BitWith Bite

PHYSICS WORKSHEET

Kinetic Theory

Chapter: Thermodynamics · Level ★★★ · Time: 30 min

SCORE ___ / 20

Name _____ Class _____ Date _____

AFTER THIS WORKSHEET YOU CAN

✓ Understand: Core Assumptions ✓ Understand: Pressure from a Molecular View

✓ Understand: Temperature and Average Kinetic Energy ✓ Understand: Root-Mean-Square Speed

Section A · Concept Check • BEGINNER 4 × 1 = 4

1 If temperature is halved, what happens to average KE of gas particles?

2 Why does cooling a gas cause its pressure to drop (at constant volume)?

3 What core assumption about particle volume is made for an ideal gas?

4 What core assumption about intermolecular forces is made for an ideal gas?

Section B · Problem Solving • INTERMEDIATE 4 × 3 = 12

5 Why might a real gas behave less ideally at very low temperatures?

6 If two gas samples are at the same temperature, do their particles have the same average kinetic energy, even if the gases are different substances?

7 What symbol represents Boltzmann's constant in the average kinetic energy formula?

8 Why is kinetic theory considered a bridge between microscopic and macroscopic physics?

Section C · Challenge • CHALLENGE 2 × 2 = 4

9 According to kinetic theory, what does 'absolute zero' represent at the particle level?

10 Why are gas particle collisions assumed to be perfectly elastic in kinetic theory?

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 = It is also halved 2 = Lower temperature reduces particle speed, leading to less frequent and less forceful collisions with the container walls 3 = Particle volume is considered negligible compared to the container's volume 4 = There are no attractive (or repulsive) forces between particles | 5 = Particles move slower and spend more time close together, making intermolecular attractive forces more significant 6 = Yes, average kinetic energy depends only on temperature, not on the type of gas 7 = k 8 = It connects the invisible, random motion of individual particles to measurable bulk properties like pressure and temperature | 9 = The theoretical point of minimum particle motion (minimum kinetic energy) 10 = So that no kinetic energy is lost from the system overall during collisions, keeping the model's energy accounting consistent