MAX YOUR BRAIN

the complete visual programme

Over 200 puzzles, plus
tips & strategies for
supercharged
mind power

foreword by

Tony Buzan

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the complete **visual** programme

foreword by **Tony Buzan**

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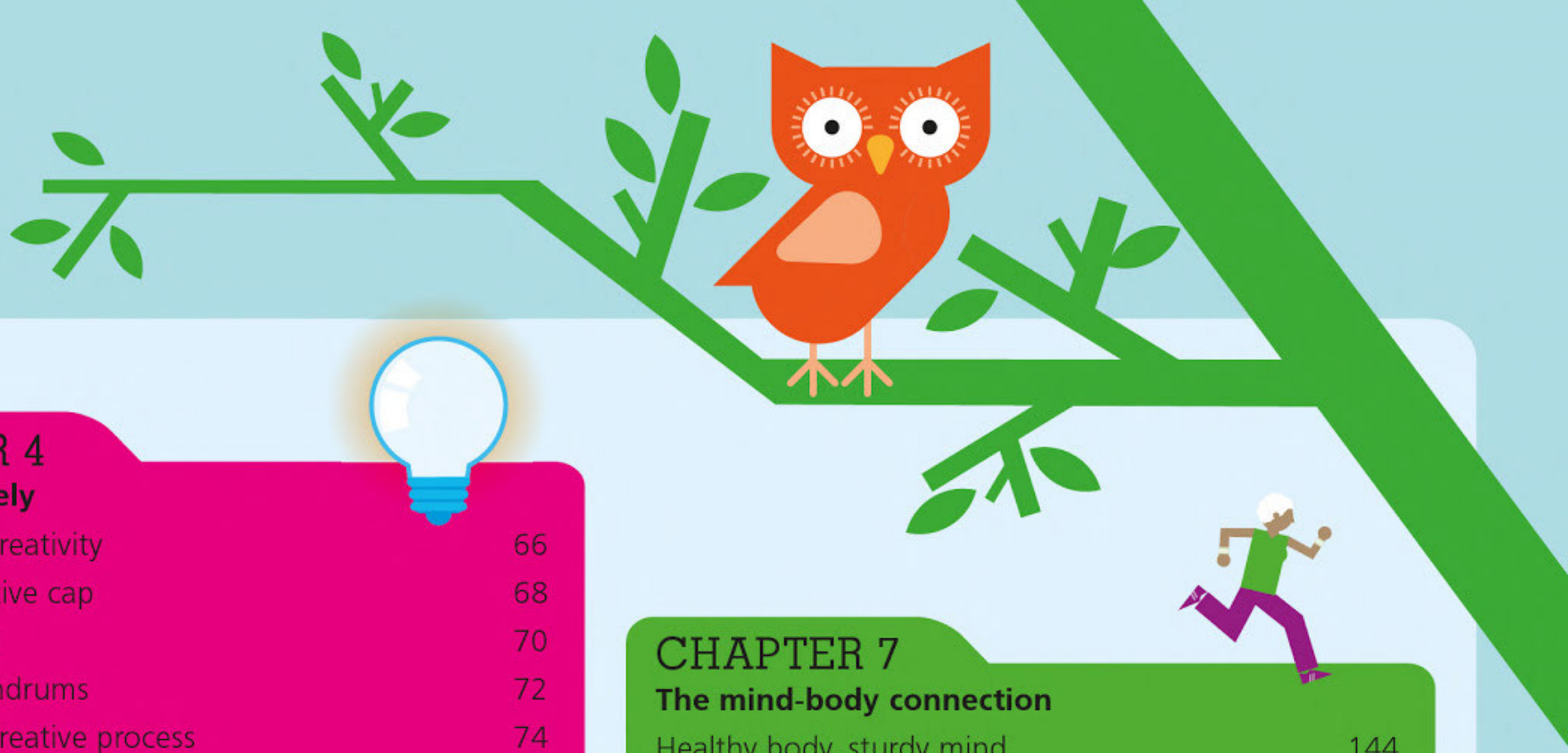
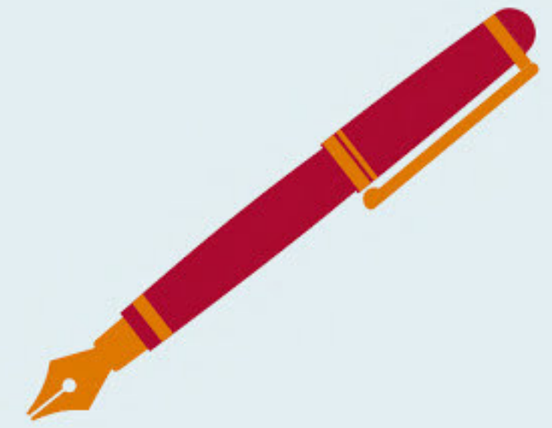


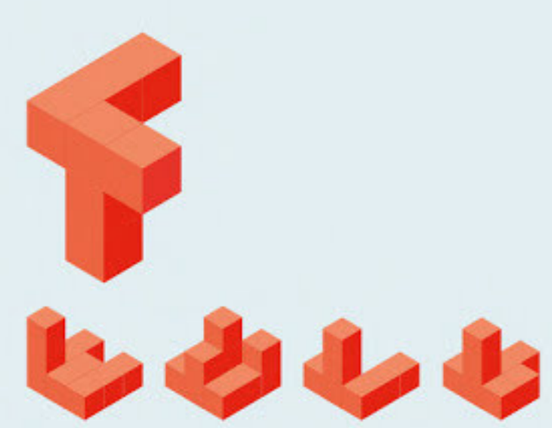
Foreword

It is the dream of everyone to have a brain that works better. You are holding in your hands a book that will help you make that dream come true!

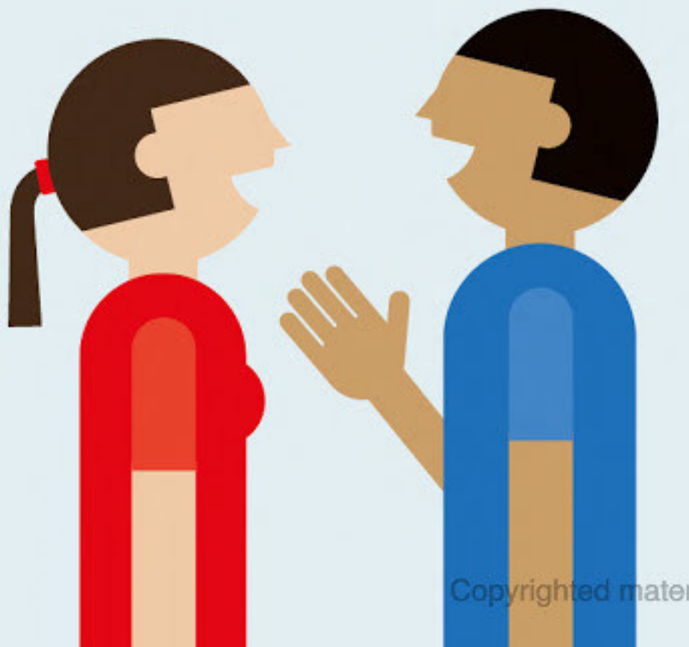
Max Your Brain is one of the first VISUAL guides to brain training. In this New Age of Intelligence, in which the human brain has to think intelligently about managing knowledge and processing the information it is bombarded with, it is vitally important that learning materials are brain-friendly. One of the reasons I was so enthusiastic about writing the foreword for *Max Your Brain* is that this book has everything your brain needs: it is written in the brain's own language – the "visual" language. It contains images that are relevant, plentiful colour, excellent spatial design, clear associations, and lucid writing. It is a book about the brain that is friendly to the brain. In its physical form, the book is completely congruent with what its contents say the brain needs.



