

## Section A

## Text 1

Study the poster below and answer Questions 1-4 in the Question Booklet.

# The Teenage BRAIN



Scientists now realise that the teenage brain undergoes a **growth spurt** in the same way as the rest of the teenage body. Just as puberty changes happen, such as facial hair in boys and breasts in girls, so do changes happen in the physical structure and layout of the teenage brain.

**Two main changes happen in the teenage brain:**

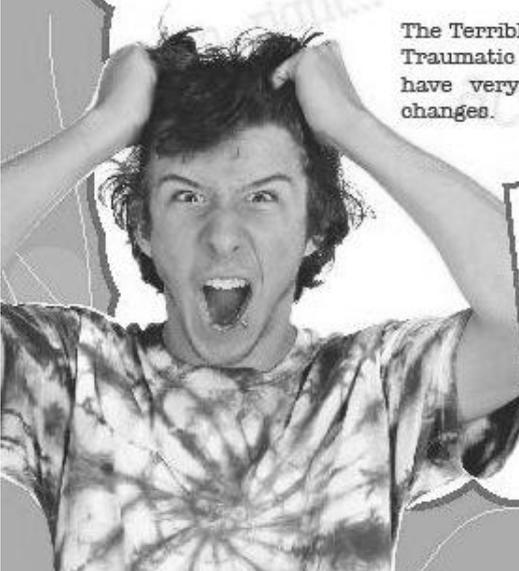
- 1.** Growth of fatty insulation around the brain connections. This increases the speed of brain messages a hundred-fold.
- 2.** Pruning process in the front of the brain, the part responsible for decision making, planning, emotion control and empathy. This process re-shapes the teenage brain.

This growth spurt also happens in early childhood which explains a great deal! Any parent who has experienced *déjà vu* when faced with teenage tantrums; "You are acting like a two year old!" may not be too far off the mark.

The Terrible Twos and the Traumatic Teens seem to have very similar brain changes.



**SO** ... the next time your children give you 'lip' or blank you with a defiant stare, spare a thought for the work in progress still taking place between the ears!




## Section B

## Text 2

*This passage describes about a fireman and his encounter with a seventeen-year-old girl after work one night. Read it carefully and answer Questions 5– 12 in the Question Booklet.*

- 1 It was a special pleasure to see things eaten, to see things blackened and changed. With the brass nozzle in his fists, with this great python spitting its venomous kerosene upon the world, the blood pounded in his head, and his hands were the hands of some amazing conductor playing all the symphonies of blazing and burning to bring down the tatters and charcoal ruins of history. His eyes were all orange-flamed with the thought of what could come next. 5
- 2 He flicked the igniter and the house jumped up in a gorging fire that burned the evening sky red and yellow and black. He strode in a swarm of fireflies. He wanted above all, like the old joke, to shove a marshmallow on a stick in the furnace, while the flapping pigeon-winged books died on the porch and lawn of the house. While the books went up in sparkling whirls and blew away on a wind turned dark with burning, Montag grinned the fierce grin of all men who had not a right to defy any higher orders of the government. 10
- 3 He knew that when he returned to the firehouse, he might wink at himself, a minstrel man, burnt-corked, in the mirror. Later, going to sleep, he would feel the fiery smile still gripped by his face muscles, in the dark. It never went away, that smile, it never ever went away, as long as he remembered. 15
- 4 He hung up his black-beetle-coloured helmet and flameproof jacket neatly. After showering luxuriously, whistling while hands in pockets, Montag walked across the upper floor of the fire station and out into the midnight street where the silent, air-propelled train slid soundlessly down its lubricated flue in the earth. Whistling, he let the escalator waft him into the still night air. 20
- 5 Before he reached the corner, however, he slowed as if a wind had sprung up from nowhere, as if someone had called his name. The last few nights he had had the most uncertain feelings about the sidewalk just around the corner here, moving in the starlight toward his house. He had felt that a moment before his making the turn, someone had been there. The air seemed charged with a special calm as if someone had waited there, quietly, and only a moment before he came, simply turned to a shadow and let him through. There was no understanding it. 25 30
- 6 Each time he made the turn, he saw only the white, unused, buckling sidewalk, with perhaps something vanishing swiftly across a lawn before he could focus his eyes or speak. However, this night, he slowed almost to a stop. His inner mind, reaching out to turn the corner for him, had heard the faintest whisper.
- 7 The autumn leaves blew over the moonlit pavement in such a way as to make the girl who was moving there seem fixed to a sliding walk, letting the motion of the wind and the leaves carry her forward. Her head was half bent to watch her shoes stir the circling leaves. Her face was slender and milk-white, and in it was a kind of gentle hunger that touched over everything with tireless curiosity. It was a look, almost, of pale surprise; the dark eyes were so fixed to the world that no move escaped them. He almost thought he heard the motion of her 35 40

hands as she walked, and the infinitely small sound now, the white stir of her face turning when she discovered she was a moment away from a man who stood in the middle of the pavement waiting.

