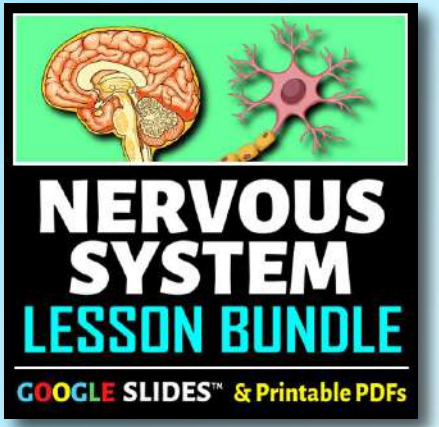
# OTHER NERVOUS SYSTEM RESOURCES YOU MIGHT LIKE by Tangstar Science




These products can be purchased individually or in the

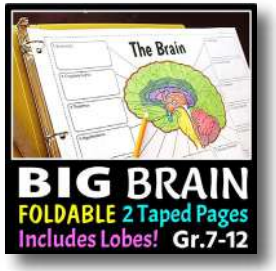
**NERVOUS SYSTEM LESSON BUNDLE**

of **13** Resources for **40% OFF**.

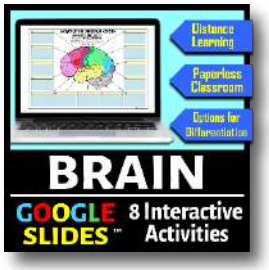
**9** OF THESE RESOURCES HAVE OPTIONS FOR GOOGLE DRIVE / CLASSROOM.

Teaching the Topic

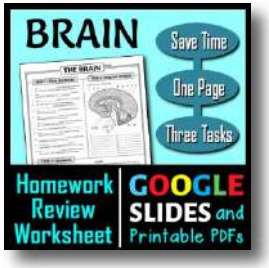

Teaching the Topic



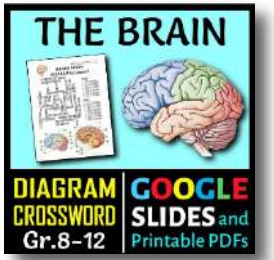

Interactive Distance Learning




Homework, Review, Test Prep

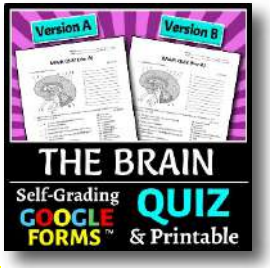



Review, Bonus, Sub Plan

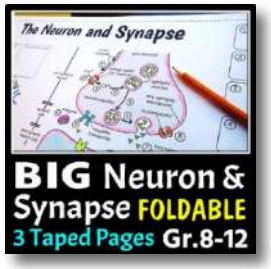



Fun Pair/Group Review Game


Quick Assessment

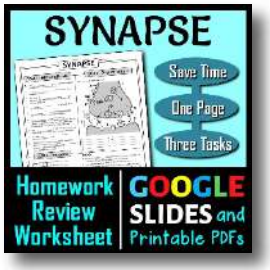



Teaching the Topic




Interactive Distance Learning


Homework, Review, Test Prep




Review, Bonus, Sub Plan


Article, Science Literacy Sub Plan


Article, Science Literacy Sub Plan

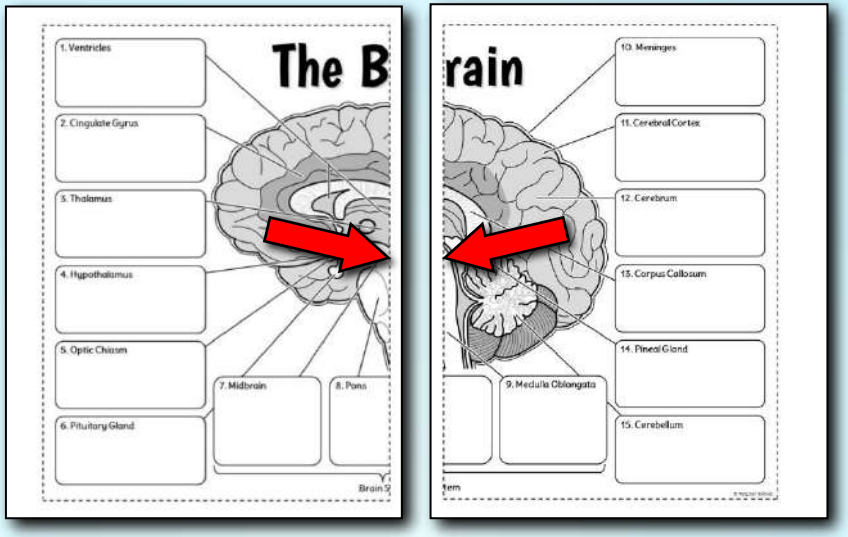
# LIST OF ALL THE RESOURCES

1. **Brain – Big Foldable** (Printable with Options for Differentiation)
2. **Brain – Interactive Google Slides Activities** (Options for Differentiation)
3. **Brain – Homework Review Worksheet** (Editable, Printable & Google Slides Options)
4. **Brain – Diagram Crossword** (Editable, Printable & Google Slides Options)
5. **Brain – Taboo Review Card Game** (Printable & Editable Template Cards)
6. **Brain – Quiz with Two Versions** (Editable, Printable & Self-Grading Google Forms Options)
7. **Neuron & Synapse – Big Foldable** (Printable with Options for Differentiation)
8. **Neuron & Synapse – Interactive Google Slides Activities** (Options for Differentiation)
9. **Synapse – Homework Review Worksheet (**Editable, Printable & Google Slides Options)
10. **Neuron & Spinal Cord – Diagram Crossword** (Editable, Printable & Google Slides Options)
11. **Spinal Cord & Vertebral Column – Big Foldable** (Printable with Options for Differentiation)
12. **Article #27: "Lobotomies, Who Needs All That Brain?"** (Printable & Google Slides Options)
13. **Article #52: "Concussions in Sports"** (Printable & Google Slides Options)

# OTHER NERVOUS SYSTEM RESOURCES YOU MIGHT LIKE by Tangstar Science

## RESOURCE 1: TEACHING THE TOPIC - Big Brain Foldable (2 Pages)

**2** pages **cut out** and **taped** together.



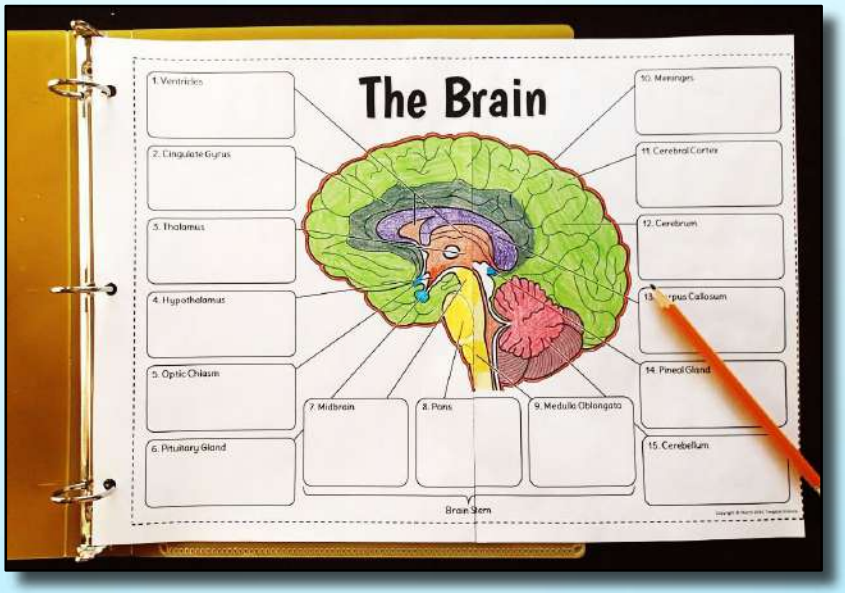

**Printable PDFs**

*then . . .*

Put in a **Binder**.

**OR**

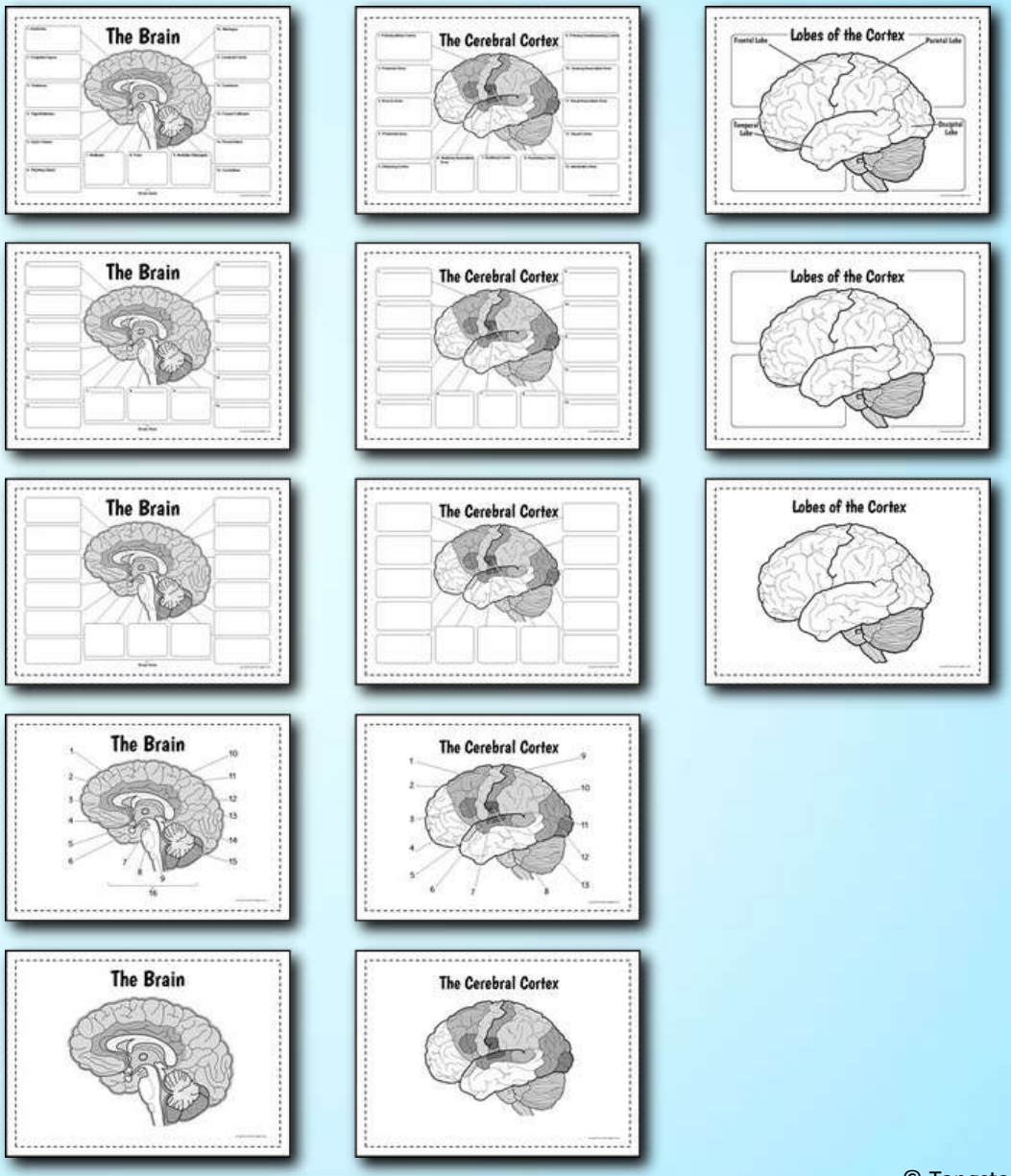
Put in an **INB**.



