

Botany



SCOPE + SEQUENCE

Gather 'Round
HOMESCHOOL



SCOPE + SEQUENCE

Teacher's Guide

SCIENCE

- What is botany?
- Why should you study botany?
 - plants create oxygen
 - plants are food
 - plants can help heal
 - plants are natural resources
- How are plants classified?
- Branches of science
 - Life science + biology**
 - ecology
 - botany
 - anatomy
 - zoology
 - genetics
 - Earth + space science**
 - meteorology
 - geology
 - astronomy
 - Physical science**
 - chemistry
 - physics
- Uses of botany
- What are herbivores, carnivores, + omnivores?
- The anatomy of a plant
 - Roots
 - Stem
 - Leaves
 - Flowers
 - Fruits
 - Seeds
- Similarities between plant + human anatomy
- How are things classified?
 - Kingdom
 - Phylum
 - Class
 - Order
 - Family
 - Genus
 - Species
- Plant name: genus, species: binomial nomenclature
- Plant press
- Tools of botany study
- Grow your own plant experiment
- Needs of plants
 - Sunlight
 - Soil
 - Air
 - Water
- Root systems
 - Fibrous root system
 - Taproot system
- Photosynthesis
 - Energy from the sun
 - Chlorophyll
 - Oxygen
 - Glucose
 - Water
 - Carbon dioxide
- Not all plants have stems
- Purpose of stems
- Xylem + phloem
- Internodes + nodes
- Woody + herbaceous stems
- Rings of tree trunks
- Tree bark
- Bryophytes
 - Moss
 - Liverwort
- Edible stems
 - Giant sequoia trees
 - Sunflowers
 - Heliotropism
 - Vines
 - How stems help us
 - Parts of a leaf
 - Blade
 - Apex
 - Margin
 - Veins
 - Midrib
 - Stem
 - Base
 - Petiole
 - Axillary bud
 - Types of conifers
 - Pine
 - Spruce
 - Fir
 - Larch
 - Cedar
 - Deciduous trees
 - Ash
 - Maple
 - Oak
 - Birch
 - Walnut
 - Edible leaves + nutrition
 - How leaves are helpful
 - Types of flowers
 - Monocot
 - Dicot
 - Regular (actinomorphic) + irregular (zygomorphic) plants
 - Annuals, biennials, + perennials

SCIENCE CONTINUED

- Flower anatomy
 - Stamen
 - Filament
 - Anther
 - Pistil
 - Stigma
 - Style
 - Ovary
 - Petal
 - Sepal
 - Pediceal
- Passion flower
- Lobster claw
- Bee orchid
- Protea pinwheel
- Star flower
- Bird of paradise
- Edible flowers
- Uses of flowers
- Types of fruit
- Fruit anatomy
- Noni fruit
- Miracle fruit
- Kiwano melon
- Jackfruit
- Durian
- Poisonous fruits
- Purpose + function of roots
- Symbiotic relationship
- Tree roots
- Adventitious roots
 - Aerial roots
 - Rhizomes
 - Corms
 - Tubers
 - Bulbs
- Root vegetables
- Vegetative propagation
- Gymnosperms
- Angiosperms
- Anatomy of seeds
- Seed coat
- Embryo
- Endosperm
- Plumule
- Radicle
- Hypocotyl
- Monocotyledons (monocots) + cotyledons (dicots)
- Seed dispersal
- Edible seeds
- Pollination
- Butterflies + moths
- Honeybees
 - Worker bees
 - Drones
 - Queen bee
- Declining populations of honeybees
- Propolis
- Honey
- Non-insect pollinators
- Cross-pollination
- Hardwoods + softwoods
- Tree cookies
- Maple trees
- How to make maple syrup
- Birch trees
- Eucalyptus trees
- Koalas
- Arbutus trees
- Baobab trees
- Wisteria
- Japanese maples
- Herbaceous plants
- Herbs + spices
- Herbs used in cooking
 - Cilantro
 - Basil
 - Oregano
 - Parsley
 - Mint
 - Dill
 - Thyme
 - Sage
 - Rosemary
 - Lavender
- Medicinal benefits of plants + herbs
- Aromatherapy + essential oils
 - Lavender
 - Oregano
 - Wintergreen
- Tinctures, teas, + tablets
- Echinacea
- Chamomile
- Peppermint
- Plants + modern medicine
- Beneficial herbs in vegetable gardens
 - Dill
 - Tarragon
 - Basil
- Garden pests: Aphids + cabbage loopers
- Ground cover
- Woolly thyme
- Brass buttons
- Lily of the valley
- Erosion
- Native vegetation
- Repotting plants
- Drought
- Cover crop uses
- Nitrogen + fertilizer
- Legumes
- Nodules
- Grasses
- Stolons + rhizomes
- Grains: wheat, barley, winter rye, + triticale
- Succulents
- Adaptations
- Crassulacean acid metabolism (CAM)
- Deserts
- Stomata
- Agave
- Aloes
- Cacti
- Prickly pear
- Giant quiver tree
- Endangered plants
- Sand dollar cactus
- Teddy bear cholla
- Vascular + non-vascular plants
- Mosses
- Rhizoids
- Spores
- Keystone species
- Sphagnum moss
- Peat bogs + peat moss
- Dung moss

SCIENCE CONTINUED

- Pleurococcus
- Beard moss
- Oak moss
- Spanish moss
- Irish moss
- Four layers of rainforests
 - Emergent layer
 - Canopy
 - Understory
 - Floor
- Ferns
- Fronds, leaflets, stems, + petioles
- Fern reproduction
- Gametophyte + sporophyte generations
- Tree ferns
- Fiddleheads + edible ferns
- Ladybugs
- Ladybug life cycle
- Taxonomy
- Plantae kingdom
- Fungi kingdom
- Hyphae + mycelium
- Decomposing
- Reproductive cycle of fungi
- Fungi + food
- Edible + dangerous mushrooms
- Types of mushrooms
 - Lion's mane
 - Entoloma hochstetteri
 - Enoki
 - Morels
 - Basket stinkhorn
 - Death cap mushroom
 - Anthraco-phyl-lum archeri
- Mold
- Penicillin
- Antibiotics
- Statins
- Algae
- Protista kingdom
- Seaweed
 - Kelp
 - Nori
- Cyanobacteria
- Water plants