In maximizing your brain it is also important you know that, in terms of learning, the majority of people do not use their full cognitive potential. This might sound like bad news, but is actually good news. It means that you have a lot of untapped brainpower still left in the tank. All you need to do is learn how to access it! *Max Your Brain* will allow you to do that, by introducing you to exciting and enjoyable games and exercises that will help you to maximize your intelligence.

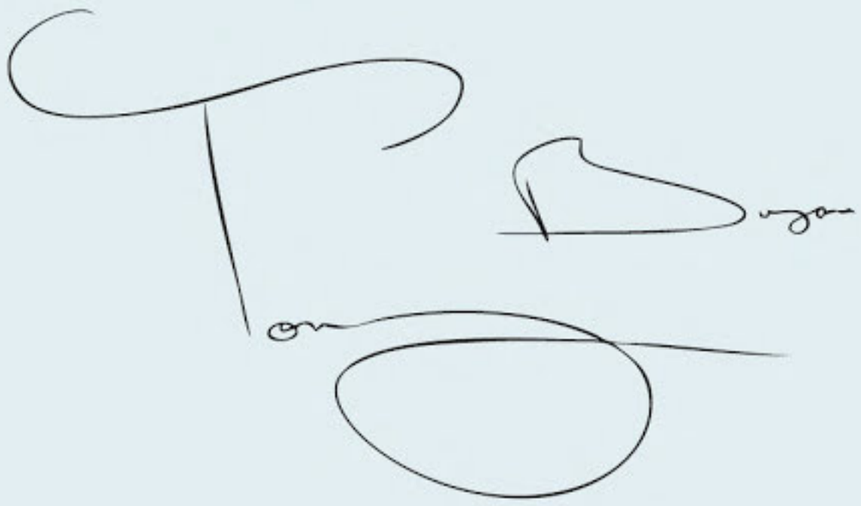


In this groundbreaking book, you will learn about your brain and its remarkable structure and capacity. You will also be enlightened about the power of your visual and imaginative processes. You will find out about your memory and its extraordinary capacities, your innate visual and creative capabilities, and your ability with numbers. The book will



offer "visual" approaches to increase your verbal reasoning and word power. There is also a chapter that addresses the vitally important relationship between your brain and your body, and in which you will learn that the ancient adage: "Healthy Body Healthy Mind, Healthy Mind Healthy Body" is true. By working through the puzzles in *Max Your Brain*, you will improve your focus and concentration, your memory, and your learning and creative powers. These are abilities that will significantly boost your confidence and joy in life.

By investing in the *Max Your Brain* programme, you have invested in your own intellectual capital, and that capital is the most valuable capital in the world.



Tony Buzan,
Inventor of Mind Maps®

How to use this book

Studies show that the sense of sight is the most receptive when it comes to learning. This programme is visually led, and is filled with a diverse mix of popular cognitive exercises, which are divided into thematic chapters covering memory, visual reasoning and spatial awareness, creativity, numeracy, verbal reasoning, and the mind-body connection.

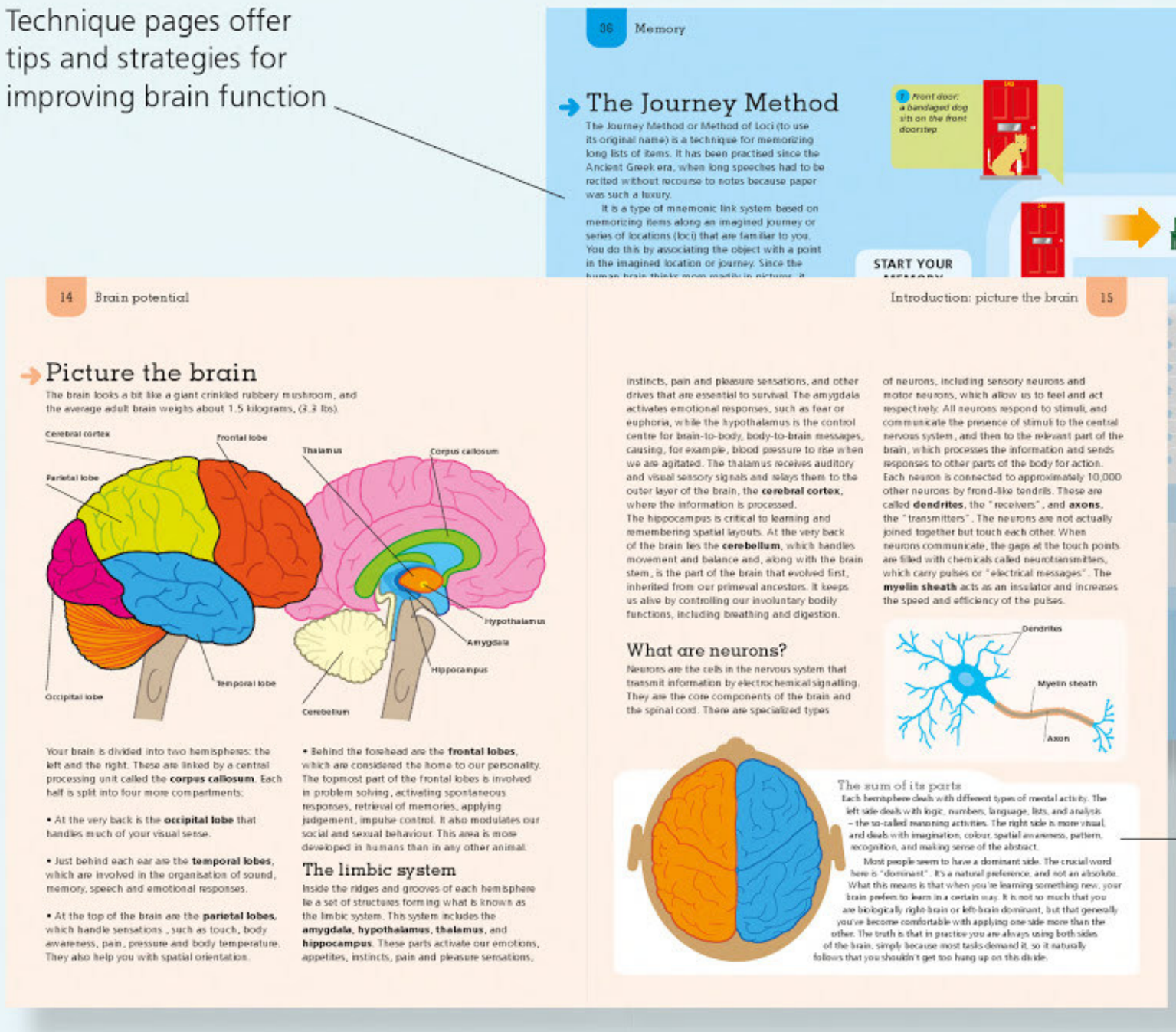
We open with a general introduction to the brain, and to the concept of intelligence and visual learning. This is followed by a range of exercises –"Where are you at?" – to gauge your current mental agility. In the subsequent chapters we concentrate on a specific brain function, such as memory or creativity. First, we explain how it works and then we offer the most effective puzzles to exercise that particular mental function.

Working through the book

The structure allows you to either work through the book from cover to cover or to pick out a specific topic – for example, memory – and work on it alone. However you choose to approach the book, we encourage you to start with the first chapter (and the "Where are you at?" exercises) and finish with the final workout in Chapter 8, so you can gauge how you have improved over time.

For the majority of exercises we have provided answer boxes for you to fill in. For the remaining exercises, we will instruct you to write your answer on a separate sheet of paper. Finally, in "The mind–body connection" chapter, we will introduce you to the type of foods, exercise, and other physical pick-me-ups that raise brain power.

