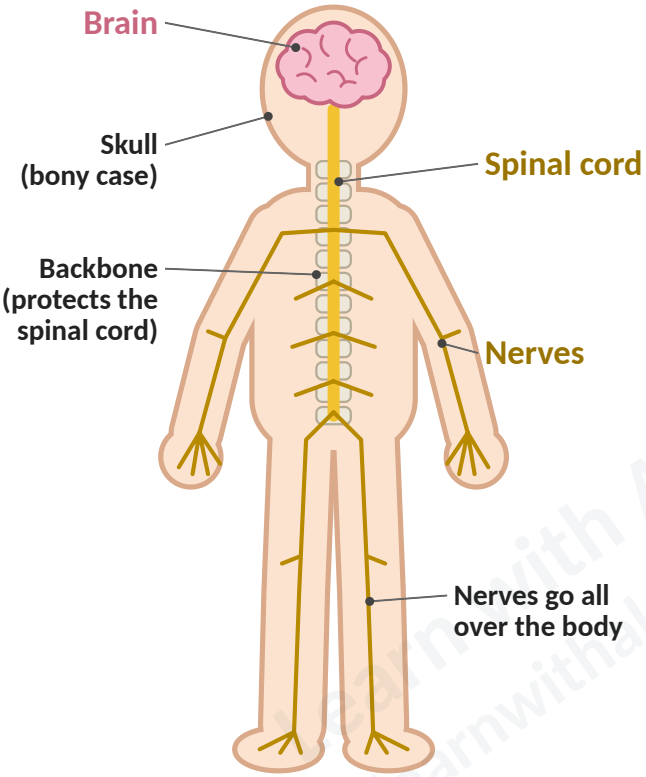
LEARN WITH AKSHADA · PICTURE LESSON

The brain and nerves: our message system

Your body is sending messages all the time. Your brain reads them and sends back orders, faster than you can blink.



For the parent *read in 1 minute*

The **brain**, the **spinal cord** and the **nerves** work together as the body's message system.

The **senses** (eyes, ears, nose, tongue, skin) notice things. **Nerves** carry the message to the brain. The **brain** works out what it means and sends a new message back along nerves to the **muscles**, and we move.

At this age, "messages" and "wires" are all the words your child needs.

The picture shows the body from the front, as if we could see through it. In a real body the spinal cord runs down the **back**, inside the backbone.

brain · spinal cord and nerves · bones

Talk about it *before turning the page · 5 minutes*

1. **Put your hand on your head. What is inside, and what do you think it does all day?**
   Listen for: the brain, kept safe inside the hard skull; it thinks, remembers, feels and moves the body; any idea that it is "in charge".
2. **Close your eyes. I will touch your hand. How did you know?**
   Listen for: the skin felt it and "told" the brain; a message went from the hand to the head.
3. **Why do we wear a helmet on a bicycle?**
   Listen for: to keep the head and brain safe if we fall.

How to use these pages

- Pages 2 and 3: read one numbered panel at a time and point to each part on the big picture above.
- Page 4: pick one or two activities for a weekend; the ruler-drop test is a favourite.
- Finish with the quick check on page 5. The answers are on page 6.

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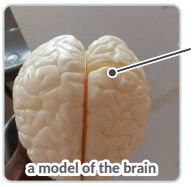
Meet the message team

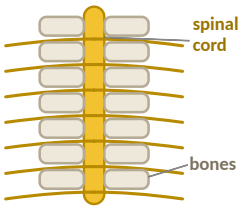


1 The brain: the control centre

Your brain sits inside your head, safe inside a hard, bony case called the **skull**.

It helps you **think, remember, learn and feel** happy or sad. It tells your body how to **move**. It also keeps your **breathing** going and sets how fast your **heart beats**, even while you sleep.

Remember: the brain is the boss of the body.

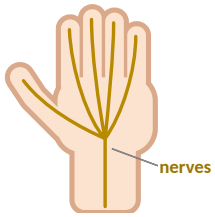


2 The spinal cord: the main road

The **spinal cord** is a thick bundle of nerves. It starts at the bottom of the brain and runs down your back.

It lies **inside your backbone**. The small bones of the backbone keep it safe. Feel the bumps down the middle of someone's back: those are the bones.

Remember: the backbone protects the spinal cord.



