

Reading in practice_ B2/ B2+

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READING IS ESSENTIAL FOR
THOSE WHO SEEK TO RISE
ABOVE THE ORDINARY.

—Jim Rohn



The Coral Reefs of Abrolhos Islands



Read the text and answer the questions.

Choose *true*, *false* or *not given*. Correct the false answers.

"It's a really special part of the world," says marine biologist Taryn Foster from the Abrolhos Islands, 40 miles from the coast of Western Australia.

"There are no palm trees or luscious vegetation. But once you get in the water, you see all these tropical species of coral and fish."

Corals are animals called polyps, found mostly in tropical waters. The soft-bodied polyp forms a hard outer shell by extracting calcium carbonate from the sea. Over time those hard shells build up to form the foundations of the reefs we see today.

Coral reefs may only cover 0.2% of the seafloor, but they provide a habitat to more than a quarter of marine species. However, the creatures are sensitive to heat and acidification so in recent years, as the oceans have warmed and become more acidic, corals have become vulnerable to disease and death. Damaged corals turn white, a process known as bleaching, something Ms Foster has witnessed first hand.

According to the Global Coral Reel Monitoring Network, a 1.5°C increase in water temperature could see losses of between 70% and 90% of the world's reefs.

Some scientists think that by 2070, they'll be gone altogether.

Coral restoration efforts usually involve transplanting tiny corals, cultivated in nurseries, on to damaged reefs. However, the work can be slow and costly, and only a fraction of the reefs at risk are getting help. In the shallow waters of the Abrolhos Islands, Ms Foster is testing a system she hopes will revive reefs more quickly.

It involves grafting coral fragments into small plugs, which are inserted into a moulded base. Those bases are then placed in batches on the seabed. Ms Foster designed the base, which is shaped like a flat disc with grooves and a handle, and is made from a limestone-type concrete.

"We wanted it to be something we could mass produce at a reasonable price," explains Ms Foster. "And easy for a diver or a remotely-operated vehicle to deploy."

So far, the results have been encouraging.

"We've deployed several different prototypes of our coral skeletons. And we've also tested this on four different species," she explains. "They're all growing wonderfully."

"We're bypassing several years of calcification growth that it takes to get to that base size," she says.

A robotic arm can graft or glue coral fragments to the seed plugs. Another places them in the base, using vision systems to make decisions about how to grab it.

"Every piece of coral is different, even within the same species, so the robots need to recognize coral fragments and how to handle them," says Nic Carey, senior principal research scientist at Autodesk.

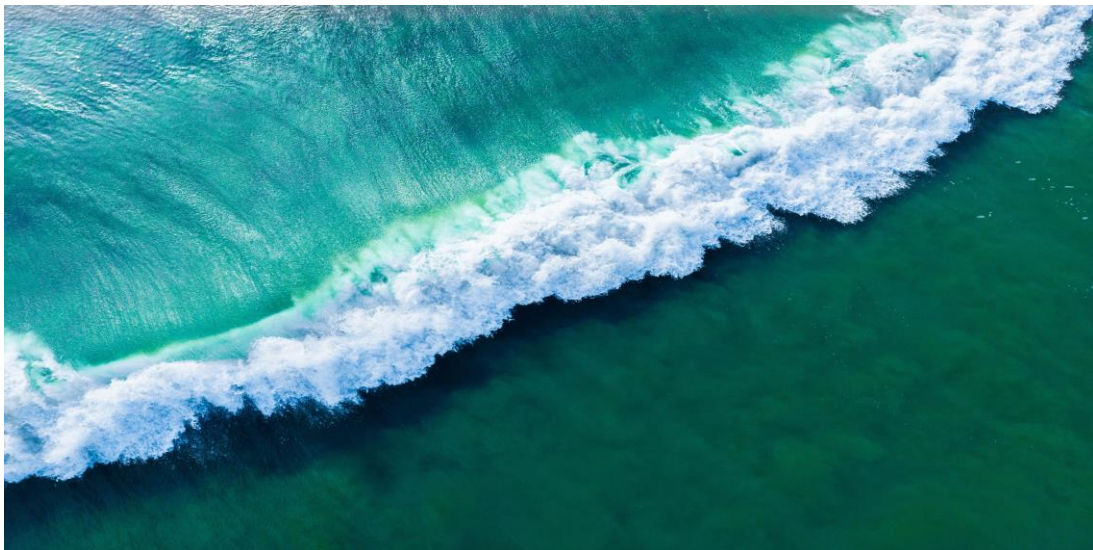
"So far, they're very good at handling the variability in coral shapes."

