

[Titre du document]

Technical English



PC

Dr . MERZOUKI SORAYA

Technical English

I. Introduction:

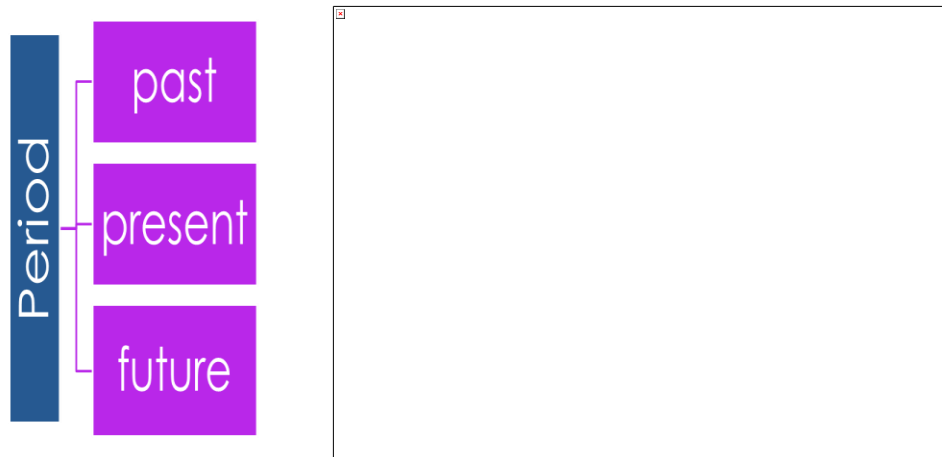
The course titled "Technical English" is designed for second-year process engineering Licence Students at the University of A. Elhafidh Boussouf of Mila. Its primary aim is to help students develop and enhance their study and learning skills. As students cultivate these skills, they are better equipped to make effective choices and achieve academic success.

A solid understanding and correct application of grammar are essential for effective communication in both educational and professional contexts. Mastering grammar enables students to express themselves clearly, convey their intended meanings, and engage in meaningful dialogue with others. By grasping the principles of grammar, students become confident and proficient communicators.

II. Tenses in English

Tenses allow for the expression of timing and duration of actions. In English, there are 12 tenses that we will learn and compare.

There are three periods :



As you see the names are the same for group, which makes things a little easier.

each

Each tense has its unique grammatical structure, simple, continuous, perfect and perfect continuous:

	Past	Present	future
Simple	Past simple	Base verb	Will + base verb
Continuous	Was/ were + verb+ing	Am/are/is + verb+ ing	Will + be + Verb+ing
Perfect	Had+ past participle	Have/has + past participle	Will have + past participle
Perfect Continuous	Had been + Verb+ing	Have/ has been+ Verb +ing	Will have been+ Verb +ing

If this seems confusing, don't worry—we will go through all of these step by step. First, we will look at the simple tenses, followed by the continuous tenses, and so on.

Why?

By learning these tenses together, we can compare them to highlight their similarities, and the groups will become more challenging as we progress. Building a strong foundation with the simple tenses will make it easier to learn the more complex ones. For example, to understand the present perfect, you first need to grasp the simple present and the simple past.

II.1. Simple tenses:

Past simple:

Subject+ **past simple verb** (verb2) +...

I woke up at 6:30 am every day

Present simple:

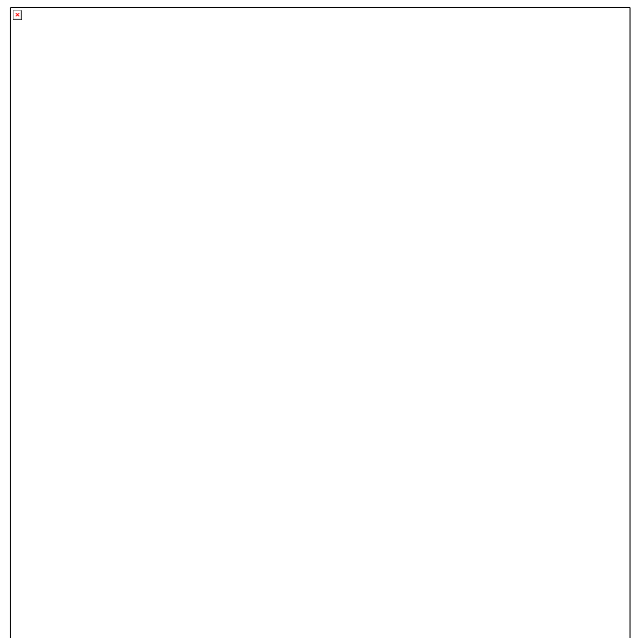
Subject+ **base verb** (infinitive or bare verb) (verb1) +...

I wake up at 6:30 am every day

future simple:

Subject+ **will+ base verb** (verb1) +...

I will wake up at 6:30 am every day



Verb(1) **verb(2)** **verb(3)**

Here's a clear breakdown of the key tenses on a timeline to help you visualize their relationships:

I **wake up** at 6 a.m. every day
(It's normal for me for now)



When I was kid,
I **woke up** at 6 am every day
(it was normal for me)

I **will wake up** at 6 am every day,
starting January
(it will be normal for me)

We use **simple tenses** to talk about habits, repeated actions, unchangeable situations, and facts. However, when using the **simple past** or **simple future**, it's important to mention or imply a specific time either in the sentence, conversation, or context.

- *I visited my grandmother **last weekend**.*
- *I will visit my grandmother **next weekend** (promises or predictions).*

"More examples:"

Repeated actions:

Students did their homework online, **during the pandemic**

Students do their homework online

Students will do their homework online, **beginning in May.**

Facts:

We also use **simple tenses** to describe states, situations, feelings, or opinions. These typically refer to conditions that are true at a particular moment or over time.

- *I had long hair until I turned 18.*

I have long hair.

In a few months, I will have long hair.

- *I feel tired today.*

I felt tired after the trip.

I will feel better tomorrow.

- *Last year, Amine was our team leader.*

Amine is our team leader.

Next Month, Amine will be our team leader.

These simple tenses help us convey emotions, attitudes, and situations clearly without needing complex structures.

We also use the **present simple** for scheduled events, especially those with fixed timetables or planned activities (we can't control over).



- **Examples:**

Our train leaves at 9 PM.

The movie starts in 30 minutes.

I return to Paris; my classes start next week.

II.1. How to use the simple present:

1. To talk about habits or routines, schedules and facts.
2. Add “s” to the verb for **he, she, and it** except:
 - add “es” to verbs ending in **sh, ch, s** and **z**.
 - change “y” to “i” and add “es” to verbs ending in a **consonant + y**.

Examples:

Study	Studies	fix	fixes
Help	Helps	buy	buys
Miss	Misses	watch	watches
Fly	Flies	worry	worries

The simple present of irregular verbs: be, do, go, have:

I	}	Do	He	}	does	I	}	am	He	}	is
You		Go	She		goes	You		are	She		
We		Have	It		has	They		we	it		
They											

Negative Statements in the Simple Present

- I, you, we, they:

Subject + **do not (don't)** + verb + ...

