Rocket Launch Lab

Classroom model: illustrative booster values and mixture performance

Name: _____ Class: _____ Date: _____

Mission: reach the highest altitude. Use the online model to collect data. Record the initial rocket mass; it includes structure, payload, fuel, and oxidizer.

1 Predict before testing

Will the largest booster always reach the highest altitude? Explain your prediction using mass and thrust.

To test the mixture fairly, which settings will you keep constant?

2 Investigate the mixture

Keep booster, payload mass, and propellant load fixed. Test five mixtures. Fuel and oxidizer mass percentages must add to 100%. Record a held launch as 0 km and note why.

Booster: _____ Payload: _____ kg Propellant load: _____ %

Test	Fuel (%)	Oxidizer (%)	Launch mass (kg)	Maximum altitude (km)	Observation / held-launch reason
1					
2					
3					
4					
5					

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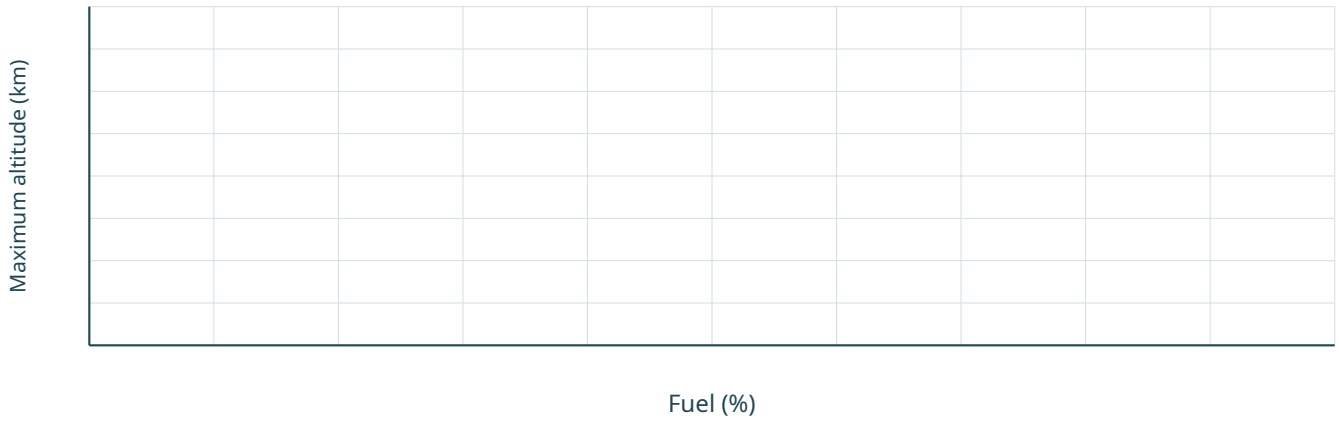
3 Compare booster packages

Keep mixture, payload, and percentage load fixed; test all three boosters. Structure mass, propellant capacity, engine mass flow rate, and diameter change together. This compares packages, not one isolated property.

Booster	Launch mass (kg)	Initial thrust (kN)	Maximum altitude (km)
Small			
Medium			
Large			

4 Graph the mixture evidence

Plot your five mixture tests: fuel percentage on the horizontal axis, maximum altitude on the vertical axis. Add numerical scales and label the best result.



5 Explain and improve

Which design worked best for your payload? Cite two measured results. Explain the roles of thrust and changing mass, and propose one next test.

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