

CONCEPT DIAGRAM

Key Words

Concept

Overall Concept

Always

Sometimes

Never

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Examples

Nonexamples

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Definition

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# CONCEPT DIAGRAM

organism

living thing

**Always**

**Sometimes**

**Never**

can move

can reproduce

uses energy

is made of cell(s)

adjusts to the environment

is little

is complex

is multi-celled

has lungs

**Examples**

plant

human

animal

protist

**Nonexamples**

chair

computer

stone

An organism is a living thing made of cell(s) that always can move, can reproduce, uses energy, and adjusts to the environment.

# CONCEPT DIAGRAM

heterogeneous mixture

mixtures

## Always

contains 2 or more

substances

contains unevenly

distributed substances

will scatter light

## Sometimes

has large or visible

particles that settle

over time

## Never

contains chemically

joined substances

## Examples

muddy water

cement

fog

milk

## Nonexamples

syrup

vinegar

pop

A heterogeneous mixture is a mixture that always contains 2 or more unevenly distributed substances that will scatter light.

# CONCEPT DIAGRAM

mollusks

invertebrates

## Always

have a foot  
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have a mantle  
-----  
have bilateral symmetry  
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have a coelom  
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## Sometimes

have a shell  
~~~~~  
have a radula
~~~~~  
have tentacles  
~~~~~  
~~~~~  
~~~~~

Never

have jointed legs

have an internal skeleton

Examples

clam

snail

octopus

sea
cucumber

Nonexamples

crayfish

sea urchin

star fish

Mollusks are animals without backbones that always have bilateral symmetry, a true coelom, a foot, and a mantle.

CONCEPT DIAGRAM

deciduous trees

trees

Always

lose leaves in fall
grow leaves in spring
"shut down" for winter
conserve water and
nutrients

Sometimes

have broad leaves
have long-jagged leaves
have flowers

Never

keep leaves all year
have "scale-like" leaves
have "needle-like" leaves
have cones

Examples

maple

oak

birch

elm

Nonexamples

fir

cedar

pine

Deciduous trees are trees that lose their leaves in the fall, conserve water and nutrients, "shut down" for the winter, and grow new leaves in the spring.

CONCEPT DIAGRAM

acids

chemicals

Always

accept electron pairs
react with a base
form a conjugate base as
a product

Sometimes

are strong
are weak
are amphoteric
are ionic
are molecular

Never

form a conjugate acid as
a product
donate electron pairs

Examples

HCl

HCO₃

BF₃

NH₃

Nonexamples

NaOH

Cl⁻

CH₃CH₃

Acids are a class of chemicals that accept electrons when they react with a base to form a conjugate base as a product.

CONCEPT DIAGRAM

Jovian Planets

planets

Always

have no solid surface
have low densities
have rings and moons
have gaseous atmospheres
made of hydrogen, helium,
methane, & ammonia

Examples

Jupiter

Saturn

Neptune

Sometimes

rotate counter clockwise
have rings made of ice
particles
have rings made of rock
particles

Pluto

Never

have liquid water
have atmospheres with
oxygen

Nonexamples

Earth

Mars

Venus

Jovian Planets are planets that have no solid surface; low densities; rings and moons; gaseous atmospheres; and are made of hydrogen, helium, methane, and ammonia.

CONCEPT DIAGRAM

tropical rainforest

biome

Always

has high humidity
receives at least 80" of
rain a year
lies between the Tropics
of Cancer & Capricorn

Sometimes

has a dry season
has mountains

Never

has fertile soil

Examples

Amazon Rainforest

Macaw's rainforest

Belize's rainforest

Costa
Rica's
rainforest

Nonexamples

Shenandoah National Forest

Yellowstone National Park

Washington State Rainforest

A tropical rainforest is a biome that lies between the Tropics of Cancer and Capricorn, has high humidity, and receives at least 80" of rain a year.

CONCEPT DIAGRAM

sedimentary rocks