Technique pages offer tips and strategies for improving brain function



Fact file boxes reveal fascinating facts about the workings of the brain as well as the latest research findings

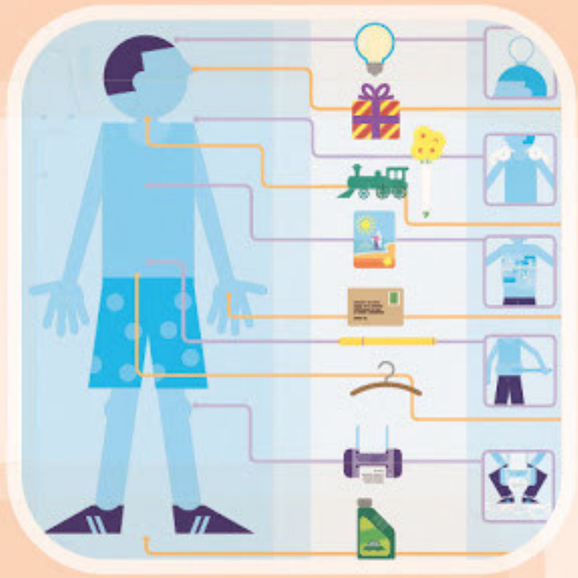
Hints and strategies

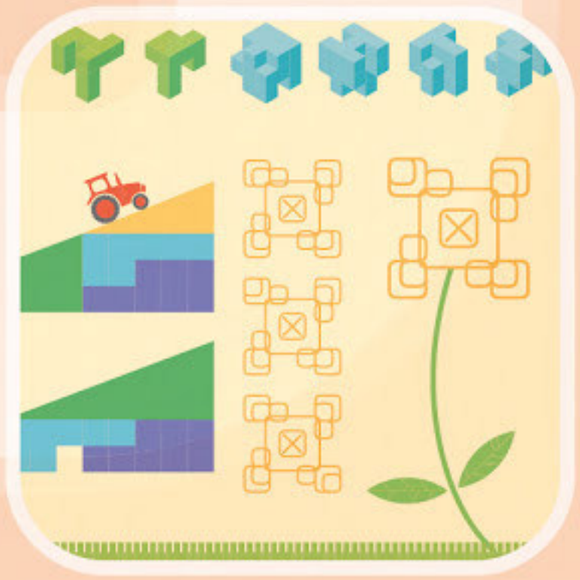
We also include techniques throughout the book, such as "The Journey Method" (see p.36) for improving memory or "The physical fillip" (see p.146) to increase mental alertness. These appear as discrete features between exercises, and come complete with an example of how and why you might use the technique. We encourage you to learn and apply these to the relevant exercises in the chapter. We might prompt you to use a specific technique to complete an exercise so that you become familiar with applying it, which is an important part of improving your brainpower. Also, try to learn the hints and tips we offer throughout the book (denoted by the lightning strike icon), as these will enhance your ability to work with the material. There are also "fact file" boxes, which offer fascinating information about the workings of the brain.

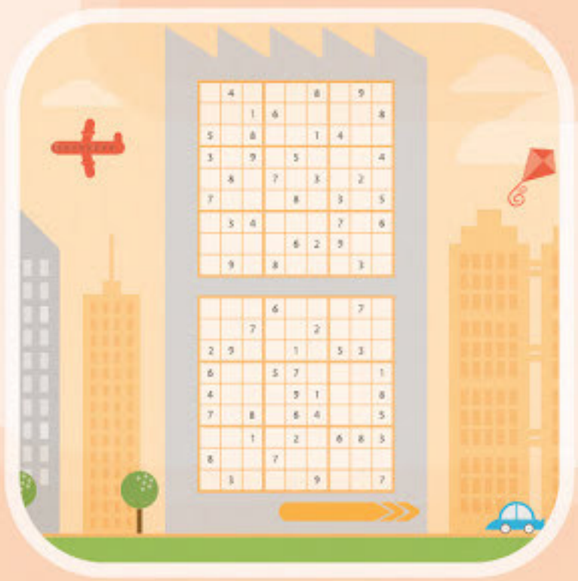
You can use all the tips and techniques you have learnt to complete the mix of exercises in the final workout (Chapter 8). You may then want to return to the start and re-test yourself against the puzzles in the "Where are you at?" section to assess overall improvement.

Solutions

Finally, you can find the solutions and/or explanations to the puzzles at the back of the book. Look out for the solutions arrow at the foot of the page, which guides you to the specific page number.

