— PREMIUM RESOURCE —

CHEMISTRY
DAILY WARM-UPS

Full Year | 36 Weeks | 180 Days

No-Prep Bell Ringers for Chemistry Class

GRADES 9 – 12

WHAT'S INSIDE

- **Real-World Connections** — Chemistry in everyday life
- **Quick Calculations** — Essential math practice
- **Vocabulary Review** — Key terms and definitions
- **"What If?" Scenarios** — Critical thinking prompts
- **Concept Checks** — Core understanding questions

COLOR-CODED BY QUESTION TYPE

Vocabulary | Real-World | Calculation | What If? | Concept

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TEACHER NOTES

How to Use This Resource

- Display one warm-up per day at the start of class (3–5 minutes).
- Students complete the warm-up independently in notebooks or on paper.
- Review answers together as a class for immediate feedback.
- Use for formative assessment, participation grades, or exit tickets.
- Warm-ups can also be assigned as homework or review activities.

What's Included

- 180 daily warm-ups (36 weeks × 5 days per week).
- Each week covers a specific chemistry topic.
- Five question types: Vocabulary, Real-World, Calculation, What If?, Concept Check.
- Complete answer keys for all 180 warm-ups.
- Monthly topic alignment chart for curriculum planning.

Question Types

- Vocabulary (purple) — Key terms, definitions, and chemistry language.
- Real-World (green) — Chemistry connections to everyday life and careers.
- Calculation (blue) — Quick math problems with formulas and conversions.
- What If? (orange) — Hypothetical scenarios that promote critical thinking.
- Concept Check (teal) — Core concept understanding and explanations.

Tips for Success

- Establish a consistent warm-up routine from Day 1.
- Allow students to discuss answers with partners before sharing.
- Use warm-ups to identify topics that need reteaching.
- Spiral review: revisit earlier warm-ups to reinforce prior learning.
- Project the warm-up on a board or print weekly sheets for students.

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MONTHLY TOPIC ALIGNMENT CHART

MONTH	WEEKS	TOPICS
September	1–4	Intro to Chemistry; Scientific Method; Lab Safety & Equipment; SI Units & Measurement
October	5–8	Properties of Matter; States of Matter; Physical & Chemical Changes; Mixtures & Separation
November	9–12	Significant Figures; Scientific Notation & Conversions; Density; Temperature & Review
December	13–16	Atomic Theory History; Subatomic Particles; Isotopes & Atomic Mass; Electron Models
January	17–20	Electron Configuration; Quantum Numbers; Periodic Table Organization; Periodic Trends
February	21–24	Ionic Bonding; Covalent Bonding; Metallic Bonding & IMFs; Lewis Structures & VSEPR
March	25–28	Balancing Equations; Reaction Types; Predicting Products; Reaction Rates & Energy
April	29–32	The Mole Concept; Molar Mass & Conversions; Stoichiometry; Limiting Reactants & % Yield
May	33–36	Solutions & Solubility; Concentration; Acids, Bases & pH; Neutralization & Review

Note: Alignment follows a standard high school chemistry sequence.
Teachers may adjust the order to match their specific curriculum or pacing guide.

WEEK 1: INTRODUCTION TO CHEMISTRY

MONDAY

VOCABULARY

Define chemistry and list its five major branches.

TUESDAY

REAL-WORLD

A chef caramelizes sugar on top of a creme brulee. Is this a physical or chemical change? Explain your reasoning.

WEDNESDAY

WHAT IF?

What would happen if chemical reactions could not release energy (only absorb it)?

THURSDAY

CALCULATION

A chemist records two measurements: 3.45 g and 2.1 g. How many significant figures does each measurement have?

FRIDAY

CONCEPT CHECK

Explain the difference between pure chemistry and applied chemistry. Give one example of each.

WEEK 2: SCIENTIFIC METHOD & EXPERIMENTATION

MONDAY

VOCABULARY

List the steps of the scientific method in the correct order.

TUESDAY

REAL-WORLD

A gardener notices tomato plants grow taller with fertilizer. Design a controlled experiment to test this.

WEDNESDAY

WHAT IF?

What would happen if a scientist skipped the peer review process before publishing new results?

THURSDAY

CALCULATION

A plant measures 12.3 cm on Day 1 and 15.8 cm on Day 7. What is the average daily growth rate?

FRIDAY

CONCEPT CHECK

What is the difference between a hypothesis, a theory, and a scientific law?

WEEK 3: LAB SAFETY & EQUIPMENT

MONDAY

VOCABULARY

Name five common pieces of laboratory equipment and state the function of each.

TUESDAY

REAL-WORLD

Why should you never eat or drink in a chemistry laboratory? Give two specific reasons.

WEDNESDAY

WHAT IF?

What would happen if you poured water into concentrated sulfuric acid instead of adding acid to water?

THURSDAY

CALCULATION

An empty beaker has a mass of 125.0 g. After adding 50.0 mL of liquid, the total mass is 175.0 g. What is the density of the liquid?

FRIDAY

CONCEPT CHECK

Explain the difference between accuracy and precision in laboratory measurements.

WEEK 4: UNITS OF MEASUREMENT & SI SYSTEM

MONDAY

VOCABULARY

List five SI base units and the quantities they measure.

TUESDAY

REAL-WORLD

A European recipe calls for 250 mL of milk. About how many cups is this? (1 cup ≈ 237 mL)

WEDNESDAY

WHAT IF?