1. The most popular coral in the Abrolhos Islands is the "Staghorn" coral. _____
2. Polyps have a soft and fragile outer shell. _____
3. In the coral reefs live less than a quarter of marine species. _____
4. Corals get damaged by the warmer and more acidic tropical waters. _____
5. Scientists think that by 2075 we will still have up to 70% of the reefs left. _____
6. The new coral restoration system is cheaper and less time consuming. _____
7. Some coral skeletons have doubled in size during a few week period after testing the new system on them. _____
8. It is easy for the robot to recognize the corals fragments because of their similarities. _____

The answer key:

1-Not given, 2-False, 3-False, 4-True, 5-False, 6-True, 7-Not given, 8-False.

Why do we explore the ocean?



Read the text. Are the following statements true or false?

Exploration is key to increasing our understanding of the ocean, so we can more effectively manage, conserve, regulate, and use ocean resources that are vital to our economy and to all of our lives.

Despite the fact that the ocean covers approximately 70% of Earth’s surface and plays a critical role in supporting life on our planet, from the air we breathe and the food we eat to weather and climate patterns, our understanding of the ocean remains limited.

Ocean exploration is about making discoveries, searching for things that are unusual and unexpected. As the first step in the scientific process, the rigorous observations and documentation of biological, chemical, physical, geological, and archaeological aspects of the ocean gained from exploration set the stage for future research and decision-making.

Through ocean exploration, we collect data and information needed to address both current and emerging science and management needs. Exploration helps to ensure that ocean resources are not just managed, but managed in a sustainable way, so those resources are around for future generations to enjoy. Exploration of the U.S. Exclusive Economic Zone is important for national security, allowing us to set boundaries, protect American interests, and claim ocean resources.

Unlocking the mysteries of ocean ecosystems can reveal new sources for medical therapies and vaccines, food, energy, and more as well as inspire inventions that mimic adaptations of deep-sea animals. Information from ocean exploration can help us understand how we are affecting and being affected by changes in Earth’s environment, including changes in weather and climate. Insights from ocean exploration can help us better understand and respond to earthquakes, tsunamis, and other hazards.

The challenges met while exploring the ocean can provide the impetus for new technologies and engineering innovations that can be applied in other situations, allowing us to respond more effectively in the face of an ocean crisis, such as an oil spill. Moreover, ocean exploration can improve ocean literacy and inspire young people to seek critical careers in science, technology, engineering, and mathematics.

As a species, humans are naturally inquisitive — curiosity, desire for knowledge, and quest for adventure motivate modern explorers even today. And if all of these examples don’t provide enough reasons to explore the ocean, well, ocean exploration is also just cool.

1. The ocean, covering the majority of our planet's surface, plays a critical role in shaping global weather and climate patterns. _____
2. Ocean exploration provides essential data for future research and decisions. _____
3. Uncovering the depths of the ocean primarily focuses on tourism and entertainment, rather than addressing scientific needs. _____
4. Exploring the ocean contributes to advancements in various fields, including medicine, energy, and environmental science. _____
5. Ocean exploration only aims to discover new species of marine life. _____
6. The challenges encountered during ocean exploration often lead to the development of innovative technologies. _____
7. Ocean discoveries do not contribute to understanding our impact on the environment or help with natural disaster response. _____
8. Ocean exploration fosters curiosity and inspires future generations to pursue careers in STEM fields. _____

The answer key:

1-T, 2-T, 3-F, 4-T, 5-F, 6-T, 7- F, 8-T.

Crypto addicts

Read an article about people who are addicted to trading cryptocurrency, and choose the correct sentence for questions 1-6. There is one extra sentence you don't need.

Cryptocurrency trading has become very popular. 1. ___ However, trading addiction is becoming increasingly common. Here, addict Josh Johnson talks about his experience.

'I heard about cryptocurrencies years ago when Bitcoin first came out, but I can't say I was intrigued from the start. Even when cryptocurrencies were mentioned more and more in the news and on social media, I didn't pay much attention. 2. ___ Seeing them earning loads of money overnight by doing practically nothing made me want to get in on it too. I'd been trading for a while by the time the pandemic started, but that was when the trouble started.

'It was crazy to begin with. My first investment quadrupled within a couple of weeks. I couldn't believe it. It gave me a feeling of power, and I felt as if I could achieve anything. I poured more money in, and the same thing kept happening. Of course, it was all chance. 3. ___ Then they plummeted. I was convinced they'd recover, so I kept pumping more money in. But what had worked before no longer did. I lost everything.

'Since getting help, I've thought about how I got addicted. There was a point when I had over three hundred thousand pounds. If I'd quit then, I could have bought the house that I had my heart set on. But rather than the money itself, it was the drama that hooked me. 4. ___ You would think I'd feel devastated when money disappeared, but instead, I'd feel a new sense of purpose and drive to prove myself once again.