- Pond edibles
- Rice + rice farming
- Pond edibles
- Watercress
- Cattails
- Water lilies
- Water chestnuts
- Carnivorous plants
- Flypaper plants: butterworts + sundews
- Pitcher plants: cobra plant + monkey cup
- Bladderwort
- Venus fly trap
- Poisonous plants
 - Water hemlock
 - Nightshade plant
 - Privet
 - Elderberry
 - Dieffenbachia
 - Philodendron
 - Mistletoe
- Stimulus
- Tropism
- Phototropism
- Heliotropism
- Gravity
- Positive + negative geotropism
- Hydrotropism
- Vines + tendrils
- Thigmotropism
- Nastic movements
- Mimosa pudica
- Maranta

SOCIAL STUDIES

- Carolus Linnaeus
- Sequoia National Park
- Biggest tree on Earth (General Sherman)
- Endemic
- Uses of wood
- Logging
- Conservation + exploitation
- Soil conservation
- Water conservation
- Forest conservation

HISTORY

- 1893 Supreme Court ruling classifying tomatoes for import + trade
- The Dust Bowl
- The Dirty Thirties + Great Depression
- Roaring Twenties
- 1929 stock market crash
- Charles Walker Cathcart
- Isaac Bayley Balfour
- Alexander Fleming + penicillin

GEOGRAPHY

- Sequoia National Park, California
- Southeast Asia
- West Africa
- South Florida
- Caribbean
- Central America
- Bolivia
- Ecuador
- Colombia
- Peru
- Great Britain
- South Africa
- South America
- China
- Fishlake National Forest, Utah
- Seychelles Islands
- Mediterranean region
- Tropical regions of the Americas
- Europe
- Canada
- United States
- Mexico
- British Columbia
- Australia
- Tasmania
- California
- Midwest US
- Southern great plains
- Canadian prairies
- Atlantic Ocean
- Madagascar
- Arabian Peninsula
- Sonoran Desert

GEOGRAPHY CONTINUED

- Arizona
- Texas
- Southwest US
- Scotland
- Ireland
- England
- New Zealand
- Arctic + Antarctic regions
- Oregon

LANGUAGE

- Latin + Greek roots of words

BIBLE PASSAGES

- John 15:1–11
- Genesis 1:11–13
- 1 Corinthians 12:12
- Ephesians 3:16–19
- Genesis 2:8–10, 15–17
- Adam + Eve
- Garden of Eden
- Colossians 3:23

BIBLE CONCEPTS

- God made all of creation
- God provides for our needs
- Body of Christ
- Stewardship + conservation

CAREERS + ETHICS

- What does a botanist do?
- Mycologist





SCOPE + SEQUENCE

Pre-Reader

SOCIAL STUDIES

- Import + export of fruits
- Caring for lawns
- Mistaken identity of plants + animals
- Work ethic

GEOGRAPHY

- China
- Ecuador
- Chile

SCIENCE

- Scientist + detective skills
- Fossils
- Label parts of a plant
- Sort woody + herbaceous stems
- Identify conifer + deciduous leaves
- Symmetry + flower patterns
- Roots experiment
- Match methods of seed dispersal
- Bee life cycle
- Design a garden
- Animal adaptations
- Beaver + healthy pond ecosystem
- Activation of yeast
- Yeast experiment
- Our response to the sun
- Circadian rhythms

BIBLE PASSAGES

- 2 Kings 22
- Josiah

ART

- Coloring
- Creating with nature
- Design your own carnivorous plant





SCOPE + SEQUENCE

Early Reader

LANGUAGE ARTS

- Match vocabulary words to definitions
- Botany Book
- Read + follow a recipe

WRITING

- Nature journaling

VOCABULARY

- Week 1: botany, biology, taproot, germination, climate, environment, absorb, extract
- Week 2: stamen, sepal, fruit, classify, convert, stabilizing, cone, seed pod
- Week 3: nectar, pollen, sap, bud, beneficial, medicinal, native, legume
- Week 4: spines, succulent, peat bog, decompose, spores, fronds, fungi, decomposing
- Week 5: habitat, algae, carnivorous, toxins, stimulus, tropism, diverse, advocate

SEATWORK

Week 1

- Copywork: John 15:1
- Spelling Rule: one-syllable words that begin with the /k/ sound
- Spelling List: kite, care, king, kid, cart, cape, keep, coal, cub, key
- Frequently Misspelled Words: came, made

Week 2

- Copywork: John 15:2a
- Spelling Rule: one-syllable words that end in the /k/ sound
- Spelling List: like, lick, pack, bike, truck, sick, rake, poke, brake, click
- Frequently Misspelled Words: look, have

Week 3

- Copywork: John 15:2b
- Spelling Rule: words containing the -ew spelling
- Spelling List: few, blew, pew, flew, stew, dew, chew, new, drew, grew
- Frequently Misspelled Words: want, has

Week 4

- Copywork: John 15:4a + 5a
- Spelling Rule: words containing the -ur spelling
- Spelling List: fur, blur, curl, surf, burn, hurt, turn, nurse, purse, church
- Frequently Misspelled Words: need, four

Week 5

- Copywork: John 15:5b
- Spelling Rule: words containing the /ing/ sound
- Spelling List: ring, sing, wing, ding, sling, bring, thing, fling, swing, string
- Frequently Misspelled Words: first, very

GEOGRAPHY

- Match fruits to their endemic locations on map
- Color the dust bowl area on map
- United States + Canada
- Match types of succulents to common location on world map