8 The trees overhead made a great sound of letting down their dry rain. The girl stopped and looked as if she might pull back in surprise, but instead stood regarding him with eyes so dark and shining and alive, as if he had said something wonderful. 45

9 "Do you mind if I ask? How long have you worked at being a fireman?"

"Since I was twenty, ten years ago." 50

"Do you ever read any of the books you burn?"

He laughed. "That's against the law!"

They walked further and the girl said, "Is it true that long ago firemen put fires out instead of going to start them?"

*Adapted from Fahrenheit 451 by Ray Bradbury*

## Section C

## Text 3

The article below is by a writer who is concerned about the effects of drying rivers on the Earth. Read it carefully and answer Questions 13– 18 in the Question Booklet.

- 1 Early in 2001, the Rio Grande River failed to reach the Gulf of Mexico for the first time. With that nefarious event, the Rio Grande joined a growing list of once-mighty rivers that are running dry from overuse: the Colorado River in the U.S., the Yaqui in Mexico, the Indus in Pakistan, the Ganges in Bangladesh, the Yellow and Tarim in China, and the Murray in Australia, along with many other rivers large and small. 5
- 2 Not surprisingly, fisheries in these once-bountiful rivers have crashed. We've tapped underground water sources pretty heavily as well. The water level in the Ogallala Aquifer in the Midwestern U.S. has dropped more than 150 feet in some places, leaving many farmers' wells bone dry. As water is sucked out of aquifers, the overlying soil and rock can compact or collapse into the dewatered void, causing tall buildings to teeter in Mexico City, automobiles to tumble into sinkholes in Florida, or swallowing tourists on the fringes of the shriveling Dead Sea in Israel and Jordan. 10
- 3 With so many rivers, lakes and aquifers going dry, we have to ask: *Are we running out of water?* The glass-half-full answer is no...at least not at the planetary level. Today there is just as much water on the planet as there was when the first signs of life appeared. 15
- 4 Every year, about 110,000 billion cubic meters of water falls on the land surface of our planet as rain or snow. That annual endowment of water would cover all land to nearly a meter deep if it was spread evenly. More than half of all of that water evaporates quickly or gets taken up by trees, shrubs, and grass. More than a third flows out to the coasts, where it helps to maintain the delicate salt and freshwater balance of estuaries, without which much of our seafood industry would collapse. 20
- 5 Of all the water falling on land, we're consuming less than 10% to grow our crops, supply our homes, keep our industries running, and generate electricity. Every bit of the water that falls on land or in the ocean or is used for human endeavors is eventually evaporated back up into the sky as water vapour, replenishing our planet's never-ending freshwater cycle. No water is actually 'lost' in that global cycle. 25  
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- 6 So what's the problem? Surely we can't be in trouble if we're depleting less than 10% of the Earth's naturally renewable water, and the water cycle keeps bringing that water back year after year?
- 7 *Here's the catch:* the water that falls from the sky isn't evenly distributed around the globe, and our needs for that water aren't the same everywhere. So why can't we just move water from places of abundance to places of shortage? Why can't we take the fresh water flowing to the Arctic Circle and redirect it to the parched cities of the American Southwest? 35
- 8 Such plans have been on the drawing boards of big water dreamers for decades. In truth, the only thing that has stopped these initiatives is the fact that far less costly alternatives usually exist for meeting our water needs in the near term. We only have to look to the South-North Water Transfer Project in China for 40

- a bellwether of what may come. The Chinese will invest \$62 billion to build a pipe-and-canal system to move water over hundreds of kilometers from the Yangtze River to parched cities and farms in the north. 45
- 9** *But here's another catch:* Even if we could move water over great distances in a cost-effective manner, it takes a tremendous amount of energy to do so. Nearly 20% of all electricity used in California—whose statewide plumbing system is reminiscent of a Rube Goldberg design—is spent moving water around. The energy required to move water—and its associated carbon emissions—is not inconsequential in the efforts to arrest climate change. Until we have abundant clean energy sources to power such re-plumbing of the planet's water sources, we should not be investing in them. 50
- 10** *And yet one more important consideration:* We should be careful about 'robbing Peter to pay Paul.' As we dry up a river or lake to harvest or export its water, the health of fish populations and natural freshwater ecosystems plummet. In virtually all of the large rivers that have begun to go dry, fisheries have been decimated, leading to severe hardship for local people that depend upon that food source for their subsistence and livelihoods. 55
- 11** The conclusion that should be drawn from all of this: we need to take stock of our local water sources and manage them wisely. 60

Adapted from *Are we running out of water?* by Brian Richter,

National Geographic, March 14, 2012