


 RioTinto

 Richards Bay  
Minerals

# Grade 4 - 7

# LEARNING!

THROUGH LOCKDOWN



## ENGLISH

English can do a lot of things for you. When you speak English, you can talk to people you meet and make new friends. When you know English, you can understand millions of people from across the world. English is the language in which movies and books are made. When you know English, it opens up a whole world!

## NATURAL SCIENCE

Kids are little problem solvers. They are innovative and inquisitive, this is why they are excellent scientists. Science teaches us how things work .... and why things work the way they do.



# ENGLISH

**GRADE 4**

# Punctuation!

*Shows how the sentence should be read and makes the meaning clear*

## QUESTION MARK

You must use me when you ask a question.

eg: Would you like vanilla ice cream?

## EXCLAMATION MARK

I am used at the end of a sentence that expresses strong feelings!

eg: Be careful!  
You will fall!

## FULL STOP

I am used at the end of a sentence.

eg: We are waiting for school to start.

## APOSTROPHE

You can use me to show possession or to represent missing letters in contractions.

eg: Let's focus more on school work.

## COMMA

I am used to cause a pause, to set off a phrase or to separate letters in series.

eg: We had coffee, cheese, crackers and grapes.

## SEMI-COLON

I am used to join two related sentences or separate items in a series.

eg: In the summer we swim; in the winter we sleep.

## DASH

I am a bit longer than a hyphen. I separate parts of a sentence and force you to pause.

eg: Next week we are going to the zoo — I love the animals.

## HYPHEN

You can use me to divide a word or in compound words.

eg: No-one else has as many sweets as Tim.

## BRACKETS

We are used to close off parts of sentences that could be left out.

eg: Buddy (the dog) loves to eat.

## QUOTATION MARKS

You can use us to enclose words that are spoken by a person.

eg: Mpho said: "I am trying to work."

## COLON

We are used to indicate that a list, explanation or idea is following.

eg: We have to buy: bread, milk, butter and cheese.



# ENGLISH

## GRADE 4

# Parts of speech

### ADVERB

It adds to a verb, it answers questions such as who, when, where or why and often ends in "ly".

I could hear him complaining loudly. near, far, today, now, very.

### PREPOSITION

Tells the relationship between nouns, pronouns, or other words in a sentence. Most often used before the noun.

He jumped over the fence. We went into the school hall.

### CONJUNCTION

Joins words, phrases or sentences together. Some are adverbs, being used as conjunctions.

and, but, so, either, or, neither, nor, because, finally, still, yet.

### INTERJECTION

A word expressing emotion. Strong interjections are followed by exclamation marks. Mild interjections are followed by commas.

Hey! Wow! Ouch! Oh, I think I've got it!

### NOUN

A noun is the name of a person, place or thing.

person ..... girl, boy, teacher

place ..... school, home

thing ..... pencil, jacket

### PRONOUN

A pronoun is a word used in place of a noun.

she, he, it, they, us, I, you, we, them.

### VERB

Tells of an action, a state of being or an event.

am, is, are, run, jump, play, raining, reading.

### ADJECTIVE

Used to describe a noun or pronoun.

green, blue, fearless, quick, enormous, wonderful.



Every name is called a **NOUN**, as field and fountain, street and town; In place of noun the **PRONOUN** stands, as he and she can clap their hands; The **ADJECTIVE** describes a thing, as magic wand and bridal ring; The **VERB** means action, something done - to read, to write, to jump, to run; How things are done, the **ADVERBS** tell, as quickly, slowly, badly, well; The **PREPOSITION** shows relation, as in the street, or at the station; **CONJUNCTIONS** join, in many ways, sentences, words, or phrase and phrase; The **INTERJECTION** cries out, 'Hark! I need an exclamation mark!' Through Poetry, we learn how each of these make up **THE PARTS OF SPEECH**.

# Sentences

## 4 TYPES OF SENTENCES

- 1 **Statements**  
The bird is going to lay eggs.
- 2 **Questions**  
When will the bird lay her eggs?
- 3 **Exclamations**  
The bird is laying her eggs!
- 4 **Commands (Imperatives)**  
Bird, lay your eggs now!

## 3 TYPES OF SENTENCE STRUCTURES

- 1 **Simple sentence:**  
1 finite verb + 1 idea  
The bird lays an egg.
- 2 **Compound sentence:**  
2 or more finite verbs  
The bird lays an egg in the barn while the other animals walk around.
- 3 **Complex sentence:**  
1 main clause or thought + one or more subordinate clauses.  
The bird walked to the barn to go and lay her eggs, while the other animals waited patiently for the chicks.

A sentence always begins with a capital letter and ends with a full stop, a question mark or an exclamation mark, depending on the nature and meaning of the sentence.

### SEEK AND YOU SHALL FIND

- To find the subject, ask yourself, "Self, what word is the sentence describing?"
- To find an action verb, ask yourself, "Self, what did the subject do?"
- If you can't find an action verb, look for a linking verb. For example: He is a winner - "Is" is the linking verb.



## ENGLISH

GRADE 4

# Practice makes perfect!

## LET'S DO IT TOGETHER.

**SECTION A: READING & VIEWING**

1 The paragraph below tells us how butter is made.

Write the sentences in the correct order to show how to make butter.

Then shake the jar until the buttermilk and butter separate. Allow it to cool, spread on bread and enjoy. First pour some cream into a jar. Drain the buttermilk and add some salt to the butter.

1.

2.

3.

4.

**TOTAL SECTION A:****4****SECTION B: LANGUAGE STRUCTURES**

2 Rewrite the sentence below using the correct punctuation.

where does Sphiwe live

\_\_\_\_\_

\_\_\_\_\_

3 Rewrite the following sentences in the correct tenses.

Write the following sentence in the Simple Present Tense.

3.1 Sphiwe received a trophy.

\_\_\_\_\_

Write the following sentence in the Simple Past Tense.

3.2 Sphiwe helps his friends at school.

\_\_\_\_\_

Write the following sentence in the Future Continuous Tense.

3.3 Sphiwe reads a book to Bongani.

\_\_\_\_\_

4 Write the plural form of the underlined words in the sentences below.

4.1 South Africa has many farm.

\_\_\_\_\_

4.2 Many child visit the farm.

\_\_\_\_\_

5 Write the correct form of the adjective in brackets.

Sphiwe is the (brave) boy in school.

\_\_\_\_\_

\_\_\_\_\_

6 Complete the sentence below using the correct preposition.

Sphiwe lives \_\_\_\_\_ Cape Town.

7 Choose the correct prefix from the box to give the correct form of the underlined verb. Write the new word below the sentence.

re	dis	un
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The whole class will have to write their projects about the school.

\_\_\_\_\_

8 Choose a verb from the brackets to complete the subject-verb agreement in the sentence below.

The boy \_\_\_\_\_ on the field. (walk/walks)

9 Circle the letter of the correct adverb to complete the sentence below.

We entered the school (quiet).

- A unquiet  
B quieter  
C quietly  
D quietest

10 Circle the letter of the correct adjective in the sentence below.

The children rode a yellow tractor.

- A children  
B yellow  
C tractor  
D rode

11 Circle the letter of the correct answer.

Choose the correct possessive pronoun to complete the sentence below.

The farmers are cleaning \_\_\_\_\_ tractors.

- A hers  
B mine  
C theirs  
D their

12 Circle the letter of the correct conjunction to complete the sentence below.

The lion chased the zebra \_\_\_\_\_ it was hungry.

- A while  
B since  
C because  
D but

**TOTAL SECTION B:****15**



# ENGLISH

## GRADE 5

# Nouns

*A noun names a person, place, thing or idea.*

### COMMON NOUNS

Common nouns refer to common, everyday things:

The **kids** in **school** are very happy.

### PROPER NOUNS

A proper noun refers to specific things that are unique or have names:

- persons** - Thabo, Cindy
- places** - London, Empangeni
- days** - Sunday, Friday
- months** - June, September

### ABSTRACT NOUNS

An abstract noun names something you cannot experience with your senses. Sometimes abstract nouns are called "idea nouns."

The **kids** in **school** treat each other with **respect**.

### COLLECTIVE NOUNS

A collective noun is a creative way of naming a collection or a group of objects, people or creatures:

A **herd** of **cattle**.

### SOME MORE COLLECTIVE NOUNS

- a herd of cattle
- a flock of sheep
- a covey of partridges
- an aviary of birds
- an arrangement of flowers
- an aquarium/school/shoal/catch of fish
- a hive of bees
- a nest of eggs

Common nouns are usually identified by **the, a** or **an**.

Proper nouns always begin with **capital letters**.

Ideologies and educational subjects always begin with **capital letters**.

If a common noun forms part of the name, the first letter of both nouns must be **capital letters**.  
Eg: **Table Mountain**

Titles of books, films, songs and plays always begin with **capital letters**.

**Abstract nouns** express a feeling or an emotion. You can give it to someone, but not in a box.

**Abstract nouns** often end with suffixes: kindness, friendship, optimism.

If we add **a, an** or **the** before the abstract noun, we will "**feel**" it.

**Avoid** using the words "**lots of**" as it is slang.



# Pronouns / A PRONOUN IS A NOUN IN DISGUISE!

### INTERROGATIVE PRONOUNS

are used to ask questions:  
what? who? which?

### RELATIVE PRONOUNS

link two pronouns into one complete thought or statement:  
that, which, who, whom, whose, whichever, whoever.

### PERSONAL PRONOUNS

take the place of a common or proper noun:  
I, you, me, he, she, it, we, them, they, us.

### DEMONSTRATIVE PRONOUNS

represent things.  
**Place** - nearby  
**Singular** - this  
**Plural** - these

### POSSESSIVE PRONOUNS

show ownership:  
my, his, her, our, your, their, mine.

### INDEFINITE PRONOUNS

refer to something that is unspecified.  
**Singular** - another, anybody, everything  
**Plural** - both, others, several  
**Singular or plural** - enough, little, less, much

### REFLEXIVE PRONOUNS

are used when the object of the sentence is the same as its subject.  
I was in a hurry, so I washed the car myself.



## ENGLISH

GRADE 5

# Adjectives

They add colour to your nouns and pronouns...

## POSSESSIVE ADJECTIVES

Possessive adjectives show who it belongs to:

- **My** kids are naughty.
- **Her** kids are running around.

## INTERROGATIVE ADJECTIVES

Interrogative adjectives show which one:

- **whose** house?
- **what** house?

FRESH

## COMPOUND ADJECTIVES

Compound adjectives are made up of more than one word, like these two examples:

- **far-off** country.
- **teenage** person.

SMELLY

## ADJECTIVES OF NUMBER

Interrogative adjectives show how many:

- **two/many/several/few/some/most** animals.
- **each/every/neither** animal.

## ADJECTIVES OF ORDER

Interrogative adjectives position:

- The boy **came first/second/last** in the competition.

## DEMONSTRATIVE ADJECTIVES

Demonstrative adjectives show which one:

- **this/that** school.
- **these/those** schools.

SMALL

## DESCRIPTIVE ADJECTIVES

Common adjectives describe nouns or pronouns:

- **strong** man.
- **green** plant.
- **pretty** girl.

## PROPER ADJECTIVES

Proper adjectives are formed from proper nouns:

- **South African** vegetables.
- **Eastern Cape** farms.

HOT

## ADJECTIVE SONG

An adjective can tell us, more about a noun. Colour, shape and size. Its texture or its sound. For interesting writing, the adjective's your friend. Describe, describe, describe from beginning to the end.

LOUD



# ENGLISH

## GRADE 5

# Practice makes perfect!

## LET'S DO IT TOGETHER.

### SECTION A: SENTENCES

1. Write a paragraph for each prompt using each type of sentence (simple, compound, or complex) at least one time. Label each type of sentence.

1.1 Prompt 1: My family vacation

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1.2 Prompt 2: Cindy's school

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2. Combine the thoughts into a good paragraph. 4

Every bus needs a driver.  
 We have over 3000 students.  
 My school is one of the largest in the district.  
 Every bus costs a lot of money.  
 To get all of us to school, our district had to buy 100 buses.  
 We have over 300 staff members.  
 Buses are not cheap.

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Our zoo is one of the oldest zoos in the country.  
 It now houses reptiles, birds, elephants, giraffes and lions.  
 I went to the zoo.  
 The zoo was built in 1789.  
 My favorite animal there is the polar bear.  
 My family went to the zoo.  
 The polar bear is named Charlie.

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**TOTAL SECTION A:** **6**  
**10**

### SECTION B: ADJECTIVES

1. Choose the correct order of adjectives.

- 1.1. A. a cotton, orange shirt   
 B. an orange, cotton shirt
- 1.2. A. a beautiful, old woman   
 B. an old, beautiful woman
- 1.3. A. an amazing, South African sunset   
 B. a South African, amazing sunset

- 1.4. A. twelve shampoo, medium bottles   
 B. twelve medium, shampoo bottles
- 1.5. A. two square, blue tables   
 B. two blue, square tables
- 1.6. A. Italian, delicious meal   
 B. delicious, Italian meal
- 1.7. A. a stinky, bathroom towel   
 B. a bathroom, stinky towel
- 1.8. A. an ugly, old, yellow bus   
 B. an old, yellow, ugly bus
- 1.9. A. a large, pretty blanket   
 B. a pretty, large blanket
- 1.10. A. empty five trunks   
 B. five empty trunks

2. Underline the prepositional phrase. Circle the noun it describes.

- 2.1. The dog on the leash tries to escape.
- 2.2. The girl with the blonde hair goes to my school.
- 2.3. The cook in the kitchen makes the best meals.
- 2.4. Did you see the teacher with the purple dress?
- 2.5. The ant under the log is the one I saw earlier.
- 2.6. The cloud above the airplane looks like a marshmallow.
- 2.7. The couch in the living room is the most comfortable place to sleep.
- 2.8. We are visiting the city near the river.
- 2.9. The park behind the school is open today.
- 2.10. Many students noticed the clown in the big shoes.

3. Are the adjectives in the correct order? If yes, write yes. If no, rewrite the sentence with the adjectives in the correct order. 10

- 3.1. That red, big truck moves slowly.  
 \_\_\_\_\_
- 3.2. My mom is a short, Russian woman.  
 \_\_\_\_\_
- 3.3. England is an entertaining, big, old country.  
 \_\_\_\_\_
- 3.4. Sophie ate a Chinese, small, delicious cookie.  
 \_\_\_\_\_
- 3.5. The team has three leather, oval balls to use for practice.  
 \_\_\_\_\_

**TOTAL SECTION B:** **5**  
**25**



# ENGLISH

## GRADE 5

### SECTION C: PRONOUNS

1. Fill in the blanks with the correct pronouns from the word banks

#### Possessive pronouns

- its
- mine
- their
- her
- ours

- 1.1. The dog was busy eating \_\_\_\_\_ bone.
- 1.2. The little girl couldn't find \_\_\_\_\_ favourite baby doll.
- 1.3. My parents love to visit \_\_\_\_\_ friends who live in Cape Town.
- 1.4. These cookies? They are all \_\_\_\_\_.

