

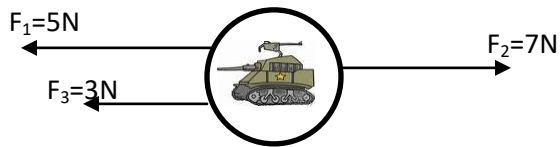
# Mini-Tank Physics

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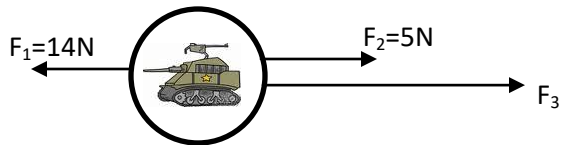
Name: \_\_\_\_\_ Date: \_\_\_\_\_

Use your understanding of Newton's Laws of motion to find the missing quantity in each question.

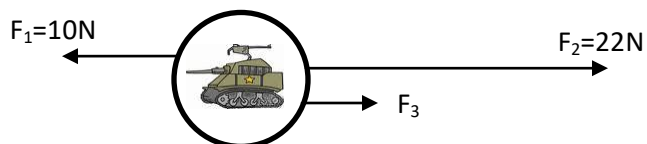
1. A **2 kg mini-tank** has the following forces acting on it. Determine the **Net/Unbalanced/Sum** of the forces acting on this mini-tank. Also determine the acceleration of the tank.



2. The 2 kg mini-tank is now moving at a constant speed of 15 m/s. What is the acceleration? What is the net force acting on the tank? Determine the unknown force,  $F_3$ .



3. The mini-tank (2 kg) is now accelerating to right with an acceleration of 9 m/s/s. What is the value of the unknown force?



4. The mini-tank (2 kg) stops to pick up a mini-elf passenger. The tank begins accelerating to left with an acceleration of 6 m/s/s. There is a 40 N motor force acting to the left. Two resistive forces also act on the tank; air resistance of 2 N and frictional force of 8 N. Complete the diagram. Determine the mass of the tank (including the passenger). Using this answer determine the mass of the magical elf.