What would happen if there were no internationally agreed-upon measurement system in science?

THURSDAY

CALCULATION

Convert 0.045 km to meters, then to centimeters.

FRIDAY

CONCEPT CHECK

Why do scientists prefer the SI system over the English system? Give two reasons.

WEEK 5: PROPERTIES & CLASSIFICATION OF MATTER

MONDAY

VOCABULARY

Define extensive property and intensive property. Give two examples of each.

TUESDAY

REAL-WORLD

Gold is often used in jewelry instead of iron. Name two intensive properties of gold that make it more suitable.

WEDNESDAY

WHAT IF?

What would happen if water had a very low specific heat capacity instead of a very high one?

THURSDAY

CALCULATION

A sample of aluminum has a mass of 54.0 g and a volume of 20.0 cm^3. Calculate its density. Is density an intensive or extensive property?

FRIDAY

CONCEPT CHECK

Explain the difference between an element and a compound. Give one example of each.

WEEK 6: STATES OF MATTER & PHASE CHANGES

MONDAY

VOCABULARY

Name the six common phase changes and identify each as endothermic or exothermic.

TUESDAY

REAL-WORLD

Why does sweating cool the body on a hot day? Which phase change is responsible?

WEDNESDAY

WHAT IF?

What would happen if solid water (ice) were denser than liquid water?

THURSDAY

CALCULATION

How much energy is required to melt 25.0 g of ice at 0 °C? (Heat of fusion of ice = 334 J/g)

FRIDAY

CONCEPT CHECK

Compare the arrangement and motion of particles in a solid, a liquid, and a gas.

WEEK 7: PHYSICAL & CHEMICAL CHANGES

MONDAY

VOCABULARY

Define physical change and chemical change. Give two examples of each.

TUESDAY

REAL-WORLD

A bicycle left outside develops rust over time. Is this a physical or chemical change? Explain your reasoning.

WEDNESDAY

WHAT IF?

What would happen if the rusting of iron were a physical change instead of a chemical change?

THURSDAY

CALCULATION

A 10.0 g sample of magnesium reacts completely with oxygen to form 16.6 g of magnesium oxide. What mass of oxygen reacted?

FRIDAY

CONCEPT CHECK

Explain how the Law of Conservation of Mass applies to a chemical reaction occurring in a closed container.

— SECTION —

ANSWER KEYS

Weeks 1–36 | 180 Daily Warm-Ups

All answers correspond to the student warm-up pages.

Use for quick reference during class review.

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ANSWER KEY — WEEK 1: INTRODUCTION TO CHEMISTRY

MONDAY

VOCABULARY

Define chemistry and list its five major branches.

ANSWER:
Chemistry is the study of matter, its properties, composition, and the changes it undergoes. The five branches are organic, inorganic, physical, analytical, and biochemistry.

TUESDAY

REAL-WORLD

A chef caramelizes sugar on top of a creme brulee. Is this a physical or chemical change? Explain your reasoning.

ANSWER:
Chemical change. Caramelization involves breaking and forming new chemical bonds, producing new substances with different properties (color, flavor, aroma) than the original sugar.

WEDNESDAY

WHAT IF?

What would happen if chemical reactions could not release energy (only absorb it)?

ANSWER:
Exothermic reactions like combustion, cellular respiration, and rusting would not occur. Most energy sources we rely on—fire, engines, even our own metabolism—would not function, making life as we know it impossible.

THURSDAY

CALCULATION

A chemist records two measurements: 3.45 g and 2.1 g. How many significant figures does each measurement have?

ANSWER:
3.45 g has 3 significant figures (all non-zero digits are significant); 2.1 g has 2 significant figures.

FRIDAY

CONCEPT CHECK

Explain the difference between pure chemistry and applied chemistry. Give one example of each.

ANSWER:
Pure chemistry seeks knowledge for its own sake (e.g., studying how electrons behave in atoms). Applied chemistry uses knowledge to solve practical problems (e.g., developing a new medication based on molecular structures).

ANSWER KEY — WEEK 2: SCIENTIFIC METHOD & EXPERIMENTATION

MONDAY

VOCABULARY

List the steps of the scientific method in the correct order.

ANSWER:
Observation → Question → Hypothesis → Experiment → Analyze Data → Conclusion → Communicate Results.

TUESDAY

REAL-WORLD

A gardener notices tomato plants grow taller with fertilizer. Design a controlled experiment to test this.

ANSWER:
Grow two groups of identical tomato plants under the same conditions (light, water, soil, temperature). Give one group fertilizer (experimental) and none to the other (control). Measure and compare heights over several weeks.

WEDNESDAY

WHAT IF?

What would happen if a scientist skipped the peer review process before publishing new results?

ANSWER:
Errors, biases, or fraudulent data could go undetected. Other scientists might build on faulty conclusions, wasting resources. In medicine, this could lead to harmful treatments being adopted.

THURSDAY

CALCULATION

A plant measures 12.3 cm on Day 1 and 15.8 cm on Day 7. What is the average daily growth rate?

ANSWER:
(15.8 cm – 12.3 cm) ÷ 7 days = 3.5 cm ÷ 7 days = 0.50 cm/day.

FRIDAY

CONCEPT CHECK

What is the difference between a hypothesis, a theory, and a scientific law?

ANSWER:
A hypothesis is a testable prediction. A theory is a well-supported, extensively tested explanation for many observations. A law describes a consistent pattern in nature (what happens) but does not explain why.