#### Relative pronouns

- who
- which
- that
- whoever
- whichever

- 1.5. \_\_\_\_\_ went to Durban, will give the report on Ushaka Marine World.
- 1.6. I saw the lady \_\_\_\_\_ lives in the house on the corner.
- 1.7. These little dogs ate the bones \_\_\_\_\_ were buried in the yard.
- 1.8. I didn't know \_\_\_\_\_ restaurant to choose.

#### Indefinite pronouns

- all
- any
- each
- some
- several

- 1.9. I cannot believe I ate \_\_\_\_\_ of the pizza.
- 1.10. \_\_\_\_\_ student needs to bring one box of tissues to donate.
- 1.11. Did you find \_\_\_\_\_ of the answers to the homework?
- 1.12. I was only able to find \_\_\_\_\_ of them.

12

2. Circle the pronoun in the sentence. Write the type of pronoun.

- 2.1. The movie that Katie saw was fantastic.  
\_\_\_\_\_
- 2.2. Are these sunglasses yours?  
\_\_\_\_\_
- 2.3. Something seems wrong with this picture.  
\_\_\_\_\_
- 2.4. Did you do any homework today?  
\_\_\_\_\_
- 2.5. We let our dog run free for the afternoon.  
\_\_\_\_\_
- 2.6. The lady who lives in that house bought a new car.  
\_\_\_\_\_
- 2.7. None of these people have heard the song.  
\_\_\_\_\_
- 2.8. His mom said to go to the store and buy bread.  
\_\_\_\_\_
- 2.9. Robert will tell the man who works at the store.  
\_\_\_\_\_
- 2.10. The jewellery is mine.  
\_\_\_\_\_

10

3. Circle the pronouns in the sentences. Write whether the sentence is written in the first person or third person.

- 3.1. Will and Michael have worked hard on their homework for their science class.  
\_\_\_\_\_
- 3.2. My friend and I will be staying at my house this weekend and going swimming with my family.  
\_\_\_\_\_
- 3.3. Ann and Michelle study French at their high school because one day they both want to travel to France.  
\_\_\_\_\_
- 3.4. My dog and I spend time playing in my backyard and walking in my neighbourhood.  
\_\_\_\_\_
- 3.5. I am moving to Gauteng where I will be living closer to my grandma and my aunt.  
\_\_\_\_\_
- 3.6. The boss is going to ask his employees to work late to help him finish his big project.  
\_\_\_\_\_

6

4. Write a paragraph about a concert from a first person point of view

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5. Rewrite the paragraph from a third person point of view.

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TOTAL SECTION C:

32

67







# ENGLISH

## GRADE 6



Verbs such as got and did are “overworked” and, if possible, should be replaced by stronger verbs!

### FINITE VERBS

A finite verb can stand on its own and does not need an auxiliary (helping) verb.

A finite verb must have a subject, number (singular or plural) and tense.

Together with the subject, it makes a complete sentence:

Harry plays. Harry jumps.

It indicates number:

The boy (one) plays ball.  
The boys (many) play ball.

It has a TENSE:

Today I play. Yesterday I played. Tomorrow I shall play.

### INFINITE VERBS

When a VERB is preceded by a “to”, it is known as the infinitive:

- to eat • to drink
- to play • to study

The infinitive cannot stand alone. It must be preceded by a finite verb.

- She wants to discuss...
- They start to argue.
- We tried to study
- Children love to play.

The infinitive should not be split:

- I am going to definitely ~~X~~ play on the field tomorrow.
- I am definitely going to play on the field tomorrow. ✓

## THE 3 TENSES

The tense tells when the action takes place.

### PAST

#### YESTERDAY

verb + ed  
Harry jumped, climbed and played all day with his friends.

### PRESENT

#### TODAY

verb  
Harry jumps, climbs and plays all day with his friends.

### FUTURE

#### TOMORROW

will/shall + verb  
Harry will jump, climb and play all day with his friends.

## THE 3 TENSES

A more detailed analysis: Simple, Continuous and Perfect Tenses

### SIMPLE

#### GENERALLY

PRESENT I jump

PAST I jumped

FUTURE I shall jump

### CONTINUOUS

#### AT THE MOMENT

PRESENT I am jumping

PAST I was jumping

FUTURE I shall be jumping

### PERFECT

#### ALREADY COMPLETED

PRESENT I have jumped

PAST I had jumped

FUTURE I shall have jumped



# ENGLISH

## GRADE 6

# Verbs

## MORE

### ACTION VERBS

An action verb expresses action. It tells what a person or a thing does.

### AUXILIARY VERBS

An auxiliary verb goes with another verb. Sometimes auxiliary verbs are called "helping verbs" because they introduce or "help out" the main verb.

### LINKING VERBS

A linking verb links the subject of the sentence with information about it.

### AUXILIARY VERB

- An auxiliary verb is a **HELPING VERB**. It always precedes the verb:  
She has **done** her work.
- Common auxiliary verbs: **am, are, be, can, could, has, have, is, may, might, must, shall, should, was, were, will, would.**
- Depending on the sentence, the verb may be classified as a **finite** or an **auxiliary** verb:  
He **is** the leader of the school. (finite verb)

He **is hoping** to become the leader of the school. (auxiliary verb + present participle)

### TRANSITIVE AND INTRANSITIVE VERBS

- A transitive verb takes a direct object.  
I baked **a cake** for my school friends.  
direct object      indirect object
- Intransitive verbs are not followed by direct objects  
I **baked** for my school friends.  
indirect object

**A VERB CAN BE TRANSITIVE OR INTRANSITIVE DEPENDING ON WHETHER OR NOT IT IS FOLLOWED BY A DIRECT OBJECT.**

### PARTICIPLES

Participles are formed when we combine an **auxiliary verb** and a **finite verb + ing or ed**.

#### PRESENT TENSE

I joke.  
He eats.  
You eat.  
They eat.

#### PAST TENSE

I joked  
He ate  
You ate.  
They ate.

#### PRESENT PARTICIPLE

I **am joking**.  
He **is eating**.  
You **are eating**.  
They **are eating**.

#### PAST PARTICIPLE

I **have joked**.  
He **has eaten**.  
You **have eaten**.  
They **have eaten**.

### THE MOOD OF THE VERB

The mood of the verb indicates the speaker's intention or attitude.

There are three main moods:

- Indicative:** Expresses a fact or provides information  
- I always **buy** sweets from the shop.
- Imperative:** Expresses instructions or commands.  
Harry the boy says, "**Don't waste** your bread."
- Subjunctive:** Expresses a wish, doubt or uncertainty.  
If I **was** to buy the old bread, Harry would eat his words.

### LINKING VERB

- The verb **'to be'** (**is, am, are**) is also referred to as the linking verb.

- A linking verb connects a noun with another noun, or a noun with an adjective.  
**The boy is a ball player.** (noun)  
**The boy is brave.** (adjective)

- The word that follows the linking verb is not the object; it is known as the **complement**.

s= singular p= plural	PRESENT TENSE	PAST TENSE	FUTURE TENSE	FUTURE TENSE if adamant or definite
1 <sup>st</sup> person (s)	I am hungry.	I was hungry.	I shall be hungry.	I will be hungry!
1 <sup>st</sup> person (p)	We are hungry.	We were hungry.	We shall be hungry.	We will be hungry!
2 <sup>nd</sup> person (s & p)	You are hungry.	You were hungry.	You will be hungry.	
3 <sup>rd</sup> person (s)	He/she/it is hungry.	He/she/it was hungry.	He/she/it will be hungry.	
3 <sup>rd</sup> person (p)	They are hungry.	They were hungry.	They will be hungry.	

# ENGLISH

## GRADE 6

# Practice makes perfect!

## LET'S DO IT TOGETHER.

### SECTION A: COMPREHENSION

1. In the wild, it often comes down to predator and prey, the hunter and the hunted. As you can imagine, most organisms want to stay alive. They have developed ways of adapting to severe habitats, and hiding or escaping from those who would like to eat them. So how do they do it?

One very helpful adaptation is called camouflage. You may have been surprised by an animal that was using camouflage in the past. It blended into its surroundings so well that you nearly missed seeing it at all. Its colouring, markings, or other physical features resemble its habitat so much that you can look directly at it without seeing it at first. This is often good enough to fool a predator that is scanning an area to look for food. This helps prey to hide from its predator.

But did you know that it often works the other way around, too? Predators can use camouflage to trap their prey.

If a predator wants to eat a certain animal, and that animal cannot see it lying in wait, it can pounce on its prey unexpectedly, devouring it before it even knows what is happening.

Another popular adaptation is mimicry. Mimicry is when an animal has markings or other physical characteristics that allow it to look like some other kind of animal or plant. If it can make its predators believe that it is something that preys on them, or would at least be difficult or painful to catch, its predator will often go off in search of an easier target.

Sometimes animals are able to survive when their habitat changes because they adapt to the new conditions. For example, birds that were accustomed to nesting on high cliffs or in tall trees have survived

Industrialisation of their habitat by learning to nest in the crevices of tall buildings.

Vervet monkeys easily adapt to residential areas that have taken their homes.

They often help themselves to any food they can grab, whether it is in trashcans, or inside people's homes!



- 1.1. What is the main idea of the text?  
 \_\_\_\_\_  
 \_\_\_\_\_
- 1.2. List two supporting details for the main idea.  
 \_\_\_\_\_  
 \_\_\_\_\_

**TOTAL SECTION A: 4**

### SECTION B: ANTONYMS

1. Circle the letter of the word that most closely matches the underlined word in the sentence. Use the antonym in blue as a clue to the correct meaning.

1. 1. While she was indifferent to golf, her husband was an avid fan.  
 A. boring B. likeable C. eager D. pleasant
1. 2. I thought it was a fresh idea, but the teacher thought it was trite.  
 A. special B. loud C. happy D. common
1. 3. Stacey was suspicious when the clown handed them a box, but her gullible little brother opened it anyway.  
 A. trusting B. sad C. doomed D. careful
1. 4. While James is very outgoing, his older brother is very reclusive.  
 A. withdrawn B. athletic C. popular D. hungry
1. 5. The woman abhorred cleaning house, but she loved a spotless home.  
 A. often B. demanded C. enjoyed D. hated
1. 6. George is adept with crossword puzzles, while his sister is a failure at solving them.  
 A. miserable B. skilled C. close D. bored
1. 7. Instead of a grimace, Claudia had a big smile across her face.  
 A. grin B. hat C. frown D. mask
1. 8. She was an agile dancer, although her partner was quite clumsy.  
 A. quiet B. nimble C. shy D. stiff

**TOTAL SECTION B: 8**

### SECTION B: VERBS

1. The subjunctive mood is a sentence that expresses a hope, a doubt, or an imaginary situation. This mood is not common in English sentences. Other verb tenses that are not in the subjunctive mood may express a fact, a possibility, a command, or ask a question. In the blank before the sentence write SUB if the verb is in the subjunctive mood. Write No if it is not.
- 1.1. If I was the teacher, I would let the class out early. \_\_\_\_\_
- 1.2. She was swimming in the pool when her phone rang. \_\_\_\_\_
- 1.3. I hope you will come to my party. \_\_\_\_\_
- 1.4. They may be able to pass the test without much trouble. \_\_\_\_\_
- 1.5. Don't you dare talk to her that way. \_\_\_\_\_
- 1.6. He wished that all the children could have a present. \_\_\_\_\_
- 1.7. If I had been there, I would have stopped the fight. \_\_\_\_\_
- 1.8. The team might win their match tomorrow. \_\_\_\_\_
- 1.9. If she were a dog, she'd be a spaniel. \_\_\_\_\_
- 1.10. Are you sure you want to take care of a kitten? \_\_\_\_\_



# ENGLISH

## GRADE 6

2. The indicative mood is a sentence where the verb states a fact or reality. This mood is very common in English sentences. Other verb tenses that are not in the indicative mood may express a hope, a possibility, a command, or ask a question. In the blank before the sentence write IN if the verb is in the indicative mood. Write No if it is not.

- 2.1. The teacher called attention to the example. \_\_\_\_\_
- 2.2. Do you like celery sticks as a snack? \_\_\_\_\_
- 2.3. We should be able to make it to the movie on time. \_\_\_\_\_
- 2.4. He was running for the bus in the rain \_\_\_\_\_
- 2.5. Don't tell me what to do. \_\_\_\_\_
- 2.6. Clair will be singing in the choir concert on Thursday. \_\_\_\_\_
- 2.7. They often see flocks of geese over the lake. \_\_\_\_\_
- 2.8. Remember to bring your money for the tickets. \_\_\_\_\_
- 2.9. Without a clear understanding of the instructions, Tom failed the test. \_\_\_\_\_
- 2.10. In the light of day, Kara's problems vanished quickly. \_\_\_\_\_

3. Imperative sentences give a command. Interrogative sentences ask a question. For each of the sentences below, rewrite it by changing an imperative sentence to an interrogative sentence and an interrogative sentence to an imperative one.

- 3.1. Will you wash the dishes?  
\_\_\_\_\_  
\_\_\_\_\_
- 3.2. Close the door.  
\_\_\_\_\_  
\_\_\_\_\_
- 3.3. Can you carry the box?  
\_\_\_\_\_  
\_\_\_\_\_
- 3.4. Eat some lunch.  
\_\_\_\_\_  
\_\_\_\_\_
- 3.5. Won't you come home now?  
\_\_\_\_\_  
\_\_\_\_\_
- 3.6. Call me when you get there.  
\_\_\_\_\_  
\_\_\_\_\_
- 3.7. Would you let the dog out?  
\_\_\_\_\_  
\_\_\_\_\_

- 3.8. Don't tell anyone my secret.  
\_\_\_\_\_  
\_\_\_\_\_

**TOTAL SECTION B:**

**8**  
**28**

### SECTION C: SENTENCES

1. Compound Direct Objects.  
Some sentences have two direct objects.

Example: Casey ate a sandwich and fruit for lunch.

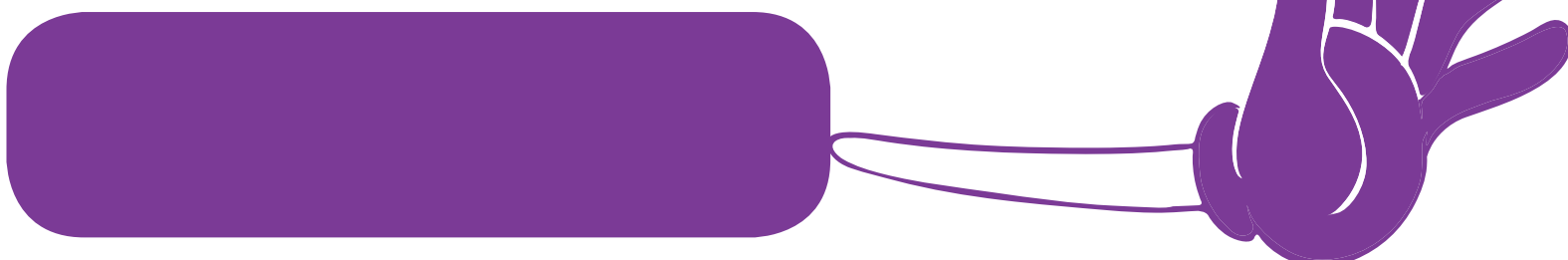
In the example sandwich and fruit are both direct objects of the verb ate. They are connected by the conjunction and. These two direct objects are called compound direct objects. Write in the blanks below the direct objects for the sentences.

