

Strawkets and Weight Activity – Weight Quiz – **Answers**

Weight

1. My rocket is too heavy for the thrust from my engines. What are two things I could do to have a successful liftoff?

1. Decrease the weight of the rocket (but less fuel reduces thrust!).
2. Increase the thrust of the engine (but adding fuel adds weight!).

2. $F = ma$ is from Newton's second (first, second or third) law of motion?

(Force = mass $\times$ acceleration)

3. Which of these rockets will make it to orbit? (Force $\div$ Mass = Acceleration)

An ACCELERATION of 10 or greater is needed to achieve orbit!



Fuel thrust force = 40
Rocket mass = 5

$$\underline{40} \div \underline{5} = \underline{8} \rightarrow \underline{\text{NO!}}$$



Fuel thrust force = 60
Rocket mass = 6

$$\underline{60} \div \underline{6} = \underline{10} \rightarrow \underline{\text{YES!}}$$



Fuel thrust force = 70
Rocket mass = 7

$$\underline{70} \div \underline{7} = \underline{10} \rightarrow \underline{\text{YES!}}$$



Fuel thrust force = 75
Rocket mass = 8

$$\underline{75} \div \underline{8} = \underline{9.37} \rightarrow \underline{\text{NO!}}$$

Name: _____ Date: _____

Image source: quest.nasa.gov/neuron/kids/express/page2.html

Part III. Control

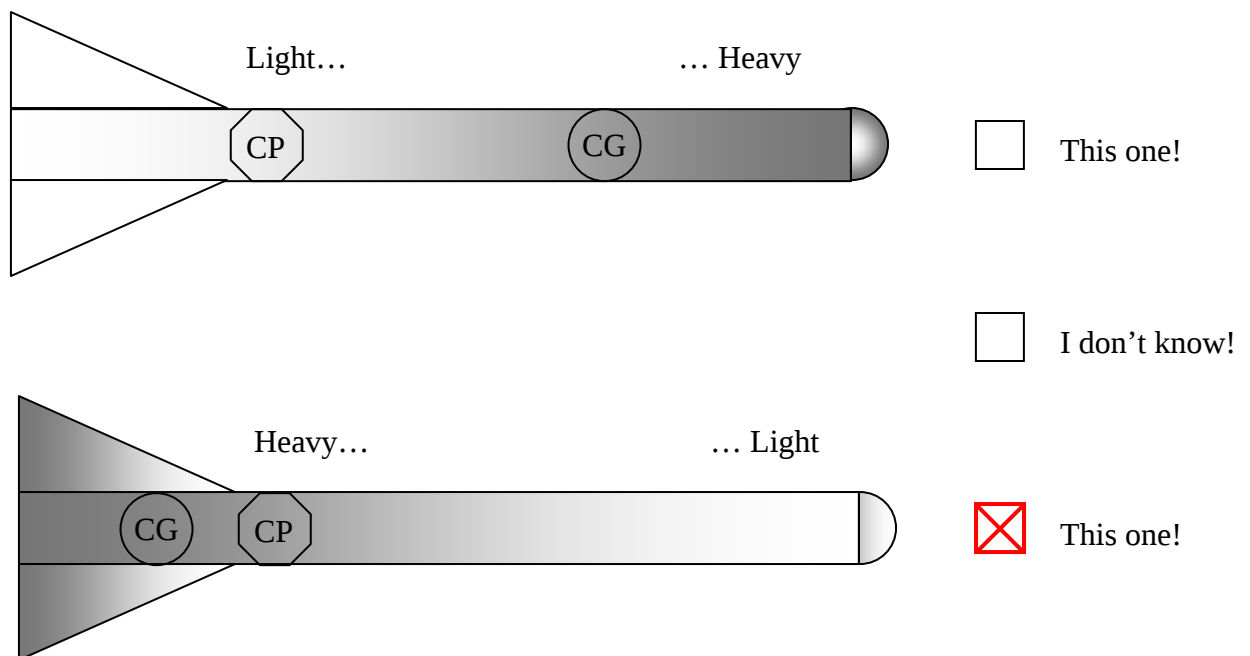
1. Circle True or False for each statement below:

True or **False**: To fly, rockets flap their wings.

True or False : In air, wings and fins help a rocket fly straight.

True or **False**: Rockets need control fins (wings) in space.

2. Which of these rockets will end up flying backward?



Explanation: Objects rotate about their Center of Gravity (CG). The Center of Pressure (CP) will be “blown” around and try to align BEHIND the CG.