Test Cases:

1. Enter in 6 space bar inputs rapidly. This should initiate 5 rockets in the game. Since the space bar initiates a rocket and only 5 can be active at one time, the program should send out only 5 rockets.
2. Enter in 6 right clicks from a mouse rapidly. This should also initiate 5 rockets as the right click should do the same thing a space input does, namely initiate a rocket.
3. Try inputting several other buttons to make sure that no other buttons initiate a rocket launch.
4. Shoot off 5 rockets, then after one has disappeared off the screen, try shooting off another rocket. This will check if the rockets are being labeled inactive after exiting the screen.
5. There must be a test to show the speed and direction values for each instance of a rocket. Since every rocket is shot off with a constant direction and speed, these must be equal.
6. Shoot off several missiles. Make sure each missile is coming from the center of the bottom of the screen.
7. Try moving the mouse and right clicking to make sure that the missiles don’t come from under the cursor when you move it.
8. Shoot off a single rocket so that it hits a ship. Make sure the program displays an explosion and removes both the rocket and ship.
9. After the rocket and ship are removed. Make sure the counter for hits is increased by one.
10. Shoot off several rockets rapidly so that they hit a ship. Make sure that there is only one explosion displayed, and that the other rockets continue on to either exit the screen or hit another ship.
11. After shooting off several rockets, make sure that the counter only incremented once. This will prove that each ship can only be hit by one rocket.
12. Run the program with a very low frequency rate of creating ships. Allow it to create 3 ships. Shoot all of them down and make sure the program then creates another ship. This will make sure that the program instantiates a ship every time there are no active ships left.
13. Let the program send out a total of 10 ships. Make sure there is some deviation to the duration between each ship when it is instantiated and that there is some deviation of where the ships are sent out at. Run this test 5 times to make sure the program doesn’t just reset some predetermined pattern of ships every time the program is rerun.
14. Enter in varying numbers of ships to see if the program allows for the configuration of the number of ships available.
15. Enter in a string into the configuration to see if the program will crash or if the program is able to handle an error in the input.
16. Enter in a number value into the configuration for the wait time between ships. Run this test several times to make sure the number is actually changing the wait time.
17. Don’t enter anything into the configuration. Run this test several times to make sure the ships are appearing at about the same frequency.
18. Enter in a string value into the configuration for the wait time between ships. This should not crash the program, there should be some check for this.
19. Allow the program to run several times, make sure that the program sends ships from the left and right in a different pattern.
20. Run the program several times. Make sure that the ships are only being sent from the top two thirds of the screen.
21. Run the program and allow it to generate several different ships. Make sure that each ship is going a different speed based on what type of ship it is.
22. Make sure that each ship goes in the right direction based on which side of the map it came from.
23. See if a ship will be launched after the first few ships exit the screen. Exiting the screen should mark them as inactive, therefore more ships should be able to be sent.
24. Run the program until the user has hit 10 ships. Make sure that the program exits.
25. Run the program and hit the esc key. Make sure that the program exits.
26. Run the program and hit the left mouse button. Make sure that the program exits.
27. Run the program for 5 minutes. Do not shoot any missiles. Make sure that the program exits.
28. Run the program and shoot several missiles. Don’t shoot any missiles after that. Make sure the program exits only after you have waited 5 minutes to shoot off any missiles.
29. Enter in several other inputs and make sure that the program does not exit.