- 1.1. Louie called Jason and Dean about the rehearsal.  
\_\_\_\_\_  
\_\_\_\_\_
- 1.2. I packed my books, clothes, and computer for the trip.  
\_\_\_\_\_  
\_\_\_\_\_
- 1.3. Her father brought her mother some flowers.  
\_\_\_\_\_  
\_\_\_\_\_
- 1.4. Mrs. Evans wrote a letter and a postcard to her friends.  
\_\_\_\_\_  
\_\_\_\_\_
- 1.5. They made chairs and tables at the factory.  
\_\_\_\_\_  
\_\_\_\_\_
- 1.6. Jane eats cereal or oatmeal for breakfast.  
\_\_\_\_\_  
\_\_\_\_\_
- 1.7. On Wednesday we rode our bikes to the park.  
\_\_\_\_\_  
\_\_\_\_\_
- 1.8. Olivia and Seth cleaned the bedroom, the bathroom, and the garage over the weekend.  
\_\_\_\_\_  
\_\_\_\_\_

**TOTAL SECTION B:**

**8**  
**8**

**48**

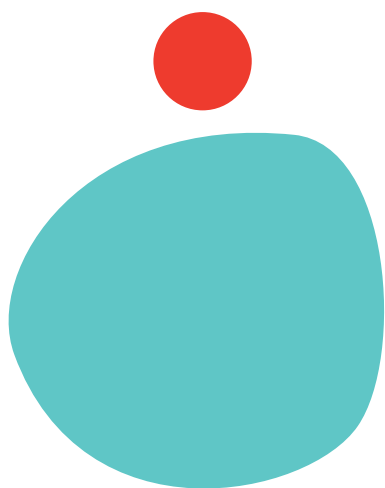


# ENGLISH

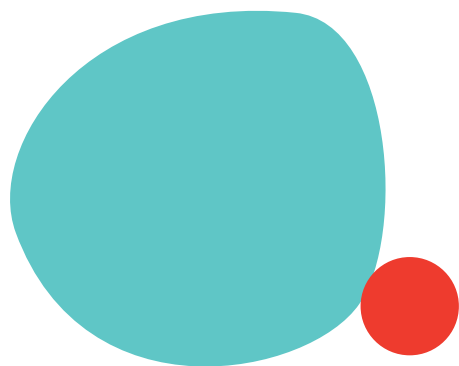
## GRADE 7

# Preposition

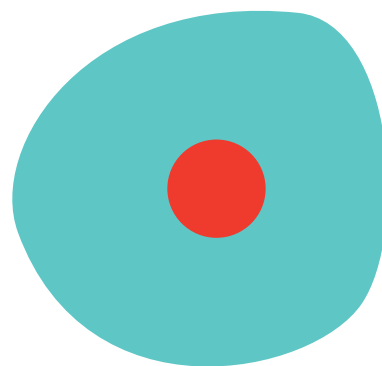
*A preposition links a noun, pronoun or phrase to another part of a sentence.*



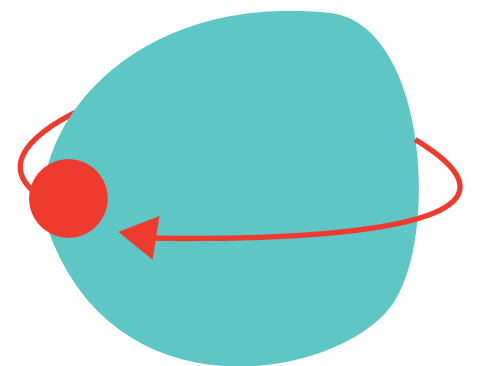
above



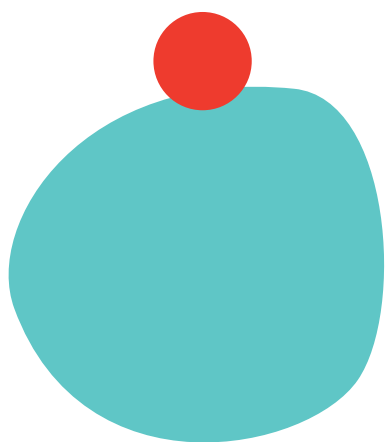
beside, out, outside



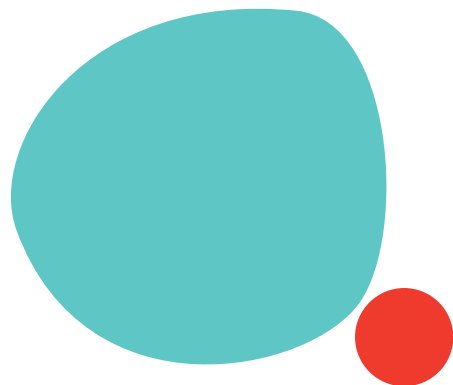
inside, in, into



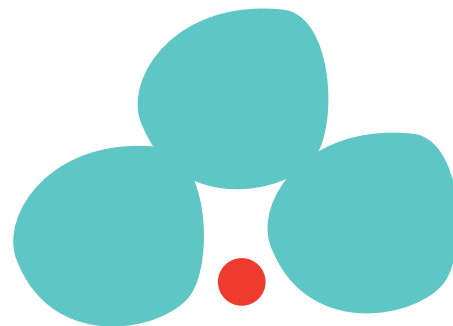
around



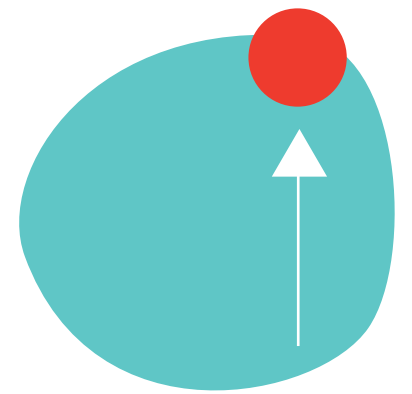
on



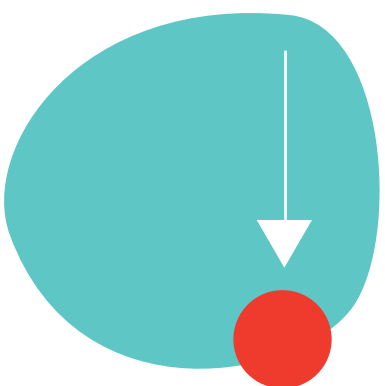
off



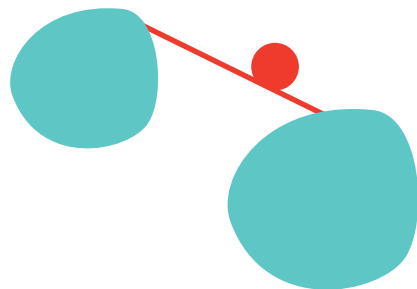
under, below, beneath  
between, through



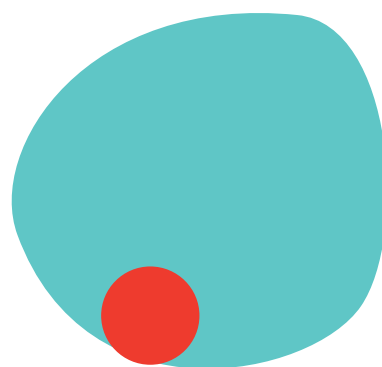
up



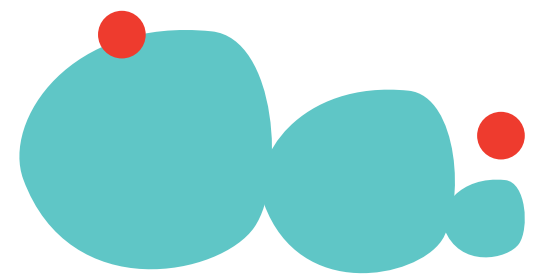
down



across



near



first

last

Because many prepositions show direction, some say that **“a preposition is anywhere I can go.”**



# ENGLISH

**GRADE 7**

# Conjunctions

*Conjunctions connect words or groups of words.*

**Some examples:**  
and, although, but,  
because, for, however, if, or, since,  
so, then, though, unless, until,  
when, whether, while, yet

## CONNECTING/LINKING WORDS

Add flow and meaning to sentences:

### Cause/effect:

therefore, because, as a result,  
consequently, furthermore,  
it is clear that

### Time:

as soon as, now, after, later, meanwhile, at the  
same time, finally, before, next

### Comparison/contrast:

similarly, alternatively, in contrast, on the  
one/other hand, however, meanwhile, in the  
same way, comparatively speaking, of equal  
importance

## SUBORDINATING CONJUNCTIONS

A subordinating conjunction joins a main clause to a subordinate clause:

The children love to play with water **although** there is a drought.

## RELATIVE PRONOUNS AS CONJUNCTIONS

**Who, whom** and **whose** are used for persons/people.

**That, which** and **what** are used for animals and objects.

## CO-ORDINATING CONJUNCTIONS

A co-ordinating conjunction is a word that connects two words or two groups of words:

Siya **and** Chelsea are best friends.

Avoid repetitive use of conjunctions such as “and” “but” or “so”.

# Interjection

Yay!

Oops!

Hmm!

*An interjection expresses an emotion. It might show excitement or surprise.*

Huh!

**Wow!** That is a giant carrot!

**Ouch,** you stepped on my toe!

**Yippee!** We won! **Whoa!** Hold your horses!

**Bravo,** you did a great job!

Phew

Ooh

Blah

Oh!

An interjection often appears at the beginning of a sentence. It is usually followed by an **exclamation mark** or a **comma**.

Eh!



# ENGLISH

## GRADE 7

# Practice makes perfect!

## LET'S DO IT TOGETHER.

### SECTION A: LITERATURE

1. Below are passages from literature. Each passage uses irony to make a point. Write a brief paragraph explaining the irony in the passage.

The Rime of the Ancient Mariner by Samuel Taylor Coleridge

*[An old seaman is telling a listener about one voyage. Here the ship has just become becalmed in the middle of the ocean, not moving and far from land. The crew has begun to run out of water to drink.]*

Day after day, day after day,  
We stuck, nor breath nor motion;  
As idle as a painted ship  
Upon a painted ocean.

Water, water, every where,  
And all the boards did shrink;  
Water, water, every where,  
Nor any drop to drink.



- 1.1 Write a brief paragraph explaining the irony in the passage.

---

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TOTAL SECTION A:

4  
4

### SECTION B: FIGURATIVE LANGUAGE

1. Each phrase below is a type of figurative language. Match the phrase to the correct type by writing the letter in the blank.

TYPE	PHRASE
1.1 _____ alliteration	A. His heart was a block of ice.
1.2 _____ simile	B. open secret
1.3 _____ metaphor	C. pink and purple popsicles
1.4 _____ onomatopoeia	D. The cup danced joyfully across the table.
1.5 _____ oxymoron	E. heavy as a rock
1.6 _____ hyperbole	F. She was humming a song.
1.7 _____ personification	G. Everyone knows that!

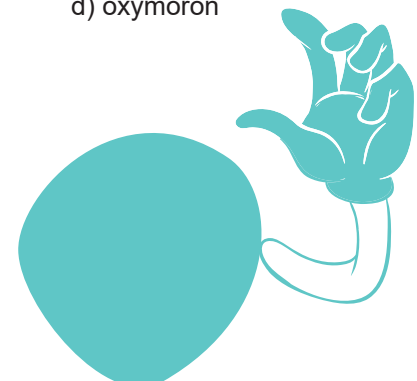
7

2. Circle the correct answer for each question below.

- 2.1 "As straight as an arrow" is an example of what?  
a) metaphor                      b) simile  
c) onomatopoeia                d) hyperbole
- 2.2 "Lucky lady" is an example of what?  
a) metaphor                      b) oxymoron  
c) alliteration                     d) onomatopoeia
- 2.3 "Boom!" is an example of what?  
a) oxymoron                      b) simile  
c) personification               d) onomatopoeia
- 2.4 "The city was a jungle." is an example of what?  
a) metaphor                      b) personification  
c) hyperbole                      d) simile
- 2.5 "It took a million years for Thomas to finish his homework." is an example of what?  
a) simile                          b) onomatopoeia  
c) hyperbole                      d) personification
- 2.6 "Thundering silence" is an example of what?  
a) onomatopoeia                b) hyperbole  
c) personification               d) oxymoron

TOTAL SECTION B:

6  
13





# ENGLISH

## GRADE 7

### SECTION C: SPELLING

1. Write a spelling word from the box below to complete each sentence.

#### SPELLING WORDS

- climbed
- symbol
- peace
- instance
- barbecue
- avoid
- foreign
- rhythm
- offered
- continue

- 1.1. I tried to \_\_\_\_\_ falling down.
- 1.2. I looked over in an \_\_\_\_\_.
- 1.3. She wore a \_\_\_\_\_ on her neck.
- 1.4. We will have to \_\_\_\_\_ tomorrow.
- 1.5. They danced with a lot of \_\_\_\_\_.
- 1.6. I \_\_\_\_\_ the tall mountain.
- 1.7. People protested for world \_\_\_\_\_.
- 1.8. We will have a \_\_\_\_\_ during the day.
- 1.9. Does the country have \_\_\_\_\_ relations?
- 1.10. She \_\_\_\_\_ to help pay for lunch.

2. Some of the words below have been misspelled; some are correct. Write the correct spelling of each word in the blank.

- 2.1. conveience \_\_\_\_\_
- 2.2. goverment \_\_\_\_\_
- 2.3. dictionary \_\_\_\_\_
- 2.4. lieutenant \_\_\_\_\_
- 2.5. recomend \_\_\_\_\_
- 2.6. laberatory \_\_\_\_\_
- 2.7. their \_\_\_\_\_
- 2.8. apperance \_\_\_\_\_
- 2.9. restuarant \_\_\_\_\_
- 2.10. enviorment \_\_\_\_\_
- 2.11. seperately \_\_\_\_\_
- 2.12. criticism \_\_\_\_\_
- 2.13. sophmore \_\_\_\_\_
- 2.14. excitment \_\_\_\_\_
- 2.15. committee \_\_\_\_\_
- 2.16. occaision \_\_\_\_\_
- 2.17. cemetary \_\_\_\_\_
- 2.18. leisure \_\_\_\_\_
- 2.19. excelence \_\_\_\_\_
- 2.20. aquaintance \_\_\_\_\_

**TOTAL SECTION D:**

**20  
30**

### SECTION D: ABBREVIATIONS

- 1.1. litre \_\_\_\_\_
- 1.2. centimetre \_\_\_\_\_
- 1.3. teaspoon \_\_\_\_\_
- 1.4. kilometre \_\_\_\_\_
- 1.5. metre \_\_\_\_\_
- 1.6. milligram \_\_\_\_\_
- 1.7. millimetre \_\_\_\_\_
- 1.8. kilogram \_\_\_\_\_
- 1.9. gram \_\_\_\_\_
- 1.10. mile \_\_\_\_\_
- 1.11. millilitre \_\_\_\_\_
- 1.12. tablespoon \_\_\_\_\_

**TOTAL SECTION D:**

**12  
12**

### SECTION E: CONJUNCTION

1. Complete each sentence using the correct subordinating conjunction

- 1.1. I visit the beach \_\_\_\_\_ I go to Richards Bay.  
(once, whenever, wherever)
- 1.2. This is the place \_\_\_\_\_ we stayed last time we visited.  
(where, when, how)
- 1.3. \_\_\_\_\_ you win first place, you will receive a prize.  
(wherever, if, unless)

2. Complete each sentence using the correct correlative conjunction

- 2.1. I plan to take my vacation \_\_\_\_\_ in June \_\_\_\_\_ in July.  
(whether / or, either / or, as / if)
- 2.2. \_\_\_\_\_ I'm feeling happy \_\_\_\_\_ sad, I try to keep a positive attitude.  
(either / or, whether / or, when / I'm)
- 2.3. \_\_\_\_\_ had I taken my shoes off \_\_\_\_\_ I found out we had to leave again.  
(no sooner / than, rather / than, whether / or)

3. Complete each sentence using the correct coordinating conjunction

- 3.1. My car has a radio \_\_\_\_\_ a CD player.  
(but, or, and)
- 3.2. Sharon hates to listen to rap music, \_\_\_\_\_ will she tolerate heavy metal.  
(but, nor, or)
- 3.3. I'm afraid of heights, \_\_\_\_\_ I appreciate the view from the top of this building.  
(and, yet, nor)

**TOTAL SECTION E:**

**3  
9**







# NATURAL SCIENCE

GRADE 4

## Life, and Living

### LIVING THINGS

There are many different kinds of living things. It is easy to see when some things are living or non-living. It is a bit more tricky to decide with other things if they are living or not!