 - I don't study chemistry every day.
 - They don't observe any changes in the experiment.
- He, she, it:

Subject + **does not (doesn't)** + verb + ...

 - He doesn't conduct experiments on weekends.
 - The solution doesn't change colour under normal conditions.

Note: The main verb remains in its base form after “do/does.”

Interrogative Statements in the Simple Present

- I, you, we, they:

Do + subject + verb + ...?

- Do you measure the temperature regularly?
- Do they analyze the data thoroughly?

- He, she, it:

Does + subject + verb + ...?

- Does she study molecular biology?
- Does the experiment require constant supervision?

Note: In questions, the main verb stays in its base form after “do/does.”

II.2. How to use the simple past:

1. The **past simple** describes a completed action at a specific point in the past. The action can be recent or distant.
2. It can also describe an action with a **long duration** that started and ended in the past.

He lived in Paris for three years.

They worked all day yesterday.

3. **Mentioning a Specific Time:**

The past simple often requires a **specific time reference**, such as *yesterday*, *last year*, *in 2010*, or *two hours ago*.

She visited the university last week.

I finished my project two days ago.

4. The **past simple form** stays the same for **all subjects**: *I*, *you*, *he*, *she*, *it*, *we*, *they*
I played soccer. / She played soccer.
5. **Forming the Past Simple of Regular Verbs:**

- **Add "-ed"** to the base form of the verb. *talk* → *talked*

- **Verbs ending in "e":** Add only "d". *live* → *lived*
- **Verbs ending in a consonant + "y":** Change "y" to "i" and add "ed". *cry* → *cried*
- **Verbs ending in a vowel + "y":** Simply add "ed". *play* → *played*
- **One-syllable verbs ending in consonant + vowel + consonant:** Double the final consonant and add "ed" (except **w** or **x**). *stop* → *stopped*
- **Two-syllable verbs ending in consonant + vowel + consonant:** Double the final consonant only if the **stress** is on the last syllable. *admit* → *admitted*
- **Do not double the final consonant** if the **stress** is on the first syllable. *open* → *opened*

Activity: conjugate the following verbs into the present simple tense (using "he") and into the past simple tense.

verb	Present simple	Past simple	verb	Present simple	Past simple
learn	Learns	Learned	happen	Happens	Happened
Play	Plays	played	carry	Carries	Carried
decide	Decides	Decided	enjoy	Enjoys	Enjoyed
want	Wants	wanted	drop	Drops	Dropped
Like	Likes	liked	start	Starts	Started
Show	Shows	Showed	follow	Follows	Followed
Look	Looks	looked	refer	Refers	Referred
heat	Heats	Heated	mix	Mixes	Mixed
Pour	Pours	Poured	clap	Claps	Clapped

6. Forming the Past Simple of Irregular Verbs:

It indicates that converting a verb to its past tense is not as simple as merely adding 'ed' to the end. Unfortunately, about 70% of the time, when we use a verb in English, it's irregular. Irregular verbs can be frustrating, but they do follow some patterns. To help us remember them better, we can divide these verbs into groups.

Here are some common patterns for the common irregular verbs in English:

A. **No Change:** The base form and the past tense are the same.

bet, bid, burst, cost, cut, fit, hit, hurt, let, put, quit, set, shut, split, spread, read

B. **Vowel Change:** The vowel in the verb changes.

Blow	Blew	Blown	Begin	Began	Begun	Choose	Chose	Chosen
Draw	Drew	Drawn	Drink	Drank	Drunk	Freeze	Froze	Frozen
Grow	Grew	Grown	Ring	Rang	Rung	Take	Took	taken
Know	Knew	Known	Sing	Sang	Sung	Forgive	Forgave	Forgiven
Throw	Threw	Thrown	Sink	Sank	Sunk	Fall	Fell	Fallen
Fly	Flew	Flown	Swim	Swam	Swum	Lie	Lay	Lain
Bite	Bit	Bitten	Run	Ran	Run	Eat	Ate	Eaten
Beat	Beat	beaten						

wake	Woke	Woken	Become	Became	Become
break	Broke	Broken	Come	Came	Come
wear	Wore	worn	Dig	Dug	Dug
write	Wrote	Written	Hang	Hung	Hung
Rise	Rose	Risen	Sit	Sat	Sat
drive	Drove	Driven	Win	Won	Won
ride	Rode	Ridden	Hold	Held	Held
Get	Got	Gotten	Understand	Understood	Understood
Forget	Forgot	Forgotten	Meet	Met	Met
			Lead	Led	Led

C. **Different Consonants:** Some verbs change both vowels and consonants

Feel	Felt	Felt	Hear	Heard	Heard	Be	Was /Were	Been
Keep	Kept	Kept	Lay	Laid	Laid	See	Saw	Seen
Sleep	Slept	Slept	Pay	Paid	Paid	Do	Did	Done
Lose	Lost	Lost	Say	Said	Said	Go	Went	Gone
Leave	Left	Left	Sell	Sold	Sold			
			Tell	Told	Told			
			Have	Had	Had			

Bend	Bent	Bent	Bring	Brought	Brought
Send	Sent	Sent	Buy	Bought	Bought
Lend	Lent	Lent	Fight	Fought	Fought
Spend	Spent	Spent	Think	Thought	Thought
Build	Built	Built	Teach	Taught	Taught
Mean	Meant	Meant	Catch	Caught	Caught
Dream	Dreamt	Dreamt			
Burn	Burnt (ed)	Burnt (ed)			

Negative Statements in the Simple Past:

Subject + did not (didn't) + verb + ...

- The particles did not collide during the experiment.
- The enzyme did not catalyze the reaction under low temperatures.
- **Note: The main verb remains in its base form after “did”**

Interrogative Statements in the Simple Past

- Did + subject + verb + ...?
 - Did the solution change colour after heating?

Note: In questions, the main verb stays in its base form after “did”

II.3. How to use the future simple:

1. The simple future is used to talk about an action or state that will begin and end in the future. It communicates willingness and expresses an expectation, a prediction, or a guess
2. It uses the auxiliary verb **will** + main verb +...
 - The catalyst will accelerate the reaction under optimal conditions. (prediction)
 - The gas will compress when pressure is applied
 - The solution will turn pink in the presence of phenolphthalein if the pH exceeds 8.2.
3. **will** is conjugated the same way regardless of the sentence's subject in person or number.

4. *Negative statement:*

Subject + will + not + base verb + ...

I **will not quit** before I reach my goal.

5. *Interrogative statement:*

will + Subject + bare verb + ...?

Will we have time to finish the program before the end of the semester?