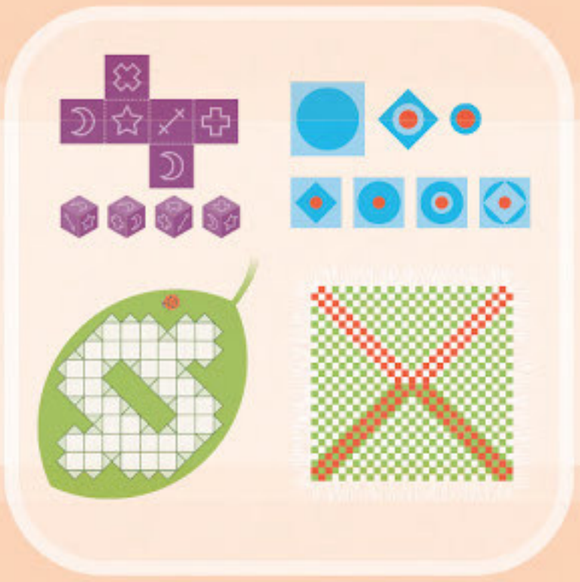






Chapter 1

Brain potential

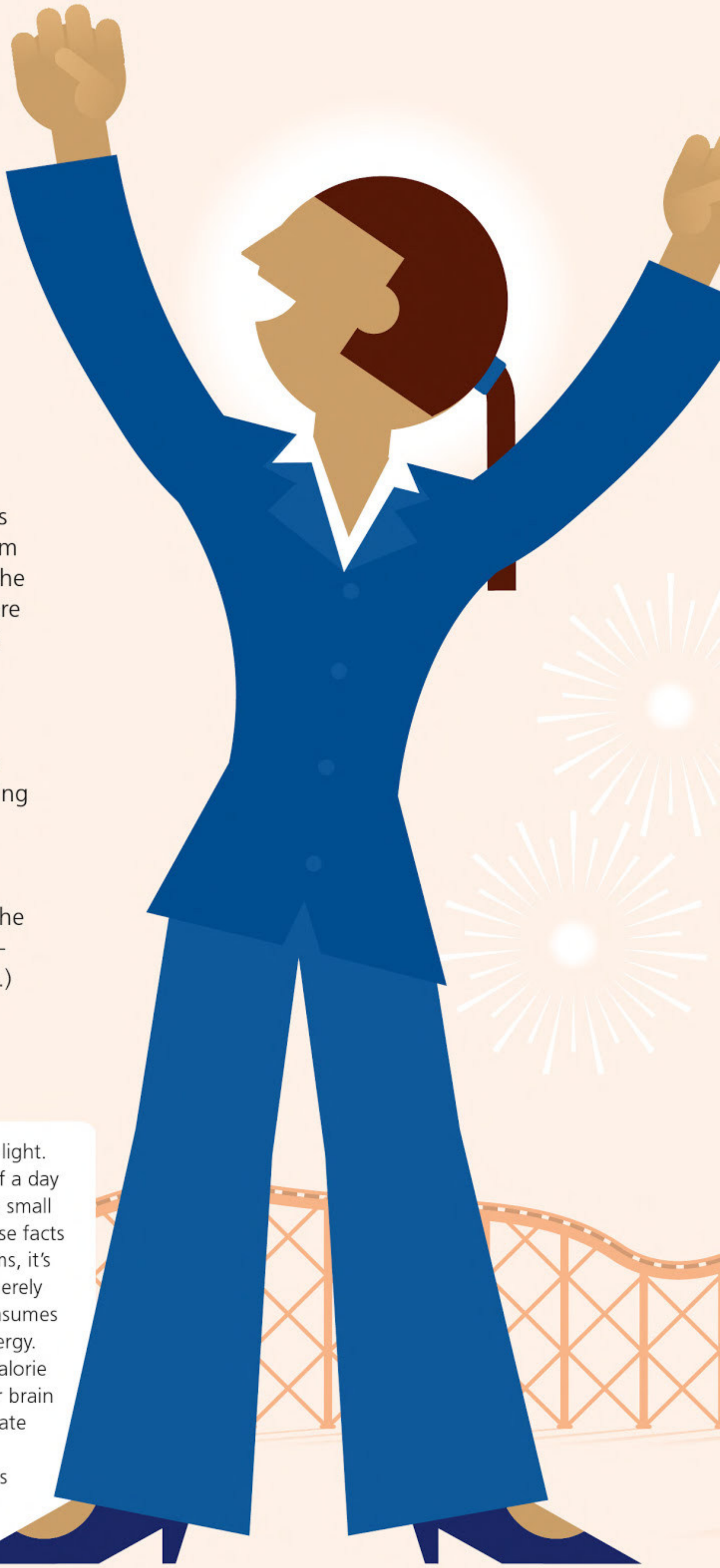


Brain power

Your brain is the most sophisticated object in the known universe. Millions of messages are speeding through your nervous system at any given moment, enabling your brain to receive, process, and store information, and to send instructions all over the body.

Your brain is capable of so much more than you might give it credit for. Just take a moment to consider all the things made by human beings. From the earliest tool, such as a pickaxe, to the modern skyscraper, and from the largest dam to the smallest microchip – the human brain is where all of these objects were first conceived. Undoubtedly, the brain is the most powerful tool at mankind's disposal.

Your brain works around the clock. It generates more electrical impulses each day than all the mobile phones in the world. You have billions of tiny brain nerve cells interacting with each other in permutations that have been estimated to equal 1 with 800 zeros behind it. (To make that remotely graspable, the number of atoms in the world – one of the smallest material things we can get a fix on – is estimated to be 1.33 with 48 zeros after it.)



Did you know?

Your brain runs on less power than your refrigerator light. That's about 12 watts of power. During the course of a day your brain uses the amount of energy contained in a small chocolate bar, around 230 calories. Even though these facts might make the brain sound efficient, in relative terms, it's a complete energy sucker. Your brain accounts for merely 2 per cent of the body's weight, but consumes 20 per cent of the body's total energy. Your brain requires a tenth of a calorie per minute merely to survive. Your brain consumes energy at ten times the rate of the rest of the body per gram of tissue. The majority of this energy goes into maintenance of the brain.

Strengths and weaknesses

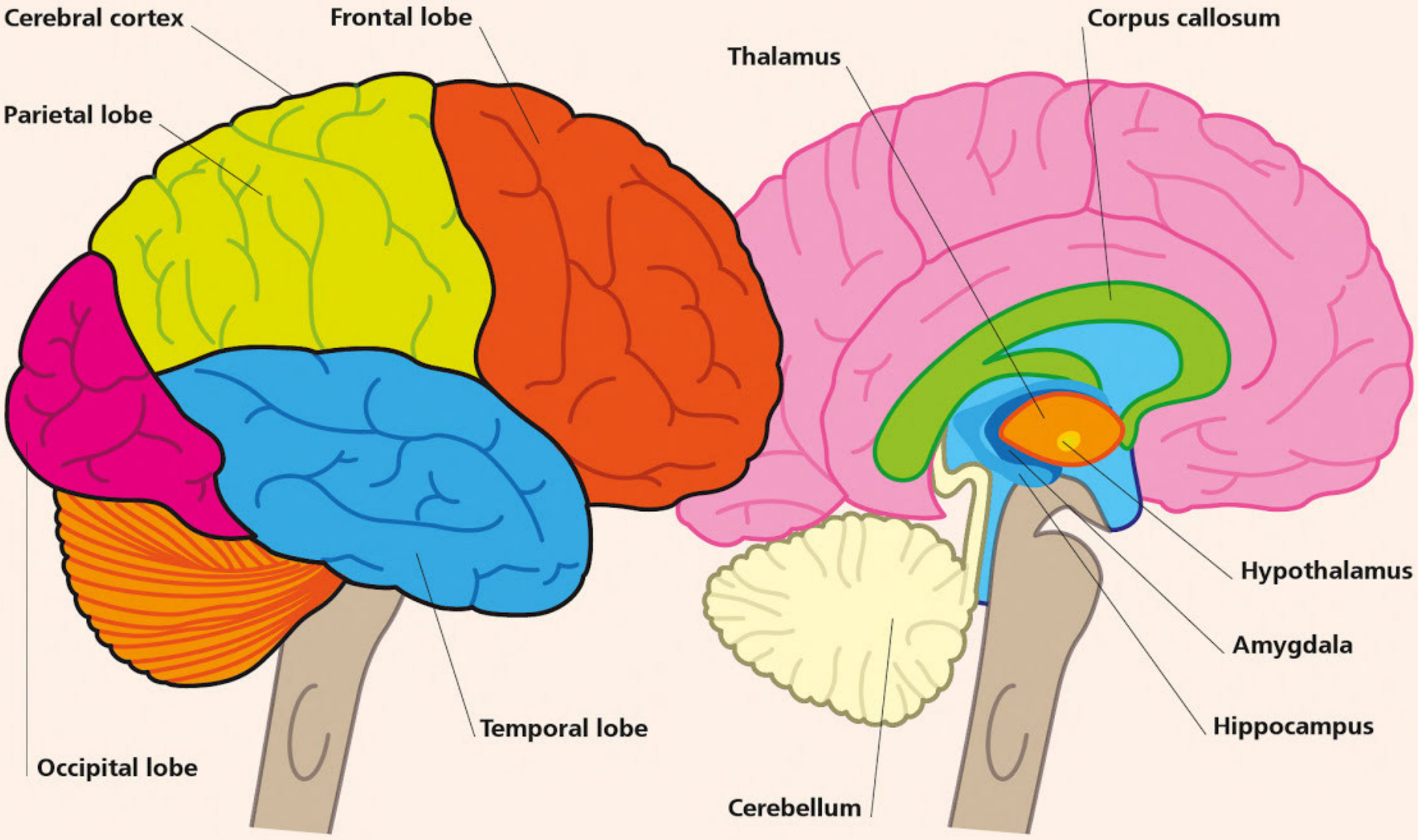
So, if we have such a powerful brain, why is it that we're not all good at everything? Why are some of us forgetful? Why do some of us have trouble reading maps? Why do some of us lack a sense of rhythm? Surely with all that "electrical" activity going on inside our heads, we shouldn't be faced with these difficulties?

Think of the brain as a busy fairground with an assortment of rides and attractions, each representing a different area of the brain, and think of the people as the tiny nerve cells or "neurons" (see p.15). Now, the popularity of the various attractions tends to differ from fairground to fairground; a ride in one fairground may draw more people than the same ride in another. In brain terms, the "popular rides" are the parts of the brain with lots of "nerve cell" activity and, hence, tend to be more developed. This development is aided significantly by the kind of education we receive as a child. One person can be proficient when it comes to map reading, another might be more creative, and another more logical. Of course, this is a crude analogy since the different areas of the brain function together for most tasks and a specific area dominates, but it does illustrate how the brain differs from person to person. In short, it's a question of education and genetics. So, don't be too hard on yourself if you think you're bad at maths or terrible at languages. The chances are that you excel in another area.