HISTORY

- Ways Indigenous Peoples used plants
- Charles Darwin
- The Great Hunger (Irish potato famine)
- 19th century log drivers

SCIENCE

- Cauliflower dissection
- Fossils
- Fingerprints
- Scientific Method
- Find + identify edible roots, stems, leaves, + fruit
- Match parts of a plant
- Determine age of a tree
- List uses for stems
- Identify + label woody + herbaceous stems
- Salicylic acid from willow trees
- Label parts of a leaf
- Match ways that leaves are helpful
- Needs + products of photosynthesis

- Locate + identify deciduous + conifer trees + leaves
- Label parts of a flower
- Identify regular + irregular flowers
- Evolution vs. creation
- Vegetables that are classified as fruit in botany
- Bananas
- Purposes of roots
- Match types of roots with examples
- Celery root experiment
- Label parts of a seed
- Match angiosperms + gymnosperms
- Match methods of seed dispersal
- Honey bee roles
- Hay fever + allergies
- Bee life cycle
- Eucalyptus trees + uses
- Identify purposes of herbs
- Design a garden
- Sense of smell + emotions
- Erosion experiment
- Appearance + special uses of agave + aloe
- Animal adaptations: camels, darkling beetles, + cactus wrens
- Identify features of moss
- Uses of beard moss, oak moss, + Irish moss
- Beavers + pond ecosystem
- Identify types of moss
- Medicinal uses of moss
- Label parts of a fern
- Ladybugs + ferns
- Life cycle of a ladybug
- Where fungus can be found
- Match types of fungi with characteristics
- Yeast experiment
- Benefits of fungi
- Match water plants to their kingdoms
- Invasive species

- Carnivorous vs. poisonous plants
- Dangers + benefits of poisonous plants
- Match plants' responses to stimuli
- Our response to the sun
- Circadian rhythms

SOCIAL STUDIES

- Skills of scientists + detectives
- Johnny Appleseed
- Create something new using bark, stems, + twigs
- Trade, import, + export of fruits
- Identify where fruits came from + find location on a map or globe
- Forest fires
- Declining bee population
- Logging industry
- Caring for lawns
- Cacti conservation
- Generations
- Mistaken identity of plants + animals
- Identity fraud
- Addictive plants + medicine
- Economic stimulus
- Create your own stimulus package for your home
- How you can help with conservation
- Work ethic

BIBLE PASSAGES

- 1 Corinthians 12
- Genesis 2:7
- Colossians 1:16–18
- Genesis 1:12, 21, + 25
- John 15:5, 10
- Galatians 5:22–23
- Matthew 6:26
- Jeremiah 29:11
- Psalm 139:13

- Galatians 6:2
- 2 Kings 22
- Josiah
- Isaiah 61:3
- Colossians 3:23

BIBLICAL CONCEPTS

- Body of Christ
- Gifts of the Spirit
- Abiding in Jesus
- Fruits of the Spirit
- Pray for people walking through hard times
- God's plans
- Beauty for ashes
- Hymn study: "Turn Your Eyes Upon Jesus"

ART

- Painting
- Sketching
- Watercolor
- Illustrating
- Make your own flower press
- Sketch or paint flowers
- Collage
- Pinecone painting
- Leaf rubbing
- Painting with chlorophyll
- Paint a conifer
- Paint an herb
- Paint a succulent
- Design a house
- Design your own carnivorous plant

HOME ECONOMICS

- Make a salad
- Create your own salad recipe
- Follow a recipe to make mashed potatoes
- Follow a recipe to make sushi

CAREERS + ETHICS

- Jobs that botanists do



SCOPE + SEQUENCE

Early Elementary

LANGUAGE ARTS

- Botany Book

WRITING

- Nature journaling
- Write a prayer

VOCABULARY

- Week 1: biology, origin, germination, cross-pollination, environment, temperate, extract, glucose
- Week 2: sepal, pistil, classify, endemic, stabilizing, cultivate, seed pod, germination
- Week 3: pollen, cocoon, bud, pulp, medicinal, cuisine, legume, erosion
- Week 4: succulent, aloe vera, decompose, sphagnum moss, fronds, sori, decomposing, penicillin
- Week 5: algae, kelp, toxins, flypaper plant, tropism, phototropism, advocate, disconnected

SEATWORK

Week 1

- Copywork: John 15:1
- Spelling Rule: words that end in *-fle*
- Spelling List: trifle, stifle, baffle, raffle, ruffle, snuffle, duffle, truffle, scuffle, shuffle

- Frequently Misspelled Words: before, clean

Week 2

- Copywork: John 15:2a
- Spelling Rule: words that end in *-gle*
- Spelling List: single, tingle, wiggle, giggle, juggle, mingle, jungle, angle, gurgle, snuggle
- Frequently Misspelled Words: carry, small

Week 3

- Copywork: John 15:2b
- Spelling Rule: words that end in *-dle*
- Spelling List: needle, ladle, doodle, noodle, riddle, fiddle, paddle, middle, cradle, poodle
- Frequently Misspelled Words: would, drink

Week 4

- Copywork: John 15:4a + 5a
- Spelling Rule: words that end in *-ble*
- Spelling List: able, Bible, table, cable, bubble, wobble, nibble, double, trouble, scribble
- Frequently Misspelled Words: eyes, shoe

Week 5

- Copywork: John 15:5b
- Spelling Rule: words that end in *-cle*
- Spelling List: circle, cycle, uncle, icicle, miracle, article, particle, vehicle, obstacle, tentacle

- Frequently Misspelled Words: grow, once

GEOGRAPHY

- Match fruits to their endemic locations on map
- Color the dust bowl area on map
- Match types of succulents to common location on world map

HISTORY

- Ways Indigenous Peoples used plants
- Charles Darwin
- The Great Hunger (Irish potato famine)
- 19th century log drivers