II.2. Continuous tenses



past continuous

to be in simple past+
Verb+ing



present continuous

to be in simple present
+verb+ ing



future continuous

to be in simple future
+verb+ ing

1. The continuous tenses are used for actions happening before and after a specific time. With the present continuous, it is clear that we are referring to the present. Still, a specific time must be mentioned in the same sentence or within the context of the conversation or text for the past or future continuous tenses.

- We **are recording** the pH values of the solution as the titration progresses.
- While the compound **was dissolving** in water, we observed a temperature change.
- By this time tomorrow, the team **will be testing** the stability of the new polymer under high temperatures.

2. **Forming ing Verbs:**

- **Add "-ing"** to the base form of the verb. *read* → *reading*
- **Verbs ending in "e"**: move the "e" and add "**ing**". *analyze* → *analyzing*
- **Verbs ending in a consonant + "ie"**: Change "**ie**" to "**y**" and add "**ing**". *die* → *dying*
- **Verbs ending in "y"**: Add "**ing**". *flay* → *flaying*
- **One-syllable verbs ending in consonant + vowel + consonant**: Double the final consonant and add "**ing**" (except **w** or **x**). *drop* → *dropping*
- **Two-syllable verbs ending in consonant + vowel + consonant**: **Double the final consonant** only if the **stress** is on the last syllable. *prefer* → *preferring*

Do not double the final consonant if the **stress** is on the first syllable. *enter* → *entering*

3. Is this action temporary or permanent?

Permanent	Temporary
Long-term or forever	short term

The continuous expresses a temporary action or situation, not a permanent or repeated action like simple tenses.

4. The continuous tenses can represent the main action, but many times they describe a background action, with another main action occurring simultaneously or interrupting the background action. This is often seen with the **past continuous** and **future continuous** tenses.

a) Past Continuous (background interrupted by main action):

I was heating the solution when the beaker **cracked** due to a sudden thermal shock.

(The background action is "heating the solution," interrupted by the beaker cracking.)

b) Past Continuous (simultaneous actions):

The assistant **recorded** the time, while the chemist was titrating the acid,
(Both actions happen at the same time.)

c) Future Continuous (simultaneous actions):

Tomorrow at 10 a.m., we will be testing the pH while the supervisor **will bring**
the reagents for the next experiment.

(Both actions will occur simultaneously in the future.)

d) Future Continuous (background with interruption):

During the experiment, we will be monitoring the reaction in case any unexpected color change **occurs**.

(The background action "monitoring" continues until or unless interrupted by a colour change.)

5. The present continuous tense for the future: it can be used to discuss fixed plans or arrangements, especially when the plan is already decided or scheduled. We don't use the simple future here because it does not describe a habit, state, prediction, or promise. The present continuous emphasizes that the action is definite and usually involves preparation or a prior agreement

There is also the "be going to" + verb structure to talk about the future, but it is often used to express future intentions (that may or may not be finalized). In contrast, the present continuous suggests that the plan is more certain, as the arrangements are already in place.

- We are running the titration experiment at 9 a.m. tomorrow.
- I am presenting my research findings at the seminar next Monday.
- The lab technicians are setting up the chromatography equipment this afternoon.
We are going to analyze the sample later today.
The chemist is going to check the pH levels soon.

6. We don't use continuous tenses with stative verbs.

Stative verbs help us describe a state of mind or a state of being. They are never used to describe an action (like action verbs or dynamic verbs). These verbs usually refer to emotions, senses, beliefs, opinions, relationships, possessions, and states of being which don't change often. So, we use the simple tenses.

Mental stative verbs	Physical stative verbs
Agree-disagree-like-dislike-be-believe-concern-deny-depend-love-hate-want-doubt-feel-hate-imagine-impress-satisfy-wish-prefer-need-mind-care-astonish-please-surprise-know-think-understand-guess-recognise-mean-suppose-realise-remember-forget-promise-matter-feel-hear-see-smell-sound-taste-touch-look-seem	Belong-consist-contain-fit-have-own-cost-include-involve-lack-owe-possess-weigh

Sometimes we use a stative verb but we mean the dynamic action, in this case, we can use the continuous form

1. **"Think"**
 - **Stative:** I **think** this reaction is exothermic. (I believe/opinion — state)

- **Dynamic:** I **am thinking** about designing a new experiment. (Temporary mental process — action)
- 2. **"Have"**
 - **Stative:** The lab **has** all the equipment we need. (Possession — state)
 - **Dynamic:** I **am having** trouble balancing the chemical equation. (Experiencing difficulty — action)
- 3. **"See"**
 - **Stative:** I **see** the precipitate forming in the solution. (Perception — state)
 - **Dynamic:** I **am seeing** the professor tomorrow to discuss the project. (Meeting — planned action)
- 4. **"Be"**
 - **Stative:** The compound **is** unstable. (Permanent characteristic — state)
 - **Dynamic:** You **are being** too careless with the measurements. (Temporary behavior — action)
- 5. **"Taste"**
 - **Stative:** The solution **tastes** bitter. (Permanent quality — state)
 - **Dynamic:** I **am tasting** the mixture to confirm its acidity. (Intentional action — process)
- 6. **"Look"**
 - **Stative:** The liquid **looks** cloudy. (Appearance — state)
 - **Dynamic:** He **is looking** at the experiment notes now. (Action of observing — process)

Negative statement:

Subject +to be in the simple tense + not + verb + ing +...

- I'm **not writing** a report.
- They **weren't doing** the necessary tests.

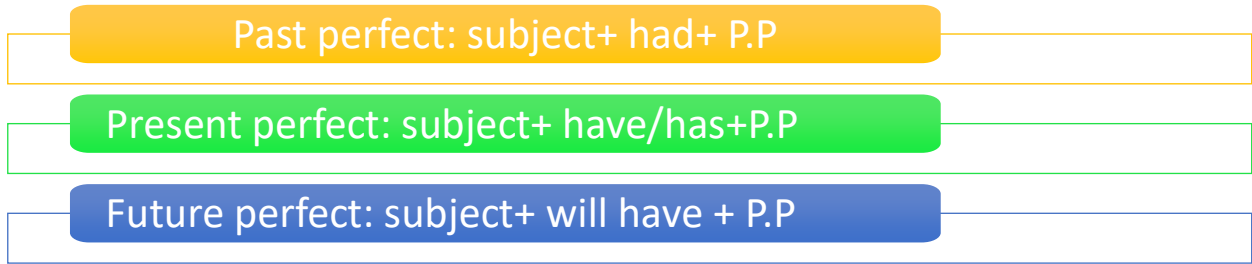
Interrogative statement:

To be in simple tense + subject +verb + ing + ...?