'Lots of people enjoy these highs and lows of trading without becoming addicts, so it's hard to know when you've gone too far. Like with many addictions, crypto addicts become isolated and withdrawn and neglect their work. But I was off work and living by myself, so if those signs were there, they weren't noticeable. For me, I missed the high when money ran out and I couldn't trade, so I found it through drugs, and my sister found out. I'd been addicted to them in the past, and it got to the point of me lying and stealing from others. She didn't want that to happen again, and she stepped in.

5. ___ It's not surprising really, given the irresponsible advertising techniques which companies have used. I'm glad authorities are cracking down on those. But it concerns me that the apps send you notifications when you make money, inviting you to share your good news with others. But when you lose, you get nothing. It gives you a false sense that you are doing well. I think there should be rules that don't allow that.

'Compared to traditional gambling, cryptocurrency trading is seen as socially acceptable. It's something that smart but adventurous people do. 6. ___ But this leads to a herd mentality, where people stop thinking things through for themselves. The companies make lots of information available to educate people about the risks of trading. It's far easier, though, to act on a friend's tip-off or hunch. All this means that people don't realize that they are on a slippery slope until it's gone too far.

- A. I happened to put my money in before the currencies hit an all-time high.
- B. By buying and selling different currencies, traders can make huge profits.
- C. But then, every stock skyrocketed.
- D. And whereas a lot of gamblers play alone or against other people, trading is social.
- E. And winning didn't give me as big a thrill as losing.
- F. There's a worrying, rising trend in cryptocurrency trading addiction.
- G. It wasn't until my friends started trading that I got into it.

The answer key:

1-B, 2-G, 3-A, 4-E, 5-F, 6-D.

The Olympics



Read the text. Decide which statements are true or false.

Besides being the world's biggest sporting event, the Olympic Games are a celebration of the human spirit, togetherness, fairness, excellence, and world peace. Its traditions symbolize oneness and connect the technologically advanced modern age to an ancient but glorious past. Thousands of athletes from around the world give their all to win a medal at the event which is held every four years. The participants script history with their grit while the Games themselves tell a story of their own. Here are a few interesting facts about the Olympic Games, its athletes and traditions.

What the rings and colours represent?

The five interlocking Olympic rings — blue, yellow, black, green and red — represent five main continents. The colour of the rings, which are on a white background of the Olympic flag, were selected because every country has at least one of the colours in their respective national flags. The Olympic flag is based on a design by Baron Pierre de Coubertin, the father of the modern Olympics, and was presented before the public in 1913 and was first hoisted at the 1920 Antwerp Olympics. Today, there are seven official versions of the Olympic rings which include the main flag, five monochrome ones in each of the five colours and a black-and-white version where the rings are in white on a black background.

The torch and the flame

Contrary to popular belief, the Olympic torch relay has no historic origins. It is a modern-day idea by university lecturer and sports theorist Carl Diem that was first used at the 1936 Berlin Olympics and has since become one of the most famous sporting traditions. Even the Olympic Flame made its debut in the 1928 Amsterdam Olympics. The relay torch carrying the Olympic flame is expected to be always lit from the moment it is ignited in a ceremony at Ancient Olympia, Greece, till the time it reaches the final destination — a cauldron in the Olympic stadium of the host city. It is designed to withstand all odds and has been carried underwater during the 2000 Sydney Olympics. However, there have been several instances when it went out due to man-made or natural reasons. As a backup plan, a second torch carrying the flame from Olympia is always at hand to quickly reignite the extinguished main torch.

Pigeons were killed at the 1900 Paris Olympics

It was the only time in the history of the games that live animals were killed for sport. Pigeon-shooting was an event of the 1900 Olympic Games in Paris. Belgium's Leon de Lunden shot 21 of the 300 birds to win the event. However, the International Olympic Committee (IOC) no longer recognizes the event. There were several other odd events at this Olympics, including standing broad jump, standing high jump, underwater swimming contest, and croquet, the last of which was attended by just one fan. None of these events has ever made a return to the Games.

Rectangular medals

The 1900 Paris Olympics is the only Summer Games in which the shape of the medal was rectangular. Designed by Frédéric Vernon, the obverse of the medals showed a winged goddess holding laurel branches in her hands with the city of Paris and the monuments of the Universal Exhibition serving as the backdrop. The reverse depicted an athlete standing on a podium, striking a victorious pose while holding a laurel branch in his hand before a stadium and the Acropolis of Athens.

The only stadium, that has hosted the Olympics twice

The Los Angeles Memorial Coliseum is the only Olympic stadium to have hosted two Summer Olympics. The first of the Games was hosted here in 1932 and the next in 1984. It is set to create history once again in 2028 when it will become the first to host the Games three times. The stadium was built in 1923 in memory of American soldiers who fought in World War I (1914–1918) and is recognized as a National and California Historic Landmark of the Country.

