

# Mechanical Physics Simulation:

## STUDENT INSTRUCTIONS (PART I)

### Getting the simulations:

Please go to this link to download your first simulation:

Otherwise you can send an email to this: [support.SymComm@gmail.com](mailto:support.SymComm@gmail.com) with your name, class and ID, and we will send you the first simulation.

### Experiment 1:

**Step 1:** Read the instruction on what the Captain needs you to do.

**Captain:**

The UFO seems to have flown away and left us alone, the radar is tracking the large alien space ship but it keeps blimping off the screen, and the computer is busted from the attack and can't compute the alien ship's trajectory.

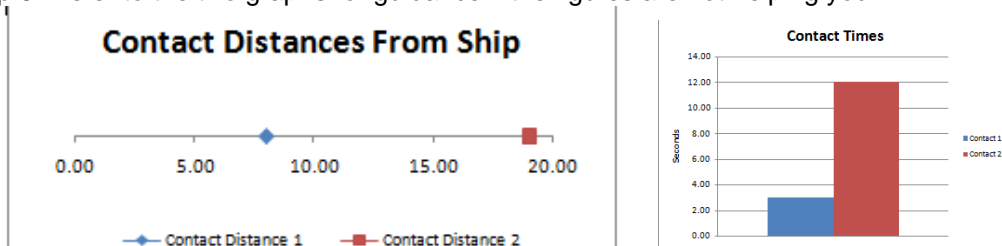
We know the space ship is moving at a linear velocity relative to our position but we need to know how fast it is moving and whether it is retreating or if it is moving forward for another attack.

I have sent you some raw data from the radar, we need to know where the hostile ship is going and how fast it is moving.

**Step 2:** Refer to information given by the Captain as the constants for the inputs part of your calculations.

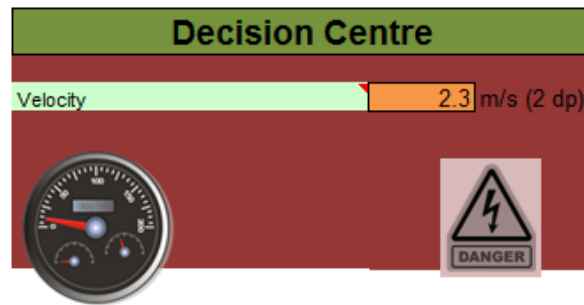
Radar Data		
<b>Contact 1</b>		
Time	3.00	Seconds
Distance	8.00	Meters
<b>Contact 2</b>		
Time	12.00	Seconds
Distance	19.00	Meters

**Step 3:** Refer to the two graphs for guidance if the figures are not helping you.



## Chemistry Sim I

**Step 4:** Go to the Decision centre to put in your final answer (in 2 decimal place). Check if there is any other option that you need to fulfil, rather than just the final result.



**Step 5:** On the next panel there are following options:

- Click 'reset' if you finish your current calculation and it is correct.
- Click 'check answer' if you want to know if your answer is correct or not.
- Click 'hint' if you are stuck and would like to know the steps to calculate the correct answer
- Click 'show answer' if you cannot solve it after using the hints and/or would like to know how the model answer looks



**WRONG**

$$\text{Time Between Contacts } \text{Time 2} - \text{Time 1} = 12 - 3 \\ 9$$

$$\text{Distance Travelled Between Contacts } \text{Distance 2} - \text{Distance 1} = 19 - 8 \\ 11$$

$$\text{Velocity } \text{Distance/Time} = 11/9 \\ 1.22$$

## Snapshot of Simulation:

Contact	Time (Seconds)	Distance (Meters)
Contact 1	3.00	8.00
Contact 2	12.00	19.00

Contact	Time (Seconds)
Contact 1	3.00
Contact 2	12.00

**Decision Centre**

Velocity: 2.3 m/s (2 dp)

**WRONG**

Time Between Contacts  $\text{Time 2} - \text{Time 1} = 12 - 3 = 9$

Distance Travelled Between Contacts  $\text{Distance 2} - \text{Distance 1} = 19 - 8 = 11$

Velocity  $\text{Distance/Time} = 11/9 = 1.22$