# OTHER NERVOUS SYSTEM RESOURCES YOU MIGHT LIKE by Tangstar Science

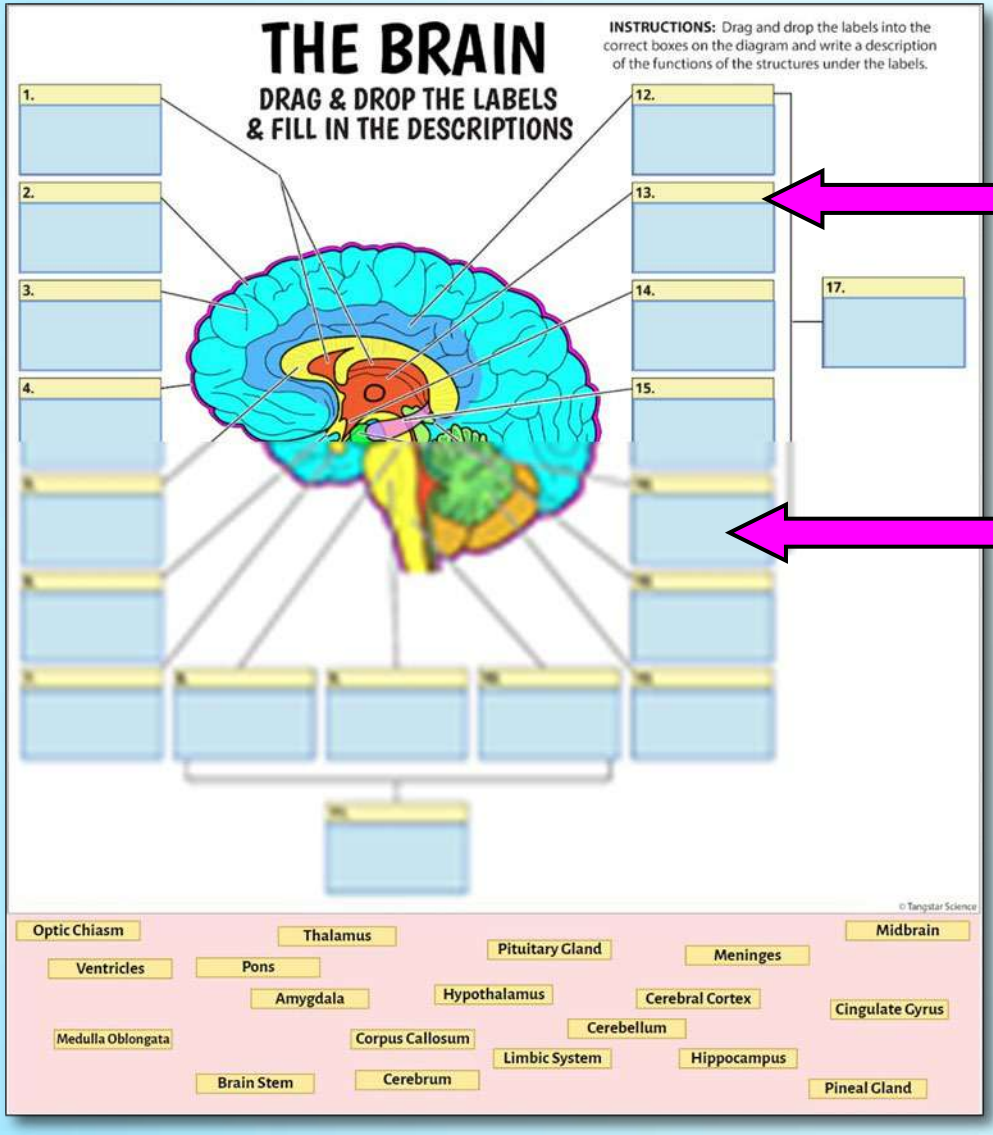
## RESOURCE 1: TEACHING THE TOPIC - Big Brain Foldable (2 Pages)

There are many **foldable options** for differentiation and **full answer keys** are provided for all options.



# RESOURCE 2: INTERACTIVE DISTANCE LEARNING – Brain Google Slides Activities

## EXAMPLE OF ONE OF THE ACTIVITIES




### TASK 1:

**Drag & drop** the labels of the structures onto the yellow numbered boxes on the diagram.

### TASK 2:

**Fill in the descriptions** of the functions of the structures by typing them into the blue boxes on the diagram.

## CONCEPTS

- Optic Chiasm
- Ventricles
- Medulla Oblongata
- Pons
- Thalamus
- Amygdala
- Brain Stem
- Pituitary Gland
- Hypothalamus
- Corpus Callosum
- Cerebrum
- Limbic System
- Cerebellum
- Cerebral Cortex
- Meninges
- Midbrain
- Hippocampus
- Cingulate Gyrus
- Pineal Gland

## ANSWER KEY

# RESOURCE 2: INTERACTIVE DISTANCE LEARNING – Brain Google Slides Activities

## WHAT IS THIS RESOURCE?

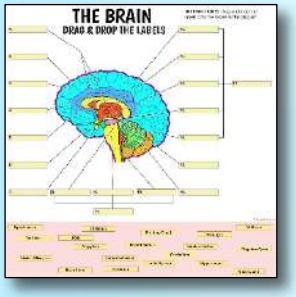
This resource asks students to identify the structures of the brain on a diagram as well determine the functions of these structures. This is done using **EIGHT** different interactive activities in Google Slides.

Having these options is great for differentiation in your classroom. As well, multiple activities can be used by each student to help them develop, review and deepen their understanding.

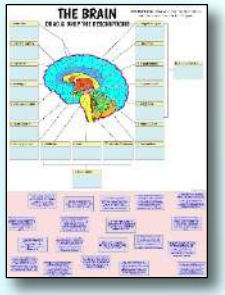
Great for distance learning and paperless classrooms.

## THE EIGHT ACTIVITY OPTIONS AVAILABLE

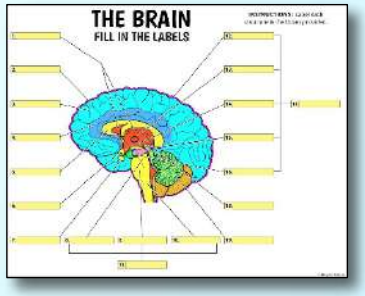
**1 Drag & Drop Labels**



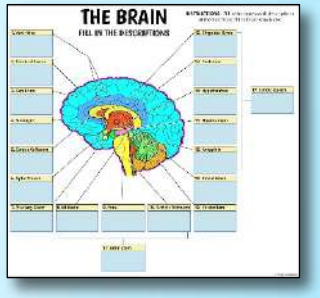

**2 Drag & Drop Descriptions**



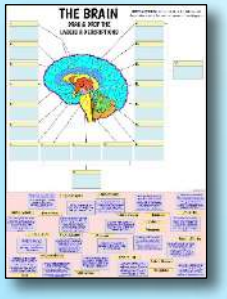

**3 Type in Labels**



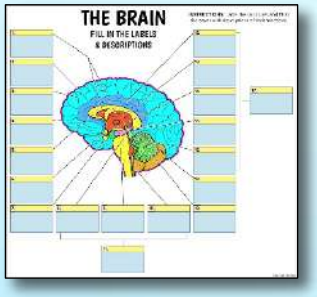

**4 Type in Descriptions**



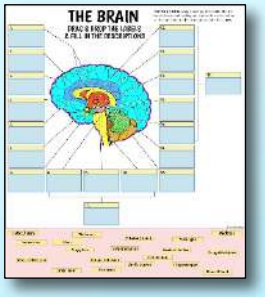

**5 Drag & Drop Both Labels & Descriptions**



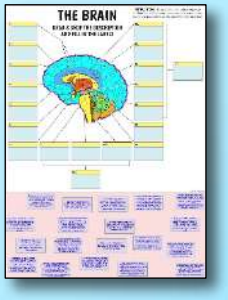

**6 Type in Both Labels & Descriptions**




**7 Drag & Drop Labels & Type in Descriptions**

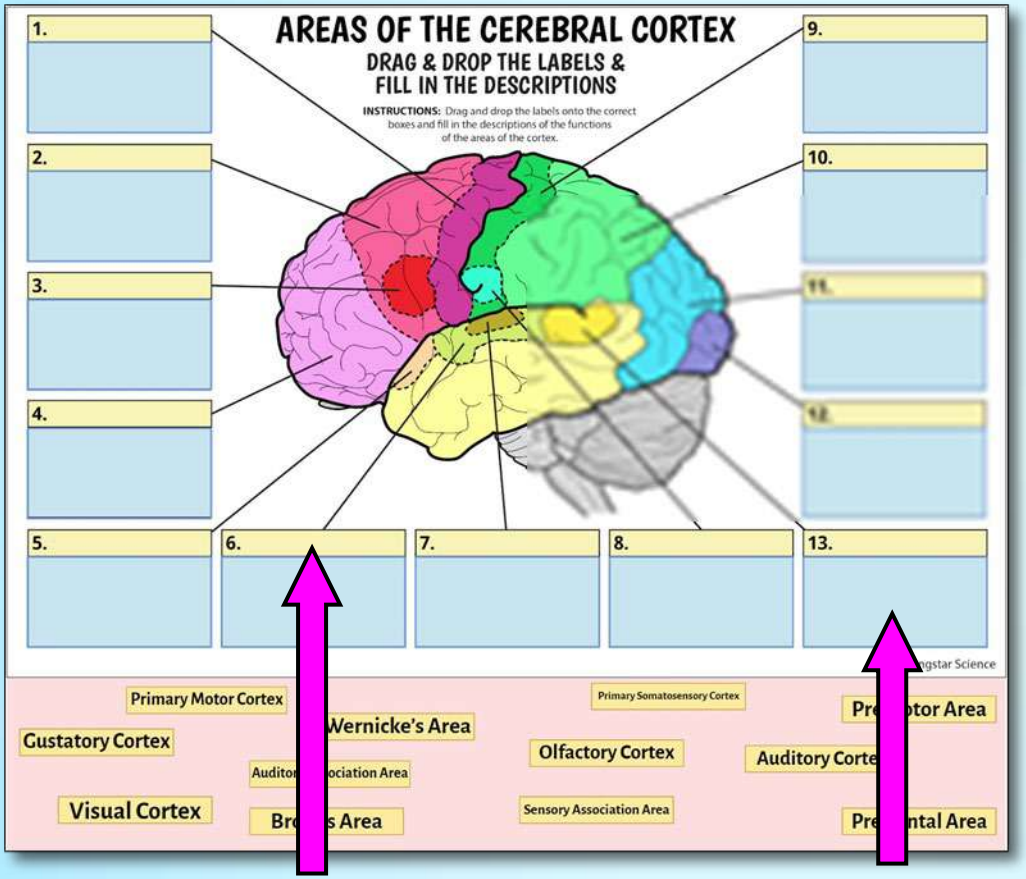



**8 Type in Labels & Drag & Drop Descriptions**



# RESOURCE 2: INTERACTIVE DISTANCE LEARNING – Brain Google Slides Activities

## EXAMPLE OF ONE OF THE ACTIVITIES




### TASK 1:

**Drag & drop** the labels of the structures onto the yellow numbered boxes on the diagram.

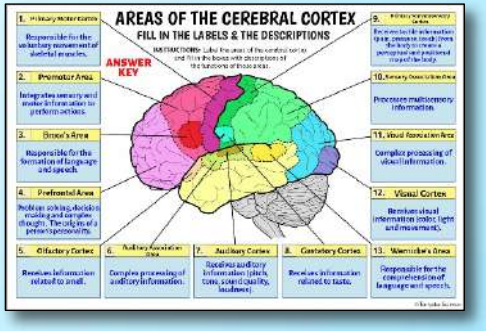
### TASK 2:

**Fill in the descriptions** of the functions of the structures by typing them into the blue boxes on the diagram.

## CONCEPTS

- Gustatory Cortex
- Primary Motor Cortex
- Visual Cortex
- Wernicke's Area
- Broca's Area
- Auditory Association Area
- Olfactory Cortex
- Sensory Association Area
- Primary Somatosensory Cortex
- Premotor Area
- Auditory Cortex
- Prefrontal Area

## ANSWER KEY



# RESOURCE 2: INTERACTIVE DISTANCE LEARNING – Brain Google Slides Activities

## WHAT IS THIS RESOURCE?

This resource asks students to identify the structures of the cerebral cortex on a diagram as well determine the functions of these structures. This is done using **EIGHT** different interactive activities in Google Slides.

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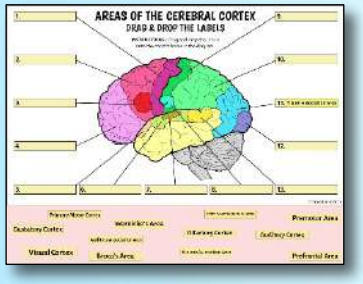
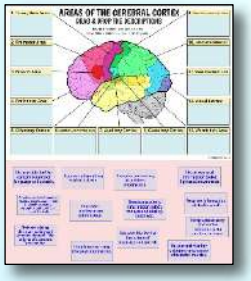



**2 Drag & Drop Descriptions**

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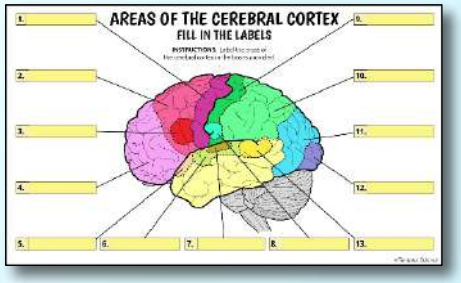


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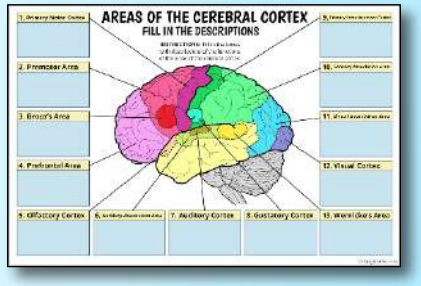


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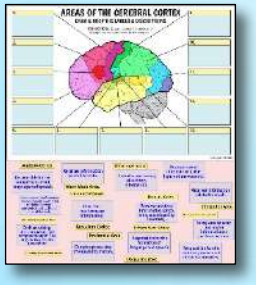


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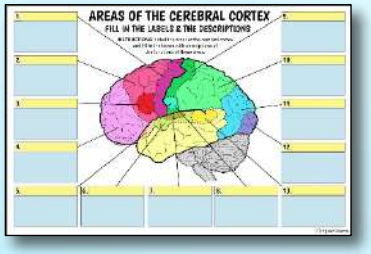
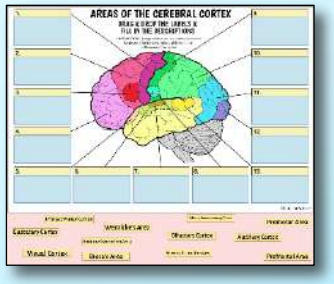