rocks

Always

are made of rock

fragments and/or

shell pieces

formed underwater

Sometimes

contain fossils

have layers

have a rough texture

have a smooth texture

Never

formed under heat

Examples

limestone

sandstone

agate

diamond

Nonexamples

granite

obsidian

slate

A sedimentary rock is a type of rock formed underwater. They are made of rock fragments and/or shell pieces - called sediments.

CONCEPT DIAGRAM

democracy

a form of government

Always

has leaders accountable by elections

has citizens with equal voting rights

lets citizens oppose government

has a statement of civil and political rights

Sometimes

has direct representation

has indirect representation

has centralized power

has decentralized power

has separation of power

Never

allows press censorship

Examples

United States in 2001

England in 2001

Athens in 500 BC

Russia in 2001

Nonexamples

China in 2001

England under Henry VIII

Macedonia under Alexander

A democracy is a form of government that always has leaders accountable by elections, has citizens with equal voting rights, allows citizens to oppose government, has a statement of civil and political rights.

CONCEPT DIAGRAM

mixed number

number

Always

has a whole number

has a fraction

Sometimes

has a fraction with a numerator
less than the denominator

has a fraction with a numerator
greater than the denominator

has a fraction with a numerator
equal to the denominator

Never

has a fraction with a
denominator that is zero

Examples

$2 \frac{2}{4}$

$1 \frac{5}{8}$

$10 \frac{1}{2}$

$10/10$

Nonexamples

$10/0$

$1/2$

A mixed number is a number that always has a whole number and a fraction.

CONCEPT DIAGRAM

linear functions

polynomial function

Always

contains exactly 1 independent variable to the first power

contains exactly 1 dependent variable to the first power

is written as an equation

has a graph that's a straight line

Examples

$$y = 3x - 5$$

$$y = 10$$

$$y = -10x^1 + 2$$

Sometimes

is written $y=c$

is written $x=c$

is written $y=mx + b$

has a negative slope

has a positive slope

10/10

Never

has an exponent on either variable less than or greater than one

Nonexamples

$$3x + 2y + 5^1$$

$$y = x^2 - .5$$

$$y^2 = 3x + 2$$

A linear function is a polynomial function that always contains exactly one independent variable to the first power, contains exactly one dependent variable to the first power, is written as an equation, and has a graph that is a straight line.

CONCEPT DIAGRAM

prism

geometric figure

Always

- has 2 bases
- has bases that are congruent
- has bases that are parallel

Sometimes

- is short
- is tall

Never

- has round bases
- has bases of different sizes
- has only 1 base

Examples



Nonexamples



A prism has 2 bases that are congruent polygons. The bases are parallel planes.

CONCEPT DIAGRAM

compound sentence

sentence types

Always

has 2 independent clauses

begins with a capital
letter

has ending punctuation

Sometimes

contains a comma

contains a coordinating
conjunction

contains a semi-colon

Never

has a dependent clause

Examples

Jim swam, but Joe slept.

Outside the sun shown, and
the wind blew.

The dog wined; it was hungry.

Since
they were
young.

Nonexamples

The team won the big game.

After they ate, the family
played a game.

A compound sentence is one of the four sentence types. It always has 2 independent clauses, begins with a capital letter, and has ending punctuation.

CONCEPT DIAGRAM

silent e syllable

6 syllable types

Always

ends with an e that is

silent

contains a vowel that is

long

follows the vce pattern

Sometimes

begins with a consonant

begins with a blend

~~~~~

~~~~~

~~~~~

## Never

has 1 vowel

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## Examples

ace

lake

slope

revive

## Nonexamples

hop

hat

main

a silent e syllable is one of the 6 syllable types that always follows the vce pattern, contains a vowel that is long, and ends with e that is silent.

