



Read the text. For statements 1 - 7, choose the option to complete each statement correctly.

It's a Secret!

Throughout history and in every civilisation, people have felt the need to communicate in secret. In wartime, military secrets need to be transferred securely to commanders without being understood by the enemy. During revolutions, those plotting to overthrow the establishment need to ensure their communications remain undisclosed. The history of secret communication is long and fascinating. World events have changed on many occasions because of secret messages — secrets that were kept and secrets that were not!

There are two ways to communicate in secret - either you conceal the fact that you are sending a message at all, (*steganography*) or you obscure the meaning of your message rather than its actual existence (*cryptology*). Steganography is very old. In 440 BC, the Greek ruler, Histiaeus, sent a message to a fellow plotter in a revolt by shaving off the hair of his most loyal slave, tattooing a message on his head, allowing the slave's hair to grow back, then sending him to deliver the message. The slave passed through enemy lines easily since he seemed to be carrying no communication. Another very old form of steganography is invisible ink. Inks made of simple organic materials such as milk or lemon juice, which turn dark when held over a flame, were used as early as the first century AD for very serious communications. During the Second World War, both sides raced to create new secret inks and to find developers for the enemy's inks, although in the end this form of steganography became impractical due to the large amount of communications involved.

Although steganography is a very clever way to communicate in secret, it does have an Achilles heel. If the messenger does not do a particularly good job concealing their message and someone finds it, all its secrets will be immediately revealed. This weakness soon led to the idea of hiding the actual meaning of messages, so that they could not be read, even if they were discovered. The result was the development of cryptology.

Cryptology hides the meaning of messages by using codes. Codes are essentially secret languages. Julius Caesar invented one. He replaced every letter in a word by the letter three places away from it in the alphabet. A was D, B was E, and so on. Later on, any code that used a system of letter replacement such as this was referred to as a 'Caesar code'. Of course, it doesn't take much brain power to figure out most of these codes! Today, code makers devise practically unbreakable codes using highly sophisticated mathematics and computer power.

Are cryptology and steganography used now? Well, you may be surprised to learn that secret communication is a part of everyday life! For example, every time you use your credit card to buy something from a company over the Internet, cryptology is employed. Very complicated codes turn your credit card number into a pile of gibberish that only the retailer can decipher, not anyone else. Steganography is also thriving in the digital world. Secret messages can easily be hidden in email, audio and image files. This is because most digital documents contain useless areas of data, so some of their information can be altered without obvious effect. This is of concern to governments as they fear that criminals may be concealing messages in files sent over the Internet.

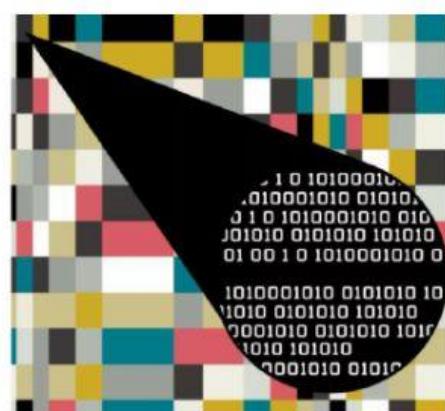
One thing is certain — secret communication is still just as much a part of life today as it was millennia ago!

1. Secret communication _____

1. can lead to revolutions or wars.
2. was first used by military commanders.
3. was only used in the past.
4. has altered the course of history at times.

2. In 440 BC, the Greek ruler, Histiaeus _____

1. sent a secret message past the enemy.
2. secretly communicated with the enemy.
3. started a revolt by sending a hidden message.
4. learnt of a plot through a secret message.



3. Invisible Ink

1. is the oldest form of steganography.
2. can sometimes be made visible with heat.
3. was used the most effectively during WW2.
4. must be made from organic materials.

4. Steganography does not

1. have any disadvantages.
2. hide the meaning of a message.
3. depend on the skill of the messenger.
4. predate cryptology.

5. 'Caesar Codes'

1. were all invented by Julius Caesar.
2. only use certain letters of the alphabet.
3. use sophisticated mathematics.
4. are usually quite easy to break.

6. Internet credit card transactions

1. are made secure by cryptology.
2. use steganographic techniques.
3. make a retailer's job easier.
4. are hidden in digital files.

7. Steganography is still used a lot today because

1. secret communication is more important than ever before.
2. governments use it to send information securely.
3. it's easy to hide secret messages in digital documents.
4. it can help to catch criminals.