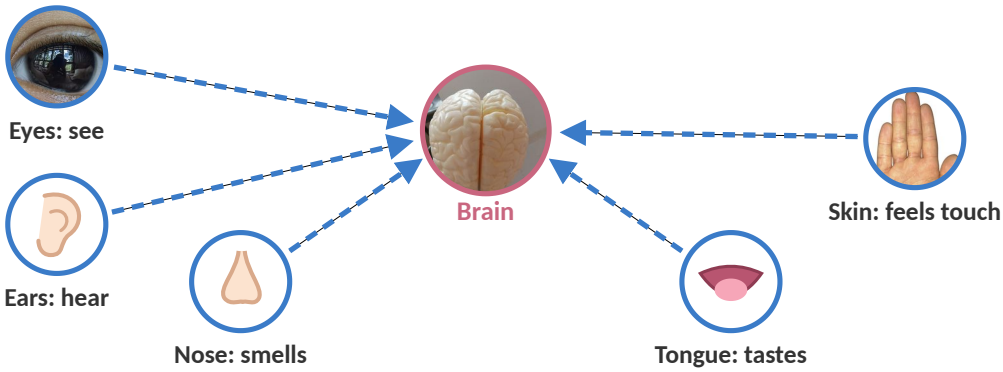
3 Nerves: the body's wires

Nerves are like very thin wires. They go **all over the body**: to your fingers, toes, face and tummy.

Some nerves carry messages **to** the brain. Others carry messages **from** the brain to the muscles. Most nerves join the spinal cord on their way to the brain.

Remember: nerves carry messages to and from the brain.

4 The five senses send messages to the brain



Your eyes, ears, nose, tongue and skin are always noticing things. Each one sends its news along nerves to the brain. The **brain** works out what it is: "That is Amma's voice!", "This dal smells good!", "The floor is cold!"

Remember: the eyes, ears, nose, tongue and skin collect news; the brain understands it.

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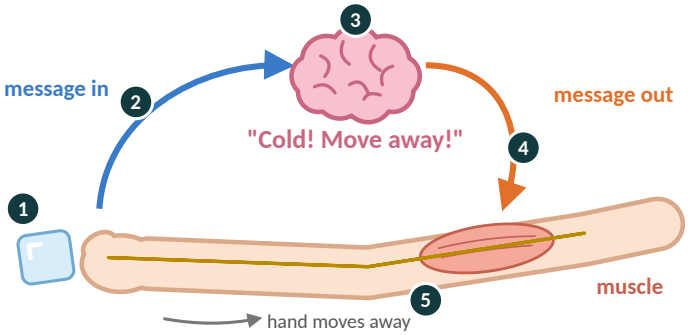
How a message travels

5 Touching an ice cube



1 The skin of your fingers feels the cold.

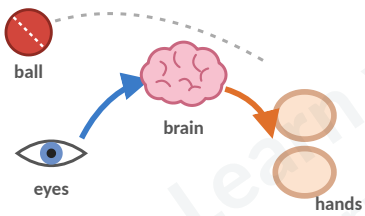
2 Nerves carry the message up to the brain.

3 The brain understands: "Cold! Move away."

4 The brain sends a message down nerves to the muscles.

5 The muscles pull, and your hand moves.

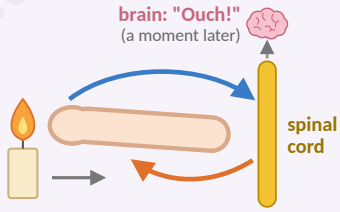
Remember: sense → nerves → brain → nerves → muscles → we move. **Blue** = message in; **orange** = message out.



6 Catching a ball

Your **eyes** see the ball coming and send a message to the brain. The brain works out where the ball is going and tells the **arm and hand muscles** where to go. All this takes less than a second!

Remember: eyes see, brain decides, muscles move.



7 Super-quick pull-back

for curious minds

Touch something **very hot or sharp** and your hand jerks away before you think. This is a **reflex**. The **spinal cord** sends the "pull back!" order straight to the muscles. The brain finds out a moment later: "Ouch!"

Remember: a reflex is quick and keeps us safe.


Wear a helmet


Sleep well


Good food and water


Safe near roads

8 Caring for your brain and nerves

Wear a **helmet** when you cycle or skate. **Sleep** about 10 hours a night: the brain rests and sorts out what you learnt. Eat **healthy food** (dal, roti, fruit, vegetables), drink **water**, and **hold an adult's hand** near roads.

Remember: a helmet protects the skull and brain.

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Activities to try at home

1. Ruler-drop catch test

You need a 30 cm ruler.

1. An adult holds the ruler hanging down, with the 0 cm end at the bottom.
2. Your child holds a thumb and finger open on either side of the 0 mark, not touching.
3. Without warning, the adult lets go. Your child catches it as fast as possible.
4. Read the number just above the thumb. Try 3 times. A smaller number means a quicker catch.