# CONCEPT DIAGRAM

folk tale

story

## Always

includes royalty  
includes an antagonist  
includes a protagonist  
includes magic  
has an ending in which good  
overcomes evil

## Examples

Snow White

Beauty and the Beast

Mufaro and His  
Beautiful Daughters

## Sometimes

teaches a lesson  
includes animals  
includes a step mother  
includes a step sister  
has events that occur in  
3's

Johnny  
Appleseed

## Never

is non-fiction  
has a sad ending

## Nonexamples

The Cat and the Hat

The Coral Reef

A folk tale is a type of story that always includes royalty, an antagonist, a protagonist, magic, and a happy ending in which good overcomes evil.



# CONCEPT DIAGRAM

non-fiction

writing

## Always

is about real people,  
places, events, and/or  
times

## Sometimes

is a narrative text  
is an expository text

## Never

is a fantasy story

## Examples

Article in Consumer Reports

Report in the New York Times

Passage in an encyclopedia

The Diary  
of Anne  
Frank

## Nonexamples

The book Green Eggs and Ham

The book Jurassic Park

Non-fiction writing always is about real people, places, events, and/or times.

# CONCEPT DIAGRAM

closed syllable

6 syllable types

## Always

ends with a consonant  
contains 1 vowel that is short

## Sometimes

follows a cycc pattern  
follows a ccvc pattern  
follows a cvc pattern  
follows a vc pattern

## Never

ends with a vowel  
has 2 vowels

## Examples

chin

at

must

swim

## Nonexamples

late

road

to

A closed syllable is one of the 6 syllable types that always ends with a consonant and contains one vowel that is short.

# CONCEPT DIAGRAM

communism

form of *economy*

## Always

government owns the land,  
natural resources, and  
means of production  
business transactions are  
controlled according to  
national plan

## Examples

Soviet Union prior to 1991

China in 2001

Cuba in 2001

## Sometimes

allows profit to the  
individual

Russia in  
2001

## Never

allows private enterprise

## Nonexamples

United States in 2001

Japan in 2001

Communism is a form of *economy* in which the government owns the land, natural resources, and means of production and business transactions are controlled according to a national plan.

# CONCEPT DIAGRAM

monopoly

economic strategy

## Always

one company controls a  
product or service  
a market

## Sometimes

involves illegal action  
involves a government  
agency  
involves private industry

## Never

competition

## Examples

Bell Telephone in 1970's

Tennessee Valley Power  
Authority

Microsoft

## Nonexamples

Nike

Dell Computer

Bank of America

A monopoly is an economic strategy in which a company controls a product or service within an economic market eliminating competition.

# CONCEPT DIAGRAM

civil war

armed conflict

## Always

is between citizen groups  
is within a single nation  
is about the distribution  
of power

## Sometimes

due to economic differences  
due to religious differences  
due to ethnic differences  
due to social differences  
due to political differences

## Never

is between nations

## Examples

US war between the States

Spanish Civil War

American Revolution

French  
Revolution

## Nonexamples

War of 1812

World War II

Gulf War

A civil war is a type of armed conflict that always is between citizen groups within a single nation about the distribution of power.

# CONCEPT DIAGRAM

fraction

number

## Always

has a numerator representing the parts you have

has a denominator representing the total number of parts

has a line separating the numerator and denominator

## Sometimes

has a numerator less than denominator

has a numerator greater than denominator

has a numerator equivalent to denominator

## Never

has a denominator that is zero

## Examples

$1/2$

$10/2$

$10/10$

$1/1,000$

## Nonexamples

$10/0$

A fraction is a number that has a numerator representing the parts you have, a denominator representing the total number of parts, and a line separating the two.

# CONCEPT DIAGRAM

insects

arthropods

## Always

have head with antennae

have thorax with wings

have abdomen

have 3 pair of legs

have an exoskeleton

## Sometimes

have 2 wings

have 4 wings

have simple eyes

have compound eyes

## Never

have 8 legs

## Examples

ant

grasshopper

butterfly

beetle

## Nonexamples

crab

spider

centipede

Insects are arthropods that have a head with antennae, a thorax with wings, an abdomen, 3 pair of legs, and an exoskeleton.