However, this doesn't mean you cannot develop a mental ability that you consider weaker than another. It's wrong to think that just because you're not naturally gifted at something, such as maths or map reading, that there's no point in trying to improve it. Your brain is similar to any muscle in your body in that exercise will raise its potency. You can always strive to improve and expand your current mental aptitude.

Picture the brain

The brain looks a bit like a giant crinkled rubbery mushroom, with the average adult brain weighing about 1.5 kg (3lbs 5oz).



Your brain is divided into two hemispheres: the left and the right. These are linked by a central processing unit called the **corpus callosum**. Each half is split into four more compartments:

- At the very back is the **occipital lobe** that handles much of your visual sense.

- Just behind each ear are the **temporal lobes**, which are involved in the organization of sound, memory, speech, and emotional responses.

- At the top of the brain are the **parietal lobes**, which handle sensations, such as touch, body awareness, pain, pressure, and body temperature. They also help you with spatial orientation.

- Behind the forehead are the **frontal lobes**, which are considered the home to our personality. The topmost part of the frontal lobes is involved in problem solving, activating spontaneous responses, retrieval of memories, applying judgment, and impulse control. It also modulates our social and sexual behaviour. This area is more developed in humans than in any other animal.

The limbic system

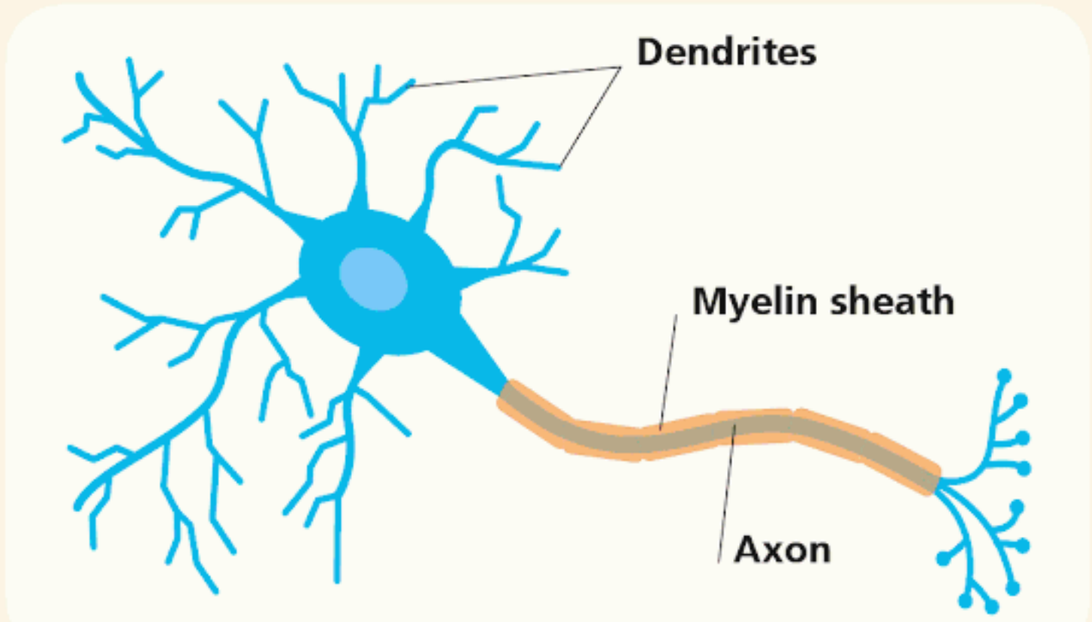
Inside the ridges and grooves of each hemisphere lie a set of structures forming what is known as the limbic system. This system includes the **amygdala**, **hypothalamus**, **thalamus**, and **hippocampus**. These parts activate our emotions, appetites,

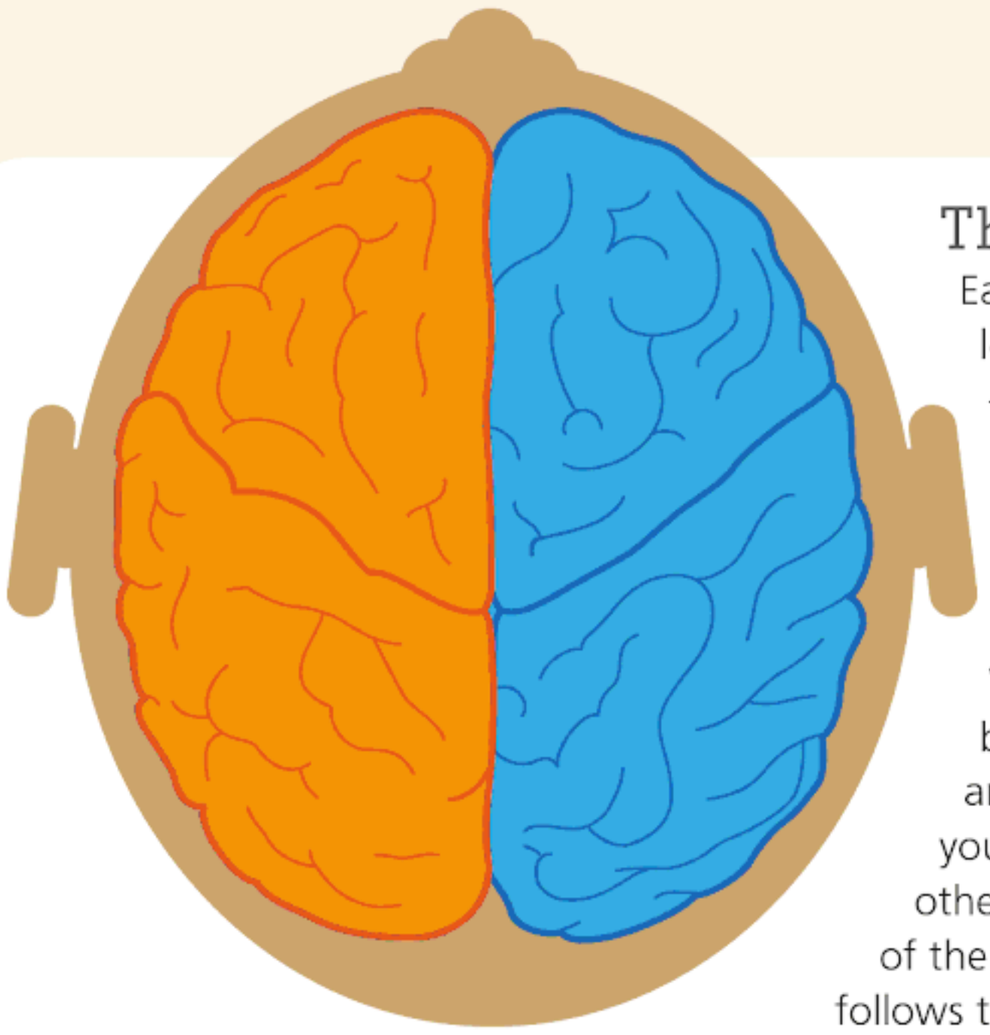
instincts, pain and pleasure sensations, and other drives that are essential to survival. The amygdala activates emotional responses, such as fear or euphoria, while the hypothalamus is the control centre for brain-to-body, body-to-brain messages, causing, for example, blood pressure to rise when we are agitated. The thalamus receives auditory and visual sensory signals and relays them to the outer layer of the brain, the **cerebral cortex**, where the information is processed.

The hippocampus is critical to learning and remembering spatial layouts. At the very back of the brain lies the **cerebellum**, which handles movement and balance and, along with the brain stem, is the part of the brain that evolved first, inherited from our primeval ancestors. It keeps us alive by controlling our involuntary bodily functions, including breathing and digestion.

