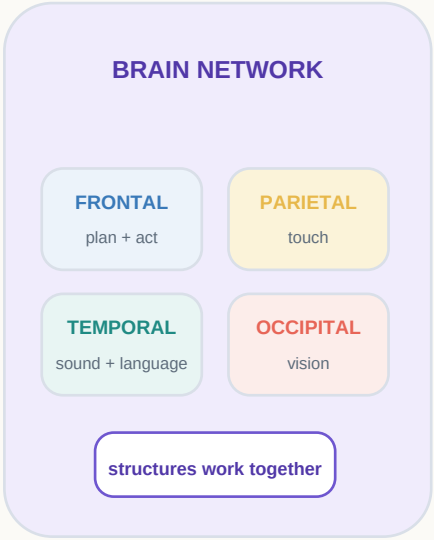
AP PSYCHOLOGY | UNIT 1

TOPIC 1.4

The Brain

Specialized structures support survival, movement, sensation, language, memory, emotion, and flexible behavior.



FROM BASIC FUNCTIONS TO COMPLEX BEHAVIOR

SURVIVE — brain stem → **COORDINATE** — cerebellum → **REGULATE** — limbic system → **INTERPRET** — cerebral cortex

BY THE END, YOU SHOULD BE ABLE TO...

1. Match major brain structures and cortical lobes with their broad functions.
2. Explain hemispheric specialization, language areas, and brain plasticity.
3. Compare EEG, fMRI, case studies, and lesioning as research methods.

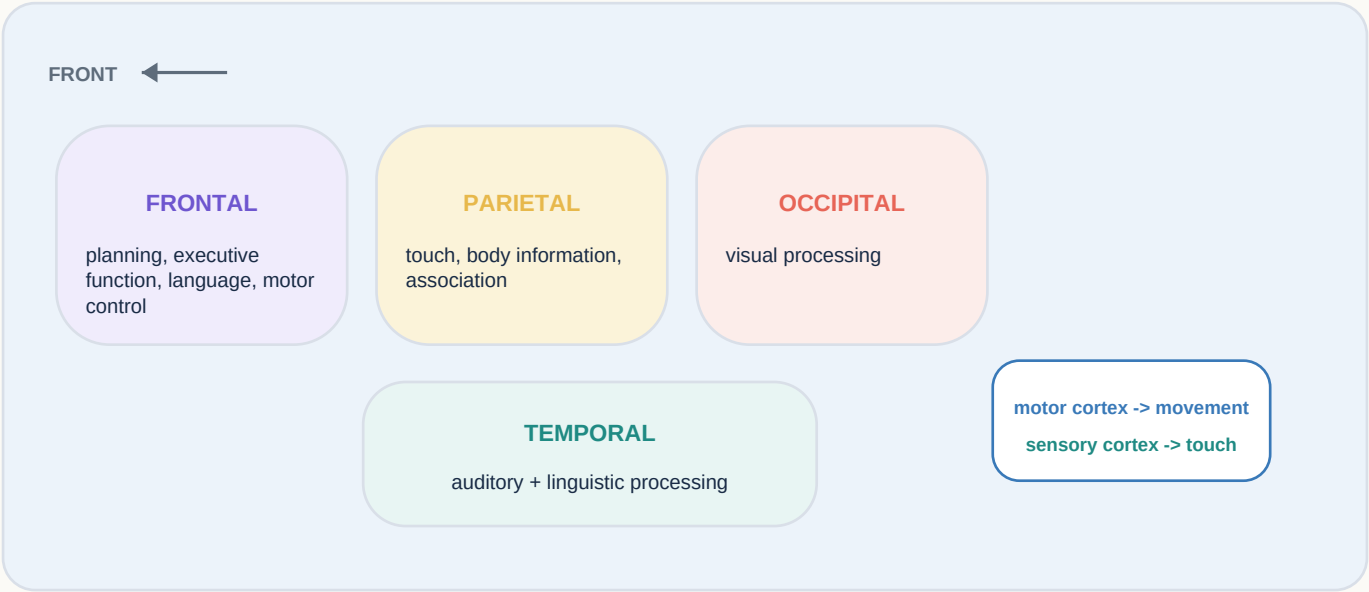
BIG IDEA

Brain areas have specialized roles, but complex behavior usually emerges from networks of structures working together.

1 Map structures to functions

Use broad function labels, while remembering that no region works completely alone.

CORTICAL LOBES - SIDE VIEW



FOUNDATIONAL AND LIMBIC STRUCTURES

BRAIN STEM

Medulla supports breathing and heart rate. Reticular activating system supports alertness.

Think: survival + wakefulness

CEREBELLUM

Coordinates movement, balance, and some procedural learning.

Think: smooth skilled action

LIMBIC SYSTEM

Links memory, emotion, motivation, sensory relay, and body regulation.

Key structures

thalamus, hypothalamus, pituitary, hippocampus, amygdala

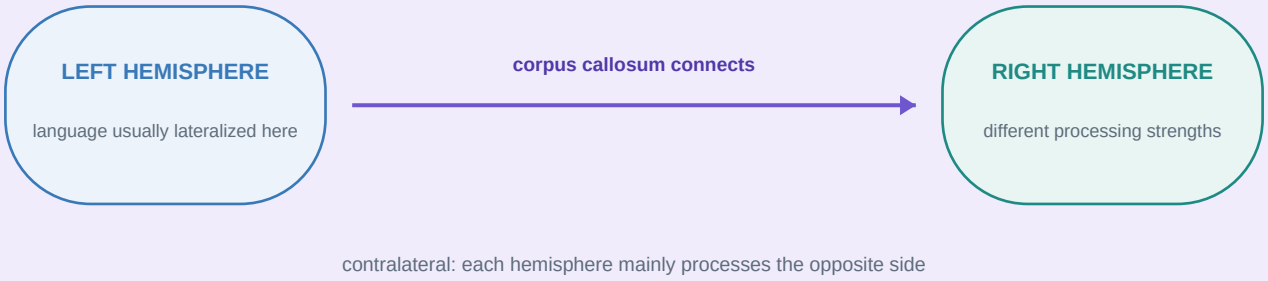
NETWORK CHECK

Planning a movement may involve frontal areas, motor cortex, sensory feedback, cerebellar coordination, and motivation at the same time.

2 Connections, language, and evidence

Use split-brain findings carefully and match each research method to the question it can answer.

HEMISPHERES AND LANGUAGE



contralateral: each hemisphere mainly processes the opposite side

BROCA'S AREA

speech production; damage may contribute to aphasia

WERNICKE'S AREA

speech comprehension; damage may contribute to aphasia

PLASTICITY The brain can modify connections across development and after damage, but plasticity does not guarantee full recovery.

BRAIN RESEARCH METHODS

Method	Best contribution	Important limit
EEG	electrical activity; excellent timing	weak spatial detail
fMRI	blood-flow changes; useful location	indirect and slower
Case study	rich detail from an unusual case	may not generalize
Lesioning	infer function from damage or removal	ethical and validity concerns

REMEMBER

A strong conclusion names the structure or method, links it to evidence, and avoids claiming that one brain area explains everything.