**7 Drag & Drop Labels & Type in Descriptions**

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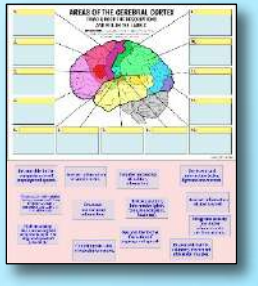
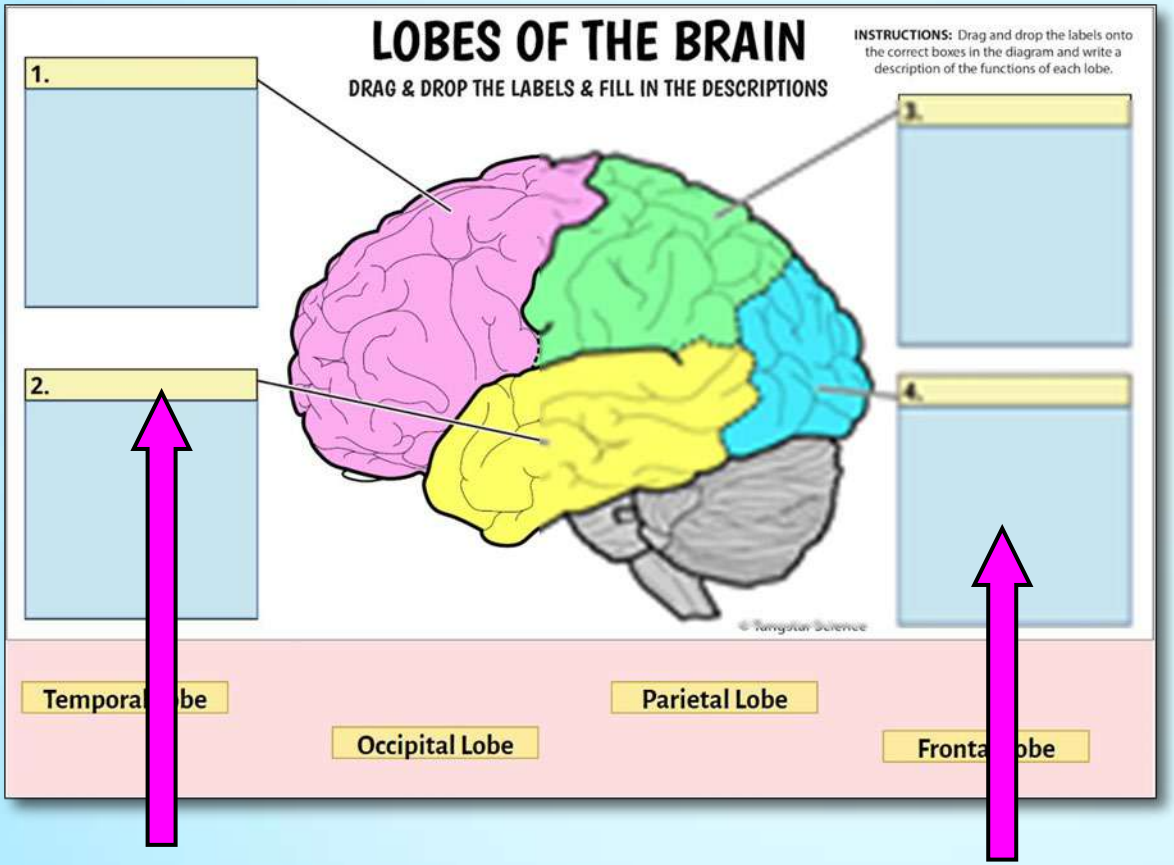


# RESOURCE 2: INTERACTIVE DISTANCE LEARNING – Brain Google Slides Activities

## EXAMPLE OF ONE OF THE ACTIVITIES




### TASK 1:

**Drag & drop** the labels of the structures onto the yellow numbered boxes on the diagram.

### TASK 2:

**Fill in the descriptions** of the functions of the structures by typing them into the blue boxes on the diagram.

## CONCEPTS

- Temporal Lobe
- Occipital Lobe
- Parietal Lobe
- Frontal Lobe

## ANSWER KEY

# RESOURCE 2: INTERACTIVE DISTANCE LEARNING – Brain Google Slides Activities

## WHAT IS THIS RESOURCE?

This resource asks students to identify the lobes of the brain on a diagram as well determine the functions of these lobes. This is done using **EIGHT** different interactive activities in Google Slides.

Having these options is great for differentiation in your classroom. As well, multiple activities can be used by each student to help them develop, review and deepen their understanding.

Great for distance learning and paperless classrooms.

## THE EIGHT ACTIVITY OPTIONS AVAILABLE

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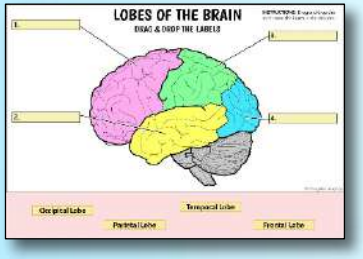
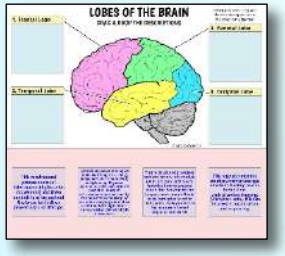
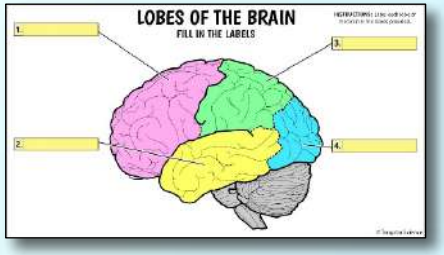



**2 Drag & Drop Descriptions**




**3 Type in Labels**

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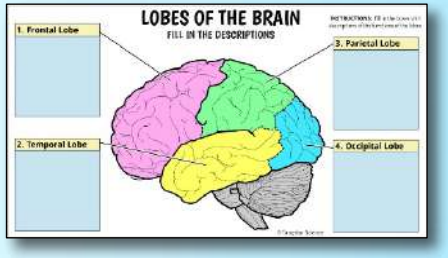


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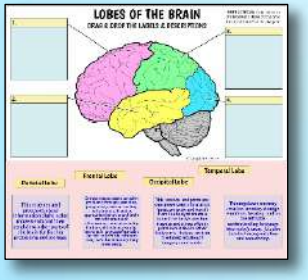


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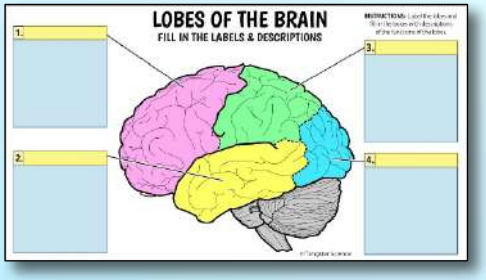


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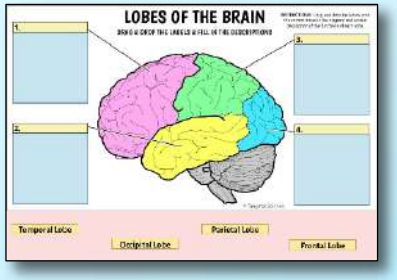


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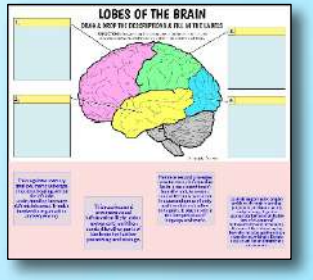
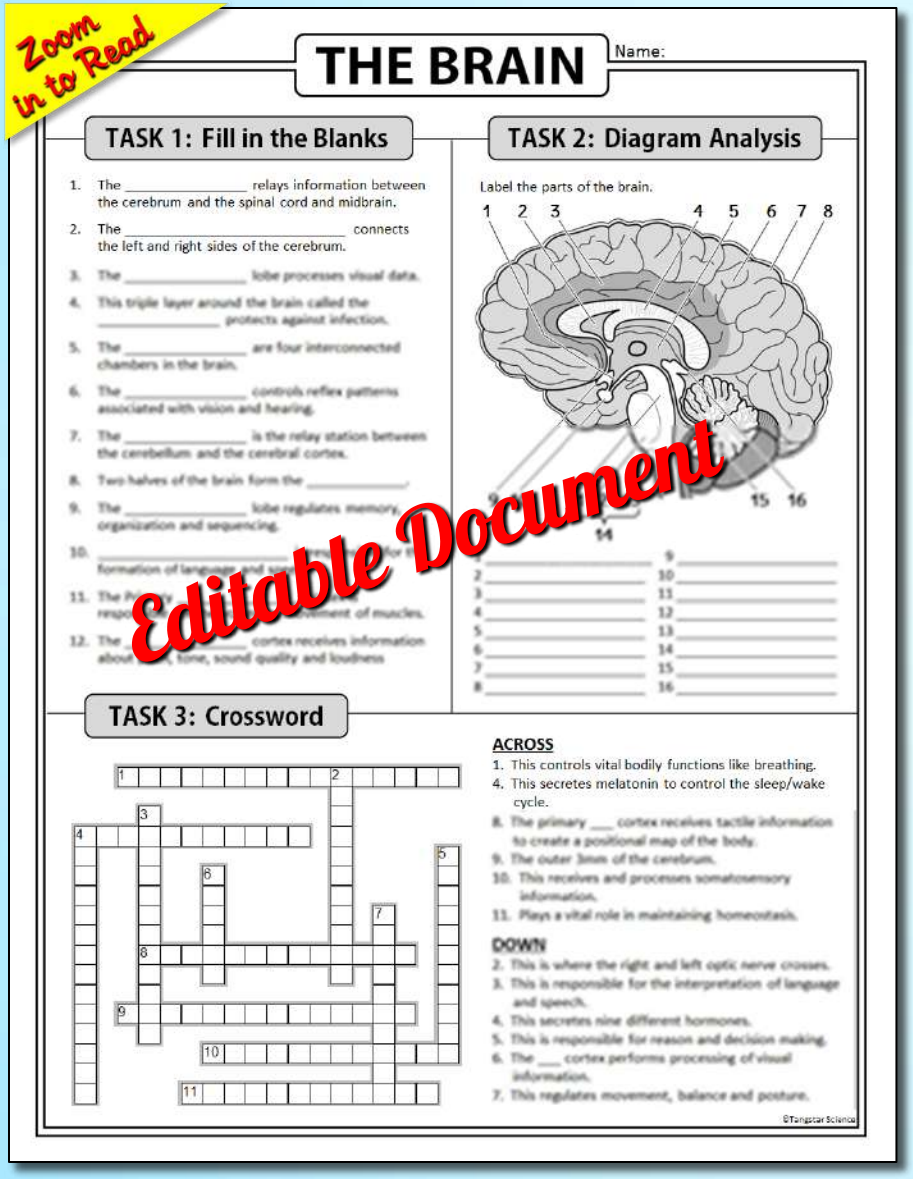


# OTHER NERVOUS SYSTEM RESOURCES YOU MIGHT LIKE by Tangstar Science

## RESOURCE 3: INDIVIDUAL REVIEW - Brain Review Worksheet / Test Prep (1 Page)




## CONCEPTS

- Hypothalamus
- Optic chiasm
- Pituitary gland
- Cerebellum
- Medulla oblongata
- Brain stem
- Pineal gland
- Cerebral cortex
- Thalamus
- Corpus callosum
- Meninges
- Ventricles
- Midbrain
- Pons
- Cerebrum
- Cingulate Gyrus
- Temporal lobe
- Occipital lobe
- Frontal lobe
- Parietal lobe
- Broca's Area
- Wernicke's Area
- Primary motor cortex
- Visual cortex
- Auditory cortex
- Primary somatosensory cortex

Comes with Editable PPT, Printable PDFs & GOOGLE SLIDES™ Options

## ANSWER KEY


## 3 TASKS

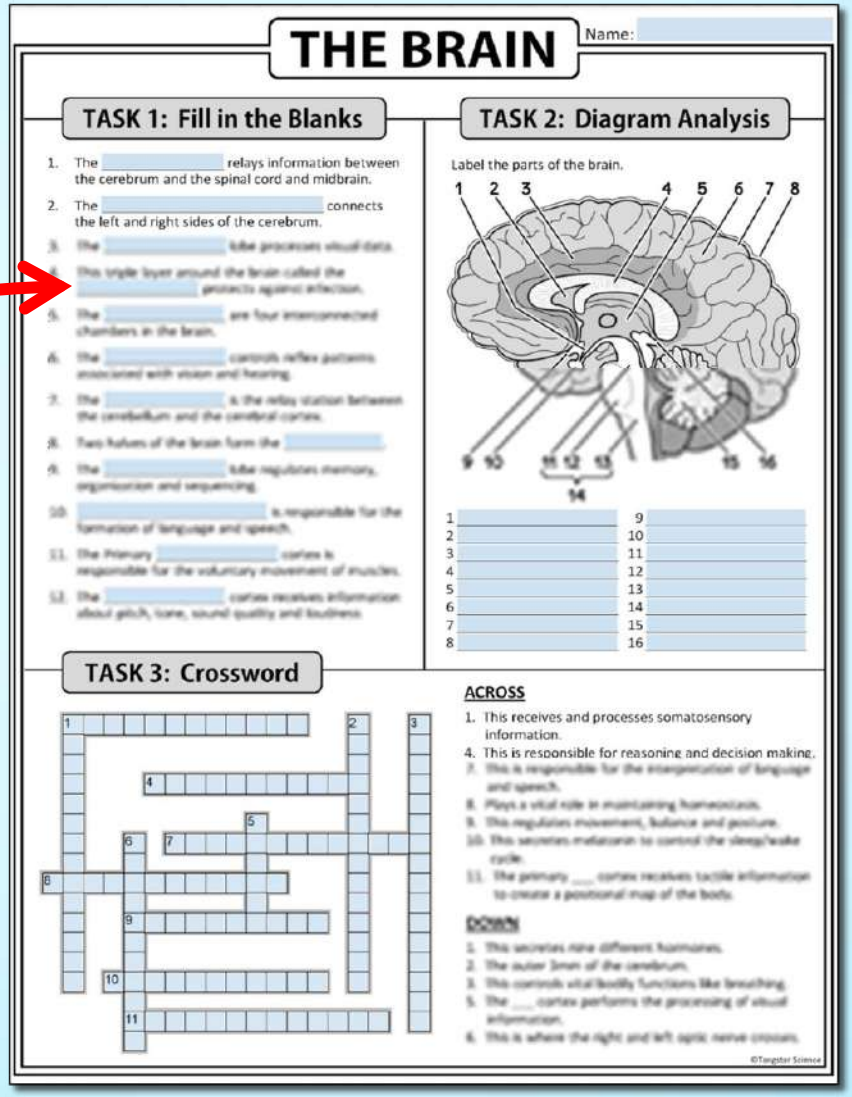
- Assign the whole page, or break it up into in class tasks, exit tickets and homework tasks.
- The variety of different tasks helps students review in different ways and holds their interest.