True or false:

1. The Olympic rings were originally designed by an artist other than Baron Pierre de Coubertin, the father of the modern Olympics. _____
2. The concept of the Olympic torch relay has been a part of the Games since their ancient origins. _____
3. The Olympic Flame was first introduced at the 1920 Antwerp Olympics. _____
4. The Olympic torch carrying the flame has never gone out due to any reasons during its journey from Greece to the host city. _____
5. Pigeon-shooting was the only odd event at the 1900 Paris Olympics, and _____

no other unusual sports were included.

6. The medals at the 1900 Paris Olympics depicted a scene of an athlete holding a torch instead of a laurel branch on the reverse side. _____

7. The Los Angeles Memorial Coliseum has hosted the Summer Olympics three times, with the first being in 1936. _____

The answer key:

1. T
2. F
3. F
4. F
5. F
6. F
7. F

Greek mythology



Read the article and answer the questions 1-6 (true or false).

There is no single original text, like the Christian Bible or the Hindu Vedas, that introduces all Greek myths' characters and stories. Instead, the earliest Greek myths were part of an oral tradition that began in the Bronze Age, and their plots and themes unfolded gradually in the written literature of the archaic and classical periods of the ancient Mediterranean world.

The poet Homer's 8th-century BC epics, *The Iliad* and *The Odyssey*, for example, tell the story of the Trojan War as a divine conflict as well as a human one. They do not, however, bother to introduce the gods and goddesses who are their main characters, since readers and listeners would already have been familiar with them.

Around 700 BC, the poet Hesiod's *Theogony* offered the first written cosmogony, or origin story, of Greek mythology. The *Theogony* tells the story of the universe's journey from nothingness (Chaos, a primeval void) into being, and details an elaborate family tree of elements, gods and goddesses who evolved from Chaos and descended from Gaia (Earth), Ouranos (Sky), Pontos (Sea) and Tartaros (the Underworld).

Later Greek writers and artists used and elaborated upon these sources in their own work. For instance, mythological figures and events appear in the 5th-century plays of Aeschylus, Sophocles and Euripides and the lyric poems of Pindar. Writers such as the 2nd-century BC Greek mythographer Apollodorus of Athens and the 1st-century BC Roman historian Gaius Julius Hyginus compiled the ancient myths and legends for contemporary audiences.

At the center of Greek mythology is the pantheon of gods and goddesses who were said to live on Mount Olympus, the highest mountain in Greece. From their lofty perch, they ruled every aspect of human life. Olympian deities looked like men and women (though they could change themselves into animals and other things) and were — as many myths recounted — vulnerable to human foibles and passions.

1. Greek myths were part of an oral tradition that began in the Iron age.
2. The poet Homer is the author of epics "The Iliad" and "The Odyssey".
3. Homer wrote the first origins story of Greek mythology.
4. In Greek mythology it is said that the universe started from Gaia.
5. The mythological figures and events appear in the lyric poems of Pindar.
6. All the Greek gods lived together on Mount Olympus.

The answer key:

1-F, 2-T, 3-F, 4-F, 5-T, 6-T.

Sleep



Read the article and choose "true" or "false" for questions 1-8.

Sometimes, the pace of modern life barely gives you time to stop and rest. It can make getting a good night's sleep on a regular basis seem like a dream.

But sleep is as important for good health as diet and exercise. Good sleep improves your brain performance, mood, and health.

Not getting enough quality sleep regularly raises the risk of many diseases and disorders. These range from heart disease and stroke to obesity and dementia.

There's more to good sleep than just the hours spent in bed, says Dr. Marishka Brown, a sleep expert at NIH. "Healthy sleep encompasses three major things," she explains. "One is how much sleep you get. Another is sleep quality—that you get uninterrupted and refreshing sleep. The last is a consistent sleep schedule."

People often think that sleep is just "down time," when a tired brain gets to rest, says Dr. Maiken Nedergaard, who studies sleep at the University of Rochester.

"But that's wrong," she says. While you sleep, your brain is working. For example, sleep helps prepare your brain to learn, remember, and create.

Nedergaard and her colleagues discovered that the brain has a drainage system that removes toxins during sleep. "When we sleep, the brain totally changes function," she explains. "It becomes almost like a kidney, removing waste from the system."

Her team found in mice that the drainage system removes some of the proteins linked with Alzheimer's disease. These toxins were removed twice as fast from the brain during sleep.

Everything from blood vessels to the immune system uses sleep as a time for repair, says Dr. Kenneth Wright, Jr., a sleep researcher at the University of Colorado.

"There are certain repair processes that occur in the body mostly, or most effectively, during sleep," he explains. "If you don't get enough sleep, those processes are going to be disturbed."