SCIENCE

- Match branches of science with what they study
- Cauliflower dissection
- Living things breathe
- Lungs
- Fossils
- Fingerprints
- Identify edible roots, stems, leaves, + fruit
- List basic needs of plants
- Label parts of a plant
- Determine age of a tree
- Uses of woody + herbaceous stems
- Identify woody + herbaceous stems
- Salicylic acid from willow trees

- Label the parts of a leaf
- Match plants to their benefits
- Needs + products of photosynthesis
- Identify deciduous + conifer trees + leaves
- Label parts of a flower
- Identify regular + irregular flowers
- Evolution vs. creation
- Vegetables that are classified as fruit in botany
- Bananas
- Label types of roots
- Celery root experiment
- Make a prediction
- Label parts of a seed
- Match methods of seed dispersal
- Roles of honey bees
- Hay fever + allergies
- Label stages of bee life cycle
- Identify + label arbutus, baobab, + wisteria tree
- Eucalyptus trees + uses
- Design a garden
- Scents of herbs
- Erosion experiment
- Appearance, native area, + special uses of agave + aloe
- Animal adaptations: camels, darkling beetles, + cactus wrens
- Defining features of moss
- Uses of beard moss, oak moss, + Irish moss
- Beavers + pond ecosystem
- Identify types of moss
- Medicinal uses of moss
- Label parts of a fern
- Ladybugs + ferns
- Life cycle of a ladybug
- Where fungus can be found
- Match types of fungi with characteristics
- Yeast experiment
- Benefits of fungi
- Sort water plants in Plantae + Protista kingdoms

- Invasive species
- Identify carnivorous + poisonous plants
- Dangers + benefits of poisonous plants
- Match tropism to plant's response + label stimuli
- Our response to the sun
- Circadian rhythms

SOCIAL STUDIES

- Skills of scientists + detectives
- Johnny Appleseed
- Create something new using bark, stems, + twigs
- Trade, import, + export of fruits
- Forest fires
- Declining bee population
- Logging industry
- Smells + emotions
- Caring for lawns
- Cacti conservation
- Generations
- Mistaken identity of plants + animals
- Identity fraud
- Addictive plants + medicine
- Economic stimulus
- Create your own stimulus package for your home
- How you can help with conservation
- How you can conserve water in your home
- Work ethic

BIBLE PASSAGES

- 1 Corinthians 12
- Genesis 2:7
- Colossians 1:16–18
- Genesis 1:12, 21, + 25
- John 15:5, 10
- Galatians 5:22–23
- Matthew 6:26
- Jeremiah 29:11
- Psalm 139:13

- Galatians 6:2
- Isaiah 61:3
- Genesis 2:15

BIBLICAL CONCEPTS

- Gifts of the Spirit
- Abiding in Jesus
- Fruits of the Spirit
- Pray for people walking through hard times
- God's plans
- Beauty for ashes
- Hymn study: "Turn Your Eyes Upon Jesus"
- Working for the Lord

ART

- Sketching
- Painting
- Illustrating
- Watercolor
- Sketch or paint a birch tree
- Make your own flower press
- Pinecone painting
- Leaf rubbing
- Painting with chlorophyll
- Paint a conifer
- Paint an herb
- Paint a succulent
- Design a house
- Design your own carnivorous plant
- Draw or paint a picture showing tropism

HOME ECONOMICS

- Make a salad
- Create your own salad recipe
- Follow a recipe to make mashed potatoes
- Write your own root vegetable recipe
- Follow a recipe to make sushi

CAREERS + ETHICS

- Jobs that botanists do



SCOPE + SEQUENCE

Upper Elementary

LANGUAGE ARTS

- Botany book
- Conduct an interview
- Read + follow a recipe
- Research

WRITING

- Nature journaling
- Write prayers
- Write about plants your family uses
- Write a recipe
- Write about a time when a smell took you back to a special memory

VOCABULARY

- Week 1: origin, taxonomy, cross-pollination, ecology, temperate, biennial, glucose, chloroplasts
- Week 2: pistil, pedicel, endemic, formidable, cultivate, symbiotic, germination, gymnosperm
- Week 3: cocoon, proboscis, pulp, lumberjack, cuisine, aromatherapist, erosion, drought
- Week 4: aloe vera, economy, sphagnum moss, keystone species, sori, fiddleheads, penicillin, mycologist
- Week 5: kelp, alga, flypaper plant, poisonous, phototropism, nastic movement, disconnected, stewardship

SEATWORK

Week 1

- Copywork: John 15:1–2a
- Spelling Rule: irregular plural words that change the ending *f* or *fe* to *ve* before adding the *s* and exceptions to the rule
- Spelling List: wife—wives, knife—knives, elf—elves, calf—calves, leaf—leaves, half—halves, shelf—shelves, thief—thieves, roof—roofs, proof—proofs
- Frequently Misspelled Words: awkward, temperature

Week 2

- Copywork: John 15:2b–3
- Spelling Rule: irregular plurals ending in *o*
- Spelling List: heroes, potatoes, tomatoes, echoes, torpedoes, videos, studios, radios, pianos, photos
- Frequently Misspelled Words: suggested, thought

Week 3

- Copywork: John 15:4
- Spelling Rule: irregular plural nouns that make significant changes to the vowels or the entire word
- Spelling List: foot—feet, tooth—teeth, man—men, woman—women, goose—geese, mouse—mice, die—dice, ox—oxen, child—children, person—people

- Frequently Misspelled Words: difference, although

Week 4

- Copywork: John 15:5
- Spelling Rule: irregular plural nouns that do not change when made plural
- Spelling List: sheep, fish, deer, moose, swine, bison, shrimp, trout, series, aircraft
- Frequently Misspelled Words: adjective, notice