### 7 THINGS ALL LIVING THINGS HAVE IN COMMON

Although living things may look different, they all carry out seven similar processes. We call these the seven life processes.

- M = Movement
- R = Reproducing
- S = Sensing
- B = Breathing
- F = Feeding
- E = Excreting
- G = Growth

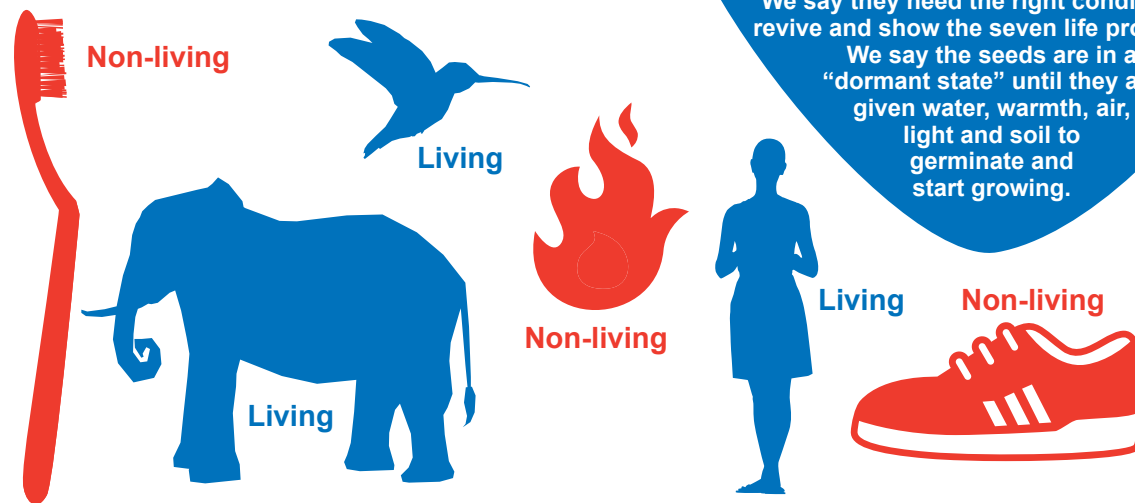


### CHANGING FROM LIVING TO NON-LIVING

Living things can become non-living when they die. Look at the wood that your desk is made of. Where did the wood come from? What was once living?

### NON-LIVING THINGS

Non-living things are different from living things because they do not perform all of the seven life processes.



**SOME THINGS SEEM TO BE NON-LIVING, BUT THEY ARE NOT!**

Some things seem to be non-living for a very long time. They wait until they sense the right conditions to revive again. This means that they have to wait for something special to happen before they can revive and show the characteristics of living things. We say they need the right conditions to revive and show the seven life processes. We say the seeds are in a "dormant state" until they are given water, warmth, air, light and soil to germinate and start growing.

## Habitats of animals and plants

### WHAT IS A HABITAT?

Different kinds of plants grow naturally in different areas too. Plants and animals will choose where they live mostly because of the water, food and climate of a specific area. If a plant is in an area that it likes, it will grow big and strong and have lots of leaves. The place that a plant or animal lives in is called a habitat. A habitat is the physical area where the animal or plant lives. An organism's natural habitat has everything it needs to live.

### DIFFERENT HABITATS

#### AQUATIC HABITATS

The aquatic biome includes the seas and oceans, lakes and rivers, wetlands and marshes, and lagoons and swamps of the world.

#### DESERT HABITATS

Deserts and scrublands are landscapes that have scarce precipitation. They're known to be the driest areas on Earth and that makes living there extremely difficult.

#### FOREST HABITATS

Forests and woodlands are habitats dominated by trees.

#### GRASSLAND HABITATS

Grasslands are habitats that are dominated by grasses and have few large trees or shrubs. There are two types of grasslands: tropical grasslands (also known as savannas) and temperate grasslands.

#### TUNDRA HABITATS

Tundra is a cold habitat. It is characterized by low temperatures, short vegetation, long winters, brief growing seasons, and limited drainage.

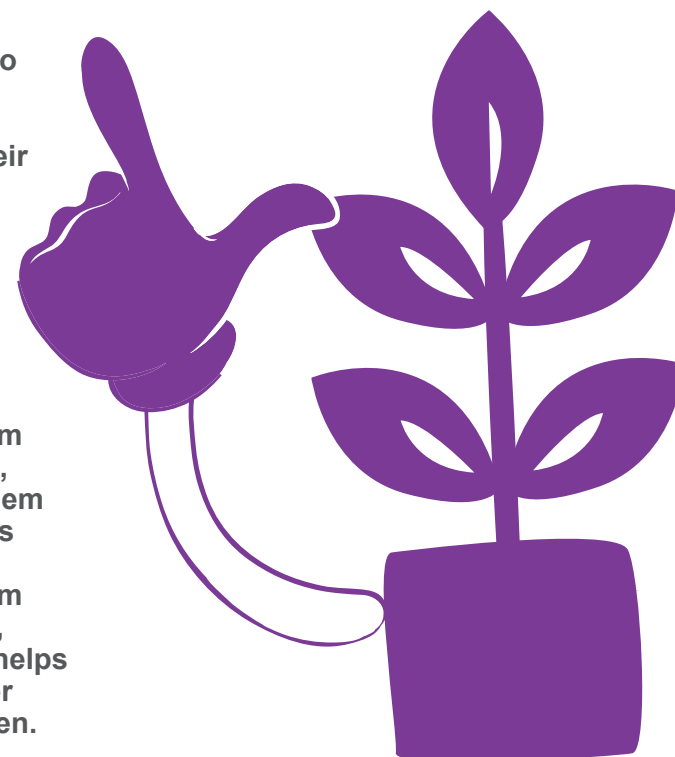
### WHY DO ANIMALS NEED A HABITAT?

#### CAMOUFLAGE

Some animals rely on their habitat to escape danger or to hide from the food they are trying to catch! To help them do this they, blend in with their surroundings. This is called camouflage.

#### ANIMALS USE CAMOUFLAGE FOR TWO REASONS:

1. Animals use it to hide from predators. In other words, their camouflage helps them to hide from other animals that eat them.
2. Animals use it to hide from their prey. In other words, when they are hunting it helps them to sneak up on other animals without being seen.





# NATURAL SCIENCE

**GRADE 4**

## Matter and Materials

Everything around us is made up of matter. All solids, liquids and gases in the universe are matter.  
Matter takes up space and has mass, this means we can weigh matter

### SOLID

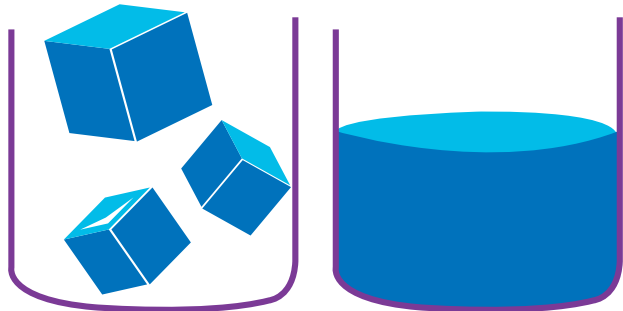
When you shift a chair to another place, it will still have the same shape. This is because the chair is solid. So we can say that all solids keep their shape.

We say that keeping its shape is a **property** of a solid.

- has a fixed shape
- takes up a definite space.

### CHANGE OF STATE

Substance can change from one state to another. A solid can change into a liquid. It changed from one to another by adding or removing heat. If we place water in a place that is cold enough, it freezes. If we place the ice cubes (**solid**) in a hot place, they melt (**liquid**).



### LIQUID

There are liquids all around you and you use them in your everyday lives. Some examples are water, paraffin, baby oil, fruit juice, petrol or methylated spirits.

- can flow,
- it has no fixed shape,
- and it takes the shape of the container that it is in.

### THE WATER CYCLE

- The Sun's heat causes water to evaporate from the seas, streams, rivers and lakes.
- The water vapour rises into the air.
- Higher up, where the air is cooler, water vapour condenses into millions of water droplets which form clouds.
- When the water droplets in the clouds get bigger, some of the water falls as rain. The scientific term for this process is precipitation.
- In other clouds, which become really cold, the water vapour freezes and forms snow. The snow falls down to the ground and melts.
- Some runoff water that falls to the

### GAS

When we breathe, we are taking in and giving out gases.

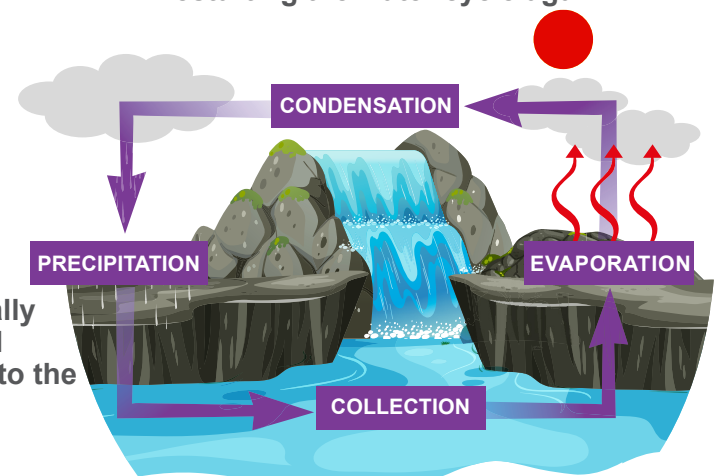
We can see places where gases are used and the containers that a gas is kept in.

The air you breathe in has oxygen gas. The air you breathe out has more carbon dioxide gas.

- usually cannot see gases

ground flows down the rivers to the seas.

- This water will evaporate again, restarting the water cycle again.



## Strong frame structures

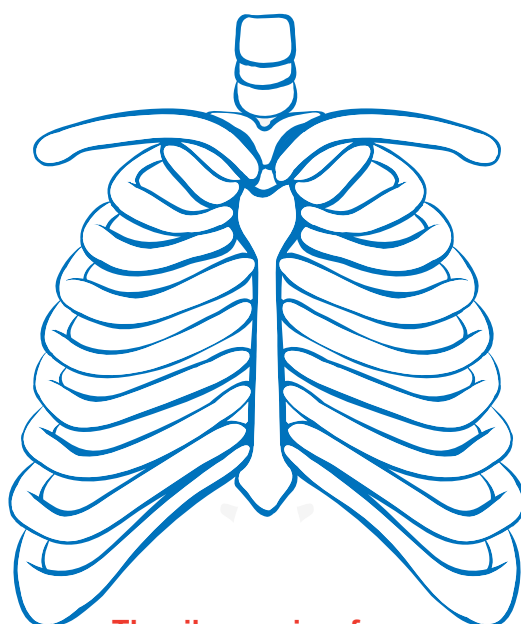
### STRUTS AND FRAME STRUCTURES

A **structure** is made of different parts. The way we put these parts together can make a structure strong or weak.

A **frame** is a rigid support structure that gives shape and forms support for its parts. The word rigid means stiff, not bending or changing shape. Every building, vehicle, and piece of furniture has a frame structure.

A **strut** is a part of structure that will support or hold another strut in place. It can be a rod or a bar. A strut is designed to withstand compression.

A **guy** is designed to withstand tension. A guy can be a rope, chain or a single wire. For example, when you put up a tent you use guy ropes to hold down the tent.



The rib cage is a frame structure.

### INDIGENOUS STRUCTURES

In South Africa, we have the traditional homes of the Zulu uguqa, the Xhosa rontabile and ungqu-phantsi and the Nama matjehuis.

In the traditional house, the reeds and branches are tied together with rope. But in the modern house, the roof trusses are strengthened with gussets.



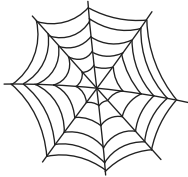


# NATURAL SCIENCE

GRADE 4

## Practice makes perfect! LET'S DO IT TOGETHER.

1. Look at the picture of the structures below:



DOG'S KENNEL

EGGS

SPIDER WEB

BIRD'S NEST

1.1. Which of these structures are man-made?

\_\_\_\_\_

\_\_\_\_\_

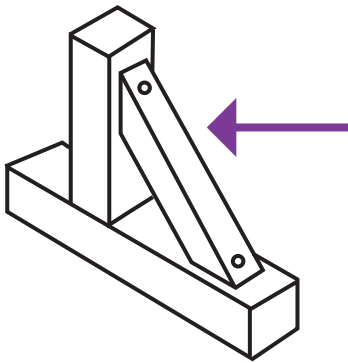
1.2. What type of structure is an egg? Shell or frame structure?

\_\_\_\_\_

\_\_\_\_\_

2

2. When the farmer built the dog kennel, he placed an extra piece of wood diagonally from one corner to the opposite. Like this:



2.1. What do we call this extra diagonal piece?

\_\_\_\_\_

\_\_\_\_\_

2.2. Why did the farmer add this extra diagonal piece?

\_\_\_\_\_

\_\_\_\_\_

2.3. The farmer bought wood to build the dog kennel.

The wood is from a tree. Is the wood a raw or manufactured material?

