

1 ① The knowledge of **mathematics** developed rapidly in **Europe** and North America after the **industrial revolution**. But the study of mathematics was carried out many centuries before in other countries, like China.

5 ② Over two thousand years ago, the Chinese began their study of numbers, **mostly** related to **astronomy** and the perfection of a calendar. Already as early as 200 B.C. they had written a textbook on mathematics that was called *The Nine Chapters on the **Mathematical Art***. Interestingly, the ideas in this book seem to have been developed
10 in China without any influence from Europe or other regions.

(97 words)

1 ① Various other books on mathematics appeared in the following centuries. But by the 5th century, it seems that the Chinese already had the concept of negative numbers and perhaps also had the concept of “zero”. Around the 13th century, Chinese mathematicians were
5 solving **equations** using **methods** that Europeans would not discover until 500 years later.

② **Unfortunately**, near the end of the 14th century, the leaders of China began to be **critical** of math and science. Because of this change in **attitude**, people **turned** away from the study of math to study
10 plants and medicine instead. It wasn't until the 19th century that the Chinese would become interested in math again, but this time under the influence of European mathematical knowledge.

(120 words)

1 ① The past thirty to forty years have seen a huge increase in the number
of children who suffer from allergies, and scientists are still looking for
the explanation. Some have **blamed** increased air pollution, but it has
also been found that allergies are common not only among children in
5 the city but also among children in the **countryside** where pollution
is **typically** much **lower**.

② A **currently** popular explanation for the rise in allergies is the
so-called “*hygiene **hypothesis**.” The basic idea is that young children
brought up in an environment which is too clean are more at **risk** of
10 developing allergies. **Nowadays**, people **bathe** and wash their clothes
more frequently than in the past, and thanks to vacuum cleaners homes
are less **dusty**, too. One result of all these changes is that in their early
lives children are **exposed** to fewer *allergens — **substances** that can
cause allergies — and this means that their bodies cannot build up
15 natural *immunity to them. Simply put, **exposure** to allergy-causing
substances is necessary for natural protection against them to develop.

(175 words)

*hygiene 「衛生」 *allergen 「アレルゲン(アレルギーの原因となる物質)」

*immunity 「免疫」

1 ① The **trend** towards smaller families/also means/that young children
encounter fewer allergens/in the home. In fact, it is known/that
 children who have older brothers and sisters/are more *resistant/to
 allergies. The same is true of children/who **share** their home/with a
 5 pet. Such children are much less likely/to develop the very common
 allergy/to cat or dog hair/for example.

② Scientists agree/that being exposed to a **wider range** of allergens/
 early in life/helps children/to develop greater immunity. There is,
 however, also some **data** suggesting/that genetics, family **income**, and
 10 even the parents' **level** of education/may play a part/in how likely a
 child is/to suffer from allergies. **Thus**/although the hygiene hypothesis
 is an important area for research, we cannot yet be sure/that too much
attention to cleanliness/is the only explanation/for the enormous rise/
 in the number of allergy **victims**. (154 words)

*resistant 「抵抗力のある」

1 ① Why is it that many people who have suffered a **major shock**, such as divorce or the death of a family member, seem to be **weaker** against a variety of major and **minor** illnesses? One common idea among psychologists has been that people could deal with suffering more effectively if they were able to understand and **accept it**. **Indeed**, many experts **emphasize** the value of expressing thoughts and feelings associated with **upsetting** events.

② Recently, a team of medical researchers **investigated** the links between describing psychologically **painful** events and long-term health. In one experiment, healthy college students were asked to write about either **personally disturbing** experiences or ordinary **topics** over a **period** of four days. In the months **afterwards**, students who had chosen to **reveal** their **inner** thoughts and feelings in their writing visited the health **center** for **illness** much less often than those who had written about **everyday** topics. (149 words)

1 ① In an experiment that followed, another group of healthy students were given the four-day writing **exercise**. Some chose to write about **highly** personal and upsetting experiences (including **loneliness**, problems with family and friends, and death). When questioned **immediately** afterwards, they stated that they did not feel any better. However, their blood **samples** taken before and after the experiment showed **evidence** of an **improved resistance** to illness. The white cells that **fight** off bacteria and viruses had increased their reaction and **sensitivity** to these “**invaders**”. This trend continued over the following six weeks, when another blood sample was taken. **Individuals** who showed the best results were those who wrote about topics that they had actively refrained from telling others about.