Week 5

- Copywork: John 15:6
- Spelling Rule: irregular plural nouns that have unusual vowel changes to make them plural
- Spelling List: cactus—cacti, fungus—fungi, alumnus—alumni, radius—radii, crisis—crises, thesis—theses, analysis—analyses, phenomenon—phenomena, bacterium—bacteria, curriculum—curricula
- Frequently Misspelled Words: schedule

GEOGRAPHY

- Match fruits to their endemic locations on map
- Identify where fruit came from + label on world map
- Color the dust bowl area on map
- Label where types of succulents are found on map

- Label US states + Canadian provinces affected by the dust bowl

HISTORY

- Ways Indigenous Peoples used plants
- Charles Darwin
- The Great Hunger (Irish potato famine)
- 19th century log drivers
- The Great Depression: major event + other contributing events
- List 3 effects of the Great Depression on people

SCIENCE

- List types of Life Science, Earth + Space Science, Physical Science
- Experiment: how a leaf breathes
- Scientific method
- Create an edible model of lungs
- Animal + plant impressions
- Fingerprints
- Find + identify edible roots, stems, leaves, + fruit
- List basic plant needs
- Label parts of a plant
- Determine age of a tree
- List a unique stem + describe a defining feature
- List uses + examples of woody + herbaceous stems
- Identify woody + herbaceous stems
- Willow tree + salicylic acid
- Make observations about plants
- Label parts of a leaf
- List a difference between deciduous + coniferous leaves
- List edible leaves + health benefits
- Describe health benefits of

houseplants

- Needs + products of plants
- Label steps of photosynthesis
- Identify deciduous + conifer leaves + trees
- List ways to distinguish between deciduous + conifer trees
- Label anatomy of a flower
- List unique flowers + distinguishing features
- List edible use for flowers + example
- Label flowers with bilateral + radial symmetry + list examples in nature
- Evolution vs. creation
- List classifications of fruit
- List vegetables that are classified as fruit in botany
- Bananas
- Label types of roots + plants
- List examples of types of roots
- Celery root experiment
- Making a prediction
- Label a seed diagram
- List + define main types of seeds
- List interesting facts about seeds
- Make a diorama or visual display to show methods of seed dispersal
- Male vs. female honey bees
- Draw + label stages of bee life cycle
- Hay fever + allergies
- Roles of bees
- Maple trees + tree tapping
- Eucalyptus trees + uses
- Label herbs + list their medicinal uses
- Design a garden
- Scents of herbs
- List a unique cover crop + interesting fact
- Importance of cover crops

- Erosion experiment
- List special features of cacti
- Agave + aloe: appearance, native areas, special uses, + interesting facts
- List interesting facts about sand dollar cactus, giant quiver tree, + vahondranda
- Animal adaptations: camels, darkling beetles, + cactus wrens
- List defining features of moss
- Sphagnum moss + uses
- Write interesting facts about pleurococcus, beard moss, oak moss, + Irish moss
- Keystone species: beaver + bee
- Identifying types of moss
- Medicinal moss
- Ferns + ladybugs in the garden
- Label layers of a rainforest
- Describe why ferns grow well in a rainforest
- Life cycle of a ladybug
- Ladybug food + how they help plants thrive
- Where fungus can be found
- List types of fungi + interesting facts
- Yeast experiment
- List plants that belong to Plantae kingdom
- List non-plants that belong to Protista kingdom
- Describe how invasive species could affect plants + animals in ecosystems
- List + describe carnivorous + poisonous plants
- Dangers + benefits of poisonous plants
- Research medicinal uses of foxglove

SOCIAL STUDIES

- List skills of scientists + detectives
- Johnny Appleseed
- Trade, import, + export of fruits
- Forest fires
- Positive outcomes of forest fires
- Declining bee population
- Logging industry
- Smells + emotions
- Caring for lawns
- Cacti conservation
- Generations + characteristics
- Identify generations of yourself, your parents + grandparents
- Mistaken identity of plants + animals
- Identity fraud
- Addictive plants + medicine
- Label + describe types of tropism
- Our response to the sun
- Circadian rhythms
- Economic stimulus
- List areas of conservation + examples
- How you can help with conservation
- Your responsibility in conservation
- Describe ways you could conserve water

BIBLE PASSAGES

- 1 Corinthians 12:1–11
- Genesis 2:7
- Colossians 1:16–18
- Genesis 1:12, 21, 25
- John 15:5, 10
- Galatians 5:22–23
- Matthew 6:26
- Jeremiah 29:11
- Psalm 139:13
- Galatians 6:2

- 2 Kings 22
- Story of Josiah
- Isaiah 61:3
- Genesis 2:15

BIBLICAL CONCEPTS

- Gifts of the Spirit
- Prayer
- God is the creator of all things
- Abiding in Jesus
- Fruits of the Spirit
- Pray for people experiencing hardships
- God's plans
- Beauty for ashes
- Hymn study: "Turn Your Eyes Upon Jesus"
- Working for the Lord

