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About Rockets

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START YOUR JOURNEY

Welcome to Rocket Research 101

Good that takes us to Momentum.

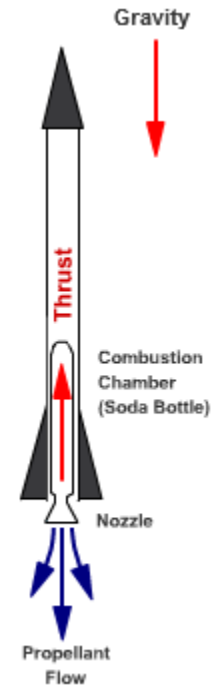
Part of what determines the bottle's velocity is the Momentum of the escaping particles. **Momentum** is defined as the object's mass x velocity (speed), or

$$\text{Momentum} = (\text{mass}) \times (\text{velocity})$$

The **Conservation of Momentum Law** requires the momentum of the bottle to be equal but opposite to the momentum of the escaping air. Therefore, more massive particles will impart more momentum [hence, velocity (speed)] to the rocket.



Water is almost 800 times more dense than air. Consequently, when the rocket expels water it expels much more total mass than when it expels only air. The increased mass results in increased rocket performance!



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Any comments, concerns, or questions should be addressed to:
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Responsible NASA Official: **Jo Ann Charleston**



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