What are neurons?

Neurons are the cells in the nervous system that transmit information by electrochemical signalling. They are the core components of the brain and the spinal cord. There are specialized types of neurons, including sensory neurons and motor neurons, which allow us to feel and act respectively. All neurons respond to stimuli, and communicate the presence of stimuli to the central nervous system, and then to the relevant part of the brain, which processes the information and sends responses to other parts of the body for action. Each neuron is connected to approximately 10,000 other neurons by frond-like tendrils. These are called **dendrites**, the "receivers", and **axons**, the "transmitters". The neurons are not actually joined together but touch each other. When neurons communicate, the gaps at the touch points are filled with chemicals called neurotransmitters, which carry pulses or "electrical messages". The **myelin sheath** acts as an insulator and increases the speed and efficiency of the pulses.





The sum of its parts

Each hemisphere deals with different types of mental activity. The left side deals with logic, numbers, language, lists, and analysis – the so-called reasoning activities. The right side is more visual, and deals with imagination, colour, spatial awareness, pattern, recognition, and making sense of the abstract.

Most people seem to have a dominant side. The crucial word here is "dominant". It's a natural preference, and not an absolute. What this means is that when you're learning something new, your brain prefers to learn in a certain way. It is not so much that you are biologically right-brain or left-brain dominant, but that generally you've become comfortable with applying one side more than the other. The truth is that in practice you are always using both sides of the brain, simply because most tasks demand it, so it naturally follows that you shouldn't get too hung up on this divide.

Looking to learn

How much do you learn from your sense of sight? Well, in general, most experts agree that about 75 per cent of your learning is through your visual sense. Take babies, for instance. With their inquisitive eyes they pick up ways of behaviour by observing the things that people do around them; they process and interpret facial expressions and physical gestures. From a single glance, babies can tell when their mothers are happy or angry with them. It's not something that ever changes. Consider two people who go out on a first date. How much attention are they really paying to the conversation and how much attention are they spending on reading each other's body language?

The fact that you pick up a great deal of information from sight isn't surprising since about 40 per cent of your brain is dedicated to seeing and processing visual material. On average, most people know the names of approximately 10,000 objects and can recognize them by their shapes alone.

Visual sense

Your visual sense is key to interacting with the world around you. By the time most children are six years old, it is estimated that they've already committed to memory the names of a fifth of the objects they will know in their lifetime. Studies have shown that visual stimulation helps brain development the most, and aids more sophisticated types of learning both when you're growing up and during adulthood.

The ability to glean information from more abstract types of visuals, such as tables, graphs, webs, maps, and illustrations, is unique to the human race. By being able to interpret information from such sources, you are able to find meaning, reorganize and group similar things, as well as compare and analyse disparate information. In learning, your visual sense is undoubtedly the most useful and widely used.

Taking instruction

The amazing thing about the visual part of your brain is that once it sees something a certain way, it tries to develop a memory of it. For example, if you're trying to learn a dance sequence from watching someone else perform, your brain will collect the visual information, process it, and then try to memorize it. You can then use the memory to practise and develop proficiency. Let's stimulate your visual sense to learn something new.

Seeing is believing

Try this. What do you see in the image below?

Of course, it's a maple leaf – the motif of the Canadian flag. But look again. Can you see the two men who are clearly riled, and head-butting each other? Look closely. Their faces are formed by the outline of the top half of the leaf. The men have very pointy noses.

From now on, every time you see the Canadian flag, your mind's eye will flit between the picture of the maple leaf and the two angry men. You tend to learn more when your preconceptions have been challenged. If you see something you think you recognize but it turns out to be something else, that's memorable.

Take a look at the image on the right. What do you see: the face of a young woman or a saxophonist playing his instrument? If you study the picture for long enough, eventually you will be able to see both images, and your brain will develop a memory of both.

A visual guide

The puzzles and exercises throughout the book have a strong visual element. Following this principle, you will find that the brain-training programme provides you with a constant interplay between words and images. This synergy will help you to exercise your cognitive muscles the most. In fact, one study showed that those who used visual presentation tools to convey information were 43 per cent more successful than those who didn't.

Where are you at?

Welcome to *Max Your Brain's* training programme. Before we introduce you to some of the tips and techniques for improving various mental faculties, let's find out your current mental agility.

The following exercises will induct you to the type of brain workout that will primarily stimulate your visual sense, but we've also included some non-visual tests to provide a contrast. You'll be given a score for each exercise you complete. Add up the score at the end to find out your current cognitive aptitude.

1. Home and away

A: Try to memorize these 9 simple landmarks in order in 1 minute. Then cover them up and see how many you can remember.

Grand Canyon
Eiffel Tower
Statue of Liberty
Taj Mahal
Acropolis
Niagara Falls
Egyptian Pyramids
Great Wall of China
Mount Rushmore

B: Now try to memorize these 9 household objects in order in 1 minute. Then cover them up and see how many you can remember.

Window
Toothbrush
Book
Frame
Cup
Radio
Wastebasket
Magazine
Plate

- 1–3 = 1 point
- 4–6 = 2 points
- 7+ = 3 points

Solutions on p.172

2. Number sequences

Work out the next number in each of the following sequences.

A: 3, 12, 48, 192

B: 1, 1, 2, 3, 5, 8

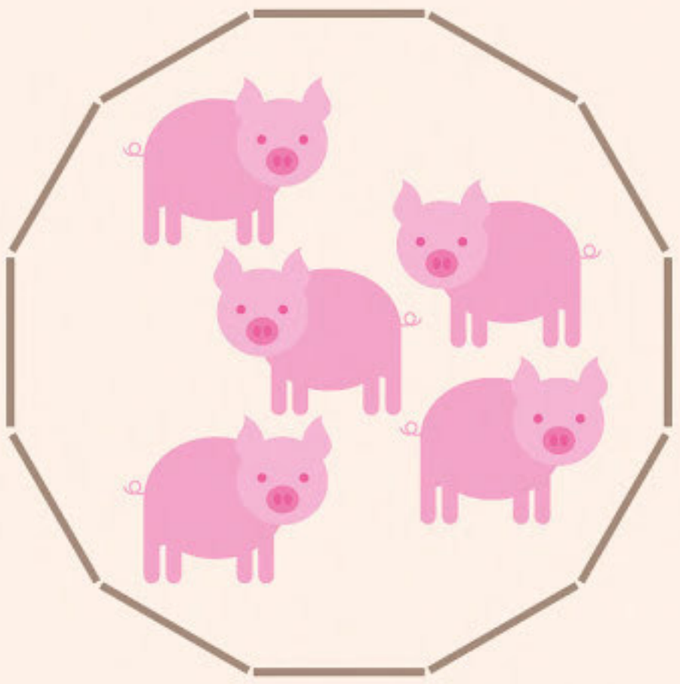
C: 2, 5, 10, 17, 26

D: 5, 13, 29, 61, 125

- A: 2 points
- B: 2 points
- C: 3 points
- D: 3 points

3. Building fences

Which pile of sticks was used to create the fence?