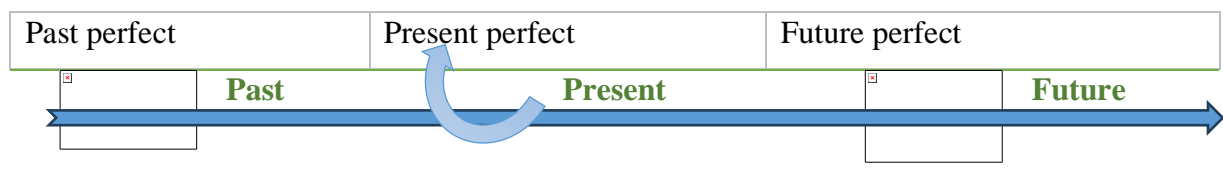
- 'Are you waiting for your supervisor?' 'No, **I'm not/I am not.**'
- 'Are you waiting for your supervisor?' 'Yes, **I am.** (Yes, **I'm- wrong answer**)

Note that we can use **short forms only in negative short answers**, but not in positive short answers.

II.3. Perfect tenses



The perfect tenses are special because they emphasize an action that happened before something else (present perfect before now, past perfect before another past point, and future perfect before another future point).



1. Present perfect:

I **have finished** writing my practical work report.

Before now (present) is not the past simple; it's simply an unspecified time before now.

Why do we use the present perfect tense instead of the simple past tense?

It's more general, and we don't need to know when we are interested in the experience.

The simple past is more specific (we need to mention the time).

- I **have studied** the first thermodynamic principle.
- I **studied** the first thermodynamic principle last year.

(The present perfect is very common in interviews because the interviewer is interested in experience not specifically when things happened).

What happens if the action isn't finished?



If the action started in the past, and it's still true now, we can also use the present perfect:

- I have studied process engineering for 4 years.
- I have had long hair my entire life.
- They have known each other since high school.

Expressions like for 4 years, my entire life, since high school; all of these tell us how long, and this is common in the present perfect (there is a connection between the past and the present). Remember we can't use the present simple or the present continuous, because these tenses don't capture this past-to-present link as effectively (it is often used in adverbs like: yet, still, already, just, since, for, never, ever and even...).

2. *Past perfect:*

The past perfect tense is used to describe an action that was completed before another specific point in the past.

- The lab had completed the quality control tests before they began the production process yesterday.
- They had gathered all the necessary raw materials before they started the mixing process."

And just like the present perfect, the past perfect can also show a past-to-past connection (it is often used adverbs like: still, already, just, never, ever, and even...).

- I saw the email this morning, I had just woken up.
- She didn't even know the first test had happened.

3. *Future perfect:*

It describes an action that will be completed before a specific point in the future.

- I have an exam next Monday, so I will have finished my review beforehand.

- The production report is due tomorrow. The team will have completed all testing by then.

We can use the future perfect tense to describe an action or state that will continue up to a specific point in the future. It is often used with *by*, *before*, or *after*.

- By the end of this month, the researchers will have analyzed all the data from the clinical trial.
- Before the product launch next year, the team will have completed all the necessary safety tests.
- After next week, we will have been working on this project for six months.

Let's compare:

- By June, he will have come back from his internship at the Research Centre.
- I think he will come back from his internship at the Research Centre in June.

The future perfect emphasizes an action that will be completed before a specific point in the future or one that will continue up to a future point. In contrast, the future simply states when something will happen without linking it to another future event.

	Negative statement	Interrogative statement
Present perfect	Subject + have/has + not + p.p She has not completed the report yet.	Have/Has + subject + p.p Has she completed the report yet?
Past perfect	Subject + had + not + p.p We had not reviewed the results before submitting the report.	Had + subject + p.p Had we reviewed the results before submitting the report?
Future perfect	Subject + will + not + have + p.p They will not have applied by the deadline.	Will + subject + have + p.p Will they have applied by the deadline?

Activity:

- Hi, I (be) Dr. Matt Carter, a colleague of Dr. Alice Brown's in the research lab.

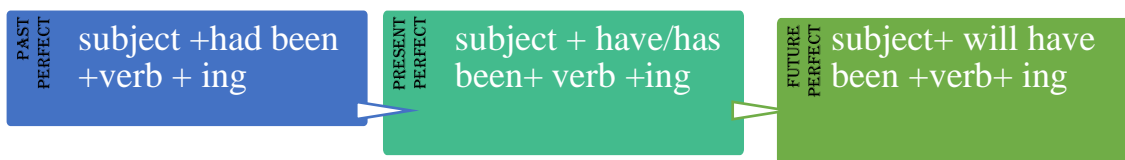
ENGLISH TECHNICAL: DR. MERZOUKI S.

- Oh, yes. Dr. Brown (mention) you the other day. Interesting, you(not look) like a researcher.
- Well, that's good, I (guess).
- I'm curious. Tell me, how you (decide) to specialize in process engineering?
- Well, when I (be) in high school, I (enjoy) conducting small experiments in my spare time. By the time I (be) eighteen, I (complete) several chemistry courses and knew I wanted to work in a lab environment. I (realize) that I (want) to pursue research and development.
- But according to Dr. Brown, you (pursue) an advanced degree in pharmaceutic engineering now.
- Yes, recently I (discover) a compound with promising antibiotic properties. After that breakthrough, I (not consider) working on routine testing anymore. Ever since I (find) this potential drug, I (want) to focus on drug development and see if it could be a viable treatment option.

Correction:

- Hi, I **am** Dr. Matt Carter, a colleague of Dr. Alice Brown's in the research lab.
- Oh, yes. Dr. Brown **mentioned** you the other day. Interesting, you **don't look** like a researcher.
- Well, that's good, I **guess**.
- I'm curious. Tell me, how **did** you **decide** to specialize in process engineering?
- Well, when I **was** in high school, I **enjoyed** conducting small experiments in my spare time. By the time I **was** eighteen, I **had completed** several chemistry courses and knew I wanted to work in a lab environment. I realised that I wanted to pursue research and development.
- But according to Dr. Brown, you **are pursuing** an advanced degree in pharmaceutic engineering now.
- Yes, recently I **discovered** a compound with promising antibiotic properties. After that breakthrough, I didn't consider working on routine testing anymore. Ever since I **found** this potential drug, I **have wanted** to focus on drug development and see if it could be a viable treatment option.

II.4. Perfect continuous tenses:



The perfect continuous tenses describe actions that begin before another action and continue, emphasizing their duration.

1. Present perfect continuous:

Let's compare between tenses:

Past simple	Yesterday, I carefully distilled the toluene, preparing it for an upcoming experiment. (a completed past action)
Present perfect	I have distilled the toluene and it's ready to use. (a completed action with no specific time mentioned)
Present continuous	I can't join you now, I am distilling the toluene (an action in progress at the present moment)
Present perfect continuous	I have been distilling the toluene for 3 hours and the lab smells awful. (focusing on the duration of an ongoing action that started in the past and continues or has just finished)

Note: The verbs "work" and "live" are generally dynamic (action) verbs. However, in contexts where they refer to relatively stable or long-term situations—like where someone lives or works—they can behave similarly to stative verbs because these situations often don't change frequently. As a result, both the present perfect and present perfect continuous can be used interchangeably with little or no difference in meaning. However, the present perfect continuous can sometimes be preferred to emphasize the duration of the situation.