\_\_\_\_\_

\_\_\_\_\_

3

3. Look at the picture below.

a. Helium in the balloon



b. Cake



c. Juice in the cup



3.1 Show which objects are solid, liquid or a gas.

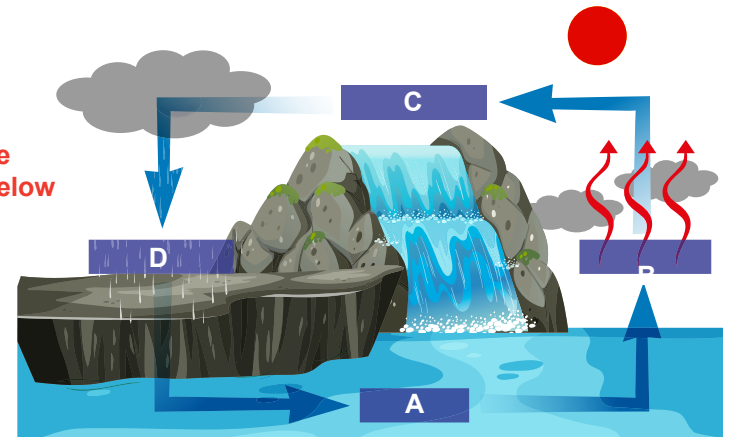
a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

3

4. Look at the diagram below



4.1. Give a suitable heading for the diagram.

\_\_\_\_\_

\_\_\_\_\_

4.2. Name the stages shown at

A: \_\_\_\_\_

B: \_\_\_\_\_

C: \_\_\_\_\_

D: \_\_\_\_\_

4.3. What causes water on Earth to evaporate and rise into the sky?

\_\_\_\_\_

\_\_\_\_\_

4.4. Write down the letter of the stage where water collects in oceans and lakes.

\_\_\_\_\_

\_\_\_\_\_

4.5. What happens to vapour when it condenses?

\_\_\_\_\_

\_\_\_\_\_

4.6. Use these words to complete the sentences:

**water vapour hail condenses**

**evaporates snow clouds rain**

a. Water on the Earth's surface \_\_\_\_\_ and moves up into the air as water \_\_\_\_\_.

b. The water vapour cools and \_\_\_\_\_ as it rises into the air.

c. Drops of water high in the air form \_\_\_\_\_.

d. Drops of water fall to the Earth as \_\_\_\_\_.

e. Water in clouds freezes and falls to Earth as \_\_\_\_\_ or \_\_\_\_\_.

f. Rain, snow and hail bring \_\_\_\_\_ back to the Earth's surface.

TOTAL:

~~16~~  
**24**

16  
24



# NATURAL SCIENCE

**GRADE 5**

# Animal types

## GROUPING ANIMALS

When we group similar things together, it is called classifying.

When classifying animals, there are generally two main groups of animals - those which have bones inside their bodies with a backbone, and those which do not have bones inside their bodies.

• Animals with a backbone are classified as **vertebrates**. • Animals without a backbone are classified as **invertebrate**.

## INVERTEBRATES

Invertebrates are animals that do not develop a backbone (spinal column). They also do not have an endoskeleton (a bony skeleton inside their bodies). They do develop different types of skeletons, like **hydroskeletons** and **exoskeletons**.

These soft-bodied animals mostly have what we call a **hydroskeleton**.

Examples of animals with a hydroskeleton are:

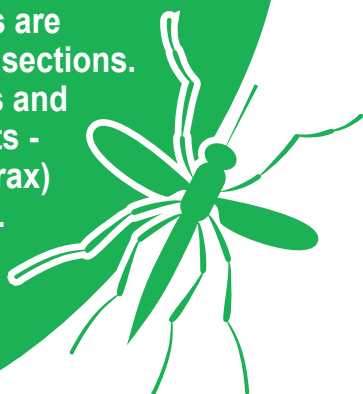
- sea anemones
- earthworms
- jellyfish
- some starfish and sea urchins

Animals with such a body often need to live in or near water or damp soil. Their skins are often thin and moist because they breathe through their skin.

Many invertebrates have a shell or hard covering protecting their bodies. This external skeleton is called an **exoskeleton**.

Insects are in an interesting group of invertebrates

- All insects have exoskeletons.
- They all have segmented bodies and legs. That means their bodies and legs are made up of different sections.
- Insects have six legs and three main body parts - a head, a chest (thorax) and a tail (abdomen).



## VERTEBRATES

Vertebrates are animals that have a skeleton inside their bodies (an endoskeleton). Part of their skeleton is a backbone. A vertebrae is what we call the individual bones that form the backbone.

Vertebrates are broken down into 5 smaller groups:

- Fish
- Amphibians (including frogs)
- Reptiles
- Birds
- Mammals

Vertebrates grow much larger than invertebrates because their bones grow with them and can support their muscles.

## SKELETONS OF VERTEBRATES

You now know that all vertebrates have bones inside their bodies, while invertebrates do not. Every time a vertebrate animal moves, it uses its **bones**, **joints** and muscles.

### Bones

Bones are hard and form a very strong frame structure to support and protect a vertebrate animal's body. Vertebrates all have similar kinds of bones - some are much bigger than others, but the basic structure of the bones is very similar.

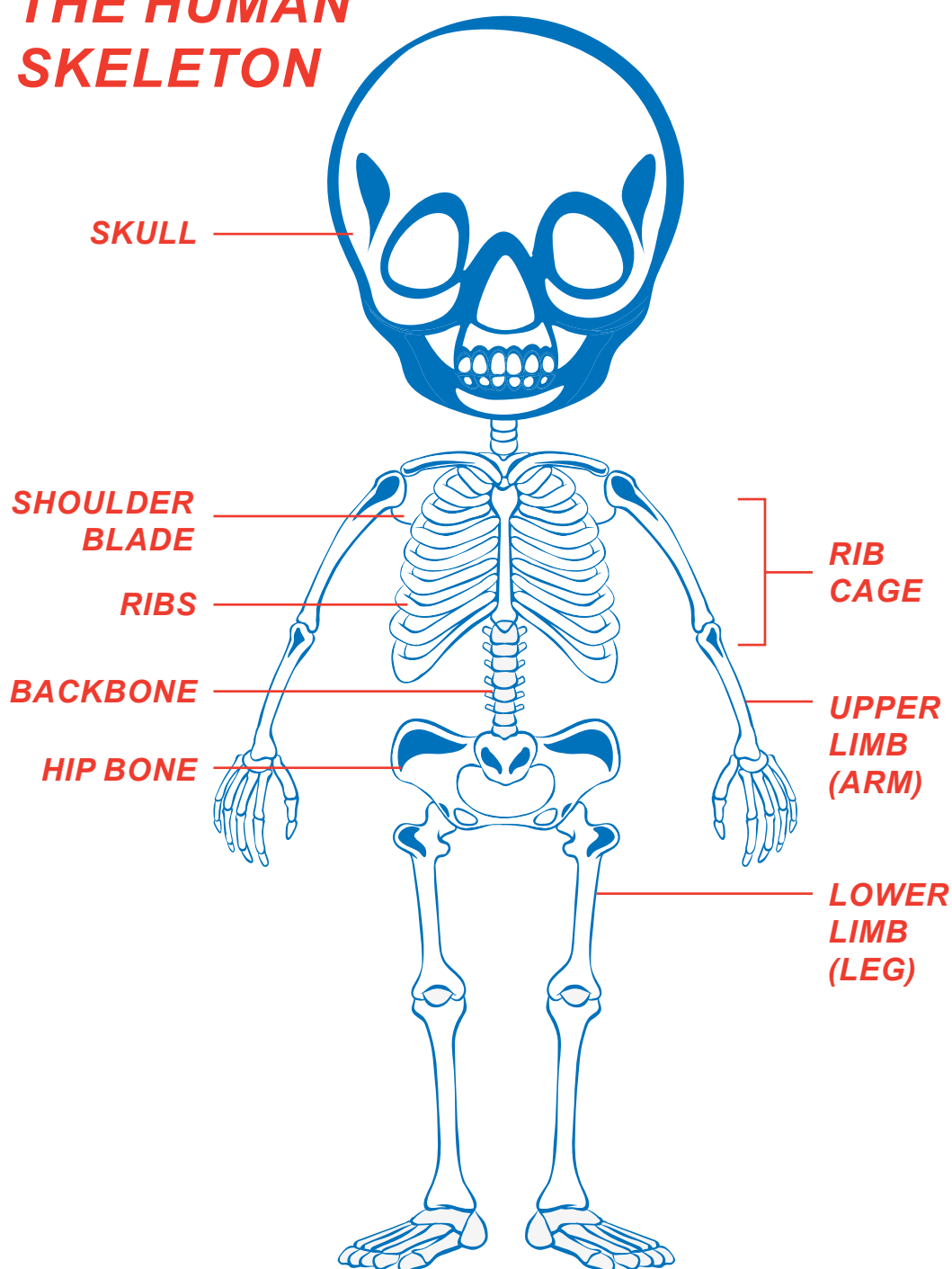
### Joints

Joints are the places where bones come together. They come together in a special way to allow the animal or human to move - like at your elbow or wrist.

Vertebrate animals can move because of two really important things:

1. They have joints between their bones which allow their bones to move.
2. Their muscles are attached to their skeletons.

## THE HUMAN SKELETON





# NATURAL SCIENCE

GRADE 5

# Food chains

## HERBIVORES

Many animals get their energy from eating plants. We call these animals herbivores.

## OMNIVORES

Some animals can eat plants and animals, for instance, baboons or people. We call these animals omnivores

## CARNIVORES

Other animals eat other animals to get energy. We call these animals carnivores.

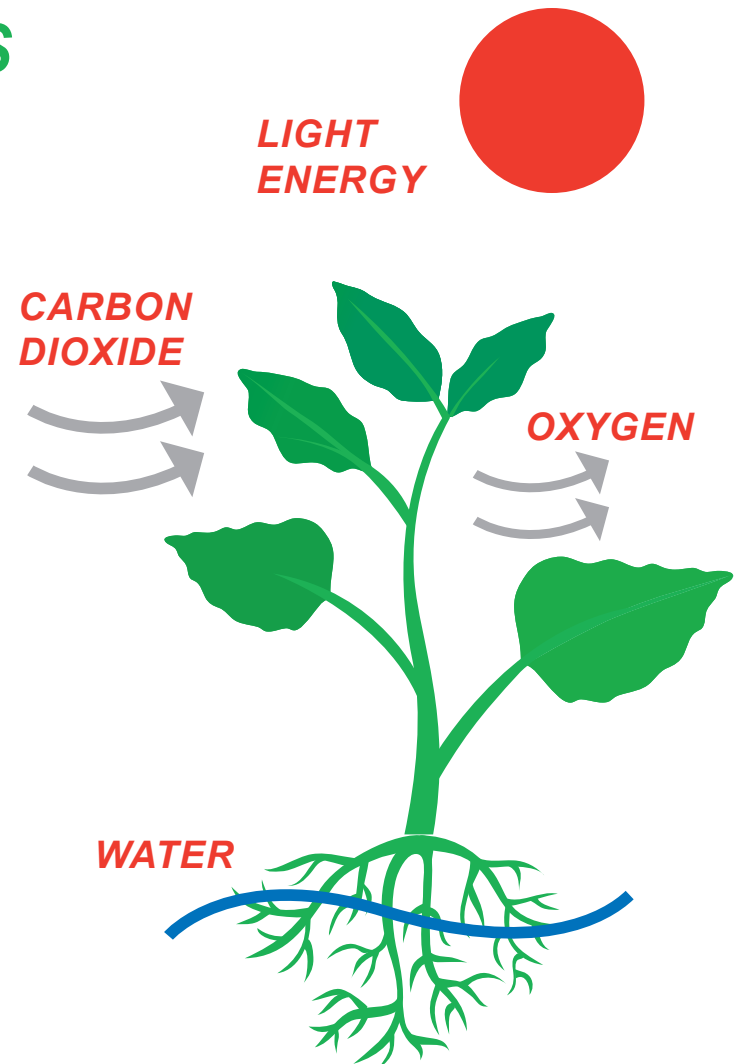
## PHOTOSYNTHESIS

DO YOU THINK PLANTS GET HUNGRY?

IF THEY DO NOT HAVE MOUTHS, HOW DO THEY EAT?

Plants do not **EAT** in the same way humans do. They make their own food inside their little "factories". They do this through a process called **photosynthesis**:

- They absorb water and nutrients through their roots.
- The water travels to the leaf or stem where the plants make the food
- The plants also use carbon dioxide (a gas) from the air.
- They also use energy from the sun (which they get from the sunlight) for this process
- The plants use the water and carbon dioxide gas with the sunlight energy to make food in the form of sugars.
- Oxygen (a gas) is given off as a by-product of this process.
- The plant can then use the food (sugars) that it produced to carry out its own life processes.
- Plants generally make much more food than they need to live. They store the extra food that they make in different parts of the plant.
- Animals then eat these parts of the plant (or the whole plant).

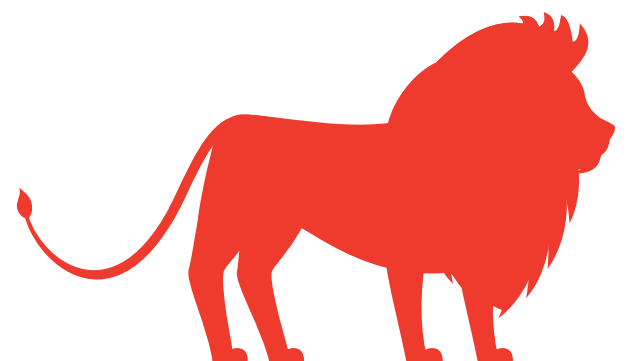
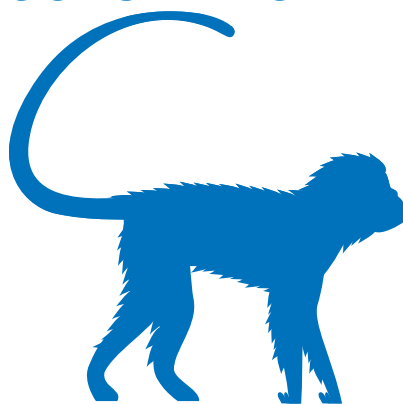
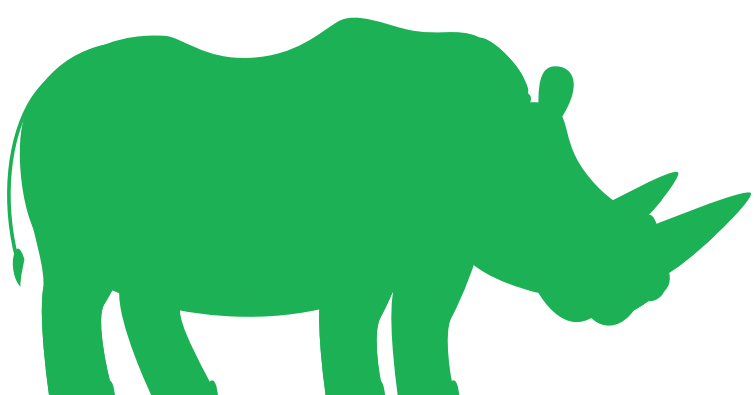


WE GET SPECIAL ANIMALS CALLED **SCAVENGERS** AND **DECOMPOSERS**.

They eat dead animals and break their bodies into tiny pieces that can go into the soil as compost.

These pieces must be small enough for plants to absorb.