## RESOURCE 3: INDIVIDUAL REVIEW - Brain Review Worksheet / Test Prep (1 Page)

# DIGITAL VERSION IN GOOGLE SLIDES

**Great for Distance Learning and a Paperless Classroom.**

- Students type their answers in the **light blue text boxes** on the Google Slide. This can either be printed out at home (on 8.5"x11" letter-sized paper) for their own notes or digitally submitted to the teacher for proof of completion or for marks.



## RESOURCE 4: EXTRA REINFORCEMENT - Brain Diagram Crossword (1 Page)

# USEFUL FEATURES OF THIS DIAGRAM CROSSWORD

### Fully Editable Word Document is Included

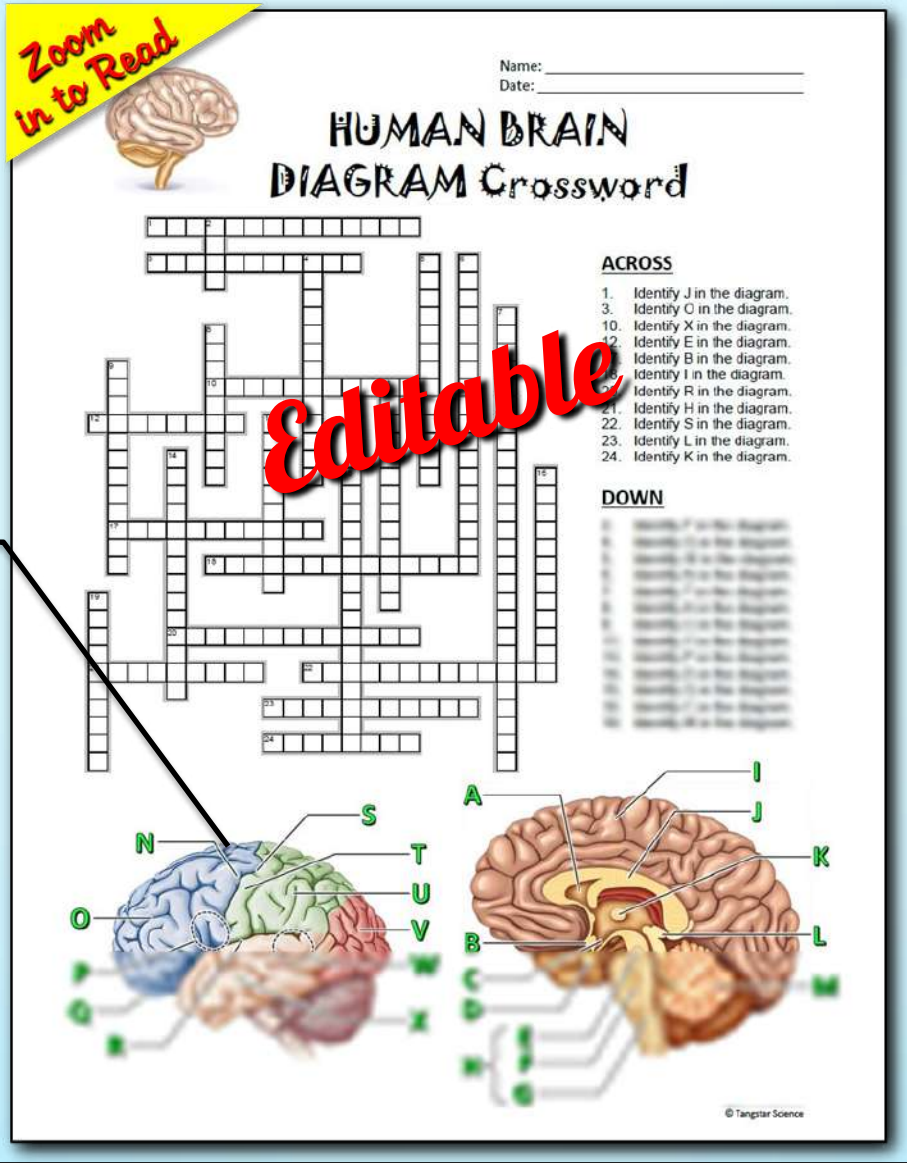
- Reword questions according to your classroom needs.

### One Page

- For easy and economical printing.

### Clear Diagrams

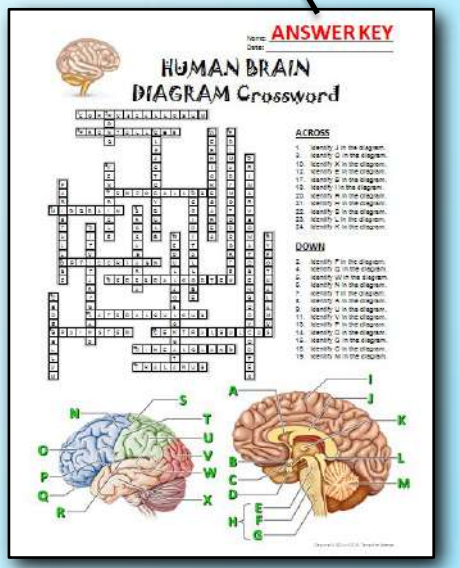
- Helps students practice labeling biological diagrams. Diagram crosswords are a fun twist on the usual labeling worksheet.
- **BONUS ACTIVITY:** After completing the crossword, have students cut out the diagrams, paste them in their notes and then label the structures for extra reinforcement.




**No Prep! Just Print and Use.**

### Full Answer Key

- Easy for you or your students to take up the answers.



## RESOURCE 4: EXTRA REINFORCEMENT - Brain Diagram Crossword (1 Page)

# DIGITAL VERSION IN GOOGLE SLIDES

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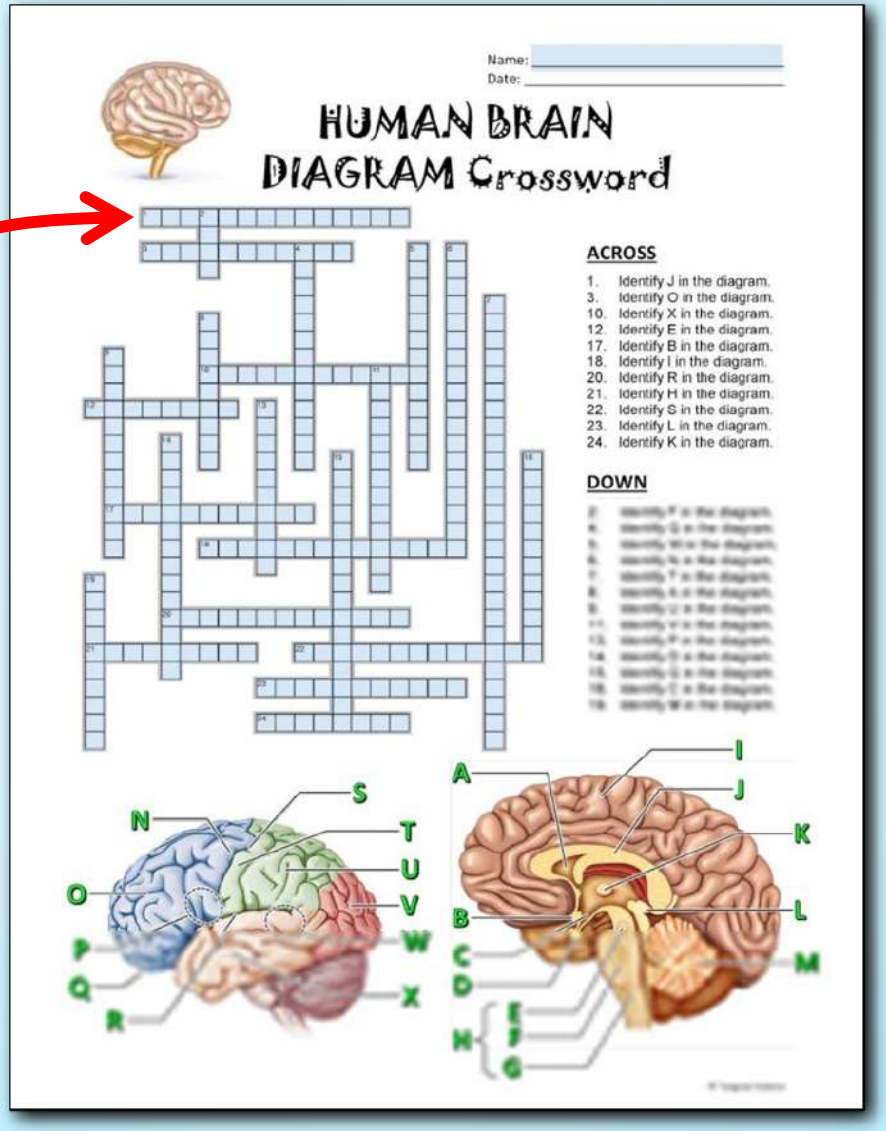
- Students type their answers in the **light blue text boxes** on the crossword in the Google Slide. This can either be printed out at home (on 8.5"x11" letter-sized paper) for their own notes or digitally submitted to the teacher for proof of completion or for marks.

Comes with Editable Word Doc, Printable PDFs & GOOGLE SLIDES™ Options



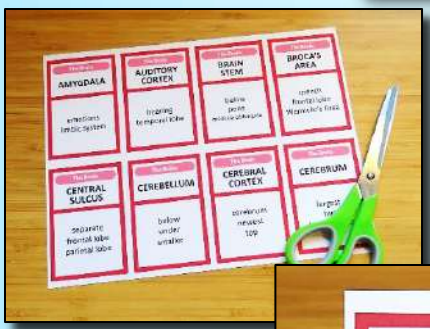

## TERMS

- corpus callosum
- frontal lobe
- temporal lobe
- midbrain
- optic chiasm
- cerebral cortex
- lateral sulcus
- brain stem
- central sulcus
- pineal gland
- thalamus
- pons
- olfactory bulb
- primary motor cortex
- primary somatosensory cortex
- ventricle
- parietal lobe
- occipital lobe
- Broca's area
- pituitary gland
- medulla oblongata
- hypothalamus
- cerebellum

# RESOURCE 5: GROUP REVIEW - Brain Taboo Card Game (4 Pages)

## 32 CARDS ON 4 PAGES

Just Print, Cut and Play.

