CADET DIVISION CHALLENGES

MINDSTORMS MINI-COURSE 2018: NANOVIRUS

STORY

An Alien NanoVirus has invaded the control system! You must shrink down to navigate through the CPU and eradicate the virus. You have been provided with instructions on how to navigate through.

COURSE

1. You must use color/light sensors to navigate the course.
2. The robot must start within the black outline (all wheels within the box).
3. The robot must end within the green box (all wheels within the box).
4. The robot must hit colors in order of code (Blue, Red, Yellow, Blue, Green).

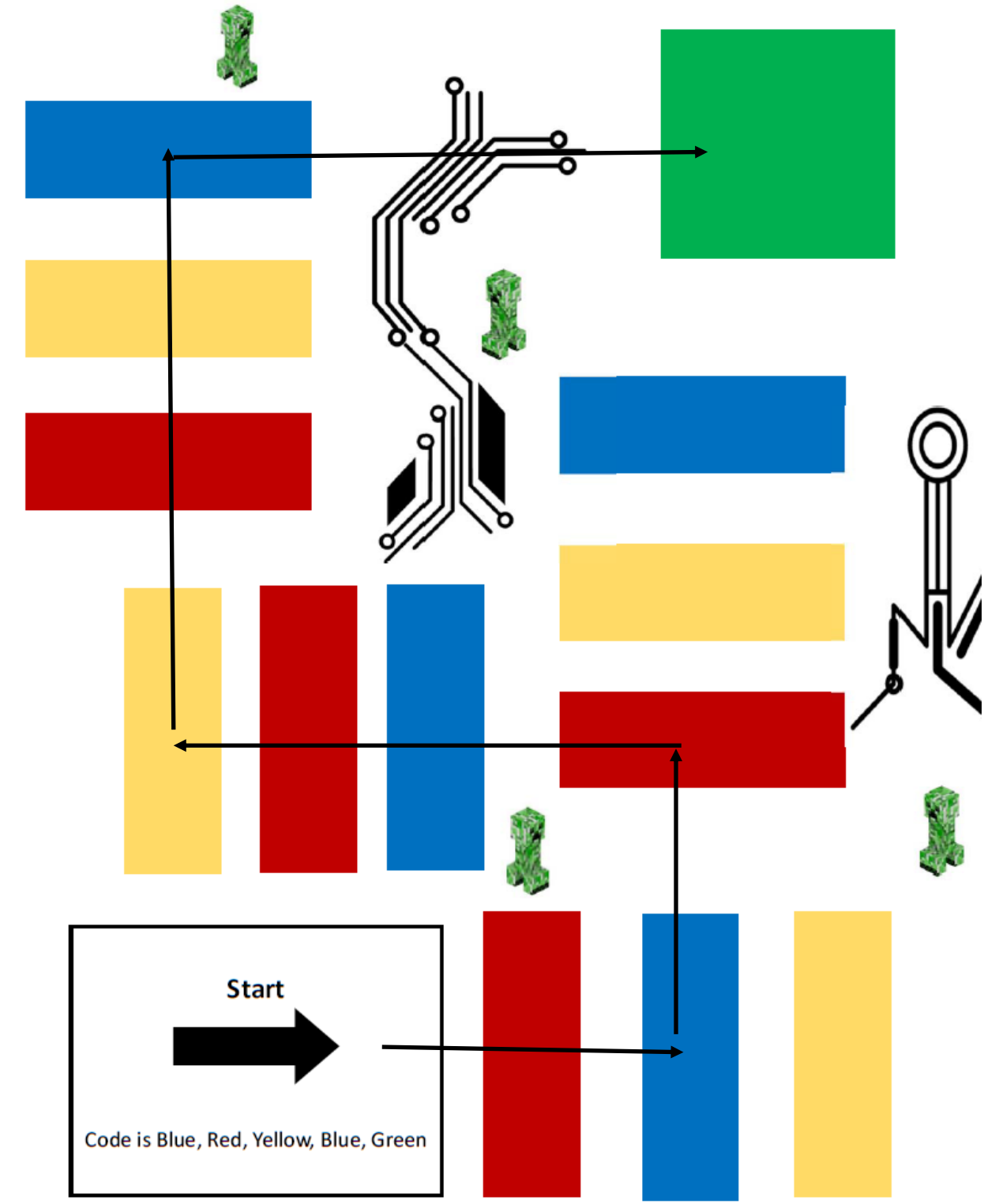
SCORING

Points	Deductions	Course Tasks
+10		Sensed Code 1
+10		Sensed Code 2
+10		Sensed Code 3
+10		Sensed Code 4
+20		Found CPU
+15		Perfect Run
	-1	Touch/reposition robot (max 5)
	-2	Touch/reposition robot (any touch over 5)
75		**Total**

NOTES

- You are not allowed to physically move the robot to the next sequence in the code. The robot must find the code in order to get the points.

MINDSTORMS MINI-COURSE 2018: NANOVIRUS



MINDSTORMS MINI-COURSE 2018: ORBITAL SLINGSHOT

STORY

The first Mars mission is in trouble! We need to make it there in half the time so we developed a ship capable of flying much faster! This rescue mission is going to leverage both the moon and the sun to catapult the ship at incredible speed! Hold on!

COURSE

1. You must start within the dotted line box.
2. The robot must hit color in 3 block section before going to the color on course. (ie, go over blue before going to blue on course) The robot needs to return to the 3 block section each time.
3. The robot must hit colors in the following order: Blue, Red, Yellow.
4. The robot ends the course at the green square. Use the color sensor to stop when the green square is seen.

SCORING

Points	Deductions	Course Tasks
+10		Travelled from Blue to Blue
+5		Pause at color and say color
+10		Travelled from Red to Red
+5		Pause at color and say color
+10		Travelled from Yellow to Yellow
+5		Pause at color and say color
+20		Arrived at Green
	-10	Deduct points if going around Earth before Moon
	-15	Looping backwards (not touching color code first)
+10		Orbital Slingshot Speed Boost Bonus (accelerates on final Yellow to Green Straightaway)
	-1	Touch the robot to readjust (max 5)
	-2	Touch the robot to readjust (greater than 5)
75		**Total**

