F=ma Worksheet

Show all work!!! FBD, Drawings, Fnet equations, givens, motion equations, substitutions and answers.

1. A 95 kg person falls at terminal (constant) velocity through the air while skydiving. What is the net force acting on the person?

2. A 25 kg box is pulled by a net force of 150 N. What would its acceleration be?

$$150N$$
 Fret = Ma
 $150 = 25a$
 $a = \frac{150}{25} = 6m/s^2$

3. If a child on a bike produces a net force of 180 N and is observed to accelerate at a rate of 3.0 m/s². What is the total mass of the child and his bike?

4. A 1.800 Kg cart starts from rest and accelerates through a distance of 1.2 m in 2.1 s. What is the net force acting on the cart?

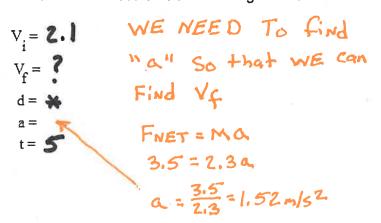
the net force acting on the cart?

$$V_i = 0$$
 $V_i = 0$
 $V_i = 0$

V4 = 2.1+1.52(5)

V1 = 9.7 m/s

5. A 2.3 kg cart is moving at 2.1 m/s when a net force of 3.5 N acts in the direction of movement. How fast will the cart be traveling after 5.0 s?



6. A 1500 kg car drifts along a level road and slows down from +35 m/s to +25 m/s in 30 seconds. What is the net force acting on the car?

$$V_i = 35$$
 $V_f = 25$
 $V_f = 25$

7. On Mars, you observe a freely falling object drop 1.83 m in one second (remember in free fall we start from rest). What will the 61 kg girl weigh on Mars?

$$V_i = 0$$
 First Find "a"

 $V_f = 0$
 $d = V_i t^2 + 1/2 a t^2$
 $d = 1.83$
 $a = 1.83 = 1/2 a (1)^2$
 $a = 1.0$
 $a = 2(1.83)$
 $a = 3.66 m/s^2 = 9$

8. The g on Jupiter (cloud tops) is estimated at 26 m/s². How much would a 2.1 Kg camera weigh there?