1. Present Perfect:

- I have lived in this city for five years.
- She has worked at the laboratory since 2018.

2. **Present Perfect Continuous** (emphasizing duration):

- I have been living in this city for five years.
- She has been working at the laboratory since 2018.

Both sets of examples mean essentially the same thing, but the continuous form of the ongoing nature or duration of the action.

2. **Past perfect continuous:**

Let's compare between past tenses:

Past simple	The other day, I distilled the toluene, preparing it for an upcoming experiment. (a completed past action)
Past perfect	By the time I started the experiment, I had distilled the toluene, and it was ready to use. (an action completed before another action in the past)
Past continuous	When we had a power cut, I was distilling the toluene for the new experiment (an action that was in progress at a specific moment in the past)
Past perfect continuous	I had been distilling the toluene all day and was exhausted. (focusing on the duration of an ongoing action in the past that had finished by a certain point)

3. **Future perfect continuous:**

The same thing with future tenses.

Future simple	Tomorrow, I will distil the toluene to prepare it for the experiment. (a future action that will be completed later)
Future perfect	By the time the experiment starts, I will have distilled the toluene and it will be ready to use. (an action that will be completed before a specific point in the future)
Future continuous	At this time tomorrow, I will be distilling the toluene for the new experiment.

	(an action that will be in progress at a specific moment in the future)
Future perfect continuous	By the end of the day, I will have been distilling the toluene for six hours and will be ready to wrap up. (focusing on the duration of an action that will have been in progress up to a specific point in the future)

III. Modals verbs:

Modal verbs definition: are auxiliary verbs that provide additional meaning to main verbs, conveying a subject's ability, permission, possibility, probability, or the necessity of an action.

- **Common Modal Verbs:** *can, may, might, could, should, would, will, and must.*
- **Less Common Modal Verbs:** *shall* and *ought*; be infrequently used in modern English.
- **Dual-Purpose Verbs:** Some verbs, like *have to, need to, and got to*, can function as either main verbs or modal auxiliaries based on context.
- **Grammatical Structure**
 - **Basic Structure :** Subject + modal verb + base verb + ...

Engineers **must follow** safety protocols during the testing process.
 - **Negative Statements:** Formed without "don't" or "doesn't"

Engineers **cannot proceed** without verifying system integrity.
 - **Interrogative statements:** Formed without "do" or "does."

Should we **run** a secondary verification test on the new reactor model?

III.1. can / could/ be able to:

These two words function like a giant umbrella, as they encompass a wide range of meanings, including ability, possibility, permission, suggestion, request, and offer. They can be confusing because they often have similar meanings. The key differences lie in their usage based on tense (past vs. present), formality (informal vs. formal), and strength (strong vs. weak).

- **Pronunciation: can-** it sounds like we're completely removing the vowel sound: cn
- **Could-** l is a silent letter.

- *At negative:* Can**not** or can'**t** / Could **not** or couldn'**t**
- *Uses:*

1. The ability (skills or talents):

<i>The past ability (could)</i>	<i>the present ability (can)</i>
<i>When I was a kid, I could run for 15 miles</i>	Now, I can run only for 5 miles

What about “**be able to**”?

Examples:

- **will you be able to** run for 15 miles next trip?
- **Being able to** speak two languages is useful for my academic career.
- **I would like to be able** to succeed with good marks.

” **Be able to**” gives more options grammatically, it’s not possible with can and could.

Important note: The modal verb « **could** » is generally used to describe a past ability, but only when that ability was consistent or continuous over some time. However, if the ability was *one-time* or specific to a single event, we should use alternative expressions, such as *was able to* or *managed to*.

- The equipment **could sustain** high pressure throughout last month's trial period.
- Researchers **could analyze** complex samples efficiently with the previous software version.
- After recalibrating the instrument, the technician **was able to identify** a rare compound in the sample.
- Despite an unexpected power fluctuation, the team **managed to complete** the full test sequence without interruptions.

2. Possibility:

Strong 95%(present/future)	Weak 10% (present/ future)	Past possibility
Can	Could	Could have (not has) + P.P

Using this catalyst can significantly increase the reaction rate. general truth based on scientific understanding)	If we add more reagents, the mixture could turn toxic. (low probability but possible outcome)	Without the emergency shutdown, the reactor could have overheated . (indicating a past danger that was avoided)
---	---	---

3. Suggestions, permissions and requests:

Could” is often used to make suggestions, and requests or ask for permission politely or less directly, making it softer than “can.”

Examples:

- Suggestion:** You could try analyzing the data again to see if there's any discrepancy.
- Request:** Could you send me the latest report on the test results? **Formal**

Can you send me the latest report on the test results? **Informal**

- Permission:** Could I borrow your notes on the experiment for a quick review? **Formal.**

Can I borrow your notes on the experiment for a quick review? **Informal.**

Note: The answer is yes, I/you can or no, I/you can't; however, to be more polite in delivering a negative answer, it is better to provide a reason instead of just saying, "I can't" or "you can't."

4. offers:

Strong offer or more direct (can)

Weak or less direct (could)

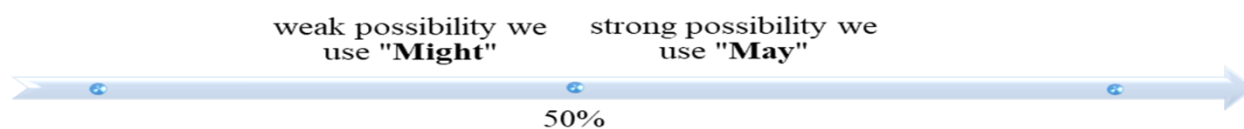
I can help you set up the lab equipment right now

I could help you set up the lab equipment if you'd like

II.2. May / Might:

"May" and "might" are modal verbs used to express possibility, ask for or give permission, and convey wishes or hopes.

1. Possibility: "Might" is used to indicate a weaker possibility and "may" to suggest a stronger possibility (and that for present or future possibility). However, in everyday speech, many speakers use "may" and "might" interchangeably, without any difference in meaning.



- They might discover new data in the next phase of research.
- She may attend the conference if her schedule allows

Past Possibility:

May / Might + have + Past participle

- The yield was low, and the equipment may have malfunctioned during the experiment.
- The yield was low, the reaction might have caused an unexpected byproduct.

2. Permission:

“May” and “might” are used to ask for and give permission in a very formal and polite way.

Note: Using “might” for permission is somewhat old-fashioned.

Asking permission:

- May I take the equipment to complete my experiment?
- Might I use your notes for a quick review before the meeting?

Giving permission:

- Yes, you may take the equipment, but please return it by tomorrow.
- Of course, you might stay in the conference room to finish your preparation if needed.

3. expressing wishes:

We use "may" to express our wishes, not "might."