ART

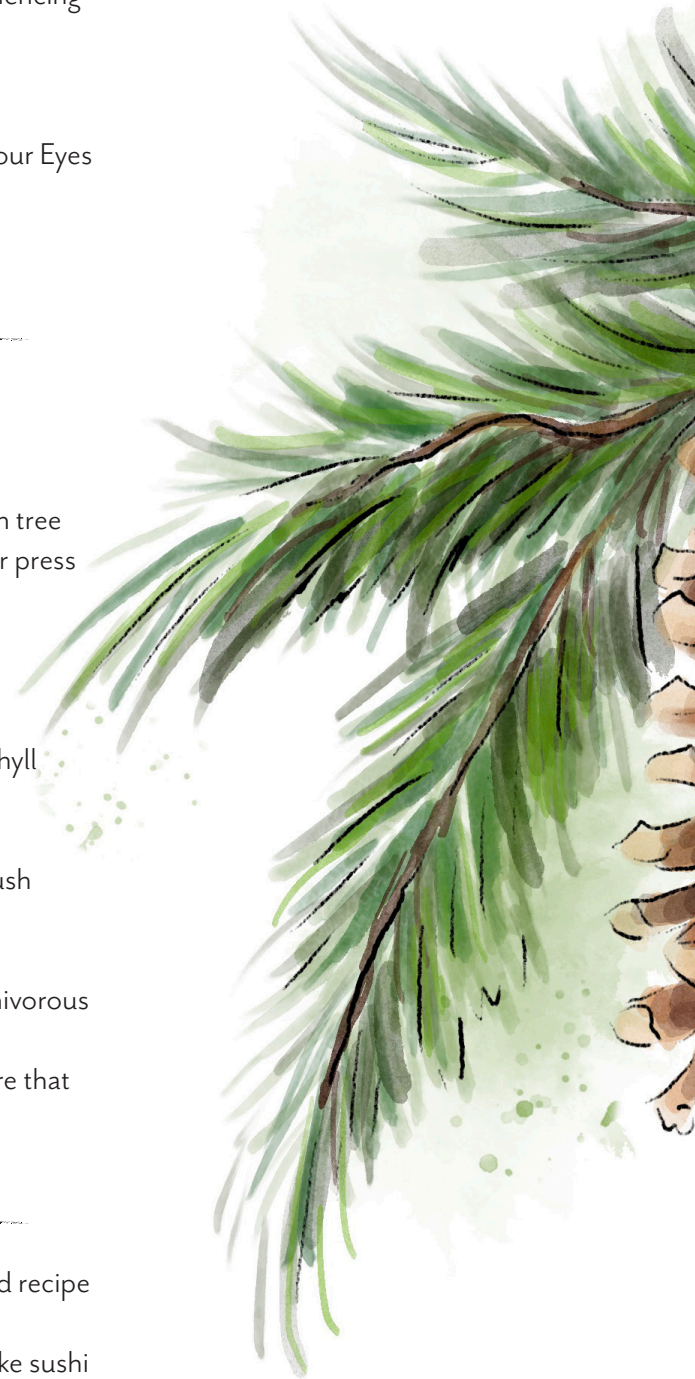
- Illustrating
- Painting
- Sketching
- Watercolor
- Sketch or paint a birch tree
- Make your own flower press
- Collage
- Creating with nature
 - Pinecone painting
 - Leaf rubbing
 - Painting with chlorophyll
 - Painting a conifer
- Paint an herb
- Make a grass paintbrush
- Paint a succulent
- Design a house
- Design your own carnivorous plant
- Draw or paint a picture that shows tropism

HOME ECONOMICS

- Make a salad
- Create your own salad recipe
- Create a menu
- Follow a recipe to make sushi

CAREERS + ETHICS

- Jobs that botanists do





SCOPE + SEQUENCE

Middle School

LANGUAGE ARTS

- Botany book
- Venn diagram
- Research
- Conduct an interview
- Graphic organizers
- Give a presentation

WRITING

- Write about benefits of forest fires
- Note taking
- Write a recipe
- Make a grocery list
- Write about a time you didn't have good work ethic

VOCABULARY

- Week 1: taxonomy, sentinel, ecology, photosynthesis, biennial, herbaceous, chloroplasts, stomata
- Week 2: monocot, dicot, formidable, aggregate, symbiotic, adventitious, gymnosperm, angiosperm
- Week 3: proboscis, propagate, lumberjack, softwood, aromatherapist, volatile, drought, stolon
- Week 4: economy, semi-arid, keystone species, lichen, fiddleheads, biodiversity, hyphae, mycologist
- Week 5: alga, umami, poisonous, fen, nastic

movement, thigmotropism, stewardship, conservation

SEATWORK

Week 1

- Copywork: John 15:1–2
- Spelling List: balance, decide, easily, generally, identity, marriage, naturally, occasion, soldier, temperature

Week 2

- Copywork: John 15:3–4
- Spelling List: accommodate, achieve, basically, describe, develop, guidance, imitation, mathematics, medicine, professional

Week 3

- Copywork: John 15:5
- Spelling List: across, advertise, minute, mysterious, often, prefer, proof, psychology, quarter, speech

Week 4

- Copywork: John 15:6
- Spelling List: because, first, happened, later, once, stopping, strength, though, toward, write

Week 5

- Copywork: John 15:7–8
- Spelling List: before, brought, forty, house, interesting, little, our, succeed, tires, use

GEOGRAPHY

- Label the states + provinces affected by the dust bowl

HISTORY

- List plants used by Indigenous Peoples + how they were prepared
- Charles Darwin
- The Great Hunger (Irish potato famine)
- Research the Irish potato famine
- Research 19th century log drivers
- Research + compare + contrast major droughts in history
- Describe what happened during the Great Depression
- Effect of the Great Depression
- Describe Alexander Fleming's experiment + medical discovery

SCIENCE

- Explain how + why taxonomy is used
- List reasons we study botany
- Describe similarities between human + plant anatomy
- Research sub-disciplines of each branch of science
- Plant respiration
- Plant impression + compression fossils
- List purpose of roots, stems, leaves, + fruit
- Label parts of a plant + root system