Talk: eyes see the drop → brain → muscles pinch. Does it get quicker with practice?

2. Message relay (squeeze game)

1. The family stands or sits in a line, holding hands.
2. The first person squeezes the next person's hand. As soon as you feel a squeeze, pass it on.
3. The last person shouts "Got it!". Time it with a phone stopwatch. Try again: can you go faster?

Talk: each person is like a piece of nerve, passing the message along. Real nerves are much faster!

3. Guess the object by touch

1. An adult puts 5 or 6 everyday things in a cloth bag: a spoon, a comb, an eraser, a small ball, a hair clip, a toy car.
2. Your child puts a hand in, without looking, and feels one thing at a time.
3. Is it hard or soft? Smooth or rough? Guess, then pull it out to check.

Safety: nothing sharp, nothing hot, nothing small enough to swallow.

4. Blindfold taste and smell

1. An adult chooses small bits of safe foods: a slice of banana, a piece of apple, a pinch of sugar, a lemon wedge.
2. With a soft cloth over the eyes, your child tastes and guesses each one.
3. Smell only: a little jeera, an orange peel, a mint leaf.
4. Try a bit of apple while holding the nose. Is it harder to tell what it is?

Safety: the adult checks every food is safe (no allergies, nothing hot or spicy, small pieces). Tie the cloth loosely.

5. Find the backbone

Ask a family member to bend forward a little. Gently run a finger down the middle of their back and count the bumps. Each bump is one small bone of the backbone, and the spinal cord runs safely inside them.

Key points to remember

- The **brain** is the control centre. It is inside the **skull**, which protects it.
- The brain helps us think, remember, feel and move. It keeps breathing going and sets how fast the heart beats.
- The **spinal cord** is a thick bundle of nerves inside the **backbone**.
- **Nerves** are like thin wires that carry messages to and from the brain, all over the body.
- Senses send messages to the brain; the brain sends messages to the muscles, and we move.

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Quick check 10 questions · answers on page 6

1. Where is the brain?
   (a) in the chest (b) inside the skull (c) in the tummy (d) in the knee

2. What keeps the spinal cord safe?
   (a) the skull (b) the skin (c) the backbone (d) the teeth

3. Nerves are like:
   (a) water pipes (b) thin wires that carry messages (c) hard bones (d) muscles

4. You eat a laddoo and it tastes sweet. Which sense organ sent that message to the brain?
   (a) eyes (b) ears (c) tongue (d) nose

5. True or false: the brain keeps you breathing even when you are asleep.
   ☐ True ☐ False

6. True or false: nerves are found only in the head.
   ☐ True ☐ False

7. **Put in order.** You touch an ice cube. Write 1 to 5.
   ___ The brain understands: "Cold!"
   ___ The muscles move your hand away.
   ___ Your skin feels the cold.
   ___ The brain sends a message to the muscles.
   ___ Nerves carry the message to the brain.

8. Match each sense organ to its job. Write the letter.

1. Eyes ___	A. hear sounds
2. Ears ___	B. feel hot, cold and touch
3. Nose ___	C. see things
4. Skin ___	D. smell things

9. **Why** should you wear a helmet when you ride a bicycle?

.....

10. **Who am I?** I am a thick bundle of nerves. I run down your back, inside the backbone.

.....

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Answers

1. (b) inside the skull. The hard skull protects it.
2. (c) the backbone. The spinal cord lies inside it.
3. (b) thin wires that carry messages, to and from the brain.
4. (c) tongue. It sends taste messages along nerves to the brain.
5. True. The brain keeps us breathing all the time, even in sleep, without us thinking about it.
6. False. Nerves go all over the body: arms, legs, fingers, toes, face and tummy.
7. Order: 1 Your skin feels the cold. 2 Nerves carry the message to the brain. 3 The brain understands: "Cold!" 4 The brain sends a message to the muscles. 5 The muscles move your hand away. (So the boxes on the sheet, from top to bottom, read 3, 5, 1, 4, 2.)
8. 1-C, 2-A, 3-D, 4-B.
9. To protect the head and brain if you fall. Accept any answer about keeping the brain safe from a bump.
10. The spinal cord.

Going further *optional*

- Ask: "Which is quicker, the ruler catch or the squeeze relay? Why?" (The ruler catch uses one person's nerves; the relay passes through many people, each of whom must feel and then act.)
- Next time your child pulls back from something hot, talk about the reflex: the spinal cord acted first, the brain found out a moment later.
- Make a "Brain care" chart for the week: helmet on, 10 hours of sleep, water bottle finished, crossed the road safely.

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