- May this Eid bring you and your loved ones peace, joy, and countless blessings. Eid Mubarak!
- May Allah accept your prayers, fulfil your wishes, and bless you with success and prosperity. Eid Mubarak!

III.3. should/ ought to/ need to:

○ **Pronunciation:** Should => shoud

Ought to =>oughto => oughta.

Need to => neeto => Nita

	Finished action	Ongoing action
--	------------------------	-----------------------

Present or future	Subject + should (ought to) + bare verb	Subject + should (ought to) be +bare verb +ing
	You should submit the report by the end of the day	You should be analyzing the data right now.
Past	Subject + should (ought to) + have + past participle of verb	Subject + should (ought to) have+ been +verb +ing
	You should have submitted the report earlier.	You should have been analyzing the data last week.

- "Should," "ought to," and "need to" express a weak obligation, meaning it's advisable or better to do something, but it's not strictly required (suggests a recommendation rather than a strict rule). This is in contrast to "must" and "have to," which indicate a strong obligation.
- These three modal verbs—"should," "ought to," and "need to"—generally have the same meaning, expressing advice or making criticism and expectation. "Should" is more common and less formal, while "ought to" and "need to" are a bit more formal in tone.
 - You should use protective gear when handling chemicals in the lab. (advice)
 - You should double-check the measurements.
 - The report should be submitted by the end of the day.
- They have more than one grammatical structure:
- **Negative statement:**
 - You should not (shouldn't) leave the equipment unattended.
 - He ought not(oughtn't) **to (optional here)** ignore safety protocols. (rarely used)
 - You don't need to submit the report today if it's not ready
- **Interrogative statement:**
 - Should we postpone the experiment until we have more resources?
 - Ought we to inform the team about the schedule change? (rarely used)
 - Do I need to attend the training session tomorrow?

III.4. must/ have to/ have got to:

“Must,” “have to,” and “have got to” are modal verbs that describe obligation and probability.

- **Grammatical structure:**

Subject + must + base verb + ...

Subject + have/has + base verb + ...

Subject + have/ has got + base verb +...

o **Pronunciation:**

Have to => hafto

1. Obligation:

- o "Must," "have to," "have got to," and "got to" are used to express **no choice** or **obligation** (such as rules and laws). However, **“must”** and **“have to”** are more formal and commonly used in everyday English (must is more used with written official obligations and contracts). **“Have got to”** is used in spoken English.

o **Personal obligations:**

British speakers tend to use "must," while American speakers typically use "have to."

- o With the other tenses:

	Past	Present	Future
Must	X	You must wear a mask in the laboratory	X
Have to	You had to wear a mask	You have to wear a mask in the laboratory	You will have to wear a mask in the lab

- o **Negative form:**

	past	present	future
Must (Prohibition or strongly not allowed)	You weren't allowed to leave the laboratory until the test was complete	He mustn't leave the lab without signing out.	You mustn't forget to turn off the equipment before leaving.
Have to (Lack of obligation (not necessary))	You didn't have to do the extra research last week, but it was helpful	You don't have to submit the report today; it's due next week	You will have to wear a mask in the lab

2. Probability:

	Past	present

<p>Positive probability (95% certain)</p>	<p>You must turn off the experiment before leaving You had to have (had to've) turned off the experiment before leaving</p>	<p>If you want to leave now, you must turn off the experiment. If you want to leave now, you have to turn off the experiment</p>
<p>Negative probability (Impossible)</p>	<p>You can't (cannot) have left before turning off the experiment You couldn't (could not) have left before turning off the experiment</p>	<p>You can't (cannot) leave before turning off the experiment</p>

o For the future form we need to use other structures like: **will probably, or is going to.**

II.5. would:

The modal verb "would" has various uses in English, ranging from expressing hypothetical situations to making polite requests.

o Pronunciation: would => wood

I would	You would	He would	She would	It would	We would	They would
I'd	you'd	he'd	she'd	it'd	we'd	they'd

o Negative statement: subject + would not + base verb +

1. hypothetical situation:

It's used to speak about hypothetical situations (for real situations we use will and shall) in the present or the future.

- o If I **had** more time, I **would** work on a new experiment.
- o What **would** you do **if** you **found** an error in the data?

For imaginary situations in the past, we use would have + past participle.

- o If I **studied** more when I was younger, I **would have been** a doctor.

2. Giving advice or making suggestions:

"Would" is sometimes used to make gentle suggestions or recommendations in the present or future.

- o If I **were** you, I **would** consider redoing the experiment.

- I **would suggest** looking at the previous experiment results for reference.
- I **would recommend** waiting for further instructions.

3. Expressing Habits or Repeated Actions in the Past:

"Would" can indicate habitual actions in the past, similar to "used to" which is used with stative verbs.

- When I **was** a student, I **would spend** hours in the lab.

4. would like to:

It is used for polite desire, meaning = want

- I would like to stay late today to finish the experiment.

5. would love to:

It's used to give a polite excuse

- A: Are you coming to review together?
B: I'd love to, but I'm so tired and I need to get a rest.

6. would you mind:

Would subject mind + verb + ing +...

It has the same meaning as "Can you please", and is used to make polite requests.

- **Would you mind closing** the door on your way out?

II.6. will/shall:

"Will" is commonly used for general future statements, predictions, offers, and showing determination or decision, but "shall" is used mostly in formal contexts, especially with "I" and "we," .

1. Future Predictions and Statements

- I **will** complete the report by tomorrow.
- The weather **will** be sunny on the day of the experiment.
- I **shall** do my best to assist you.
- We **shall** see the results of our work soon.

2. Offers and Suggestions

- I **will** help you with the calculations.
- **Shall we** meet at the lab?

3. Expressing quick decisions or threats:

“**Will**” is Used to show strong determination or a promise, and "shall" can emphasize a strong commitment or command, often in legal or official language.

- I **will** finish this project no matter what.
- Employees **shall** comply with safety regulations.

4. Instructions, Rules, and Commands

“**Will**” is less commonly used for commands but can indicate a requirement more softly. “**Shall**” is frequently used in legal or formal contexts to give commands or state rules.

- You **will** report to the manager after the meeting.
- All lab members **shall** follow the protocols.

5. Conditional Sentences

“**Shall**” is rarely used in conditionals; "**will**" is generally preferred.

- If you check the data, you **will** notice the error.

II.7 Practicing exercises:

Exercise 1: give the function of each modal verb in the sentences below.

1. The technician must calibrate the equipment before the experiment to ensure accuracy.
2. You should wear gloves when handling hazardous chemicals.
3. The compound may react with oxygen at high temperatures.
4. This device can measure temperatures up to 300°C.
5. The results might vary depending on the sample purity.

Exercise 2: Choose the correct modal verb to complete each sentence based on context.