SCIENCE CONTINUED

- Describe functions of xylem + phloem
- Describe how to determine the age of a woody stem
- List unique stems + describe defining features
- List historical + present uses for stems
- Define woody + herbaceous stems
- Describe cambium + what it does inside a tree
- List plants with herbaceous stems
- List special feature of woody stems
- List example of plant without a stem
- Research how stems are used around the world
- Research + write a recipe for a home remedy using plant products
- Willow tree + salicylic acid
- Make observations about plants
- Describe differences between deciduous + coniferous leaves
- Sketch + label parts of a leaf
- List health benefits of edible leaves
- Plant needs + products
- Describe steps of photosynthesis
- Find examples of deciduous + coniferous trees
- Identifying trees
- Sketch + label flower to show its anatomy
- Edible uses for flowers + examples
- List unique flowers + distinguishing features
- Define + list examples of radial + bilateral symmetry
- Evolution vs. creation
- Research Darwin's theory of evolution
- List the classifications of fruit + examples
- List vegetables that are classified as fruit in botany
- List fruits from around the world + their endemic locations
- Research how bananas are grown + reproduce
- Describe functions + purposes of plant roots
- List types of adventitious roots + examples
- Define relationship between roots + microbes
- Potato experiment
- Sketch + label diagram of a seed
- List main types of seeds + examples
- Make a diorama or visual display to show methods of seed dispersal
- Differences + expectations between male + female bees
- Hay fever + allergies
- Research common allergies, symptoms, + treatments
- Draw + label stages of bee life cycle
- Lumber mills + pulp mills
- Describe debate surrounding logging industry
- List unique trees + interesting facts
- Process of making maple syrup
- Uses of eucalyptus
- Research koalas: appearance, habitat, diet, + interesting facts
- List medicinal herbs + uses
- Describe uses for herbs in traditional + modern medicine
- Gardening tricks
- Design a garden
- Research companion planting
- Research smell + memory
- Adaptations of succulent photosynthesis
- Agave + aloe: appearance, native areas, special uses, + interesting facts
- Animal adaptations: camel, darkling beetle, desert toad, + cactus wren
- List reasons ground cover is important
- Describe unique cover crops + identifying features
- List defining features of moss
- Uses of sphagnum moss
- Pleurococcus, bear moss, oak moss, + Irish moss
- Research keystone species, contributions, + their importance to ecosystems
- Identify types of moss
- Research medicinal benefits of moss
- Describe reproductive process of ferns
- Describe features of a fern
- Label + describe rainforest layers
- Draw + describe stages of ladybug life cycle
- Sketch + label a fungus diagram
- Yeast experiment
- Uses + benefits of fungi
- Research forest fires + morel mushrooms
- Describe + define seaweed
- List common types of seaweed
- List edible water plants + unique features
- Describe rice farming
- Research invasive species: alligator weed, flowering rush, + yellow iris
- Carnivorous vs. poisonous plants

SCIENCE CONTINUED

- Describe functions of a pitcher plant + venus fly trap
- Dangers + benefits of poisonous plants
- *Nepenthes hemsleyana* + bats
- *Nepenthes ampullaria* + frogs
- Describe tropism + relationship to sun, gravity, + water
- List nastic plants + special features
- How thigmotropism benefits plant health
- Our response to the sun
- Circadian rhythms
- List conservation areas + examples
- Scientific method

SOCIAL STUDIES

- Compare + contrast scientist + detective
- Johnny Appleseed (John Chapman)
- Trade, import, + export of fruits
- Research kinds of fruit imported by your country
- Research benefits of forest fires
- Declining bee population
- Caring for lawns
- Cacti conservation
- Arizona Law 3-932
- Generations + characteristics
- Identify generations of yourself + your parents
- Mistaken identity of plants + animals
- Identity fraud
- Addictive plants + commonly abused substances
- Economic stimulus
- How you can help with conservation
- Your responsibility in

conservation

- List ways you can conserve water at home
- Research California's water conservation efforts
- Work ethic
- List ways you can show good work ethic

BIBLE PASSAGES

- Colossians 1:18
- Romans 12:3-8
- 1 Corinthians 12
- Genesis 2:7
- Romans 1:18-20
- Colossians 1:16-18
- John 15
- Psalm 139:13-16
- Matthew 10:28-31
- 2 Kings 22
- Josiah
- Isaiah 61:3
- Genesis 27:1-38

BIBLICAL CONCEPTS

- Spiritual gifts
- God is the creator
- Abiding in Jesus
- God's plans for your life
- Beauty for ashes
- Hymn study: "Turn Your Eyes Upon Jesus"
- Working for the Lord

ART

- Illustrating
- Painting
- Sketching
- Watercolor
- Sketch or paint a birch tree
- Make your own flower press
- Collage
- Creating with nature
- Pinecone painting
- Draw or paint a window scene
- Draw or paint a unique tree
- Paint an herb
- Paint a succulent

- Design your own carnivorous plant
- Draw or paint a picture that shows tropism
- Art mediums: oil paint, acrylic paint, watercolor, colored pencils, + pastels

HOME ECONOMICS

- Make a salad
- Make your own recipe for salad
- Cooking with roots
- Make a meal plan
- Follow a recipe to make sushi

CAREERS + ETHICS

- Careers in different branches of science





SCOPE + SEQUENCE

High School

LANGUAGE ARTS

- List synonyms + antonyms
- Research
- Botany book
- Read + write recipes

WRITING

- Write recipes
- Write a grocery list

VOCABULARY

- Week 1: sentinel, classification, photosynthesis, xylem, herbaceous, bryophytes, stomata, gymnosperm
- Week 2: actinomorphic, zygomorphic, aggregate, exotic, adventitious, rhizomes, angiosperm, endosperm
- Week 3: propagate, propolis, softwood, hardwood, volatile, tincture, stolon, nodule
- Week 4: semi-arid, biofuel, lichen, rhizoid, biodiversity, petioles, hyphae, mycelium
- Week 5: umami, herbicides, fen, pitcher plant, thigmotropism, heliotropism, conservation, exploit

SEATWORK

Week 1

- Copywork: John 15:1–2
- Spelling List: absent, bachelor, cereal, emperor, fortunate,

gardener, knock, misspell, quizzes, visitor

Week 2

- Copywork: John 15:3–4
- Spelling List: acceptable, bargain, capital, entirely, forego, genius knit, miscellaneous, right, ukulele

Week 3

- Copywork: John 15:5–6
- Spelling List: acclaim, between, carriage, engineer, forehead, governor, kitchen, miniature, ridiculous, unique

Week 4

- Copywork: John 15:7–9
- Spelling List: accuse, bite, career, envelope, fallacy, guarantee, kindergarten, million, quarrelling, voice