**RHINOS ARE HERBIVORES**   **BABOONS ARE OMNIVORES**   **LIONS ARE CARNIVORES**





# NATURAL SCIENCE

**GRADE 5**

## Matter and Materials

### METALS AND NON-METALS

#### Properties of metals

A property is a word used to describe a material or object and tells us something about it.

- Metals are usually shiny. The shine that we see when light reflects off the surface of a metal is called the lustre of the metal.
- Most metals are hard and they feel heavy.
- We say metals are dense as their particles are packed close together.
- Metals conduct electricity and heat well.
- Metals are malleable (they can be shaped into flat sheets) and they are ductile (this means they can be made into thin wire)
- Most metals can be heated to high temperatures without melting or changing their shape.
- Metals are mined from the Earth.

#### Properties of non-metals

Non-metals are materials that do not have the same properties as metals.

- Non-metals are not shiny, but tend to be dull.
- Many non-metals are not bendy (flexible) but brittle. This means that they will break when we try to bend them with enough force.
- Non-metals do not conduct electricity or heat well. We call them insulators. Can you think of a reason why pots and pans often have plastic or wooden handles?



### Comparing metals and non-metals

What have we learnt about the properties of metals and non-metals? Now we are ready to compare the properties of metals and non-metals. Read through the two lists below. Do you agree with the properties that have been listed? Are there other properties that you would like to add?

#### Metals are (mostly):

- solid and strong;
- malleable and ductile (this means they can be hammered or bent into different shapes);
- shiny or silvery (lustrous), especially when they are new; and
- cold to touch.

#### DID YOU KNOW?

South Africa has one of the biggest deposits of platinum in the world. Platinum is a very valuable and expensive metal.

#### Non-metals:

- can be soft or flexible, like rubber;
- can be hard and brittle, like glass;
- do not have a silvery (lustrous) appearance, but tend to be dull;
- can be grouped into different categories (ceramics, wood, rubber, plastic, glass etc.); and
- usually feels neither cold nor hot.

### USES OF METALS

Metals have thousands of uses. We use metals every day, sometimes even without knowing!

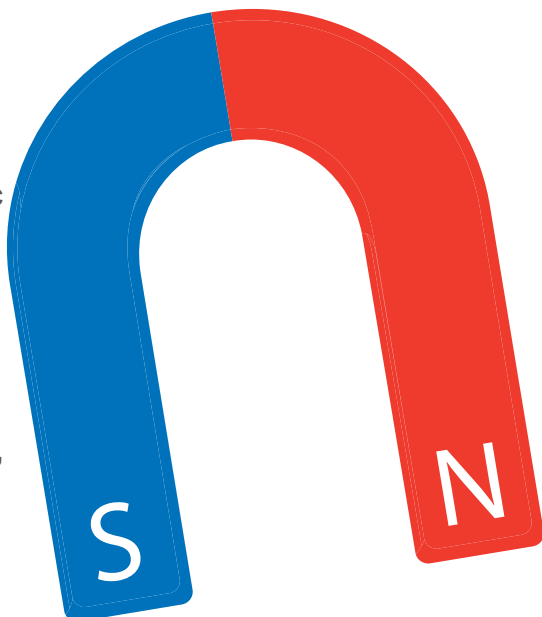
Metals are ductile and good conductors of electricity. This is why metal is used to make the wire inside electrical cables. Without electrical cables we would not have electricity in our homes or schools; we would not have lights or television, or telephones.

Metals are extremely strong and can be turned into thin sheets. These sheets can be used to make the bodies of the cars, trucks, trains and aeroplanes that are used to transport people and goods from one place to another.

#### Metals and magnets

Have you ever played with magnets? Did you notice how magnets attract other magnets, and also certain metal objects? Metals are usually magnetic because they contain iron, though nickel is magnetic despite having no iron.

Magnetic metals include iron, nickel, cobalt and most of their alloys. Some forms of steel are magnetic, while others are not.



### METALS AND CORROSION

Have you ever noticed how some metal objects are shiny when they are new, but over time the shine disappears and they become dull and blotchy? The car in the picture was once shiny and new, but look at it now! It is covered in rust from standing out in the rain for so long.

Rust has a reddish-brown colour and a rough texture. Rust is very common; it is the product that forms when iron corrodes. During corrosion, iron reacts with oxygen in the air or in water to form iron oxide (the chemical name for rust). Rust is a type of corrosion, but it is not the only type.



#### DID YOU KNOW?

Many plastics can be made strong enough to replace metals, glass and other materials. Some cars can be made from these plastics! The plastic weighs much less than metal, and this means the car needs less energy to move around.



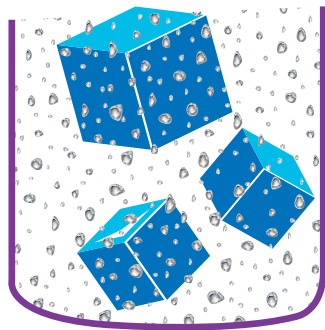


# NATURAL SCIENCE

GRADE 5

## Practice makes perfect! LET'S DO IT TOGETHER.

1. Look at the picture of a glass containing liquid and ice.



1.1 The glass has been placed in a sunny area. Water droplets have formed on the outside of the glass. Which process caused the water droplets to form on the outside of the glass?

- A. Condensation
- B. Evaporation
- C. Precipitation
- D. Run-off

2. What is the correct term for any type of solid liquid or gas? 1

\_\_\_\_\_

3. What is an insulator? 2

\_\_\_\_\_

4. Choose the correct word to fill in the blank spaces: 2

AIM    OBSERVATION    HABITAT    CORROSION

METHOD    CONCLUSION    RUST    APPARATUS

a) \_\_\_\_\_ is what you need for your investigation.

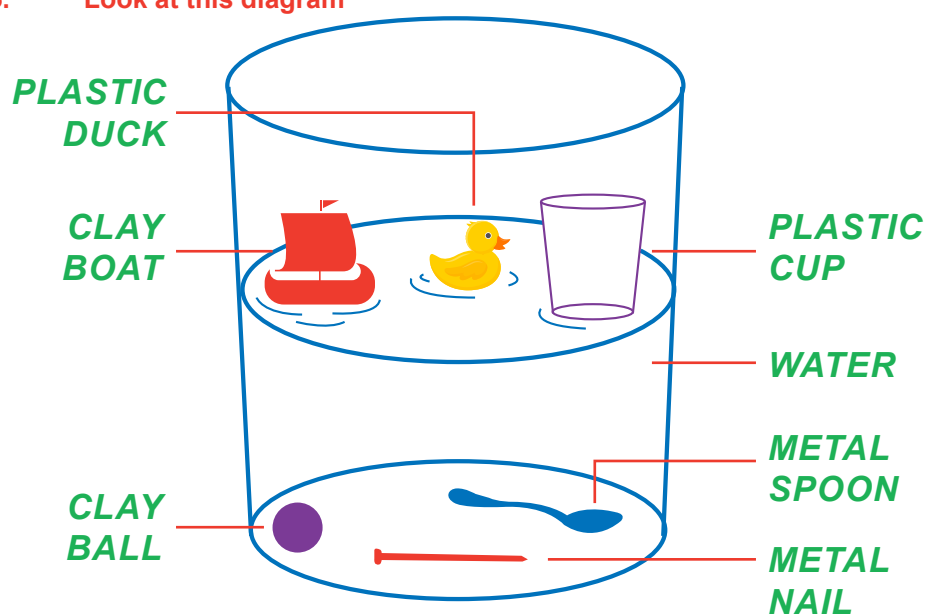
b) A \_\_\_\_\_ is what you learnt.

c) An \_\_\_\_\_ is what you observed while doing an experiment.

d) \_\_\_\_\_ is what you need to find out.

e) A step-by-step instruction explaining what must be done, is called \_\_\_\_\_.

5. Look at this diagram 5



a) Name the objects that are good conductors of heat and electricity.

\_\_\_\_\_

b) Which non-metal objects are floating?

\_\_\_\_\_

c) If I take the plastic cup and fill it with water, would the diagram change?

\_\_\_\_\_

d) What would happen to the plastic cup?

\_\_\_\_\_

e) If someone takes a magnet and holds it against the clay ball, will it be magnetic?

\_\_\_\_\_

f) Name two properties of metal:

\_\_\_\_\_

g) What does it mean if we say an object is malleable?

\_\_\_\_\_

h) What are ceramic materials?

\_\_\_\_\_

i) Which are better at conducting heat: metals or non-metals?

\_\_\_\_\_

j) How can you tell if an object is metal or non-metal?

\_\_\_\_\_

k) Would you rather have a metal coffee mug or plastic coffee mug?

\_\_\_\_\_

l) Explain the properties of a metal mug and a plastic mug, and indicate which properties make the better mug?

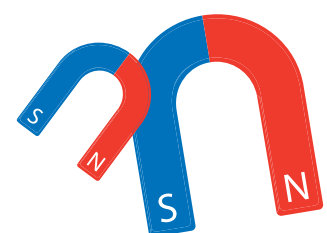
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

TOTAL:

25





# NATURAL SCIENCE

**GRADE 6**

## Photosynthesis

### IMPORTANT REQUIREMENTS FOR PHOTOSYNTHESIS TO HAPPEN:

#### Chlorophyll:

Chlorophyll is a green substance that plants use to capture light energy from the sun. Chlorophyll is very important. Without chlorophyll plants cannot use the sunlight energy to make food. Also, oxygen levels in the air will go down. If that happens plants and animals will suffocate.

#### Sunlight:

Sunlight has energy. Plants use this energy to make sugars from water and carbon dioxide.

#### Water:

The roots of a plant absorb water and nutrients from the soil. Water is a solvent in all living things. Dissolved substances are moved around the body to where they are needed. Just like you, plants have veins for this movement. They move minerals from the

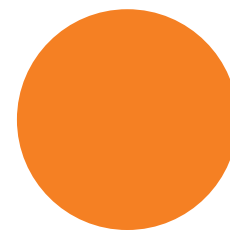
roots upwards. They move sugars from the leaves downwards. Photosynthesis can only happen in a water solution. Water is also important because it provides support to the plant to keep it upright. Like you, plants have skeletons. But unlike you many plants have water skeletons!

#### Carbon dioxide:

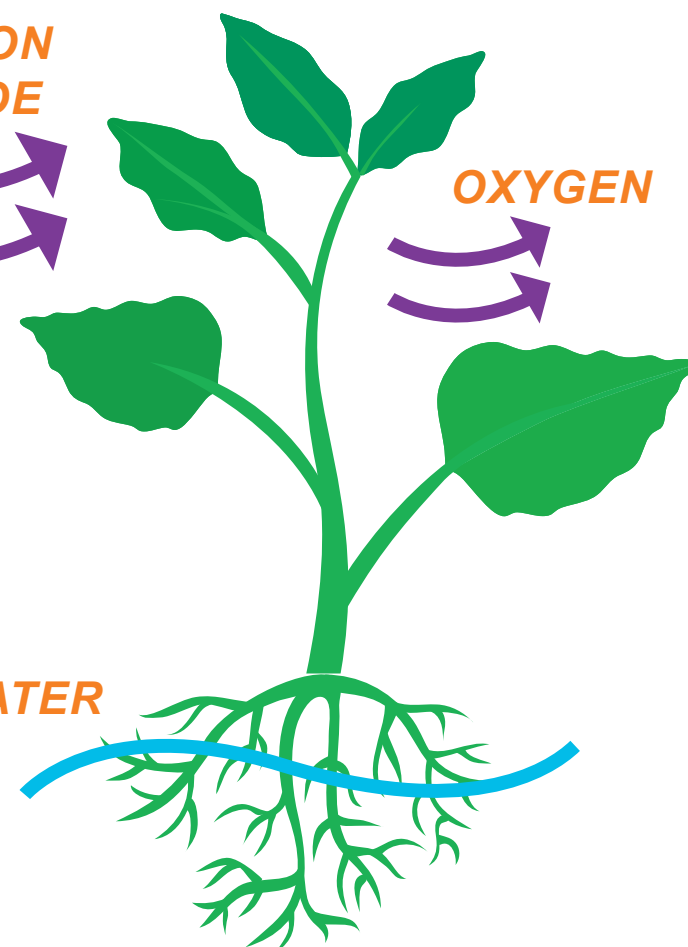
The plant absorbs or takes in carbon dioxide from the air through little holes. These holes are found all over the plant, mostly under the leaves.

#### Soil:

The soil provides mineral nutrients and water for the plant that are necessary during photosynthesis. Soil also provides anchorage to the plant, otherwise the plant cannot stand up straight.

**LIGHT  
ENERGY**

**CARBON  
DIOXIDE**

**OXYGEN**

**WATER**


Animals take in oxygen from the air and produce carbon dioxide when they breathe.

### DID YOU KNOW?

Scientists have a term for substances like chlorophyll that have a colour. They call them pigments. There are other pigments in plants. Can you think of their colours? There are pigments in your body too! Where do you find them? What do they do?

### HOW DOES PHOTOSYNTHESIS OCCUR?

Plants use chlorophyll, sunlight, water and carbon dioxide to make food.

- Chlorophyll captures the sunlight energy.
- This energy splits the water into hydrogen and oxygen.
- The oxygen is released into the air.
- The hydrogen is used with the carbon dioxide to make glucose (sugars).
- The sugars are moved from the leaves to other parts of the plants where they are stored.
- The water in the plant veins carries the sugars. When the sugars reach the storage parts they are changed into starch.

### Plants can store the starch in these places:

- leaves (cabbage, spinach, lettuce)
- fruit (apples, banana, peaches)
- stem (sugar cane)
- seeds (wheat or mealies)
- flowers (nasturtiums, broccoli and cauliflower)
- roots (carrots or beetroot)





# NATURAL SCIENCE

GRADE 6

## Nutrients in food

### CLASSIFICATION OF FOOD GROUPS

The food we eat can be grouped or classified into different types or groups. We call these food groups. Although most foods contain a mixture of more than one nutrient group. Let's look at each food group separately and see why each one is important: There are four main food groups and each food group does a different job in the body

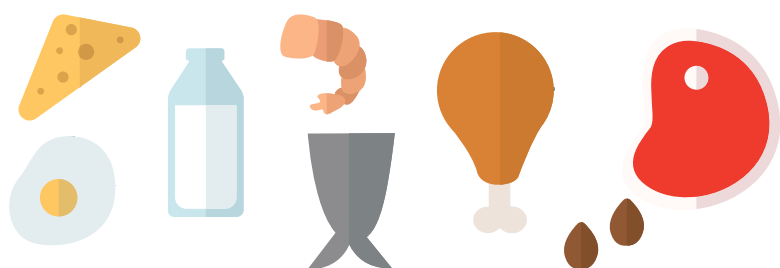
#### FATS AND OILS



##### Lipids - fats and oils:

- Fat is stored around organs like the kidneys to protect them from injury.
- Fat is also stored under the skin to insulate us (keep us warm).
- Fat can be used as reserve energy if there is a shortage of carbohydrates.
- Foods that contain fats include: butter, margarine, sardines, cooking oils, nuts, peanut butter and avocados.