How much sleep you need changes with age. Experts recommend school-age children get at least nine hours a night and teens get between eight and 10. Most adults need at least seven hours or more of sleep each night. There are many misunderstandings about sleep. One is that adults need less sleep as they get older. This isn't true. Older adults still need the same amount. But sleep quality can get worse as you age. Older adults are also more likely to take medications that interfere with sleep.

1. Bad sleep improves your brain performance, mood, and health. _____
2. Healthy sleep encompasses three major things. _____
3. Sleep is just "down time," when a tired brain gets to rest. _____
4. While you sleep, your brain is working. _____
5. The brain has a drainage system that removes toxins during sleep. _____
6. If you don't get enough sleep, repair processes are going to be fine. _____
7. How much sleep you need changes with age. _____
8. Sleep quality cannot get worse as you age. _____

The answer key:

1-F, 2-T, 3-F, 4-T, 5-T, 6-F, 7-T, 8-F.

Running and jogging



Read the article and answer the question 1-6 (“true” or “false”).

Jogging or running is a popular form of physical activity. About one in 5 Australians try running (or jogging) at some stage in their life. Running is an appealing exercise because it doesn't cost a lot to take part and you can run at any time that suits you.

Some runners choose to participate in fun runs, athletics races or marathons. If you are interested in competing with other runners, contact your local running club.

An inactive lifestyle is associated with higher mortality, coronary artery disease, hypertension and stroke. It is also a primary cause of most chronic diseases, as the body rapidly adapts to insufficient physical activity which results in substantially reduced quality of life.

Regular physical activity such as running can significantly improve mental health, self-confidence, healthy aging, and quality of life.

The difference between running and jogging is intensity. Running is faster, uses more kilojoules and demands more effort from the heart, lungs and muscles than jogging. Running requires a higher level of overall fitness than jogging.

Both running and jogging are forms of aerobic exercise. Aerobic means 'with oxygen' – the term 'aerobic exercise' means any physical activity that produces energy by combining oxygen with blood glucose or body fat.

Some general tips for beginners:

- ✓ Make sure you warm up and stretch thoroughly before you head out. Cool your body down with light stretches when you return.

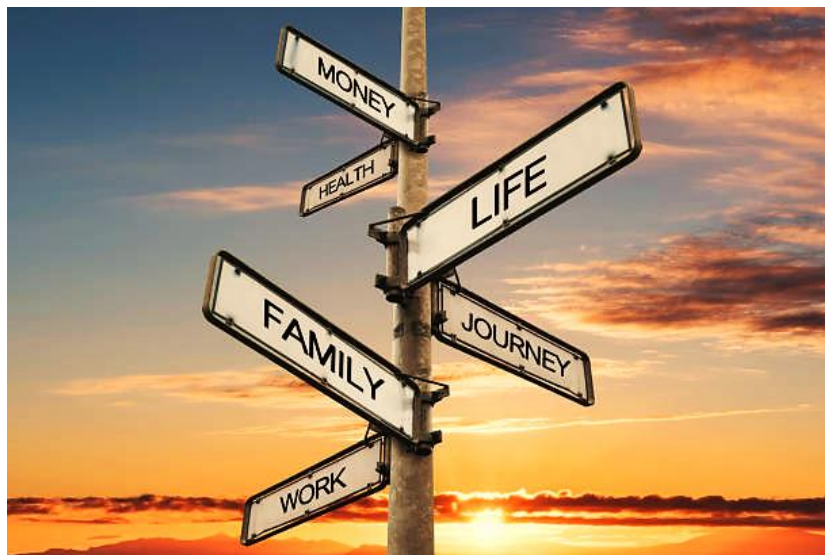
- ✓ Start with brisk walking. Aim for 30 minutes per session. Allow a minimum of 8 to 12 weeks to build up to regular running. Aim to increase your jogging time each session, and alternate between walking and jogging.
- ✓ Make sure you have plenty of fluids and take a water bottle with you on your run. Try to drink plenty of water before, during and after any activity.
- ✓ Allow at least 2 complete rest days per week to avoid overtraining, which may cause injury. Consider other low impact activities, such as swimming, at least once each week.

1. About three in 5 Australians try running at some stage in their life. _____
2. Substantially reduced quality of life is caused by insufficient physical activity. _____
3. Running can significantly improve mental health but not self-confidence. _____
4. Running is faster, uses more kilojoules, however it demands less effort from the heart, _____
lungs and muscles than jogging.
5. Only jogging is a form of aerobic exercise. _____
6. Consider other low impact activities, such as swimming, at least once each week to _____
avoid overtraining.

The answer key:

1-F, 2-T, 3-F, 4-F, 5-F, 6-T.