Week 5

- Copywork: John 15:10–11
- Spelling List: advantageous, bottle, camouflage, equivalent, facility, guidance, loyal, might, rough, usually

GEOGRAPHY

- Label the states + provinces affected by the dust bowl

HISTORY

- Research plants used by Indigenous Peoples
- Charles Darwin

- The Great Hunger (Irish potato famine)
- Research the potato famine
- Research 19th century log drivers
- Research to compare + contrast droughts in history 1930s Dust Bowl Northern Great Plains Drought Syrian Drought Australia's Millennium Drought
- Research causes + effects of the Great Depression

SCIENCE

- List reasons we study botany
- Describe similarities between human + plant anatomy
- Research sub-disciplines of branches of science
- Plant respiration
- Fossilization of plants
- Purpose of roots, stems, leaves, + fruit
- Describe the process of photosynthesis
- Sketch + label plant with a tap root
- Sketch + label plant with a fibrous root system
- Describe functions of xylem + phloem
- Describe process for identifying age of a woody stem

SCIENCE CONTINUED

- Unique stems + defining features
- Pros + cons of woody + herbaceous stems in flower arranging, fuel, + landscaping
- Explain the difference between perennial + annual
- Plants without stems
- Heliotropism
- Research + write a recipe for a home remedy using plant products
- Deciduous vs. coniferous leaves
- Edible + helpful leaves
- Sketch + label parts of a leaf
- Describe the steps of photosynthesis
- Research + write the chemistry equation for photosynthesis
- Identify deciduous + coniferous leaves
- Research identifying trees in North America
- Sketch + label anatomy of a flower
- List edible uses for flowers + examples
- Define radial + bilateral symmetry
- Flowers with radial + bilateral symmetry
- Evolution vs. creation
- List classifications of fruit
- List vegetables classified as fruit in botany
- Research how bananas are grown + reproduce
- Root functions
- List, describe, + give examples of types of roots
- Describe relationship between roots + microbes
- Potato experiment
- Sketch + label a seed diagram
- List + define the main types of seeds + give examples
- Make a visual representation to show how seeds are dispersed
- List examples of seed dispersal by wind, water, animals + people in your area
- Hay fever + allergies
- Research common allergies, symptoms, + treatments
- Research the link between an allergen + your immune system
- Describe process of making maple syrup
- Eucalyptus trees + uses
- Research koalas
- Herbs in traditional + modern medicine
- List medicinal herbs + uses
- Design a garden
- Research companion planting
- Research the connection between smell + memory
- Succulents: adaptation + photosynthesis
- Agave + aloe: appearance, native areas, special uses, + interesting facts
- Research animals with special adaptations for living in dry environments
- Similarities between adaptation + evolution
- Research + compare bees + African elephants as keystone species
- Identifying types of moss
- Medicinal uses of moss
- Label + describe layers of a rainforest
- Research, draw, + label ladybug life cycle
- Sketch + label diagram of a fungus
- Describe fungus root + reproductive systems
- Research yeast
- List uses of fungi in nature, food, + medicine
- Research morel mushrooms
- Research invasive species: alligator weed, water lettuce, flower rush, yellow iris, + canary grass
- Research dangers of consuming puffer fish
- Define + describe carnivorous plants
- List poisonous plants + unique features
- Dangers + benefits of poisonous plants
- Research pros + cons of using synthetic over herbal medications
- Research Nepenthes hemsleyana
- Research Nepenthes ampullaria
- Our response to the sun
- Circadian rhythms

SOCIAL STUDIES

- Compare + contrast skills of scientists + detectives
- Johnny Appleseed (John Chapman)
- Trade, import, + export of fruit
- Research fruit imported by your country
- Research the Banana Wars
- Research benefits + dangers of forest fires
- Fighting forest fires
- Controlled burns
- Declining bee population
- Colony collapse disorder
- Importance of bees
- How we can protect + grow bee population
- Habitat destruction
- Draw + describe stages of bee life cycle

SOCIAL STUDIES CONTINUED

- Logging industry
- Caring for lawns
- Cacti conservation
- Arizona Law 3-932
- Generations + characteristics
- Identify generations of yourself + your parents
- Mistaken identity in plants + animals
- Identity fraud
- Addictive plants + commonly abused substances
- Financial stimulus + government assistance
- Research + compare your country's response to worsening economy during the pandemic with another country's response
- List areas of conservation
- Your responsibility in conservation
- List ways you can conserve water
- Research California's water conservation efforts
- Work ethic
- Compare good work ethic + bad work ethic

BIBLE PASSAGES

- Colossians 1:18
- Romans 12:3-8
- Ephesians 4:1-7
- 1 Corinthians 12
- Genesis 2:7
- Colossians 1:16-18
- Romans 1:18-20
- John 15
- Galatians 5:22-23
- Psalm 139
- Matthew 10:28-31
- 2 Kings 22
- Josiah
- Luke 23:32-43
- Isaiah 61:3

- Genesis 27:1-38
- Jacob + Esau
- Matthew 14:22-33

BIBLICAL CONCEPTS

- Spiritual gifts
- Abiding in Jesus
- Fruit of the Spirit
- God's plans
- Nothing is too big for God
- Beauty for ashes
- Hymn study: "Turn Your Eyes Upon Jesus"

ART

- Botany book
- Sketch or paint a birch tree
- Illustrating
- Watercolor
- Painting
- Sketching
- Make your own flower press
- Creating with nature
 - Pinecone painting
 - Draw or paint a window scene
 - Draw or paint a unique tree
- Paint an herb
- Art mediums: oil paint, acrylic paint, watercolor, colored pencils, + pastels
- Paint a succulent
- Design your own carnivorous plant

HOME ECONOMICS

- Make a salad
- Make your own recipe for salad
- Cook root vegetables in various ways
- Compare flavors of raw vegetables + cooked vegetables
- Follow a recipe to make sushi

