Science 8 Teacher Checklist

(Alberta Program of Studies, with Grade 9 Enrichment)

Teacher: _____ **Class:** _____ **Student:** _____ **Term:** _____

Scientific Inquiry Skills (Apply in All Units)

Strand	Skill / Outcome	Practice Example(s)	Done
Initiating & Planning	Ask testable questions; identify variables; make hypotheses.	"How does temperature affect dissolving rate?"; define variables clearly.	☐
Performing & Recording	Follow safe procedures; measure accurately; use microscopes and lab tools.	Focus microscope; measure 20 mL water; build hydraulic lift safely.	☐
Analyzing & Interpreting	Graph data; find trends; calculate formulas.	$d = m/v$; $p = F/A$; efficiency $= \frac{\text{output}}{\text{input}} \times 100$.	☐
Communication & Teamwork	Share results, drawings, ray diagrams; collaborate effectively.	Draw lens ray diagram with labels; group presentation.	☐
Attitudes & Safety	Show curiosity, persistence, stewardship, and safe lab habits.	Wear goggles; follow WHMIS symbols; dispose chemicals correctly.	☐

Unit A: Mix and Flow of Matter

Topic	Skill / Outcome	Practice Example(s)	Done
Substances and Solutions	Classify pure substances, mixtures, solutions, suspensions, colloids.	Identify salt water, muddy water, milk.	☐
Solubility	Investigate dissolving factors: temperature, agitation, particle size.	Hot vs cold water dissolving rate.	☐
Saturation	Interpret solubility curves; identify saturation points.	Plot solubility vs temperature.	☐
Viscosity	Compare viscosities; explain particle motion.	Compare oil, honey, water flow times.	☐
Density	Measure mass/volume; calculate $d = m/v$.	Mass 40 g, volume 20 cm^3, density 2 g/cm^3.	☐
Pressure & Buoyancy	Relate $p = F/A$; compare floating/sinking.	Tire pressure; boat buoyancy with saltwater.	☐
Compressibility	Compare compressibility of liquids and gases.	Syringe with air vs water.	☐
Technologies	Explain fluid-based systems and applications.	Solution mining, IV drips, pipelines, pumps.	☐

Unit B: Cells and Systems

Topic	Skill / Outcome	Practice Example(s)	Done
Microscopy	Identify parts; prepare wet mount; stain and draw cells.	Onion skin slide; 40x magnification.	☐
Cell Theory	State cell theory; compare unicellular vs multicellular.	Amoeba vs human.	☐
Cell Structures	Identify organelles and functions.	Nucleus, mitochondria, chloroplasts.	☐
Diffusion & Osmosis	Model movement across membranes.	Potato strip in saltwater.	☐
Human Systems	Describe digestive, respiratory, circulatory, excretory.	Pathway of oxygen in body.	☐
Interactions	Explain links between systems.	Increased breathing rate supports circulation during exercise.	☐
Medical Tech	Explore technologies and their impacts.	Pacemaker, dialysis, prosthetics.	☐

Unit C: Light and Optical Systems

Topic	Skill / Outcome	Practice Example(s)	Done
Nature of Light	Describe evidence for light behavior; transmission vs absorption.	Beam in dusty air; shadow formation.	☐
Reflection	Use ray model; measure and predict angles.	Angle in = 30°, angle out = 30°.	☐
Refraction	Investigate bending in different materials.	Straw in water appears bent.	☐
Lenses	Form images; predict size/location.	Convex lens producing real image.	☐
Vision	Compare eye and camera; corrections with lenses.	Iris = aperture; myopia fixed by concave lens.	☐
Optical Devices	Use microscopes, telescopes, glasses, binoculars.	Properly focus telescope on moon.	☐
Imaging Tech	Explore emerging technologies.	Infrared cameras; fibre optics.	☐

Unit D: Mechanical Systems

Topic	Skill / Outcome	Practice Example(s)	Done
Simple Machines	Identify levers, pulleys, gears, inclined planes, screws, wedges.	Identify 1st class lever in scissors.	☐
Gear Systems	Build/analyze gear trains; speed ratio.	Driver 8 teeth, driven 24 teeth → SR = 1/3.	☐
Work & Power	Calculate work $W = Fd$, power $P = W/t$.	Lift 50N object 2m = 100J.	☐
Efficiency	Compare input vs output; find % efficiency.	80J out / 100J in = 80%.	☐

Topic	Skill / Outcome	Practice Example(s)	Done
Hydraulics	Explain force in liquids; build/test system.	10N on 2cm^2 piston $\rightarrow$ 5N/cm^2.	☐
Pneumatics	Compare gas vs liquid systems.	Syringe with air vs water.	☐
Design & Impact	Evaluate devices; consider safety/environment.	Efficiency of car brakes; recycling impacts.	☐

Unit E: Freshwater and Saltwater Systems

Topic	Skill / Outcome	Practice Example(s)	Done
Water Distribution	Describe global/local water distribution.	Oceans, glaciers, groundwater, rivers.	☐
Water Quality	Test and interpret clarity, salinity, hardness, dissolved oxygen, pH.	Water sample test kit.	☐
Streams & Basins	Model slope/flow; erosion, transport, deposition.	Stream table experiment.	☐
Oceans	Identify ocean-basin features; relate currents to climate.	Gulf Stream, Labrador Current, El Nino.	☐
Glaciers	Describe evidence and factors affecting growth.	Moraine, retreating glacier.	☐
Aquatic Ecosystems	Identify adaptations; population change.	Salmon migration; algal bloom.	☐
Human Impacts	Analyze use, pollution, treatment, watershed management.	Wastewater treatment tiers; agriculture runoff.	☐

Grade 9 Science Enrichment (Preview)

Topic	Skill / Outcome	Practice Example(s)	Done
Chemistry	Write/interpret chemical formulas and reactions.	$2H_2 + O_2 \rightarrow 2H_2O$.	☐
Electricity	Build/analyze series and parallel circuits.	Measure current and voltage.	☐
Space Exploration	Describe technologies and challenges.	Rockets, satellites, telescopes.	☐
Environmental Systems	Explore population change, sustainability, climate impacts.	Predator-prey graphs; carbon cycle.	☐