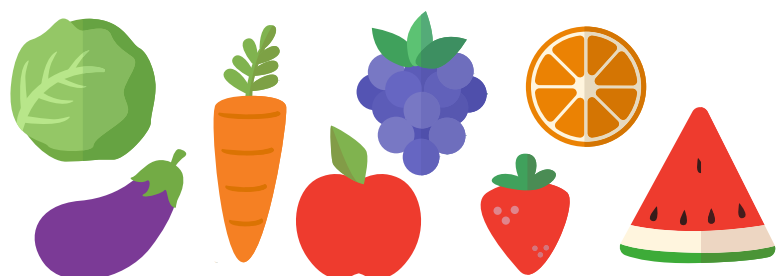
#### PROTEINS



##### Proteins:

- Proteins are the building blocks for our body - they build the body's muscles.
- They also help to repair hurt or broken tissue.
- Proteins can be used as reserve energy if there is a shortage of carbohydrates.
- Some foods that contain proteins are: meat, fish, chicken, eggs, beans, milk and cheese.
- Protein is also found in many plant products: chickpeas, beans, lentils, nuts and soya

#### VITAMINS AND MINERALS



##### Vitamins and minerals:

- Vitamins and minerals are essential to the human body and yet we produce very few of them ourselves.
- Many important minerals are contained in the food we eat. Two of the most important are:
  - Sodium that helps to keep the correct balance of water in the body and is found in most food.
  - Calcium that is important for strengthening of bones and teeth. Calcium can be found in fish, green vegetables, milk and cheese.
- Most vitamins are manufactured by plants, so we get vitamins from the food we eat like fruits and vegetables or from vitamin supplements.

#### CARBOHYDRATES



##### Carbohydrates

- They are the most important source of energy for the body.
- They store energy for the body.
- Carbohydrates are an important part of the body structure.
- Foods that contain carbohydrates are: pasta, samp, potatoes, cereal, mealie meal, porridge and bread.

## PROCESSED FOOD

##### Why do we need food processing?

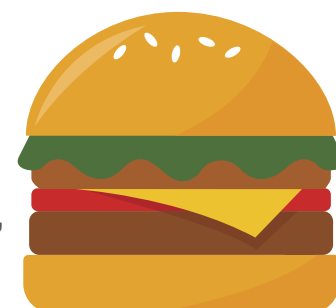
People have been processing food for thousands of years. Before the invention of fridges and freezers, people had to collect food in summer and store it because in winter food is often scarce. They found out that they could preserve food like meat and fish by salting and spicing, and then drying it - this is called curing the meat. In South Africa biltong and bikkoms are examples of cured meat and fish.

##### Processed food ingredients:

- Products with a longer shelf-life, like flours, oils, fats, sugars, syrups margarine, sweeteners and starches, fall into this category.
- The original product has been changed and the ingredient does not look like the original kernel or grain, or oil seed or beans.
- These processing techniques often break down any nutrient values and the manufacturers often add in extra nutrients, vitamins and minerals to their foods.

##### Highly processed foods:

- Highly processed foods include snack foods and desserts, biscuits, cereal bars, chips, cakes and pastries as well as soft drinks and breads, pastas, breakfast cereals and infant formula.
- Animal products that are highly processed include processed meats (smoked, canned, salted or cured, nuggets, fish fingers, viennas, many sausages and boerewors, and burgers).





# NATURAL SCIENCE

**GRADE 6**

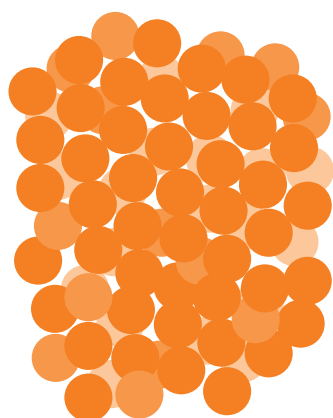
## Matter and Materials

### ARRANGEMENT OF PARTICLES

• **Solids** keep their shape. • **Liquids** flow and take the shape of their container. They fill up a container from the bottom up to a certain level. They take up a fixed amount of space in the container. • **Gases** also flow and take the shape of their container. They always fill up the whole space of the container and will escape if the container is open.

#### PARTICLES IN A SOLID

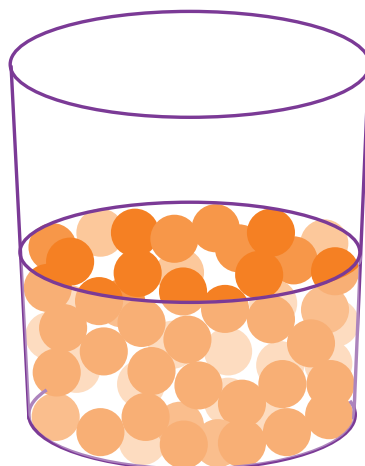
Let's imagine that we can shrink ourselves down to the size of such a 'matter particle'. What would we see if we could look around inside a solid? We would see the particles in the solid are **packed tightly together**. This explains why solids cannot be squeezed into a smaller shape - solids **cannot be compressed**. We would also see that the particles in the solid have **fixed positions**; they cannot move from their positions. This explains why solids **keep their shape**.



The particles in a solid

#### PARTICLES IN LIQUID

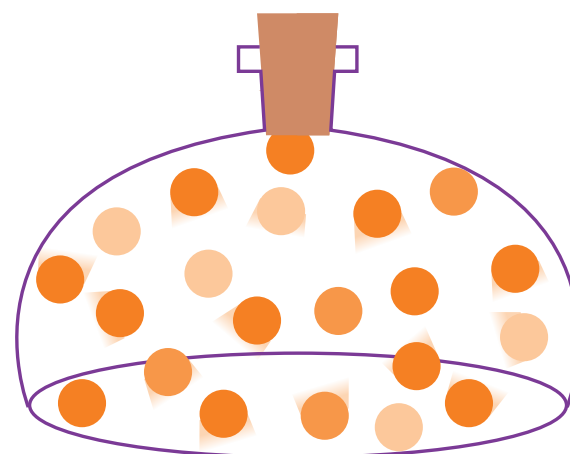
If we could shrink ourselves down to the size of a 'matter particle', and we could look around inside a liquid, what would we see? We would see that the particles in the liquid are also very **close together**. Like solids, liquids **cannot be compressed** either. Unlike solids, the particles in a liquid do not have fixed positions. They are always moving around. This explains why **liquids flow**, to take the shape of their container.



The particles in liquid

#### PARTICLES IN GAS

If we could shrink ourselves down to the size of a 'matter particle', and we could look around inside a gas, what would we see? We would see that the particles in the gas are **far apart**. The spaces between the particles are huge compared to the size of the particles themselves. These spaces are empty! We call this a vacuum. This explains why gases **can be compressed** - they can be squeezed into a smaller shape by pushing them closer together. We can make the spaces between them smaller. The particles of a gas are always **moving freely**. If they are in a closed container, they will **spread out** to fill the whole container. If they are in an open container they will not stay inside for long. They will **flow out** of the container, and disperse (disperse means to spread out over an area or space.)



The particles in gas

## SOLUTIONS

### WHEN IS A MIXTURE ALSO A SOLUTION?

When two substances are mixed it will be possible to still see each substance in the mixture. **Is sugar and sand a mixture? Yes!**

### WHAT IS A SOLUTION?

When two substances make a solution, it will look as if the one substance has disappeared into the other:

- The **substance** that looks as if it has **disappeared** is called the **solute**.
- The **substance** that we can **still see** is called the **solvent**.
- The **solvent and solute together** are called the **solution**.

### SOLUBLE SUBSTANCES

We have a word for substances that form solutions when they are mixed with water. These substances are called soluble substances. Substances that do **NOT** form solutions when they are mixed with water are called **insoluble** substances.

### SATURATED SOLUTIONS

When the particles of a solute spread throughout the particles of a solvent, we say the solute dissolves in the solvent to make a solution.

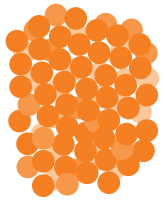


- Solutions cannot be separated by sieving, filtering, hand sorting, or settling and decanting. This is because solute particles are dispersed between the solvent particles.
- Solutions can be separated by heating so that the solvent evaporates. The dry solute will be left behind.

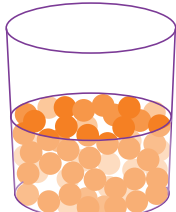


# NATURAL SCIENCE

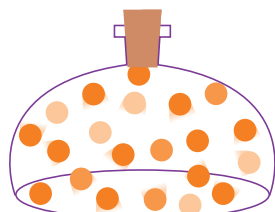
## GRADE 6



The particles in a solid



The particles in liquid



The particles in gas

1. What do we call the solid state of water?  
\_\_\_\_\_  
\_\_\_\_\_ **2**
2. What do we call the gas state of water?  
\_\_\_\_\_  
\_\_\_\_\_ **2**
3. When water in liquid form becomes a gas, what do we call the process?  
\_\_\_\_\_  
\_\_\_\_\_ **2**
4. When water in gas form becomes liquid, what do we call the process?  
\_\_\_\_\_  
\_\_\_\_\_ **2**
5. When water in liquid form becomes solid, what do we call the process?  
\_\_\_\_\_  
\_\_\_\_\_ **2**
6. When water in solid form becomes liquid, what is it called?  
\_\_\_\_\_  
\_\_\_\_\_ **2**
7. Air is a mixture of different gases. What gas in the air do we need to breathe in order to live?  
\_\_\_\_\_  
\_\_\_\_\_ **2**
8. Name two other gases that are found in clean air:  
8.1. \_\_\_\_\_  
8.2. \_\_\_\_\_ **2**
9. When you pour a mixture of sand and water through a filter, the process is called \_\_\_\_\_. **1**
10. Explain why the sand grains stay behind on the filter paper.  
\_\_\_\_\_  
\_\_\_\_\_ **2**
11. What is a mixture of sugar and water called?  
\_\_\_\_\_  
\_\_\_\_\_ **2**

12. What happens if a sugar-and-water mixture is poured through a filter?  
\_\_\_\_\_  
\_\_\_\_\_ **2**
  13. Would it be possible to separate the sugar and the water?  
\_\_\_\_\_  
\_\_\_\_\_ **2**
  14. If yes, how?  
\_\_\_\_\_  
\_\_\_\_\_ **2**
  15. Why is it not possible to separate a solution through a filter?  
\_\_\_\_\_  
\_\_\_\_\_ **2**
  16. A Grade 6 learner investigates how the temperature of water affects how fast salt dissolves in water.  
  
Method: He measures equal amounts of water of different temperatures and pours it into three different beakers. He poured one teaspoon of fine salt into each beaker, stirring the mixture until all the salt has dissolved. He recorded the time it took for the salt to be completely dissolved in each beaker.
  - 16.1. Write down the question that this learner is investigating. (Investigative question)  
\_\_\_\_\_  
\_\_\_\_\_
  - 16.2. Which variable is the learner changing? (independent variable)  
\_\_\_\_\_
  - 16.3. Which variable is the learner measuring? (dependent variable)  
\_\_\_\_\_
  - 16.4. Write down two things that the learner has done to ensure that the investigation is a fair test.  
a. \_\_\_\_\_  
b. \_\_\_\_\_
  - 16.5. The learner recorded his results in the table below  

Beaker	Temperature	Time it took for salt to dissolve
A	5	9 mins
B	25	5.5 mins
C	90	2.8 mins

  
What conclusion can you reach based on the results he recorded?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ **7**
- TOTAL: 25**



# NATURAL SCIENCE

**GRADE 7**

# Biosphere

## WHAT IS THE BIOSPHERE?

A sphere is normally used when talking about a round shape (like a ball). Now, what do we mean when we talk about the biosphere? The prefix 'bio-' indicates something to do with life. For example, 'biology' is the study of living organisms. So, can you put these two meanings together to work out what 'biosphere' means?

We can also use the term biosphere in different ways. When we speak of all life on Earth as it interacts with the non-living rocks and soil, water and air (**atmosphere**), we call this the biosphere. The biosphere is the place where life exists on planet Earth. When we talk about the biosphere, we are talking about a huge system (the whole

world!) and how all the different parts work together to support life.

We can also call a specific part or region on Earth that supports life, a biosphere, especially when we refer to the living organisms and the **environments** in which they live.

## COMPONENTS OF THE BIOSPHERE

In the previous activity we saw that life can be found in water, soil and rocks or the air around us. These components form part of the biosphere and have special names:

- **Lithosphere** which includes the soil and rocks.
- **Hydrosphere** which includes all the water.
- **Atmosphere** which includes all the gases.

The biosphere includes the lithosphere, hydrosphere and atmosphere. The biosphere includes all living organisms, and also dead organic matter.

### ATMOSPHERE

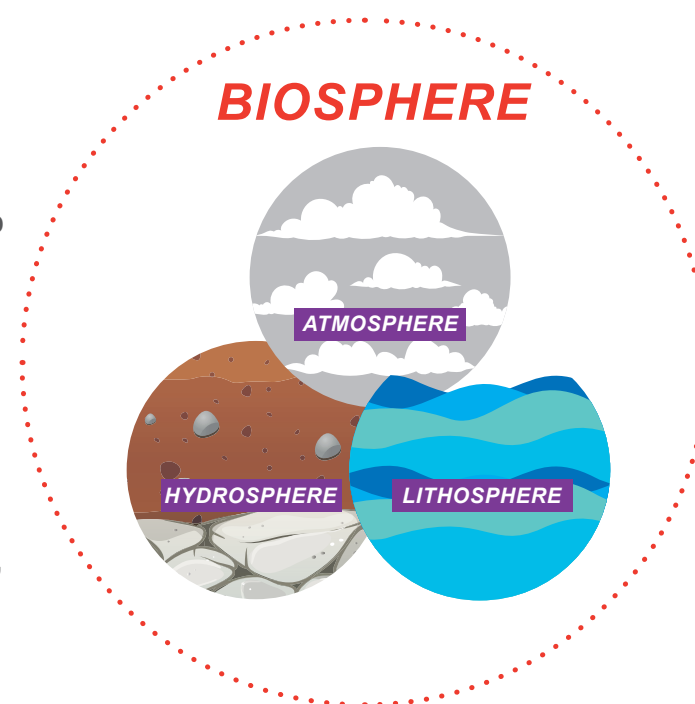
The atmosphere is the layer of gases that surrounds the Earth. The three most important gases in the atmosphere are nitrogen, oxygen and carbon dioxide. The atmosphere is made up of several layers.

### HYDROSPHERE

The hydrosphere consists of all water on Earth in all its forms.

### LITHOSPHERE

As we have said, the lithosphere includes the rocks, soil and sand on Earth. Organisms depend on the lithosphere in many different ways.



**TAKE NOTE**  
'Sustain' means to keep things alive or in existence. We also use the word sustainable when we want to say that something can continue or be continued for a long time.

## CHARACTERISTICS OF LIVING PLANTS AND ANIMALS

**SEVEN PROCESSES THAT ALL LIVING ORGANISMS PERFORM THAT DETERMINE WHETHER THEY ARE ALIVE OR NOT:**

- Movement
- Reproduction
- Sensing the environment
- Growth
- Respiration
- Excretion
- Nutrition

**LIVING ORGANISMS REQUIRE CERTAIN CONDITIONS OR THINGS TO BE ABLE TO STAY ALIVE.**

We say that these things or conditions sustain life. Living organisms require the following to survive:

- Energy
- Gases
- Water
- Soil
- Favourable temperatures

### - ENERGY

All living organisms need energy to stay alive and perform the life processes. Plants need energy from sunlight in order to photosynthesise. Other organisms get their energy from the food that they eat.

