <u>  F  </u> | 3.a.iii./3.d.i./5.e. The <b>Final Action</b> is successfully completed. (The golf ball from the Start Action is moved ≥ 20 cm horizontally from its original resting position and placed on a golf tee so that it stays on the tee for ≥ 3 seconds with the ball touching the tee and nothing else. The golf tee is standard, unmodified, wooden or plastic, ≤ 1.25 cm in diameter, and placed in a "tee holder" such that its top 2.5 cm is above the top of the tee holder and free of glue/tape.) |
| <u>26. T</u> <u>  F  </u> | 3.d.ii./5.f. For the <b>Final Action</b> : The part of the Device that delivered the ball to the tee is automatically moved away so the ball is clearly unobstructed in all directions. The ball stays on the tee and no part of the Device (except the tee and tee holder) is within 10 cm of the ball in any direction. This can occur after timing stops. If this part goes outside the original dimensions, the Device dimensions must be remeasured to allow for this action.                   |
| <u>27.</u> _____          | 4.a. <b>Target Operation Time</b> (Invitational/Regional: 60 seconds; State: 61–90 s; National: 91–120 s)  |
| <u>28.</u> _____          | 4.b./5.g. <b>Operation time of the Device</b> (in seconds rounded down to the nearest second) up to the Target Operation Time—starts when the participant drops the golf ball for the Start Action and ends when this golf ball touches the golf tee or after 180 seconds have elapsed, whichever is first   |
| <u>29.</u> _____          | 4.c./5.h. <b>Bonus</b> : If the participants designated a 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 and for State/National tournaments, and the team must demonstrate how this timer is adjusted to account for the increased length of Target Operation Time.   |
| <u>30. T</u> <u>  F  </u> | 6.c. All solids and liquids stay inside the measured dimensions of the Device.   |
| <u>31.</u> _____          | 6.d.i. The number of spring timing actions in the Device that took longer than 10 seconds.   |
| <u>32. T</u> <u>  F  </u> | 6.d.ii. No electricity is used in the Device except for the stationary fan action (3.c.x.).  |
| <u>33.</u> _____          | 4.d./6.b.iii. The number of times the Device was adjusted to continue operation—up to 3 times  |
| <u>34. T</u> <u>  F  </u> | <b>General Rule</b> : The team is disqualified. (Notify the team and their coach as soon as possible.)   |