BitWith Bite

PHYSICS WORKSHEET

Newton's Laws

Chapter: Mechanics · Level ★★☆ · Time: 30 min

SCORE ___ / 20

Name _____ Class _____ Date _____

AFTER THIS WORKSHEET YOU CAN

✓ Understand: Newton's First Law (Inertia) ✓ Understand: Newton's Second Law ✓ Understand: Newton's Third Law ✓ Understand: Net Force

Section A · Concept Check

• BEGINNER 4 × 1 = 4

1 A 8 kg object has net force 40 N. Find acceleration.

2 A 3 kg object accelerates at 7 m/s^2. Find net force.

3 A 50 kg person stands still on a scale. What is the reaction force pair here (Newton's third law)?

4 A car engine applies 2000 N force, and the car (mass 1000 kg) experiences 500 N of friction. Find the net force and acceleration.

Section B · Problem Solving

• INTERMEDIATE 4 × 3 = 12

5 Why does a heavier object require more force to achieve the same acceleration as a lighter one?

6 A book rests on a table without moving. What does this tell you about the net force on it?

7 If a 1000 kg car needs to accelerate at 2 m/s^2, what net force is required?

8 What law explains why passengers lurch forward when a car suddenly stops?

Section C · Challenge

• CHALLENGE 2 × 2 = 4

9 A 6 kg object accelerates at 0 m/s^2. What can you conclude about the net force?

10 Give a real-world example of Newton's Third Law.

Reflection — the most useful thing I learned: _____

A ___/4 B ___/12 C ___/4 Total ___/20

Teacher's Signature

Parent's Signature

✂ ANSWER KEY — FOLD OR CUT BEFORE HANDING OUT

1 = 5 m/s^2 2 = 21 N 3 = The person pushes down on the scale, and the scale pushes up on the person with equal force 4 = Net force=1500N, a=1500/1000=1.5 m/s^2 | 5 = F=ma means force needed is directly proportional to mass for a given acceleration 6 = The net force is zero (gravity and the table's normal force balance) 7 = 2000 N 8 = Newton's First Law (inertia) -- the passengers' bodies resist the sudden change in motion | 9 = The net force is 0 N 10 = Any valid example, e.g. walking (pushing backward on the ground, ground pushes you forward) or a swimmer pushing water backward to move forward