Ranking the lifestyle choices



Read the text and insert the missing sentences.

The study was able to rank the eight lifestyle behaviors to see which provided the biggest boost in longevity.

No. 1: First on the list was exercise, which many experts say is one of the most important behaviors anyone can do to improve their health. Adding that one healthy behavior produced a 46% decrease in the risk of death from any cause when compared with those who did not exercise, Nguyen said.

1) _____ Nguyen said. “People who lived longer did 7.5 metabolic equivalent hours of exercise a week. Just to give you a baseline — if you can walk up a flight of stairs without losing your breath, that’s four minutes of the 7.5.”

That finding echoes results from other studies that show you don’t have to do extreme sports to get the health benefits of exercise, although more vigorous activities that cause you to lose your breath are best.

No. 2: Not becoming addicted to opioids was the second most important contributor to a longer life, reducing the risk of early death by 38%, the study found. 2) _____, an agency within the Department of Health and Human Services reported.

No. 3: Never using tobacco reduced risk of death by 29%, the study found. If a person was a former smoker, that didn’t count: “We did that to make it as strict as we could,” Nguyen said. However, stopping smoking at any point in life confers major health benefits, experts say.

No. 4: Managing stress was next, reducing early death by 22%, the study found. Stress is rampant in the US today, with devastating consequences for health, experts say. 3) _____

No. 5: Eating a plant-based diet would raise your chances of living a longer life by 21%, the study found. 4) _____, Nguyen said. Following a healthy plant-based plan such as the Mediterranean diet full of whole grains and leafy green vegetables was key.

No. 6: Avoiding binge drinking — which is having more than four alcoholic beverages a day — 5) _____, Nguyen said. Binge drinking is on the rise in the US, and it’s not just college students. Even moderate drinkers are at risk, studies say.

In addition, other studies have found that any amount of drinking may be unhealthy, except perhaps, for heart attacks and stroke and even that finding has been challenged. One study found that even one drink may trigger an irregular heart rhythm called atrial fibrillation.

No. 7: Getting a good night’s sleep — defined as at least seven to nine hours a night with no insomnia — reduced early death from any cause by 18%, Nguyen said. Dozens of studies have linked poor sleep to all sorts of poor health outcomes, including premature mortality.

No. 8: Being surrounded by positive social relationships helped longevity by 5%, the study found. 6) _____, is becoming more widespread and worrisome, experts say.

“Five percent may seem small, but that’s still a decrease in terms of all-cause mortality,” Nguyen said. “Every little bit helps, whether you pick physical activity or make sure you’re surrounded by positive social support.”

A recent study found people who experienced social isolation had a 32% higher risk of dying early from any cause compared with those who weren’t socially isolated. Participants who reported feeling lonely were 14% more likely to die early than those who did not.

A - And there are ways to revamp your outlook and turn bad stress into good stress;

B - That’s a significant issue today, with the opioid crisis in the US a national “public health emergency,”;

C - We looked at whether they did light, moderate or vigorous activity compared to not doing anything and just sitting on the couch,”;

D - However, loneliness and isolation, especially among older adults;

E - Was another healthy lifestyle habit, reducing the risk of death by 1%;

F - But that doesn't mean you have to be a vegetarian or vegan;

The answer key:

1-C, 2-B, 3-A, 4-F, 5-E, 6-D.

Treasure hunting

Replace words 1-15 with a synonym.

The game of solving difficult (1) puzzles has always filled (2) people with the feeling of a proud excitement (3). No wonder, then, that the fascination (4) of treasure hunting has invariably been associated with the possibility of realizing the most improbable (5) dreams. According to what the psychologists claim, there is a little boy in every treasure hunter. Yet, the chase (6) of hidden valuables has recently become a serious venture (7) with amateur and professional seekers equipped with highly sophisticated devices (8) like metal detectors, radars, sonars or underwater cameras.

What raises the adrenaline level in these treasure-obsessed fanatics are legends, myths, old maps and other variety (9) of clues promising immeasurable (10) fortunes buried beneath the earth's surface or drowned in the ancient galleys.

For many treasure hunters the struggle of hint searching is even more stimulating (11) than digging out a treasure trove composed of golden or silver objects, jewellery and other priceless artefacts. The job is, however, extremely strenuous as even the most puzzling (12) clues must be thoroughly analysed (13). Failures and misinterpretations occur (14) quite frequently, too. Yet, even the most unlikely clue or the smallest find is enough to reinforce the hunter's self-confidence and passion.

Indeed, the delight in treasure finding doesn't always depend on (15) acquiring tremendous amounts of valuables. Whatever is detected, be it a rusty sundial or a marble statue, brings joy and reward after a long and exhausting search.

