Part C: Finding Acceleration Using Newton's Second Law

C.1. A car moves forward due to a thrust of 2000 N. Air resistance pushes back on the car with a force of 200 N. The car has a mass of 1000 kg.
a) Draw a free-body diagram of the car:

b) What is the net force on the car?

c) What is the acceleration of the car?

Looking For	Formula	
Already Know		
Answer as equation *with unit*:		

C.2. A man is falling due to his weight of 700 N down. He is resisted by an air resistance force of 200 N up. He has a mass of 71 kg.
a) Draw a Free-Body Diagram of the man:

b) What is the net force on the man?

c) What is his acceleration?

Looking For	Formula	
Already Know		
Answer as equation *with unit*:		

C.3. An elephant on roller skates is rolling down a hill. The elephant has a mass of 2,700 kg. A downward force (caused by gravity) of 18900 N pulls him down the track. A frictional force of 7500 N resists his motion.
a) Draw a Free-Body Diagram of the elephant:

b) What is the net force on the elephant?

c) What is its acceleration?

Looking For	Formula	
Already Know		
Answer as equation *with unit*:		

C.4. Three people are pulling on a big, 50 kg barrel.
Jim is pulling 400 N to the right.
Joe is pulling 400 N to the right.
Hector is pulling 1000 N to the left.
a) Draw a Free-Body Diagram of the barrel:

b) What is the net force on the barrel?

c) What is its acceleration?

Looking For	Formula	
Already Know		
Answer as equation *with unit*:		

C.1
1.8 m/s^2 FORWARD

C.2
7.04 m/s^2 DOWN

C.3
4.2 m/s^2 DOWN THE TRACK

C.
4 m/s^2 LEFT