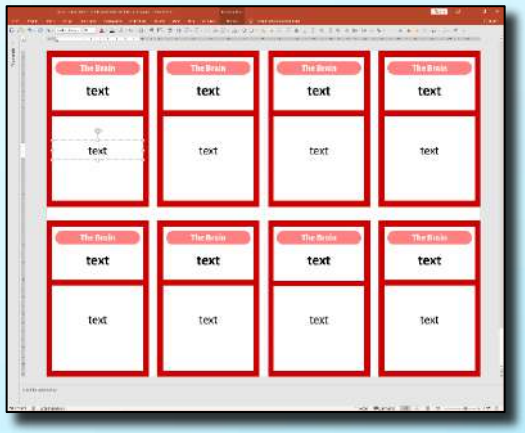


**Printable PDFs**

## 32 TERMS

- Amygdala
- Auditory cortex
- Brain stem
- Broca's area
- Central sulcus
- Cerebellum
- Cerebral cortex
- Cerebrum
- Cingulate gyrus
- Corpus callosum
- Frontal lobe
- Hippocampus
- Hypothalamus
- Limbic system
- Medulla oblongata
- Meninges
- Midbrain
- Occipital lobe
- Olfactory bulb
- Optic chiasm
- Parietal lobe
- Pineal gland
- Pituitary gland
- Pons
- Premotor Area
- Primary motor cortex
- Primary somatosensory cortex
- Temporal lobe
- Thalamus
- Ventricles
- Visual cortex
- Wernicke's area

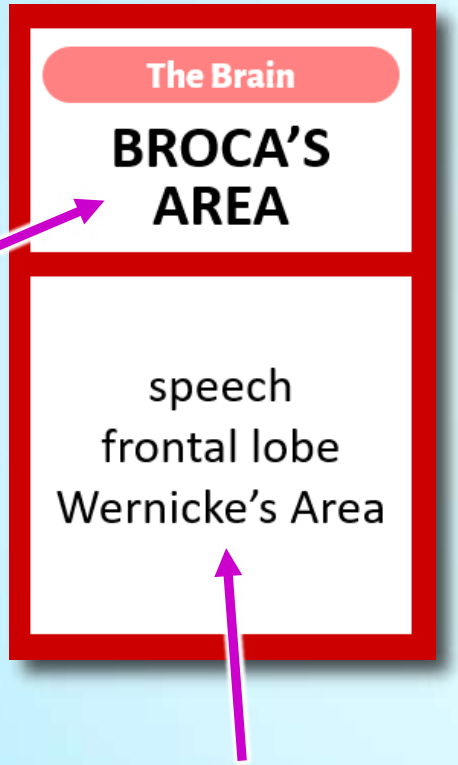
## EDITABLE TEMPLATE




Make Your Own Cards in PowerPoint.

# RESOURCE 5: GROUP REVIEW - Brain Taboo Card Game (4 Pages)

## HOW TO PLAY TABOO




**Step 1:** Form groups (or pairs) where one person is the **guesser** and the remaining students are the **clue givers**. Group members take turns being the guesser.

**Step 2:** The **guesser needs to guess the term** on the card (in this case it's "BROCA'S AREA"). Clue givers will give descriptions of the term to help the guesser guess the right term. Use a timer to limit the guessing time.

**Step 3:** The **clue givers have to describe the term without using the taboo words** on the card (in this case the taboo words are "speech", "frontal lobe" and "Wernicke's Area"). Also, clue givers cannot use root words found in the term or the taboo words. For example, if the term was "kicking", the root word "kick" cannot be used in the clue giving.

**ASSIGNING POINTS:** **3 points are given to the guesser** for every correct term guessed. **2 points are deducted from any clue giver that uses a taboo word OR root word** during clue giving. Alternatively they can choose to lose their next turn as the guesser.

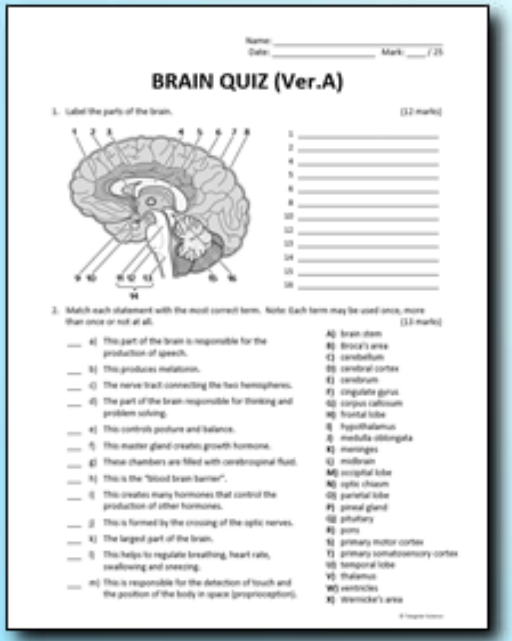
# OTHER NERVOUS SYSTEM RESOURCES YOU MIGHT LIKE by Tangstar Science

## RESOURCE 6: ASSESSMENT - Brain Quiz with Two Versions (1 Page)

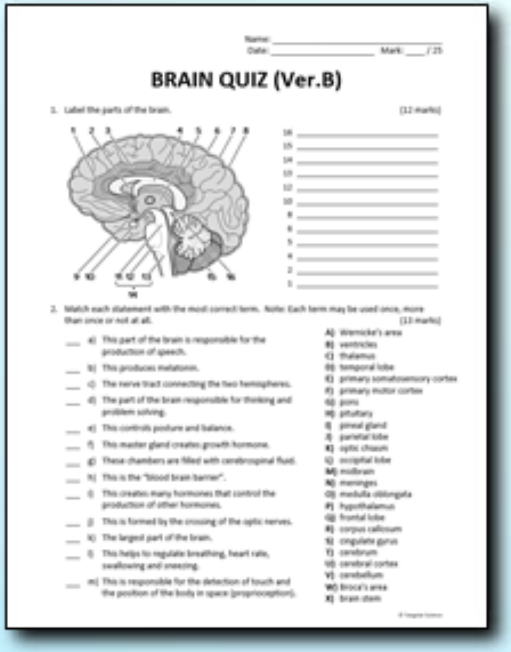
### TWO VERSIONS PREVENT CHEATING

- Version A and B contain the same questions but in mixed order.
- This allows you to alternate them between adjacent neighbours to deter cheating.

**Version A**




**Version B**




### IT'S EDITABLE

- Allows you to customize, add or delete questions.

### EASY PRINTING

- Single page quiz saves on printing, time and money.

### 25 MARKS, STRAIGHTFORWARD QUESTIONS

- 12 marks labelling a diagram.
- 13 marks matching questions.

### DIAGRAM

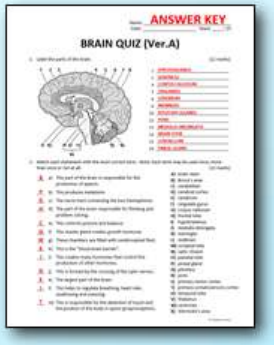
- I drew the diagram myself in Adobe Illustrator so that it would be clear and accurate.

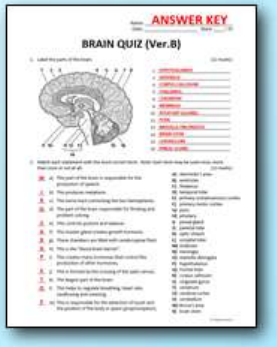
Comes with Editable Word Doc, Printable PDFs & GOOGLE FORMS™ Options

Self-Grading

### ANSWER KEY

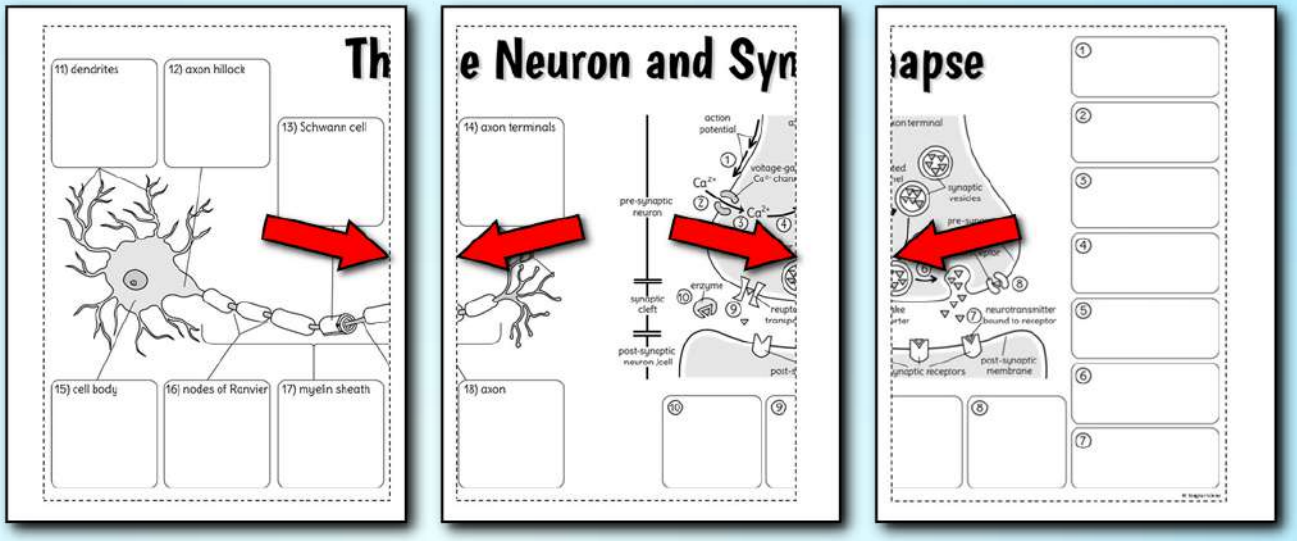
- Makes marking quick and easy.



## RESOURCE 7: TEACHING THE TOPIC - Big Neuron & Synapse Foldable (3 Pages)

**3** pages **cut out** and **taped** together.

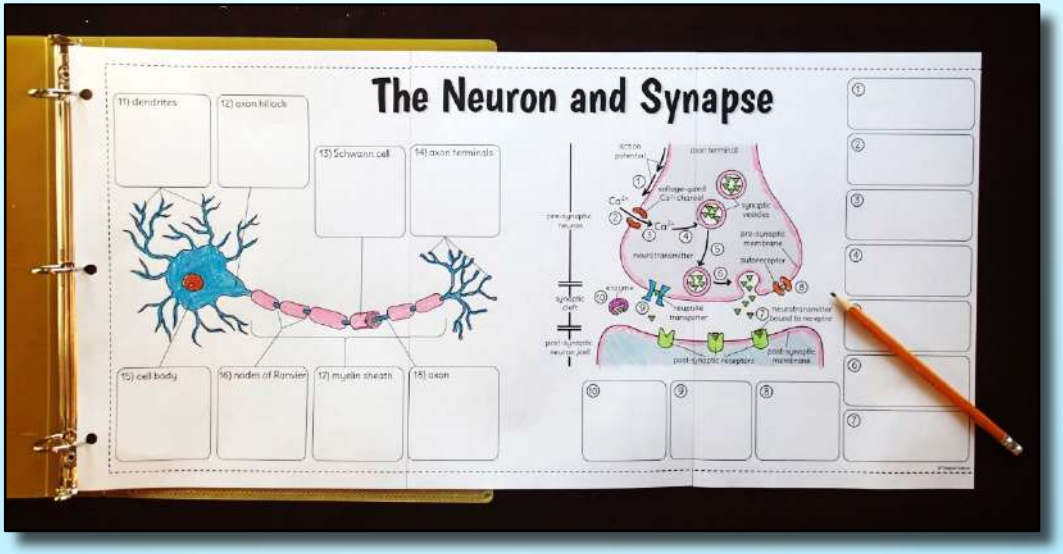



*then . . .*

Put in a **Binder**.

**OR**

Put in an **INB**.

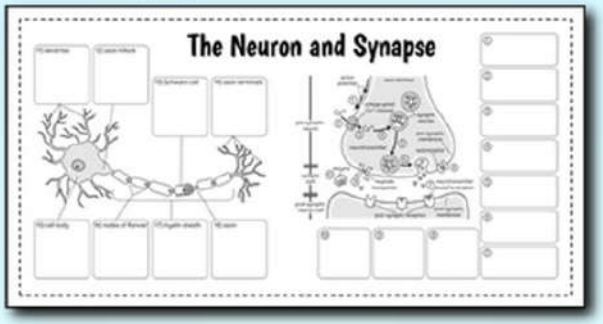



**Printable PDFs**

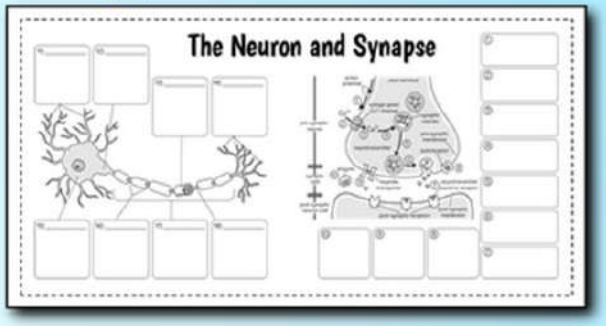
## RESOURCE 7: TEACHING THE TOPIC - Big Neuron & Synapse Foldable (3 Pages)

There are many **foldable options** for differentiation and **full answer keys** are provided for all options.