1. a) extreme b) fierce c) intricate d) passionate
2. a) imposed b) congested c) imbued d) aroused
3. a) exhilaration b) dismay c) acclaim d) inflammation
4. a) rage b) trauma c) craze d) uproar
5. a) inopportune b) impetuous c) unbearable d) implausible

6. a) pursuit b) dash c) gait d) crusade
7. a) riddle b) exploit c) toil d) strain
8. a) garments b) contributors c) appliances d) phenomena
9. a) range b) abundance c) stack d) batch
10. a) continuous b) irrelevant c) unaccountable d) priceless
11. a) stimulant b) troublesome c) escalating d) engulfing
12. a) crippling b) appalling c) baffling d) overwhelming
13. a) utilized b) scrutinized c) disclosed d) verbalized
14. a) uncover b) agree c) strike d) encounter
15. a) dwell on b) poke around c) lay about d) hinge upon

The answer key:

1-c, 2-c, 3-a, 4-c, 5-d, 6-a, 7-b, 8-c, 9-a, 10-d, 11-a, 12-c, 13-b, 14-c, 15-d.

A life – saving cow

Read the text and answer the questions below.

Six consecutive days of spring rain had created a raging river running by Nancy Brown's farm. As she tried to herd her cows to higher ground, she slipped and hit her head on a tree trunk. The fall knocked her out for a moment or two. When she came to, Lizzie, one of her oldest and favorite cows, was licking her face. The water was rising. Nancy got up and began walking slowly with Lizzie. The water was now waist high. Nancy's pace got slower and slower.

Finally, all she could do was to throw her arm around Lizzie's neck and try to hang on. About twenty five minutes later, Lizzie managed to successfully pull herself and Nancy out of the raging water onto a bit of high land, a small island now in the middle of acres of white water.

Even though it was about noon, the sky was so dark from the rain and lightning, so bad that it took rescuers another two hours to discover Nancy. A helicopter lowered a paramedic, who attached Nancy to life-support hoist. They raised her into the helicopter and took her to the school gym, where the Red Cross had set up an emergency shelter. When the flood subsided two days later, Nancy immediately went back to the "island". Lizzie was gone. She was one of nineteen cows that Nancy lost. "I owe my life to her," said Nancy sobbingly.

The questions:

1. What did the rain create?

2. What did happen when Nancy Brown try to herd her cows to higher ground?
3. Who was Lizzie?
4. What did Lizzie manage successfully?
5. How did the rescuers take Nancy?
6. Did Nancy find Lizzie?
7. What did Nancy say about Lizzie?

The answer key:

1. A raging river.
2. Nancy had slipped and hit her head on a tree trunk.
3. Lizzie was one of her oldest and favorite cows.
4. Lizzie managed successfully pull herself and Nancy out of the raging water onto a bit of high land.
5. A helicopter lowered a paramedic, who attached Nancy to life-support hoist.
6. No, she did not.
7. "I owe my life to her."

Sand energy

1) _____

According to Polar Night Energy, the Finnish company behind the idea, a sand battery is a "high temperature thermal energy storage". It uses sand or sand-like materials as its storage medium to store energy as heat. The purpose of these batteries is to provide a high-power and high-capacity reservoir for excess wind and solar energy. By storing this excess energy as heat, it can be used to heat homes, to provide hot steam, and to power fossil-fuel dependent industries with high temperature process heat. With this invention, the two founders Tommi Eronen and Markku Ylönen hope to support the shift towards renewable energy. Currently, the intermittent nature of energy sources is challenging for energy networks. Storage is expensive and imperfect. With the sand battery, renewables production can be upscaled, ensuring that there is always enough clean energy available. The first commercial sand battery in the world is located in a Western Finnish town called Kankaanpää. It connects to the district heating networking and heats residential and commercial buildings as well as the municipal swimming pool. A BBC news story from July 2022 introduced the term "sand battery" to a large audience. So far, there are no sand batteries available for individual homes.

2) _____

The heat storage of the sand battery consists of an insulated silo made of steel housing. Inside the silo there are sand and heat transfer pipes. Additional equipment outside the storage unit included automation components, valves, a fan, and a heat exchanger or steam generator. Electricity from the grid or from local production, coming from fluctuating sources like wind or solar, heats the sand. This charge happens whenever clean and cheap electricity is available. Then, the electrical energy gets to the heat storage via a closed loop air-pipe arrangement. Electrical resistance heating elements heat up the air that circulates in the heat transfer piping. The sand reaches maximum temperatures of about 600 degrees Celsius in Kankaanpää. Depending on different needs, it is also possible to work with a higher temperature. In theory, the maximum temperature is not limited by the properties of the sand as a storage medium, but by the heat resistance of the materials used in construction and control. To get the heat out of the heat storage, cool air is blown through the pipes. It heats up while passing through the storage. The resulting hot air serves to convert water into process steam or to heat district heating water in an air-to-water heat exchanger.