A

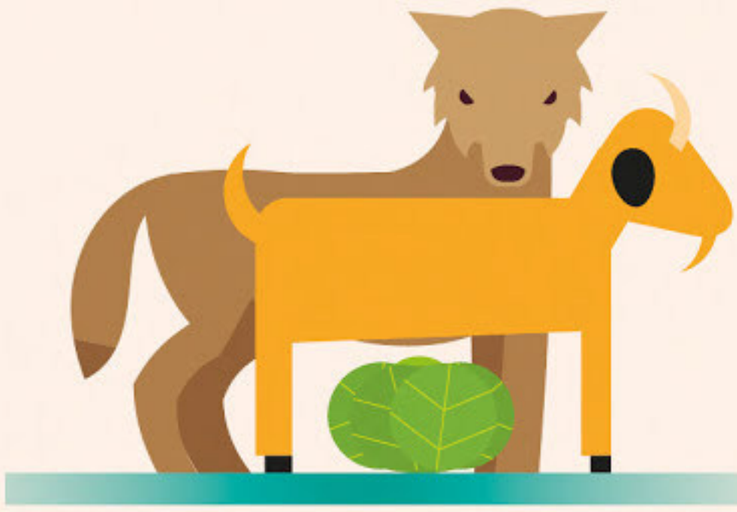
B

C

•4 points

4. Goat, cabbage, and wolf

A farmer is to ferry a goat, a cabbage, and a wolf across a river. Besides the farmer himself, the boat allows him to carry only one of them at a time. Without supervision, the goat will gobble up the cabbage whereas the wolf will not hesitate to feast on the goat. How can he ferry all of them safely to the other side?



•4 points

5. Mental arithmetic

Complete this set of mental arithmetic questions in the fastest time possible.

A: 12 – 3 =

B: 9 + 8 =

C: 2 x 10 =

D: 36 ÷ 3 =

E: 7 x 7 =

F: 8 x 4 =

G: 11 – 6 =

H: 9 x 8 =

I: 6 x 7 =

J: 9 + 7 =

K: 17 – 8 =

L: 14 – 5 =

M: 5 x 8 =

N: 3 + 9 =

O: 4 x 6 =

•Under 20 secs = 3 points
•21–40 secs = 2 points
•41+ secs = 1 points

6. A perfect circle?

Is the inner shape a perfect circle, or just a little warped? Look closely.

perfect circle
warped

•1 point

Novelty factor

What makes good mental stimulation? The answer is challenge, novelty, and variety. Don't just do numerical exercises because that will only stimulate your number-crunching skills, and if you concentrate only on crosswords, it will only fire up your aptitude for language. And if you only look at words and numbers, that won't spark your visual and spatial awareness. Returning to the fairground metaphor (see p.13), it is a case of activating every ride, not just the ones that you are good at or like the most.

7. Personal diary

Write down two specific things you did ...

Note: you're not allowed to write the same things.

A: Yesterday

B: Same day last week

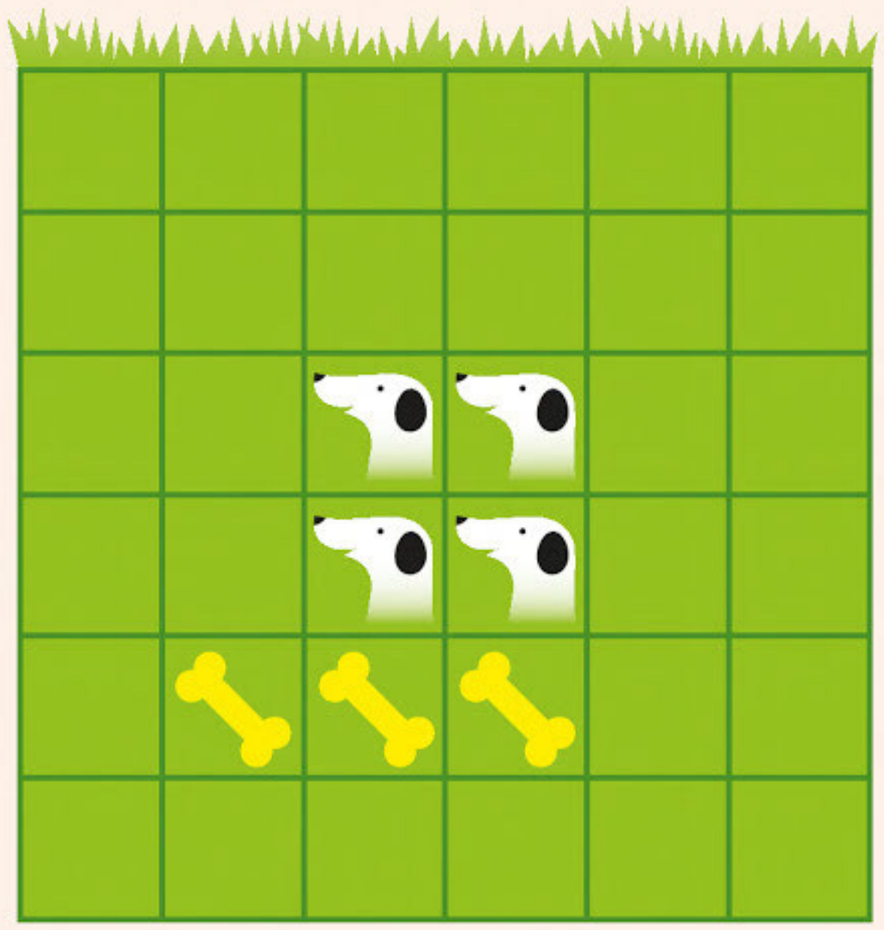
C: Same day a month ago

D: On your last birthday

- A: 1 point for each thing you remember
- B: 2 points for each thing you remember
- C: 3 points for each thing you remember
- D: 1 point for each thing you remember

8. Dog and bone

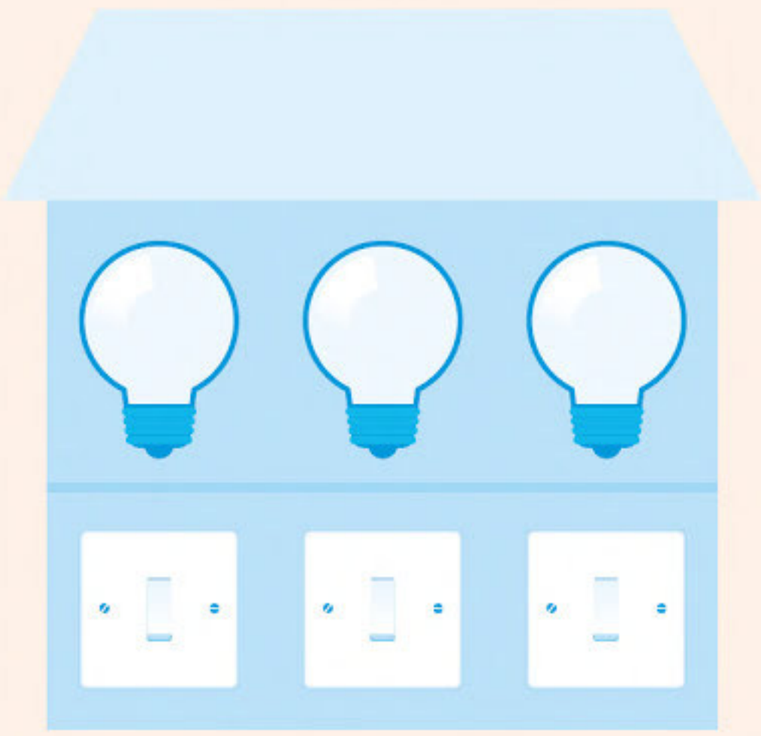
Divide the square into four identical sections, so that in each section there is a dog with a bone. One dog will not have a bone because he's suffering from a toothache.



•4 points

9. Light switches

Three light switches control 3 lights upstairs. When you click the switches you cannot see which switch controls which light. You know that all the lights are off when the switches are up. You are allowed just one visit upstairs, then you have to say which switch matches which light. How can you do it?



