8th Grade Science at a Glance

Chemistry

Properties of Matter

• physical property	
o luster	
o hardness	
o magnetism	
o others?	
• chemical property	
o flammability	
o pH	
o oxidation/rusting	
o other?	
• characteristic property	
o melting/freezing point	
o density—formulas/how to solve	
o others?	

Periodic Table

• atom	
• elements	
• symbol	
• atomic mass	
• atomic number	
• subatomic particles—neutron, protons, electrons (and their charges)	
• periodic table	
• group	
• period	
• metals	
• non-metals	
• metalloids	
• valence shell	
• valence electrons	
• electron cloud model	
• isotope	
• ion	
• reactivity	
• Noble gases	

8th Grade Science at a Glance

Bonding

• ionic	
• covalent	
• ionic characteristics	
• covalent characteristics	
• why they bond	
• conductivity	

Chemical Reactions

• law of conservation of mass	
• chemical formulas	
• molecules	
• chemical equations	
• reactants	
• products	
• balancing chemical equations	
• physical vs. chemical change	
• 4 ways to speed up reaction	○
	○
	○
	○
• 4 ways to tell if a chemical reaction occurred	○
	○
	○
	○
• endothermic	
• exothermic	

Diseases/Biotechnology

Pathogens

• 3 causes of disease	○
	○
	○
• prokaryotic cell	
• eukaryotic cell	
• DNA/RNA	
• unicellular	
• multicellular	

8th Grade Science at a Glance

• microorganism	
• microbiology	
• pathogen	
• examples of some infectious diseases and their pathogenic cause	
• treatment	
• prevention	
• virus	
o structure	
o reproduction	
o defense	
o treatment	
o benefits	
• bacteriophage	
• bacteria	
o structure	
o reproduction	
o defense	
o treatment	
o benefits	
• protozoa	
• fungi	
o structure	
o reproduction	
▪ sexual	
▪ asexual	
o harmful in addition to pathogenic how?	
• helminth	
o define	
o parasite-host relationship	
o example	
• vaccination	
• antibiotic	
• antibiotic resistance	
• antiviral	

8th Grade Science at a Glance

Spread of Disease

• transmission: direct vs. indirect	
• vector	
• vehicle	
• carrier	
• epidemiology	
• outbreak	
• epidemic	
• pandemic	
• aseptic technique	

Biotechnology

• biotechnology	
• genetic engineering	
• enzymes	
• selective breeding	
• sustainability	
• risks/benefits	
• career options	

Hydrology

Water Properties

• adhesion	
• cohesion	
• polarity	
• hydrogen bond	
• surface tension	
• capillary action	
• density of water	
• universal solvent	

Fresh Water

• hydrosphere	
• distribution	
• availability/percentage	
• importance	
• divide	
• drainage basin- which one do you live in?	
• groundwater	
• run-off	

8th Grade Science at a Glance

• water table	
• aquifer	
• permeable	
• impermeable	
• wells	
• springs	
• aquitard	

Salt Water

• salinity	
• density of salt water	
• 3 layers of water	o
	o
	o
• technology for research—sonar, satellites	
• submersibles	
• current	
• upwelling	
• downwelling	
• El Nino	
• intertidal zone	
• estuary	
o importance	
o characteristics	
• salt marsh, mangrove forest	
• kelp, coral reefs	
• plankton—phyto-, zoo-	
• nekton	
• benthos	
• zones—surface/deep	
• hydrothermal vents—life there? How?	
• adaptations—surface, intertidal, and deep sea organisms	

Water as a Resource

• Why is it a limited resource?	
• How is water used by humans?	
• conservation	
• Where does most of the O_2 come from?	

8th Grade Science at a Glance

• pollution	
• EPA	
• Clean Water Act	
• point source	
• non-point source	
• drought	
• problems in NC	
• plume	
• contaminant	

Water Quality

• dissolved oxygen—O_2/CO_2 cycle	
• nitrates/nitrites—nitrogen cycle	
• temperature	
• pH	
• eutrophication	
• turbidity	
• bioindicators	
• macroinvertebrates	

Populations and Ecosystems

• ecology/ecologist	
• ecosystem	
• biotic	
• abiotic	
• individual	
• population	
• community	
• niche	
• limiting factor	
• carrying capacity	
• density dependent/independent	
• interdependence	
• symbiosis	
o mutualism	
o commensalism	
o parasitism	
• predation	
• competition/cooperation/coexistence	

8th Grade Science at a Glance

• energy flow	
• role of the sun	
• photosynthesis	
o chloroplast	
• cellular respiration	
o mitochondria	
• consumers (carnivores, omnivores, predators, scavengers	
• decomposers	
• biodegradation	
• food chain	
• food web	
• energy pyramid	
• biomass pyramid	

Earth's Past and Evolution

Geologic Time Scale

• Eon, era, period, epoch	
• Precambrian	
• Cambrian through Quaternary (humans)	

Earth's Past

• fossils	
• original remains	
• index fossils	
• rock fossils	
• ice cores	
• tree rings	
• relative age	
• unconformity	
• Law of Superposition	
• absolute age	
• radioactive dating	
• half-life	
• parent-daughter atoms (isotopes)	

Plate Tectonics

• continental drift/theory of plate tectonics	
• Alfred Wegener	
• plate boundaries	

8th Grade Science at a Glance

• convergent	
• divergent	
• transform	
• impact of catastrophic events	

Evolution of Life

• evolution	
• Charles Darwin	
• natural selection	
• principles of natural selection	
o overproduction	
o variation	
o adaptation	
o selection	
• evidence of evolution by natural selection	
o fossil record	
o genetic info—most convincing	
o isolation→speciation	

Use of Natural Resources

• conservation	
• renewable resources	
• nonrenewable resources	
• depletion	
• conservation	
• energy transformation	
• fossil fuel	