

## Investigation 11.D: The Brain

### Answer Key

#### Answers to Part 1 Analysis Questions

1. This table summarizes the functions of the structures of the cerebrum that are visible when looking at the whole brain.

Cerebrum structure	Major functions
frontal lobe	associated with conscious thought, intelligence, memory, and personality; controls voluntary muscle movements
temporal lobe	involved in auditory reception
parietal lobe	receives sensory information from the skin, and processes information about body position
occipital lobe	processes visual information

2. The right cerebral hemisphere is associated with creativity and artistic ability. The left cerebral hemisphere is associated with analytical and mathematical ability.

#### Answer to Part 2 Analysis Question

1. This chart summarizes the function of the structures visible in a cross section of the brain.

Brain structure	Major functions
spinal cord	the spinal cord serves as a means of communication between the brain and much of the body (the peripheral nervous system); is also a centre for reflex actions
cerebellum	controls muscle coordination and balance
medulla oblongata	controls subconscious activities, such as heart rate, blood pressure, breathing, swallowing, and vomiting
pons	relays information between the cerebellum and cerebral cortex
midbrain	receives specific sensory input; connects the hindbrain to the forebrain
thalamus	connects various parts of the brain; relays information from the senses
hypothalamus	regulates the pituitary gland, heart rate, blood pressure, and temperature; controls drives such as hunger, thirst, and sexual desire
pituitary gland	secretes hormones to regulate a variety of bodily functions; regulated by the hypothalamus
corpus callosum	connects the right and left cerebral hemispheres through nerve tracts

#### Answer to Conclusion Question

2. The sheep brain is very similar to the mammalian brain in terms of structures. The human brain is larger and has a different shape. The cerebrum of the human brain is notably larger.

#### Answer to Extension Question

3. Try to include as many key structures as possible in your model.