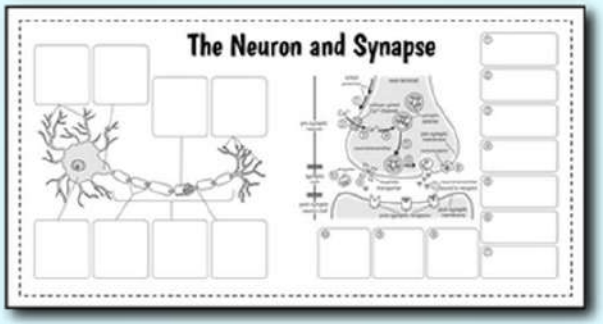
### Image, Boxes and Labels



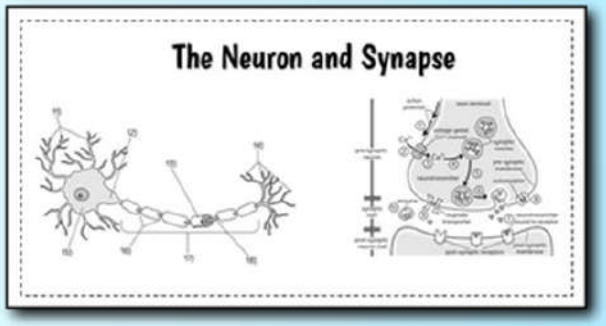

### Image, Boxes and Underlines



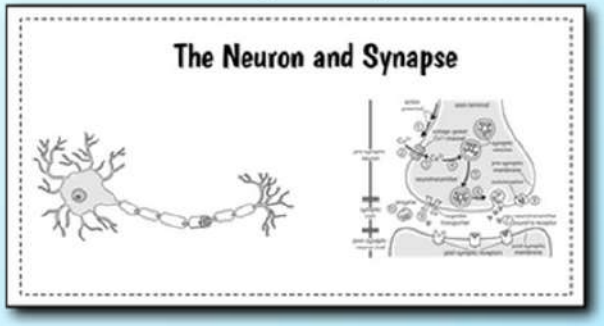

### Image and Boxes




### Image and Numbers

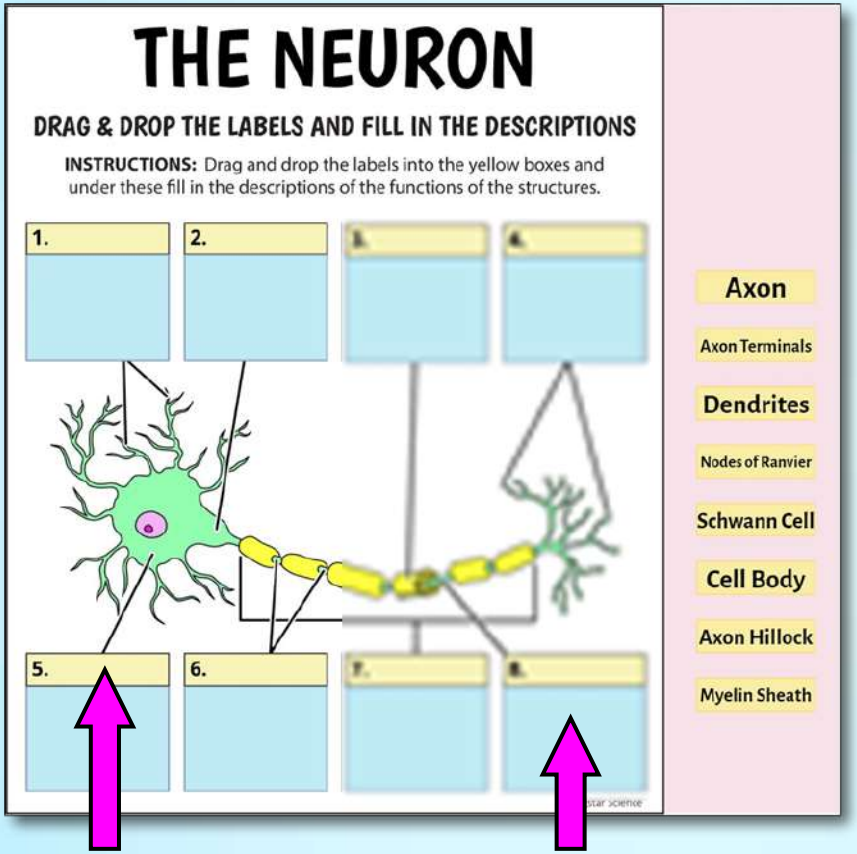



### Image Only



## RESOURCE 8: INTERACTIVE DISTANCE LEARNING – Neuron & Synapse Google Slides Activities

# EXAMPLE OF ONE OF THE ACTIVITIES




## TASK 1:

**Drag & drop** the labels of the structures onto the yellow numbered boxes on the diagram.

## TASK 2:

**Fill in the descriptions** of the functions of the structures by typing them into the blue boxes on the diagram.

## CONCEPTS

- Cell Body
- Dendrites
- Axon Hillock
- Axon
- Schwann Cell
- Myelin Sheath
- Nodes of Ranvier
- Axon Terminals

## ANSWER KEY

# RESOURCE 8: INTERACTIVE DISTANCE LEARNING – Neuron & Synapse Google Slides Activities

## What is this Resource?

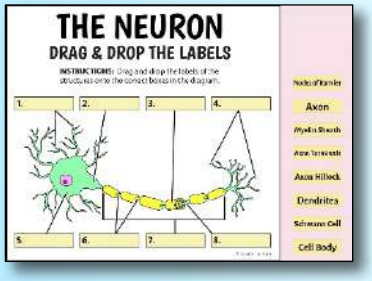
This resource asks students to identify the structures of the neuron on a diagram as well determine the functions of these structures. This is done using **EIGHT** different interactive activities in Google Slides.

Having these options is great for differentiation in your classroom. As well, multiple activities can be used by each student to help them develop, review and deepen their understanding.

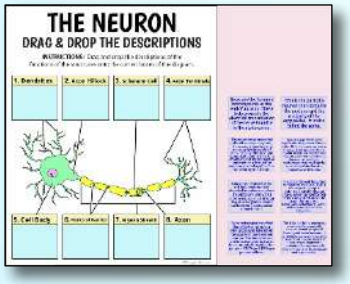
Great for distance learning and paperless classrooms.

## The Eight Activity Options Available

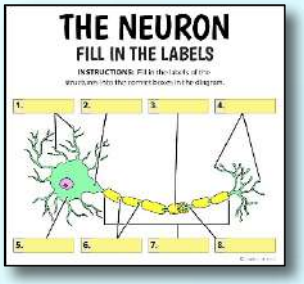
**1 Drag & Drop Labels**



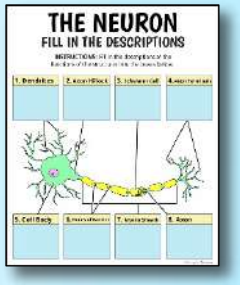

**2 Drag & Drop Descriptions**



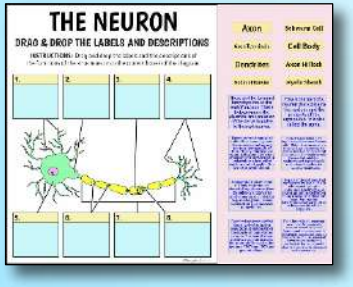

**3 Type in Labels**



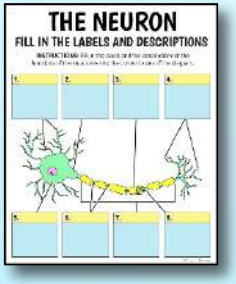

**4 Type in Descriptions**



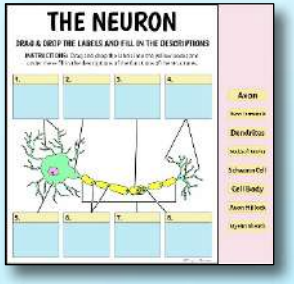

**5 Drag & Drop Both Labels & Descriptions**



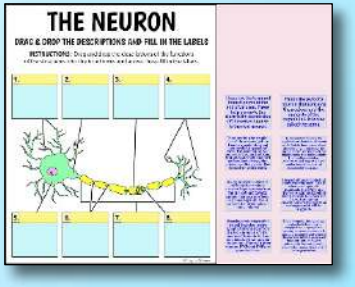

**6 Type in Both Labels & Descriptions**




**7 Drag & Drop Labels & Type in Descriptions**

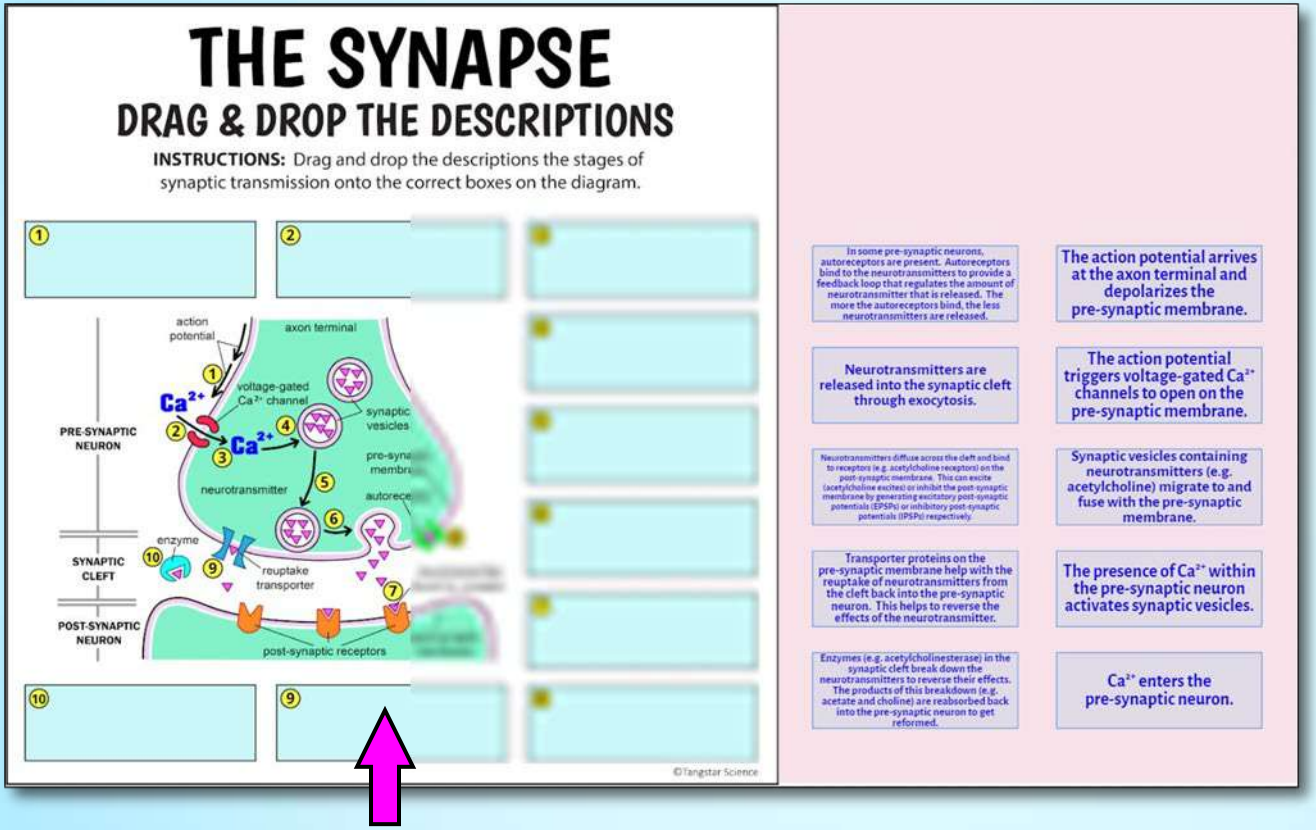



**8 Type in Labels & Drag & Drop Descriptions**



## RESOURCE 8: INTERACTIVE DISTANCE LEARNING – Neuron & Synapse Google Slides Activities

# EXAMPLE OF ONE OF THE ACTIVITIES



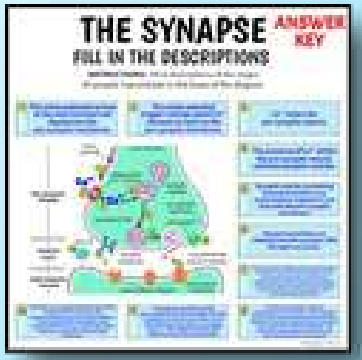

## TASK:

Drag & Drop the descriptions of the steps of synaptic transmission into the correct boxes of the diagram.

## CONCEPTS

- Synapse
- Synaptic cleft
- Presynaptic neuron
- Postsynaptic neuron
- Neurotransmitter (e.g. acetylcholine)
- Voltage-gated $Ca^{2+}$ channel
- Calcium
- Synaptic vesicles
- Reuptake transporter
- Enzyme (e.g. acetylcholinesterase)
- Autoreceptor (for feedback control)

## ANSWER KEY



## RESOURCE 8: INTERACTIVE DISTANCE LEARNING – Neuron & Synapse Google Slides Activities

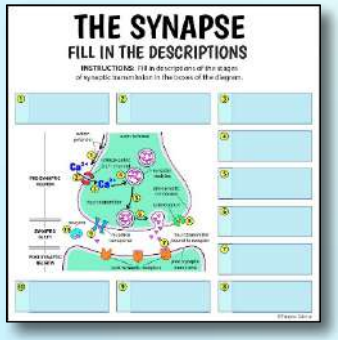
# What is this Resource?

This resource asks students to understand and identify the sequence of events that occur during synaptic transmission. There are two options that contain numbered steps. The first is a fillable text option that is best suited toward teacher instruction. The second option is a drag and drop activity that students can use to reinforce what they've just learned.

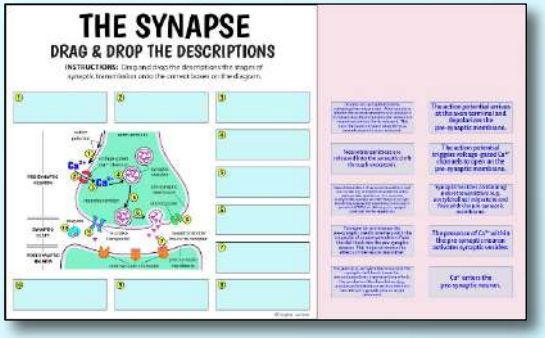
Great for distance learning and paperless classrooms.