15 ② The researchers **propose** that **failure** to face up to painful experience can be a form of stress itself, and can increase the possibility of illness. It follows, then, that actively dealing with a major shock makes possible its understanding and acceptance. The answer is not to suffer in **silence**. It may not always be possible to talk about personal problems, but writing them down will help the body to fight disease in the long run.

(194 words)

1 ① *Beware of those who **deliberately** use **aspects** of the **truth** to **deceive** you and others. When someone tells you something that is true, but **intentionally** leaves out important information that should be included for full *comprehension on your part to take place, they
5 can create a false **impression**.

② For example, an **acquaintance** might tell you, “I just won a hundred **dollars** in the state *lottery and it was **fantastic** when I took that one dollar ticket back to the store and turned it in for one hundred *bucks!” This woman’s a winner, right? Maybe maybe not. In fact, you later
10 learn that she had **purchased** not one ticket but instead two hundred for this **specific** lottery — and only one of these a winner. Eventually, you realize this woman, who you thought was ‘lucky’ or ‘fortunate’ is, in fact, a huge loser. Although she didn’t say anything false, she clearly left out important information and likely did so on purpose. That’s called a
15 *half-truth which is not technically a lie, but it’s just as dishonest.

(174 words)

*beware 「気をつける」 *comprehension 「理解」 *lottery 「(宝)くじ」 *buck 「ドル」
*half-truth 「一部だけが真実の話」

- 1 ① *Untrustworthy **candidates** in **political campaigns** often use such *deceptive communication **strategies** to **trick voters** into supporting them. Let's say that during **Governor** Smith's last term, her state lost one million jobs but **gained** three million new ones.
- 5 Then she seeks another term in office and enters the **election race**. One of her opponents in that race **subsequently** begins a multimedia **advertising** campaign saying, "During Governor Smith's term, the state lost one million jobs." That is indeed true but, at the same time, it is intentionally deceptive. A more **honest** statement from her
- 10 opponent would have been, "During Governor Smith's term, the state had a *net gain of two million jobs."
- ② Advertisers sometimes use half-truths as well. Because it's **illegal** in many countries to openly make false claims about a product or **service**, some advertisers try to *mislead you with the truth. An ad
- 15 might **consequently** *boast, "Nine out of ten doctors **recommend** Yucky Pills to **cure** nose *pimples." This is also a *factual statement but one which deliberately fails to **mention** that only ten doctors were asked about Yucky Pills and nine of these actually work for the Yucky **Corporation**. (190 words)

1 ① No one knows better than your mother, right? But does she know how much underwear you own? Jockey International does. Or the number of ice cubes you put in a glass? Coca-Cola knows that we put 3.2 ice cubes in a glass and prefer cans to pop out of vending machines at a temperature of 2 degrees. Which potato chips do you usually eat first, the broken ones or the whole ones? Try asking a big snack maker. Big companies know the what, where, how, and when of their consumers' wants and demands. They figure out all sorts of things about us that we don't even know ourselves. Most companies
10 research us in detail and collect mountains of facts about our buying habits and preferences.

② Did you know that 51 percent of all males pull their left pants leg on first, whereas 65 percent of women start with the right leg? Nothing about our behavior is sacred. A study showed that 68 percent
15 of consumers prefer their toilet paper to *unwind over the *spool rather than under. But Americans are not always easy to figure out. A few years ago, Campbell Soup gave up trying to learn our opinions about the ideal-sized meatball after a series of tests showed that we prefer one so big it wouldn't fit in the can. (221 words)

1 ① In fact, almost everything we **swallow** is closely monitored by someone. Each year, we consume 156 hamburgers, 95 hot dogs, 283 eggs, 5 **pounds** of yogurt, 9 pounds of cereal, and 2 pounds of peanut butter. We spend 90 minutes a day munching it.

5 ② Of all **businesses**, however, the **prize** for research *thoroughness may go to *toothpaste makers. Among other things, they know that our **favorite** toothbrush color is blue and that only 37 percent of us are using one that's more than six months old. About 47 percent of us put water on our **brush** before we **apply** the paste, 15 percent put water on after the paste, 24 percent do both, and 14 percent don't wet the brush at all.

15 ③ Thus, most big companies have answers to all the what, where, when, and how questions about their consumer demand. But to **affect** demand, companies need the answer to one more question: they need to know what causes us to want the things we buy. That's a much harder question to answer.

(173 words)