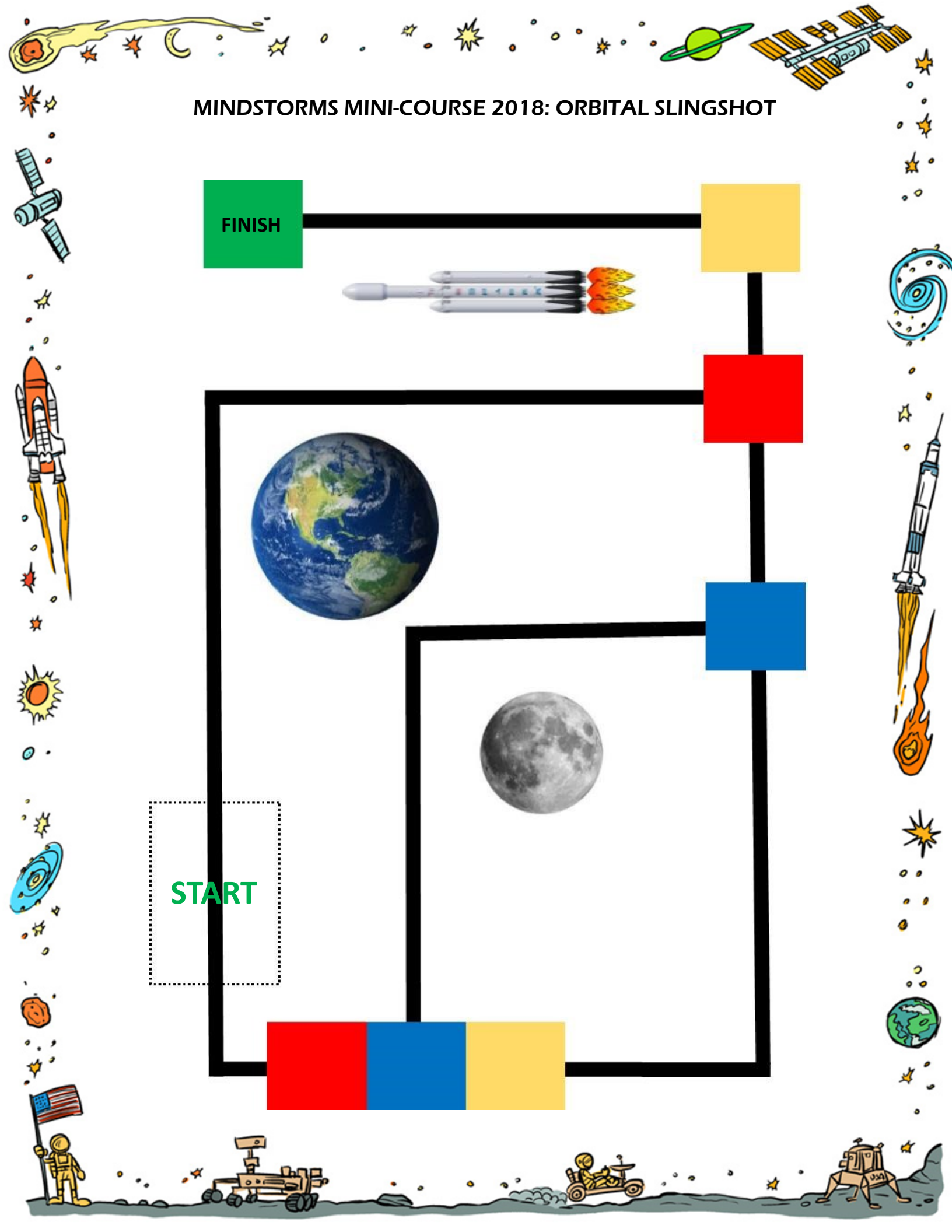
NOTES

⇒ Deductions for looping in reverse or wrong order but color to color matches can still be awarded regardless

⇒ Speed boost can be actual acceleration or auditory signal

⇒ No penalties for tires on Earth or moon

MINDSTORMS MINI-COURSE 2018: ORBITAL SLINGSHOT



MINDSTORMS MINI-COURSE 2018: MARS RESCUE

STORY

One of your space crew members got lost on Mars and is now being held captive by a space Martian! Your mission– should you accept– is to leave the Landing Excursion Module (LEM) by taking one of the black paths, ensuring to circumvent any space rocks, in order to reach your fellow astronaut, and bring her back safely to the camp on a different path than which you took initially– but be sure not to grab the Martian! Upon your return into space camp, you mustn't knock over the LEM, or else you cannot return to Planet Earth once the mission is complete. Extra points will be rewarded to teams who can precisely drop the astronaut into the white square at home base.

COURSE

1. You must start with both wheels in the black box by the launchpad.
2. The robot can go either way, but it must return via the other path.
3. The robot must return to the black line by the red indicators on the line.
4. If you wish to place a rock in the middle of the course on competition day, it must COMPLETELY cover the printed rock on the line.
5. Avoid all the rocks (even the ones printed on the course).
6. The Martian will be in the green box. The astronaut will be in the blue box. The entire block with the astronaut must be moved. You can pick up the block or push/pull it. You cannot move the alien at all.

SCORING

Points	Deductions	Course Tasks
+15		Follow the black line to the astronaut
+20		Move the astronaut (pick up or drag)
	-5	Pick up the astronaut manually
	-10	Move the Martian
	-5 (max 25)	Collide with space rock(s)
+15		Follow the second black line to home base
+20		Drop the astronaut into the accuracy square
+5		Display on screen or have robot say "Mission Accomplished"
	-10	Knock over the Landing Excursion Module
	-1	Touch the robot to readjust (max 5)
	-2	Touch the robot to readjust (greater than 5)
75		Total

NOTES

⇒ Obstacles will be foam blocks; on competition day, the blocks will be decorated with rocks and spaceships

⇒ The astronaut/Martian will be minifugres placed on a Lego construct. The Lego construct will be placed within the white box in the orientation shown in the picture.

MINDSTORMS MINI-COURSE 2018: MARS RESCUE