# The Two Activity Options Available

**1** Type in Descriptions

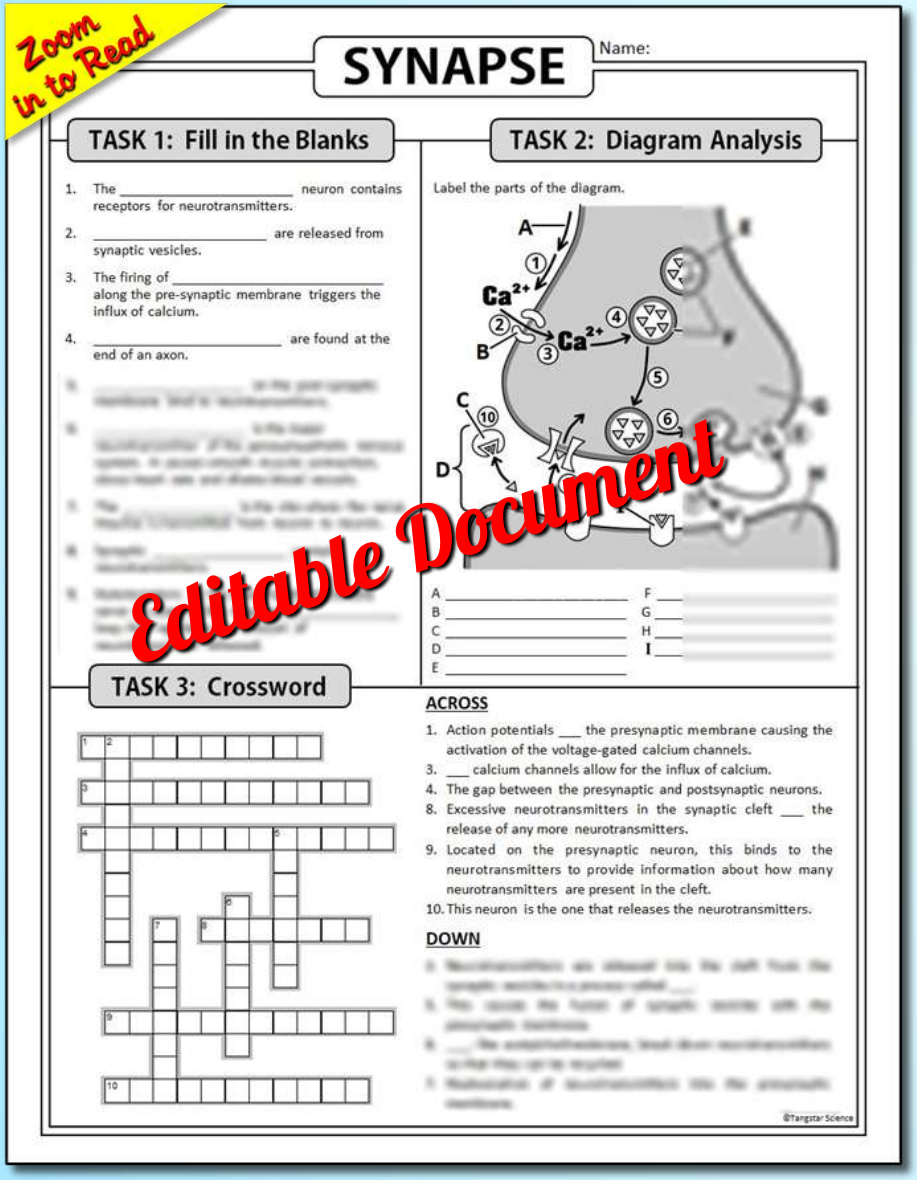



**2** Drag & Drop Descriptions



# OTHER NERVOUS SYSTEM RESOURCES YOU MIGHT LIKE by Tangstar Science

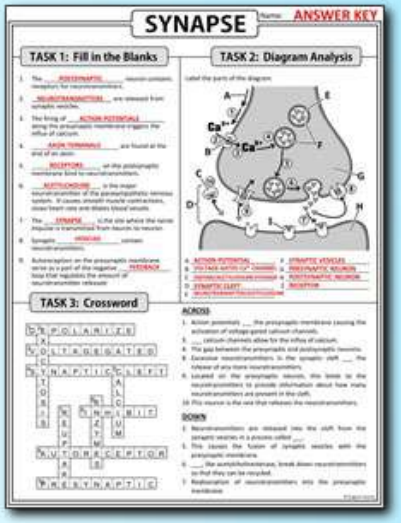
## RESOURCE 9: INDIVIDUAL REVIEW - Synapse Review Worksheet / Test Prep (1 Page)




## CONCEPTS

- Synapse
- Presynaptic Neuron
- Postsynaptic Neuron
- Receptors
- Synaptic Cleft
- Axon Terminals
- Neurotransmitters
- Synaptic Vesicles
- Exocytosis
- Action potentials
- Depolarize
- Voltage-Gated Calcium Channels
- Calcium Ions
- Acetylcholine
- Enzymes
- Acetylcholine Esterase
- Autoreceptors
- Negative Feedback
- Inhibition
- Reuptake

## ANSWER KEY




## 3 TASKS

- Assign the whole page, or break it up into in class tasks, exit tickets and homework tasks.
- The variety of different tasks helps students review in different ways and holds their interest.

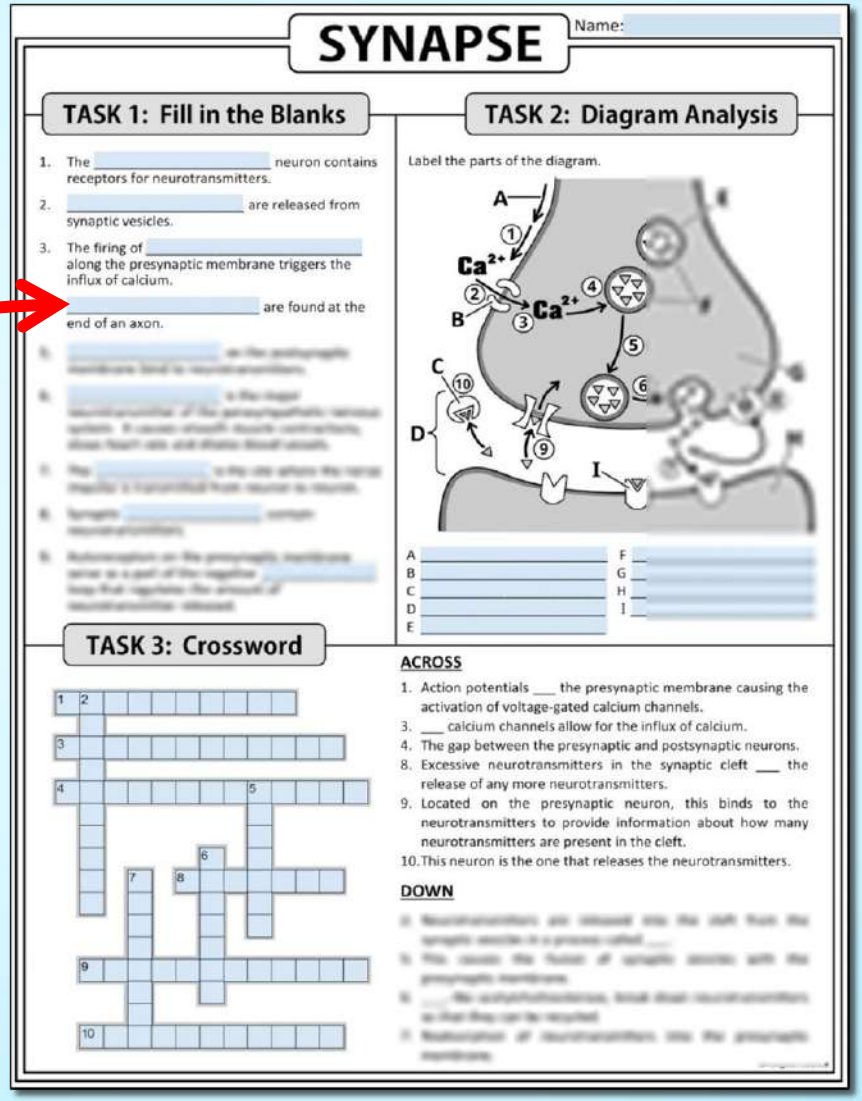
Comes with Editable PPT, Printable PDFs & GOOGLE SLIDES™ Options

## RESOURCE 9: INDIVIDUAL REVIEW - Synapse Review Worksheet / Test Prep (1 Page)

# DIGITAL VERSION IN GOOGLE SLIDES

**Great for Distance Learning and a Paperless Classroom.**

- Students type their answers in the **light blue text boxes** on the Google Slide. This can either be printed out at home (on 8.5"x11" letter-sized paper) for their own notes or digitally submitted to the teacher for proof of completion or for marks.



# RESOURCE 10: EXTRA REINFORCEMENT – Neuron & Spinal Cord Diagram Crossword (1 Page)

## FULLY EDITABLE WORD DOC INCLUDED

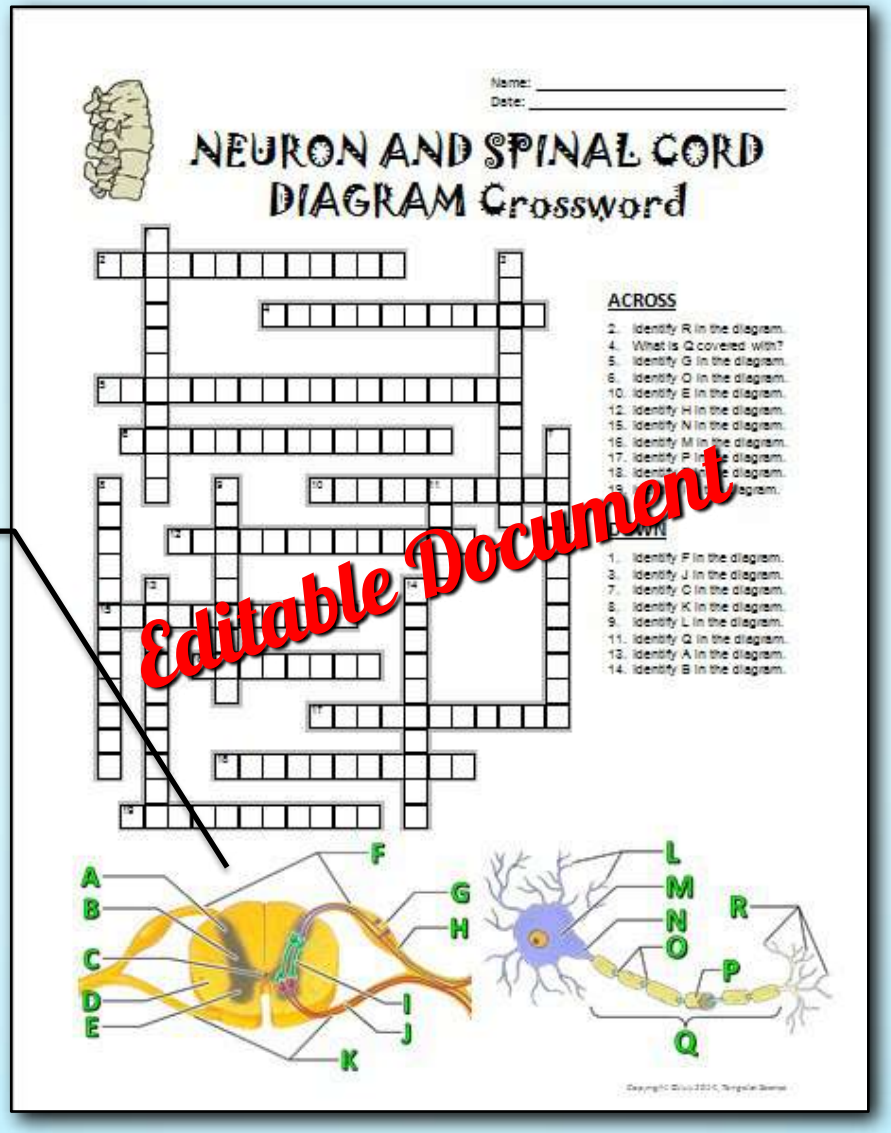
- Reword questions according to your classroom needs.

## ONE PAGE

- For easy and economical printing.

## CLEAR DIAGRAMS

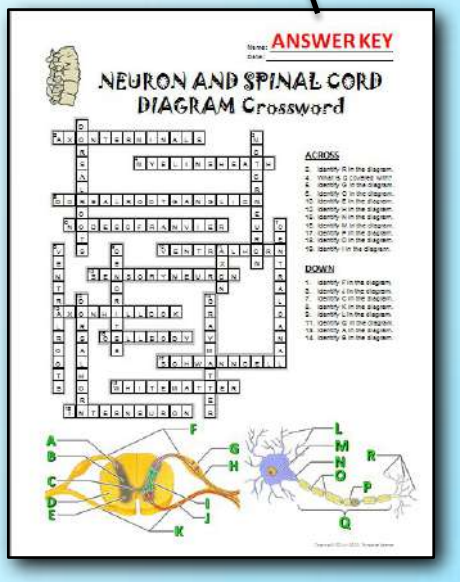
- Helps students practice labeling biological diagrams. Diagram crosswords are a fun twist on the usual labeling worksheet.
- **BONUS ACTIVITY:** After completing the crossword, have students cut out the diagrams, paste them in their notes and then label the structures for extra reinforcement.