1. Scientists ____ use protective goggles in the lab to avoid accidents. (can / should / must)
2. The sample ____ degrade if exposed to light for too long. (must / might / can)
3. Before mixing these solutions, you ____ check the compatibility chart. (may / should / must)
4. We ____ replicate the experiment under different conditions to confirm the findings. (can / might / must)
5. Technicians ____ adjust the pH meter carefully, as small changes affect the results. (can / may / should)

Exercise 3: Use the appropriate modal verb to complete each sentence with a scientific context in mind.

1. Researchers ____ perform multiple tests to verify the stability of the compound.
2. The reaction ____ require a catalyst to reach completion.
3. In case of equipment malfunction, you ____ contact the supervisor immediately.
4. Lab personnel ____ wear masks when dealing with volatile substances.
5. This technique ____ be useful in detecting trace amounts of pollutants.

Exercise 4: Rewrite the following sentences using a modal verb to convey the same meaning.

1. It is necessary for the technician to monitor the pressure constantly.
2. There is a chance that this process will fail at high temperatures.
3. You are allowed to access the storage room with authorization.
4. It is advisable to use a smaller sample to reduce waste.
5. It is possible to observe different outcomes if the sample is impure.

Exercise 5: Contextual Multiple Choice

Choose the most appropriate modal verb to complete each sentence.

1. During a power failure, lab technicians ____ (can / must / might) immediately secure all ongoing experiments to prevent data loss.

2. Researchers ___ (should / might / can) consider the limitations of their equipment when interpreting their data.
3. The results ___ (must / might / should) vary slightly if there are fluctuations in room temperature.
4. Only qualified personnel ___ (may / must / should) access the high-security storage unit for sensitive chemicals.
5. After sterilization, all lab instruments ___ (can / might / should) be handled with gloves to maintain sterility.

Exercise 6: Each sentence below contains an incorrect use of a modal verb. Identify the error and correct it.

1. The scientist can finish the experiment before the equipment reaches maximum temperature.
2. We may store flammable substances in any part of the laboratory.
3. The students should handle hazardous materials without supervision.
4. Researchers must use a microscope if they want to observe bacteria.
5. The technician might dispose of waste in regular trash bins.

Exercise 8: Writing Prompts with Modals

Write a short paragraph about each scenario, using at least three modal verbs.

1. **Laboratory Safety Protocol:** Describe the essential safety procedures that must be followed in a lab with hazardous materials.
2. **Unexpected Reactions:** Explain what actions a researcher might take if an unexpected reaction occurs during a chemical test.

IV. Reported speech (indirect speech):

Before we discuss reported speech, let's first clarify what direct speech is.

Direct speech refers to the exact words someone uses; in writing, it is identified by quotation marks.

Aymen said "I am a process engineering student"

When we report a speech, we tell what someone said.

Aymen said that he was a process engineering student.

For reported speech, we need to change certain elements from the direct speech sentence.

1. That is optional.
2. Subject: I => he.
3. Verb: is => was (back shifting: is a very fancy way of saying going back one tense)

He said “I forgot to write my practical work report”

He told the professor he had forgotten to write his practical work report.

It's very logical; when we report speech, we talk about actions that occurred in the past.

	Direct speech	Indirect speech
Present tenses	Present simple Present continuous Present perfect Present perfect continuous	Past simple Past continuous Past perfect Past perfect continuous
Past tenses	Past simple Past continuous Past perfect Past perfect continuous	Past perfect Past perfect continuous Same Same
Future tenses	future simple future continuous future perfect future perfect continuous	Will=>Would
Model verbs	Will Can May (possibility) May (permission) Must (obligation) Must (speculation) Could Should	Would Could Might Could Have to Must Could Should

	Would Might	Would Might
--	----------------	----------------

Important note: he said “he lives in Canada”

He said he lives in Canada.

Typically, we don't change the tense if the information is still true. Also, we don't need to change the tense if something has not yet occurred, but if we backshift is still correct.

“Next week, I’m flying to Algiers”

She told me that he is flying to Algiers next week.

4. When using reported speech, it's essential to include a reporting verb, such as agree, complain, mention, say, state and tell, “say” and “tell” are the most common.

We typically use the simple past tense of the verbs "**said**" and "**told**" for reported speech because they refer to something that happened in the past. However, if someone says something repeatedly or habitually, we can use the present simple forms "**say**" and "**tell**" to express that it happens regularly or is a general truth.

- She **said** she was tired after the meeting.
- He **told** me about his trip to Italy last week.
- She **says** (**pronounced sez**) she prefers tea over coffee (always).
- He **tells** me to be more organized (constantly).

	Tell	Say
Direct speech	×	She said “Good morning”
Reported speech	She told us good morning	She said good morning

The verbs "**say**" and "**tell**" both refer to speaking, but they are used differently. "**Tell**" usually includes the listener as part of the sentence (the person being spoken to), whereas "**say**" does not unless followed by a phrase like "to someone."

Examples:

1. **Tell**
 - Correct: She **told** me the truth.

- Incorrect: She **told** the truth. (This sounds incomplete without specifying "me" or another listener.)

2. **Say**

- Correct: She **said** the truth.
- Correct: She **said** the truth **to me**.
- Incorrect: She **said me** the truth. (The person must be preceded by "to.")

5. **Reported questions:**

- yes/ no questions:

“Are you a student at this university?”

That lady **asked** me **if (whether) I was** a student at this university.

The reported question is not a question: a person asked (someone) if/whether +subject+ back shifted verb

- Wh questions: (who, what, where, when, why, how)

A person asked +question word + subject + back sifted verb

“Where do you live?” =>She asked me where I lived

“Who will be at my team” =>He asked me who would be at his team.

6. **Reported commands (imperative)**

Tell + person+ **to** + **base verb**

My mom **told** me **to sit down**.

V. comparatives & superlatives:

Before discussing comparatives and superlatives, let's first provide the following definitions:

1. An adjective is a word that describes or modifies a noun or pronoun.

Chemistry is a subject

Chemistry is an interesting subject

2. A syllable is an unbroken vowel sound within a word:

fast	Ha/ppy	Po/wer/ful	In/ te/lli/gent
1	2	3	4

3. The rule:

	adjective	comparative	superlative
1 syllable	small	Smaller than	The smallest
	cute	Cuter than	The cutest
	Flat (cvc)	Flatter than	The flattest
2 or more than 2 syllables	active	More active than	The most active
Adjectives ending by “y”	Happy	Happier than	The happiest
Adjectives can take on two different forms*	polite	Politer than More polite	The politest The most polite
Irregular form	Good Bad Far	Better Worse Farther (further)	The Best The worst The farthest (furthest)

*(clever, gentle, quiet, simple, narrow, stupid, common)

4. When do we use a comparative? And do we use a superlative?

We use the comparative form to compare two items and the superlative form to indicate the most extreme version.