### - SOIL

Soil sustains life on Earth. Most plants depend on soil for support, minerals and water. Without the soil, plants would not be able to produce the food that animals and other organisms depend on.

### - GASES

All living things require oxygen for cellular respiration. Oxygen is used to release energy from nutrients and carbon dioxide and water is produced as a waste product of respiration. Green plants also need carbon dioxide to photosynthesise.

### - FAVOURABLE TEMPERATURES

All organisms are adapted to live in a particular temperature. In general, our planet has favourable temperatures to support life. Earth is at an optimal distance from the sun so that it is not too hot, like on Mercury, and not too cold, like on Neptune.

### - WATER

Water is vital to life. Every organism on our planet needs water to live.



# NATURAL SCIENCE

GRADE 7

# Variation

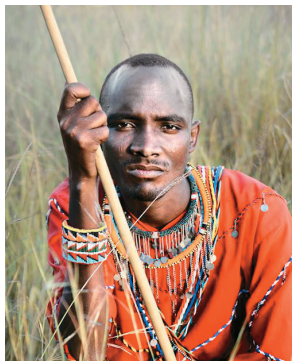
## VARIATION WITHIN A SPECIES

Wherever organisms in a species live, they need to survive in those conditions. We say they are adapted to their environment. Those individuals of a species, which have characteristics that make them more successful at surviving, will reproduce more and pass on their characteristics to their offspring. However, environments change over periods of time. This means that the species needs to constantly change over time to better survive the conditions of their changing habitat. If the organisms do not adapt to their environment, they may not survive, and the species will die out.

ALL HUMANS ON EARTH ARE FROM THE SAME SPECIES, AND YET THERE IS HUGE VARIATION AMONG US. LOOK AT THE FOLLOWING PHOTOS OF PEOPLE FROM AROUND THE WORLD.



Chinese man



Masai warrior from Kenya



Dutch lady



Cambodian boy

People belong to the species *Homo sapiens*.



Zulu children



Indian lady

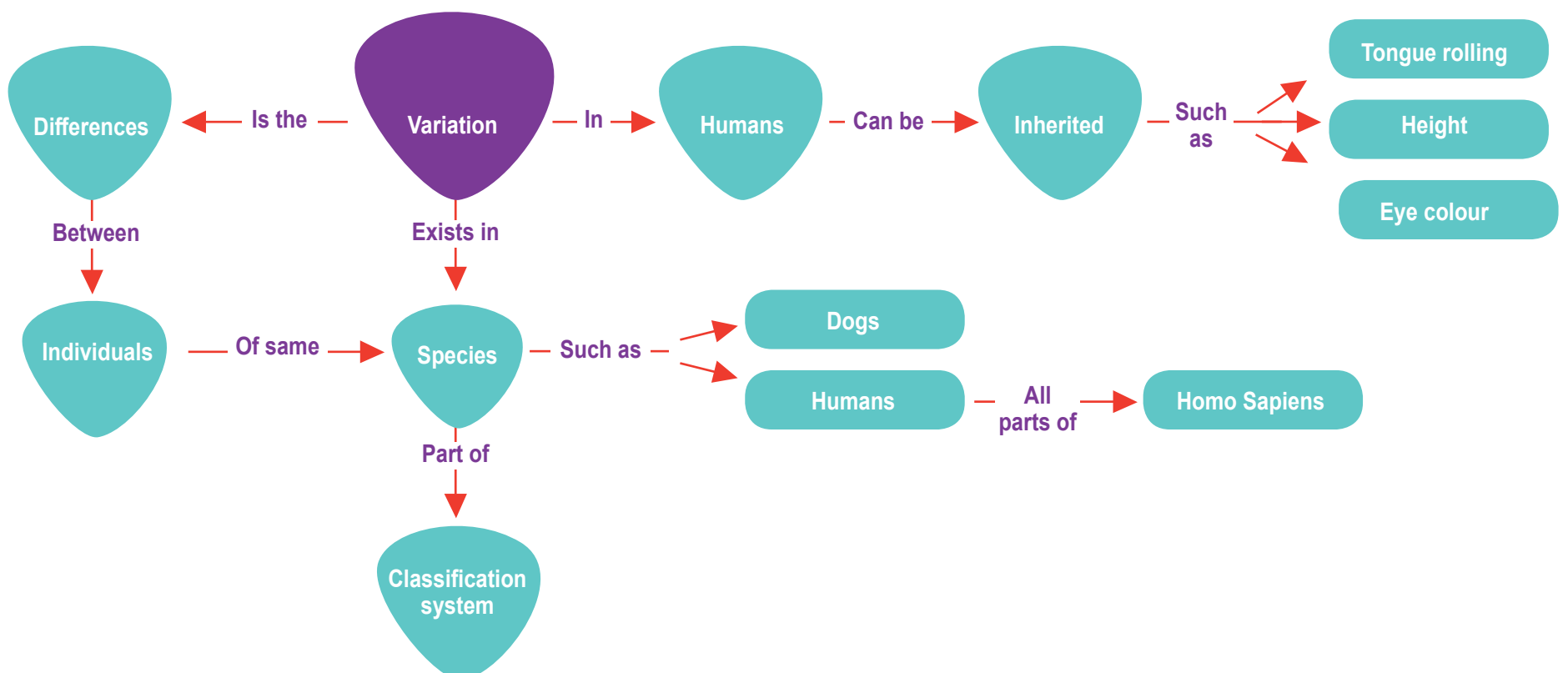


English boy

South Africa is an amazing example of diversity amongst our people. Just think of your school and how much variation there is between all of you in one school. Some learners may be tall and others may be shorter, some have dark hair, some have blonde or brown hair, and there is a range of skin colours in South Africa.

## INHERITANCE IN HUMANS

We say that certain traits are passed down from generation to generation over many years, from parent organisms to their offspring. This is called inheritance. There are some traits which are very easy to see how they are inherited, such as skin colour or height. Did you know that some people are able to wink with one eye but not with both? Or that others can only see some colours but not all the colours - this is called colour blindness.





# NATURAL SCIENCE

**GRADE 7**

## Properties of materials

### WHAT ARE PROPERTIES AND WHY ARE THEY IMPORTANT?

We can describe a metal by saying that it is strong and **durable**. A metal is also **malleable**. This **property**, malleability, means that a metal can be formed into sheets which can be used for a variety of different purposes. For example, metal sheets can be used as roof panels for a house, or to press body panels for a car.

Property	Materials
Strong	Metals, plastics, leather, concrete and wood are all examples of strong materials
Flexible	Some plastics, rubber, some metals (especially in thin sheets) are all examples of flexible materials
Conducts electricity	Metals
Conducts heat	Metals

### WHAT DOES IT MEAN WHEN A MATERIAL IS FLEXIBLE?

Flexible means supple and bendy; able to flex and bend.

### POSSIBLE USES OF FLEXIBLE MATERIALS

Flexible materials can be used to make clothing that needs to bend and fold; tubing or a pipe that needs to bend; coverings for electrical wiring that need to bend around corners; soles of shoes that need to flex when walking, etc.

### POSSIBLE USES OF A MATERIAL THAT IS A GOOD CONDUCTOR OF ELECTRICITY.

Transmission cables for electricity, electrical wiring, electronic components for computers and other electronic equipment, electrical fencing (to protect property), etc.

### POSSIBLE USES OF A MATERIAL THAT IS A GOOD CONDUCTOR OF HEAT.

Good conductors of heat can be used for making pots and pans, heating elements, etc.

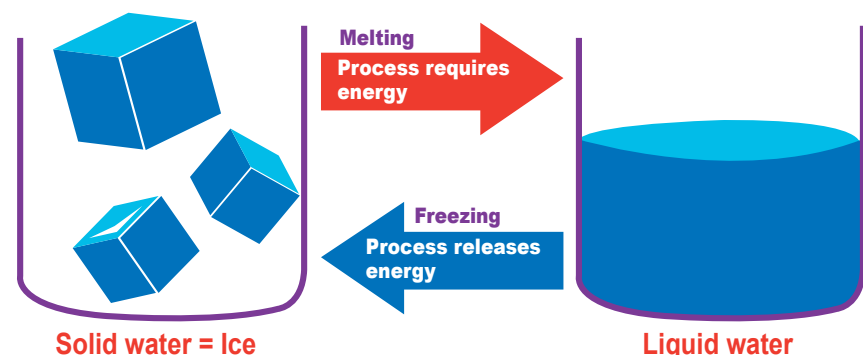
### WE CAN THINK OF CERTAIN PROPERTIES OF MATERIALS IN TERMS OF ADVANTAGES AND DISADVANTAGES.

We call the desirable properties of materials advantages. Disadvantages are unfavourable features, for instance, plastic in the environment. We always have to weigh up the advantages against the disadvantages when we choose materials for a particular job.

### BOILING AND MELTING POINTS

A liquid can change into a gas by evaporation. For example if you leave a saucer of water out in the sun, the water will evaporate. Evaporation can take place at any temperature. But, in boiling, the liquid needs to be heated to reach its boiling point. Bubbles of water vapour then form in the liquid and rise up.

In order to melt ice, we need to add energy to it to raise the temperature to melting point. However, if we want to freeze water, we need to remove (take out) energy from it until the temperature decreases to freezing point.



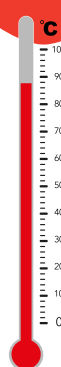
**Heat** is the transfer of energy from one object to another. This happens because of the difference in temperature between the two objects. The transfer of energy will be from the hotter object to the cooler object until they are the same temperature. You cannot measure heat directly, but you can detect its effect on a substance. Changes in heat can usually be detected as changes in temperature.

Water boils at a temperature around 100°C (100 degrees Celsius), depending on factors such as altitude above sea level and atmospheric pressure.

**Temperature** is used to describe how hot or cold something is. Temperature can be measured directly with a thermometer.

### How does a thermometer work?

The common glass thermometer that you see in the image is called a bulb thermometer. All bulb thermometers consist of a fairly large bulb, connected to a long thin tube. The thermometer usually contains some type of brightly coloured liquid. Liquids take up less space when they are cold and more space when they are warm; we say they contract when they are cooled and expand when they are warmed.





# NATURAL SCIENCE

## GRADE 7

### Practice makes perfect! LET'S DO IT TOGETHER.

Materials are substances that we use to make things or do things with. We choose materials for certain uses because of the properties of those materials. For example: We use concrete to build buildings because concrete is very strong. We use copper for electric wires because copper conducts electricity very well. Materials can have the following properties:

- strong
- shiny
- flexible
- durable
- coloured
- stretchy
- ductile
- malleable

**1. Fill in the missing words:**

1.1 The set of characteristics that describe a material are called the \_\_\_\_\_ of that material.

1.2 Materials that can be bent are called \_\_\_\_\_.  
(Some plastics have this property)

1.3 A material that conducts heat well is said to have a high \_\_\_\_\_.

1.4 Complete the following table by adding the names of different materials that have the properties listed:

Property	Materials
Strong	_____
Flexible	_____
Conducts electricity	_____
Conducts heat	_____

**2. Which of the above properties would be important if you were choosing material for:**

- a) a cooking pot \_\_\_\_\_
- b) wires to distribute electricity \_\_\_\_\_

**3. The property of materials determine their suitability for a particular use. What materials are suitable to wrap a sandwich in?**

- A. Cling wrap
- B. Cardboard
- C. Newspaper
- D. A fabric cloth

**4. Explain why each of the above materials is suitable or not suitable in which to wrap a sandwich.**

- A. \_\_\_\_\_
- B. \_\_\_\_\_
- C. \_\_\_\_\_
- D. \_\_\_\_\_

**5. What are each of the above materials better suited for? Why do you say that? Explain their properties.**

- A. \_\_\_\_\_
- B. \_\_\_\_\_
- C. \_\_\_\_\_
- D. \_\_\_\_\_

**6. Compressive strength: strength of an object that stops it from being crushed or changing shaped when it is pushed or squeezed.**

**Tensile strength: strength of an object that stops it from breaking when it is pulled apart.**

**Flexibility: ability to bend easily**

- A. Concrete
- B. Bricks
- C. Steel
- D. Rubber
- E. Fabric

6.1. Which of the materials have compressive strength?

\_\_\_\_\_

6.2. Which of the materials have tensile strength?

\_\_\_\_\_

6.3. Which of the materials have flexibility?

\_\_\_\_\_

**7. Explain why the material is not suitable for the object:**

- a) Rubber ladder  
\_\_\_\_\_
- b) Glass knife  
\_\_\_\_\_
- c) Wire mesh bucket  
\_\_\_\_\_
- d) Cardboard lamppost  
\_\_\_\_\_
- e) Iron soccer ball  
\_\_\_\_\_

**8. Matter can change its state.**

When a substance melts, it changes from solid to liquid.  
When a substance boils, it changes from liquid to gas.

8.1. What needs to happen to water to make it turn into a solid state?

\_\_\_\_\_

8.2. What happens to water when it reaches boiling point?

\_\_\_\_\_

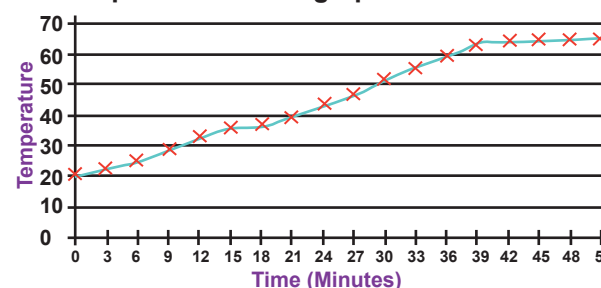
8.3. We use a \_\_\_\_\_ to measure temperature.

8.4. True or false? All liquids boil at 100°C.

\_\_\_\_\_

**9. A scientist wants to determine the boiling point of an unknown liquid. She places the unknown liquid in a beaker and carefully heats it on a hotplate. The scientist measures the temperature of the liquid at regular time intervals (every 3 minutes). Afterwards, she draws the following graph:**

9.1. At what temperature does the unknown liquid boil? Show this temperature on the graph.



9.2. How long does it take for the unknown liquid to start boiling?

\_\_\_\_\_

9.3. The scientist suspects that the unknown liquid is one of the substances on the following list. Use the list to identify the unknown liquid. Say why you think it is this substance.

Substance	Boiling point ( °C )
Acetone	56
Methanol	65
Ethanol	78
Isopropanol	83
Water	100

\_\_\_\_\_

9.4. What was the temperature of the unknown liquid at the start of the experiment?

\_\_\_\_\_

TOTAL:

RioTinto

Richards Bay  
Minerals

# Grade 4 - 7 **LEARNING!** THROUGH LOCKDOWN



**T**his supplement was compiled with the aim to assist learners from Grades 4 to 7 to master the subjects of Natural Science and English for the 2nd term of the academic year. In addition to working through this book, learners are advised to consult their CAPS textbooks as well as online resources availed by the Department of Education.