# CALCULATING MOTION

7. For each of the cases below, tell which object would require the greater <u>force</u> to achieve the acceleration given. A 10 kg mass with an acceleration of 10 m/sec/sec or a 15 kg mass with an acceleration of 6 m/sec/sec.

$$F_{net} = m \times a$$

8. For each of the cases below, tell which object would require the greater <u>force</u> to achieve the acceleration given. An 18 kg mass with an acceleration of 9 m/sec/sec or an 11 kg mass with an acceleration of 15 m/sec/sec.

$$F_{net} = m \times a$$

9. For each of the cases below, tell which object would develop the greater <u>acceleration</u> after receiving the force given. A 2 kg mass with 10 N of force applied or a 3 kg mass with 6 N of force applied.
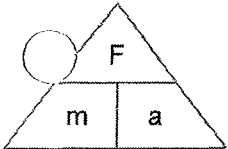


## TRY THIS!

10. A car going 10m/s accelerates at 2m/s$^2$ for 8s. What is the car's final velocity?

11. A 1000kg car going 10m/s downshifts and applies a force of 200N for 20s. What is the final velocity of the car?

12. One person is having a tug-o-war with a rope attached to a wall. Draw and label the force (strength and direction) at each end of the rope.

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irections: Calculate the missing variables for each question below. You must show your work. Follow the 5 step method to problems solving.
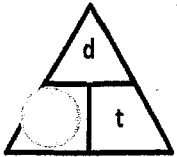
1. What is the velocity of a frog that jumps 27 feet in the air for 2.75 seconds?

$$V = \frac{d}{t}$$

2. What is the velocity of a ball that is thrown in the air 16 meters? The ball reaches the ground in 25 seconds.

$$V = \frac{d}{t}$$

3. What is the distance from Langhorne to Newtown if the car is traveling 35 miles/hr up Rt.413 for 0.12 seconds? (THINK ABOUT WHAT YOU ARE SOLVING FOR)



4. The velocity of a car was increased from 87 m/sec. to 110 m/sec. in 8 seconds. Calculate acceleration.

$$a = \frac{v_F - v_i}{t}$$

5. A car traveled down the highway at 39 miles/hr. After the great patience, the driver decided to pass and accelerated to 55 miles/hr. This acceleration took 6 seconds. Calculate the acceleration.

$$a = \frac{v_F - v_i}{t}$$

6. How much time does it take a go-cart to accelerate to 15 m/sec$^2$ if the total velocity change was 30 m/sec? Calculate the time.