Oxygen is a **small** atom

Nitrogen is **smaller than** Oxygen

Hydrogen is **the smallest** gas atom in the periodic table

5. Negative statement: we add not before adjective:

Tuesday was cold => Tuesday was **not** cold

Wednesday was colder than Tuesday => Wednesday was **not** colder than Tuesday

Thursday was the coldest => Thursday was **not** the coldest

6. If it's already clear what you are comparing, you don't need to add than:

The moon is light, but the sun is lighter

You are smarter **than** me or you are smarter **than** I (both are correct)

Proposition **conjunction**

Informal (more common) (formal)

Sometimes we need to add the verb to the pronoun.

You are smarter than I am

(You like games more than me (two meanings: more than you love me or more than I do)

7. To be more specific about comparative form, we need to add some adverbs before the adjectives:

	Small difference	Big difference
--	-------------------------	-----------------------

Informal	A bit A tad	A lot way
Natural	A little (bit) slightly	Far (so) much
Formal	marginally	Significantly considerably

- This catalyst is **a bit more effective** than the previous one in promoting the reaction.
 - The yield of this reaction is **a tad better** with increased pressure.
- The new procedure is **way (far) faster** than the conventional method for synthesizing nanoparticles.

The reaction proceeds **slightly faster** when 5 °C increases the temperature.

Adding 0.1% of the stabilizer results in **a little bit more** purity of the final product.

The solvent polarity has a **marginally greater** impact on the reaction rate than the concentration of the reactants.

My car is **significantly the most fuel-efficient**.

Important note:

You are way smarter **than me**. (informal, more common)

You are way smarter **than I**. (formal)

The pronoun "I" is used here because it is the **subject pronoun**, and "than" is a conjunction.

Sometimes, we must add the verb to the pronoun: You are way smarter **than I am**.

"me" is the **object pronoun**, which is often used in everyday English because it sounds more natural and casual.

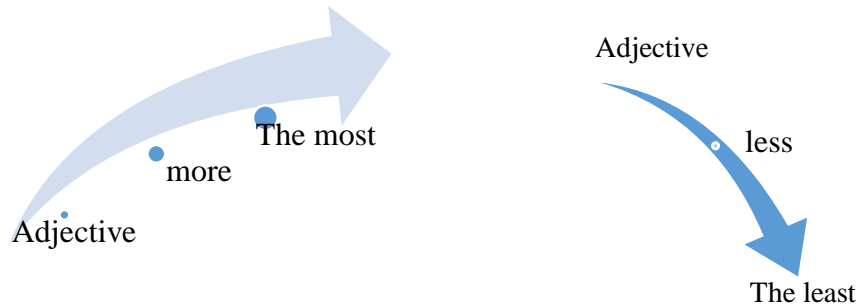
You like chemistry experiments more than **me**.

This phrase can have two meanings:

1. You prefer chemistry experiments over me.
Meaning: You value chemistry experiments more than you value me personally.
2. You enjoy chemistry experiments more than I do.
Meaning: You have a greater interest in chemistry experiments than I have.

It's important to be more specific by including the verb.

8.



“**More**” is used when **comparing** two items or indicating an **increase** in degree or quantity. In contrast, “**the most**” is used to show **the highest** degree among three or more items. On the other hand, “**less**” and “**the least**” indicate **smaller** quantities, **lower** degrees, or **decreases**.

More	Comparative (increase)	This method is more reliable than the other.
The Most	Superlative (highest degree)	This is the most significant breakthrough in years.
Less	Comparative (decrease)	This solution is less efficient than expected.
The Least	Superlative (lowest degree)	This sample contains the least impurities of all.

8. important notes:

- For comparatives, combine them with nouns to specify the focus of the comparison:

I got two offers; I chose **the more interesting one**.

- Use possessive adjectives (**my, your, his, etc.**) instead of "the" to emphasize **personal ownership** of the superlative quality.

This is **my best work** so far.

□ **9. As + Adjective + As (AAA rule)**

It's used to show that two things are **equal** or **not equal** in a specific quality or characteristic.

This experiment is **as efficient as** the previous one.

This material is **not as strong as** steel.

Don't use "than" instead of "as":

~~✗~~ This process is **as precise than** the older one.

✓ This process is **as precise as** the older one.

VI. Relative clauses:

- When the same noun appears in two sentences, you can combine them by replacing the repeated noun in the second sentence with a **relative pronoun** (such as **who, whom, whose, which, or that**). The result is a relative clause, which provides additional information about the noun in the first sentence.

The researcher discovered the new compound. The researcher works in our lab.

The researcher **who works in our lab** discovered the new compound.

- When a noun in the first sentence refers to a place, time, reason, or manner and the second sentence contains an adverb related to that noun, you can combine the two sentences using a **relative adverb** (**where, when, why or how**) to form a relative clause.

This is the laboratory. Experiments are conducted in this laboratory.

This is the laboratory **where experiments are conducted**.

- The relative clause always goes after the noun it is describing
- Relative clauses are useful to avoid repeating information.

The relative pronouns are:

	Formal	Informal
People	Who (subject) Whom (object)	That
Thing/ animals	which	That
Possessive	whose	

The relative adverbs are

Where	When	Why	How
place	Time	Reason	Manner

Relative clauses are categorized into defining relative clauses and non-defining relative clauses.

VI. 1. Defining relative clauses:

These clauses provide essential information about the sentence's subject. They define the person, time, or thing being discussed. Removing a clause makes the sentence incomprehensible.

The scientist **who developed the vaccine** won the Nobel Prize

The equipment **that/which measures pH levels** is in the lab.

This is the laboratory **where we conduct stability tests**

The reason **why we implemented the new protocol** is improved efficiency

VI.2. Non-defining relative clauses:

Non-defining relative clauses provide additional information to a noun or noun phrase. This extra information is not essential; if we remove the clause, the sentence still makes sense. This type of clause is more commonly found in written English.

Dr. Smith, **who is an expert in virology**, gave a lecture on emerging viruses.

The centrifuge, **which we purchased last year**, has significantly improved our efficiency.

The protocol, **why we received recognition for innovation**, has been adopted globally.

	Defining clause	Nondefining clause
Rule	noun + relative pronoun + rest of clause	Noun, relative pronoun + rest of clause, rest of sentence. Cannot use “ that ”
Examples	The researcher whose discovery won an award made a groundbreaking contribution.	Last Friday, when the results were announced , was a day of celebration

Important note:

- In defining relative clauses, you can **omit** the relative pronoun (which, that, who, etc.) if it refers to the **object** of the clause.
- You **cannot omit** the relative pronoun if it refers to the **subject** of the clause.

The equipment **which we bought last year** is very efficient.

=> The equipment **we bought last year** is very efficient.

The equipment **that operates automatically** is expensive.

=>The equipment operates automatically is expensive. (Incorrect)

The professor **whom I met yesterday** is an expert in nanotechnology.

⇒ The professor **I met yesterday** is an expert in nanotechnology.

“Whom” is slowly disappearing from English; it’s not common to hear it. It is usually replaced by “who.”