A7 · Sensing the world: receptors, taste, smell, skin and body position · Practice key

This is the worked key. Every practice question is worked step by step.

Worked examples

Read these first. There is one for each kind of question in this lesson.

Example 1 · Name the receptor from the stimulus

Which kind of receptor detects the taste of lemon juice?

1. Lemon juice is a chemical dissolved in liquid.
2. A receptor that detects chemicals is a chemoreceptor.

Answer: A chemoreceptor (a taste receptor).

Example 2 · Explain sensory adaptation

A new wool sweater itches. After ten minutes you no longer notice it. Explain.

1. The stimulus has not changed: the wool still touches the skin.
2. The touch receptors become used to it, and their sensory neurons stop firing.

Answer: This is sensory adaptation.

Practice

Questions 1 to 4 are easy. Questions 5 to 8 are medium. Questions 9 and 10 are harder.

EASY

1. State what a sensory receptor does.

1. It detects one kind of stimulus.
2. It changes the stimulus into action potentials.

EASY

2. Name the kind of receptor that detects light.

1. Photo means light.
2. It is a photoreceptor.

EASY

3. Name the receptors for smell.

1. They line the top of the nasal cavity.
2. They are olfactory cells.

EASY

4. Name the receptors that tell the brain where your arms and legs are.

1. They are in muscles, tendons and joints.
2. They are proprioceptors.

MEDIUM

5. Explain where a sensation happens, and what the receptor does.

1. The receptor only starts action potentials.
2. The sensation happens in the brain.

MEDIUM

6. You get into a hot bath. After a few minutes it feels less hot, though the water has not cooled. Explain.

1. The thermoreceptors become used to the heat.
2. Their sensory neurons stop firing.
3. This is sensory adaptation.

MEDIUM

7. Explain why food has less flavour when your nose is blocked.

1. Taste and smell work together.
2. With the nose blocked, chemicals in the air do not reach the olfactory cells.

MEDIUM

8. Name the kind of receptor that detects each stimulus: sound, and a hot stove.

1. Sound is a movement of the air: a mechanoreceptor.
2. Heat: a thermoreceptor.

HARDER

9. A pin touches a patient's foot. The patient feels nothing, but can move the foot normally. Predict two parts that could be damaged. Explain.

1. The motor neurons and muscles work, because the foot moves.
2. The receptor in the skin could be damaged, so no action potentials start.
3. Or the sensory neuron could be damaged, so they do not reach the brain.

HARDER

10. With eyes closed, a person cannot touch a finger to their nose. The muscles work normally. Predict which receptors are not working. Explain.

1. The person does not know where the hand is.
2. Proprioceptors give the position of the body parts.
3. The proprioceptors are not working.