Comes with Editable Word Doc, Printable PDFs & GOOGLE SLIDES™ Options

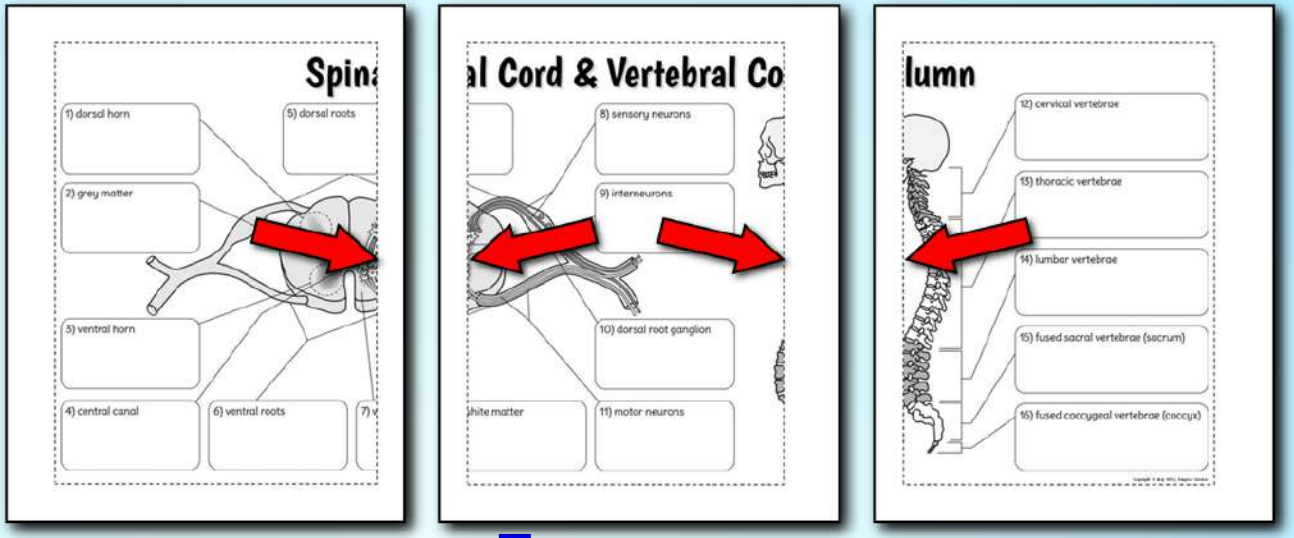
## FULL ANSWER KEY

- Easy for you or your students to take up the answers.



## RESOURCE 11: TEACHING THE TOPIC - Big Spinal Cord & Vertebral Column Foldable (3 Pages)

**3** pages **cut out** and **taped** together.

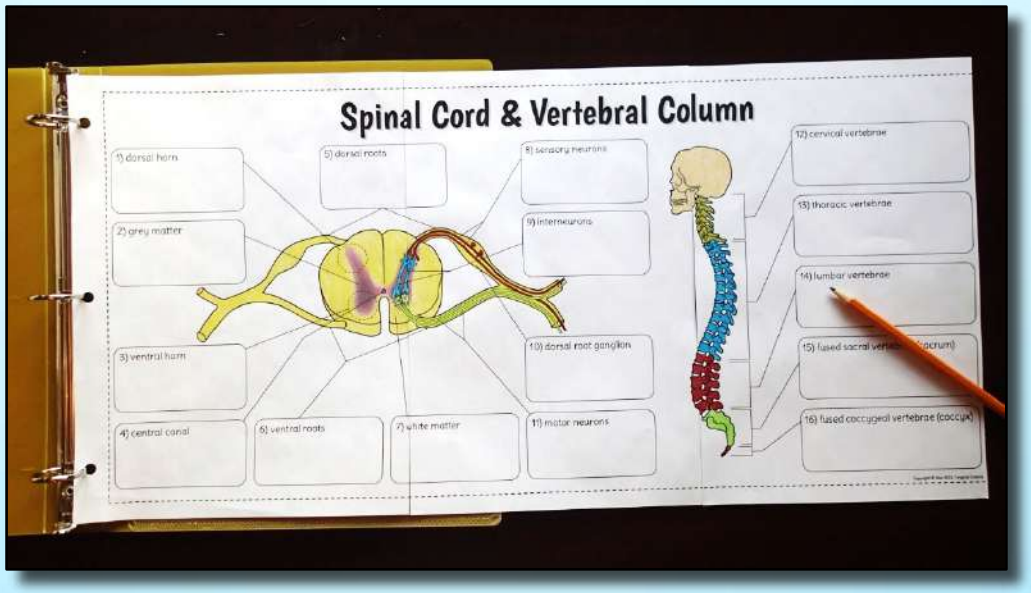



*then...*

Put in a **Binder**.

<u>OR</u>

Put in an **INB**.

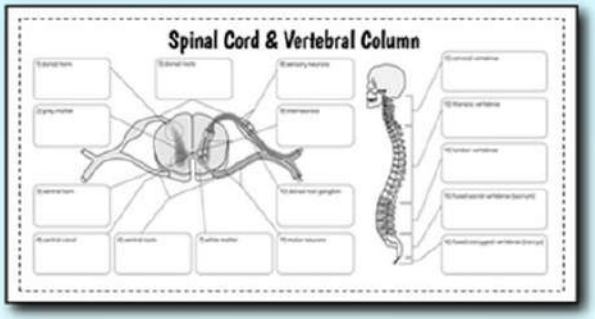



**Printable PDFs**

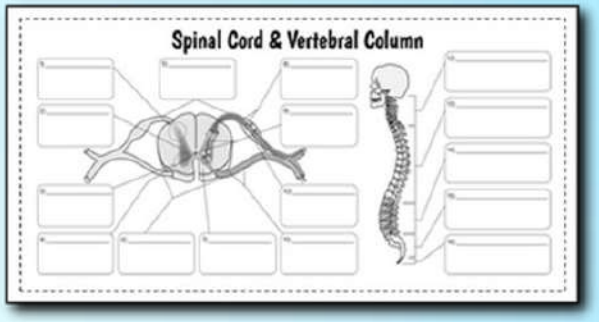
## RESOURCE 11: TEACHING THE TOPIC - Big Spinal Cord & Vertebral Column Foldable (3 Pages)

There are many **foldable options** for differentiation and **full answer keys** are provided for all options.

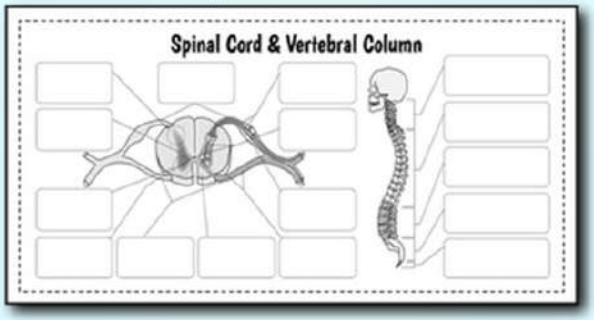
### Image, Boxes and Labels



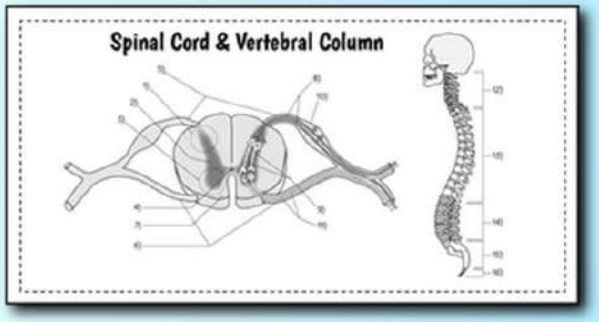

### Image, Boxes and Underlines



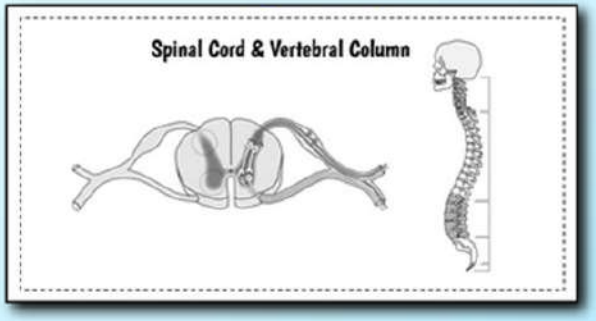

### Image and Boxes




### Image and Numbers




### Image Only



## RESOURCE 12: ARTICLE/SCIENCE LITERACY - "Lobotomies, Who Needs That Brain?" (2 Pages)

Zoom in to Read



# LOBOTOMIES: WHO NEEDS ALL THAT BRAIN?

27

(1) These days people with mental illnesses like schizophrenia, depression, mania and anxiety are treated with medication and psychotherapies focusing on retraining the mind. Though these types of treatments seem common, it wasn't until the mid-1950s that psychoactive drugs (drugs that act on the brain) became commonly used to treat mental illnesses. Before this, many treatments for mental illnesses were often brutal and ineffective.

(2) One such treatment was the lobotomy. A lobotomy is a surgery which cuts the connection between one area of the brain and another so that they cannot communicate with each other. Lobotomies are performed on the front of the brain called the prefrontal cortex. This procedure was thought to remove disruptive and violent actions and thoughts in patients, and often it did, but at a severe cost.

(3) The prefrontal cortex is the area of the brain that performs higher level thinking. It is responsible for decision making, planning, problem solving, inhibiting inappropriate behaviors and it is also the source of our personality. Prefrontal lobotomies often left patients calmer and less aggressive, but for many, it also cost them their intelligence and personality. Many lost the ability to make decisions, communicate and control their motor functions. Some patients even died.

(4) In 1888, Gottlieb Burckhardt performed the first modern psychosurgery, which is a surgery intended to alter mental functioning. He

brain. The brain is made up of gray and white matter. The gray matter is composed of brain cells while the white matter is composed of the axons that connect brain cells to one another to allow for communication between brain cells. Moniz thought that destroying the white matter in the prefrontal area would prevent many of the symptoms of mental illnesses.

(6) Initially, Moniz's leucotomy involved drilling holes into the skull and injecting the brain with ethanol to destroy the white matter in the prefrontal area, but it ended up damaging other parts of the brain. Moniz then designed an instrument he called a leucotome which had a metal loop which could be inserted into the white matter and moved around to physically destroy the tissue. Moniz was awarded a Nobel Prize in Physiology and Medicine in 1949 for developing this technique. Decades later, patients of lobotomy and their families began campaigning to remove the award from Moniz.

(7) In 1936, an American psychiatrist named Walter Freeman, with the help of a

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# RESOURCE 13: ARTICLE/SCIENCE LITERACY - "Concussions in Sports" (2 Pages)

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♦ nervous system ♦ sports medicine

## CONCUSSIONS IN SPORTS

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(1) These days sports concussions are getting more attention as there are up to 4 million cases of concussions reported due to recreational, amateur and professional sports in North America each year. A concussion isn't just a simple bump to the head. It can be a very serious injury, especially when experienced repeatedly as in the case of professional sports like football and boxing.

(2) A concussion is an injury to the brain which can result in bruising of the brain tissue, damage to the brain's blood vessels and injury to its nerves. The term concussion comes from the Latin term *concussus*, meaning the "action of striking together". Concussions occur when a player takes a blow to the head by contacting another player, by being hit by equipment or when hitting the ground. A concussion can also occur due to a blow to the body that causes the head to rapidly snap forward. When a concussion happens, it means that the force to the head was great enough to bypass the two main protective features of the brain.

(3) The brain is a 3 lb organ made up of soft and vulnerable tissues. The brain has two forms of protection against physical damage. One is the cranium, which is the curved top part of the skull (not including the jaw bone), which encases the brain. The other protection involves the thin layer of fluid, called cerebral spinal fluid (CSF), that surrounds the brain and is found between the surface of the brain and the cranium. Essentially, the brain is gently "floating" in a liquid within your skull. When you turn, nod or shake your head, your brain would hit the inside of your cranium if you

accelerates very rapidly and slams into the brain. The thin layer of CSF can't provide enough shock absorption in this case. Contrecoup injuries occur at the side opposite the point of impact. These typically occur when a moving head slams into a stationary object, like the ground. In this scenario, the brain slams into the inside of the skull when the skull decelerates upon impact. A combination of both a coup and contrecoup injury can also occur simultaneously if the brain is first injured at the site of impact, causing a coup injury, and then whiplashes to the opposite side of the skull, causing a contrecoup injury. A concussion with a contrecoup injury component is often more dangerous because they are difficult to diagnose since it isn't obvious that the head has been hurt opposite to the site of impact.

(5) The immediate and short-term symptoms of a concussion can include any combination of the following: headache, nausea, vomiting, confusion, slurred speech and trouble walking. About a quarter of people with concussions also report delayed and chronic symptoms that

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