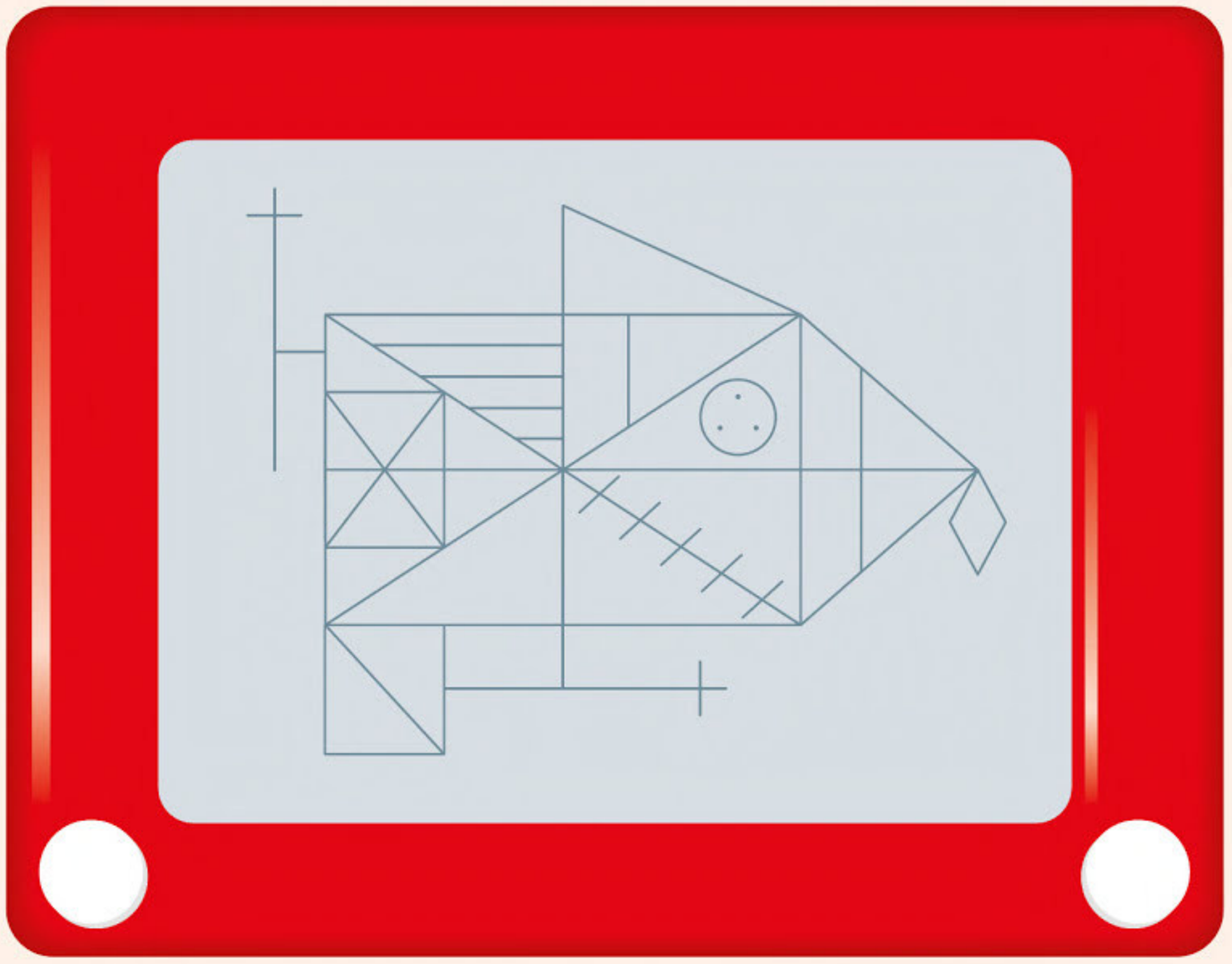
•3 points

Solutions on p.172

18. Abstract art

What you see on the right is the Rey-Osterrieth Complex Figure Test. Neurologists commonly use it to assess a patient's memory and attention span.

Look at the figure and copy it on a separate sheet of paper. This should help you to memorize the details. Then cover up the original and the copy, and begin drawing it from memory on a piece of paper. You have 1 minute to draw as much of it as you can. How much of it can you recall?



- Quarter of it = 2 points
- Half of it = 3 points
- Two-thirds + = 5 points

19. Magic square

The numbers in all rows, columns, and both diagonals of the grid add up to 15. You have to use the numbers 1 to 9; a number cannot be repeated. We've filled three squares. Fill in the missing numbers:

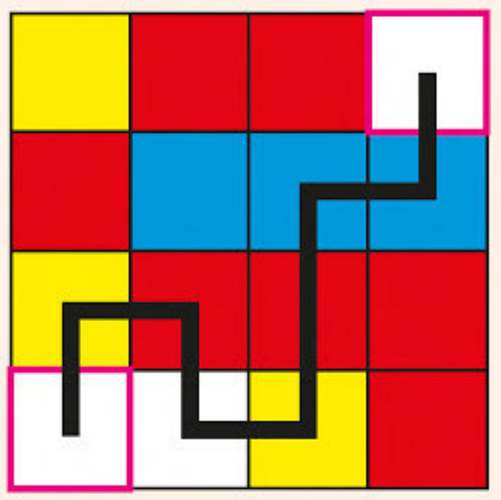
6		
	5	
8		

- Under 45 secs = 3 points
- 45 secs –1 min = 2 points
- Over 1 mins = 1 point

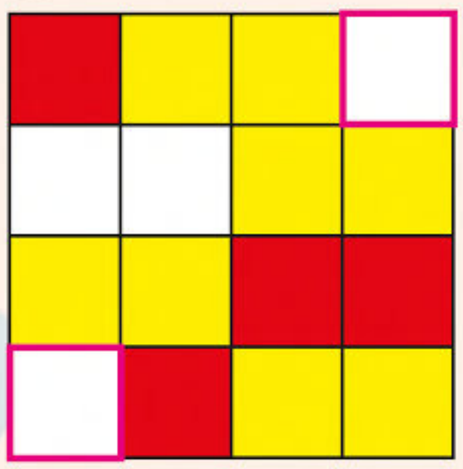
20. Colour mazes

Find a path from the bottom left to the top right that passes through an equal number of squares of each (non-white) colour. To the right is a solved example.

Note: the line passes through two yellow squares, two red squares, and two blue squares.

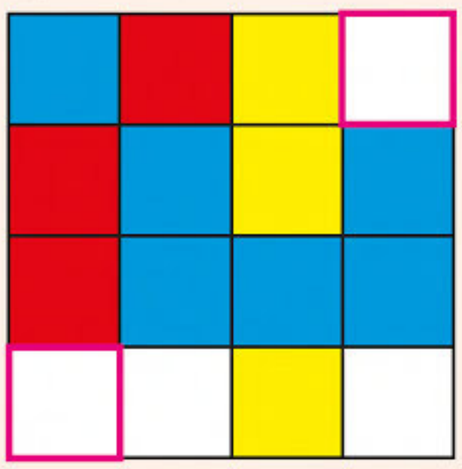


A:



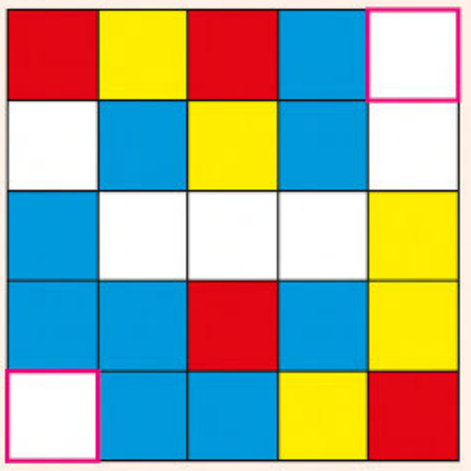
- 2 points

B:



- 2 points

C:



- 5 points