3) _____

There are many solid materials that can hold temperatures well above the boiling point of water. Sand can store several times the amount of energy that a water tank of similar size could store thanks to its large temperature range. For this reason, sand plays a key role in this Finnish innovation. In addition, sand saves space and allows for a versatile use in industrial applications. The grain size of the sand is not particularly important for the sand battery process because heat storage is not sensitive to the grain size. Therefore, Polar Night Energy prefers a high density and low-cost sand that does not come from scarce sources: "Someone else's dirt could be our heat storage medium. We prefer to use materials that are not suitable for the construction industry." Another advantage of sand is that it can stay hot for months. In the heat storage in Kankaanpää, it is charged in 2-week cycles. According to the company, the heat storage has its best range when it is charged and discharged between 20 to 200 times per year.

4) _____

While the idea of heating sand to store energy is not new, the model pioneered by Polar Night Energy allows for a large-scale application of heat storage. This makes the commercialisation of sand batteries possible. Clients include a range of different businesses and industries, such as energy utilities, residential and commercial building operators, food and beverage companies, chemistry and pharma, metal production, and other industries. Even in the cold Finnish winter, the sand battery is working. This insulation surrounds the sand, keeping the temperature inside at 600 degrees Celsius. When full, the battery stores up to 8 MWh of thermal energy. Depending on demand, it can discharge about 200 kW of power through the heat-exchange pipes, which is enough to provide hot water and heating for about 100 homes and a swimming pool. In Kankaanpää, the sand battery supplements power from the grid. Battery charging happens overnight when the electricity prices are lower. Sand batteries fill an important gap in renewable energy, where storage is still the key challenge. They provide a low-maintenance system and use lower-quality sand that has been rejected by builders to avoid contributing to the global shortage of higher quality river sand. The parts of the sand battery experience no wear and tear. The only moving part is the fan, which is easy to replace. On top of its efficiency, sand also has a very long lifetime: a sustainable storage for renewable energy.

Match the topics A-E to paragraphs 1-4 (there is one that doesn't fit).

- A) How the sand battery works
- B) Impact of Sand Batteries on Wildlife Conservation
- C) The benefits of sand

- D) The sand battery idea
- E) An important step for renewables

True or False:

- The sand battery in Kankaanpää heats residential and commercial buildings, as well as the municipal swimming pool.
- Sand batteries use sand or sand-like materials as a storage medium to store energy as heat.
- Sand batteries can provide a high-power and high-capacity reservoir for excess wind and solar energy.
- Sand batteries can reach temperatures of about 600 degrees Celsius and can work with even higher temperatures depending on the materials used in construction and control.
- Sand can store several times the amount of energy compared to a water tank of similar size due to its large temperature range.

The answer key:

- 1. D 1. F
- 2. A 2. T
- 3. C 3. T
- 4. E 4. T
- 5. T

Robots Are Trained to Help Revive Coral Reefs

"It's a really special part of the world," says marine biologist Taryn Foster from the Abrolhos Islands, 40 miles from the coast of Western Australia." There are no palm trees or luscious vegetation. But once you get in the water, you see all these tropical species of coral and fish."

Corals are animals called polyps, found mostly in tropical waters. The soft-bodied polyp forms a hard outer shell by extracting calcium carbonate from the sea. Over time those hard shells build up to form the foundations of the reefs we see today.

Coral reefs may only cover 0.2% of the seafloor, but they provide a habitat to more than a quarter of marine species. However, the creatures are sensitive to heat and acidification so in recent years, as the oceans have warmed and become more acidic, corals have become vulnerable to disease and death. Damaged corals turn white, a process known as bleaching, something Ms Foster has witnessed first hand.

According to the Global Coral Reel Monitoring Network, a 1.5°C increase in water temperature could see losses of between 70% and 90% of the world's reefs. Some scientists think, that by 2070, they'll be gone altogether. Coral restoration efforts usually involve transplanting tiny corals, cultivated in nurseries, on to damaged reefs. However, the work can be slow and costly, and only a fraction of the reefs at risk are getting help. In the shallow waters of the Abrolhos Islands, Ms Foster is testing a system she hopes will revive reefs more quickly.

It involves grafting coral fragments into small plugs, which are inserted into a moulded base. Those bases are then placed in batches on the seabed. Ms Foster designed the base, which is shaped like a flat disc with grooves and a handle, and is made from a limestone-type concrete.

"We wanted it to be something we could mass produce at a reasonable price," explains Ms Foster. "And easy for a diver or a remotely-operated vehicle to deploy." So far the results have been encouraging. "We've deployed several different prototypes of our coral skeletons. And we've also tested this on four different species," she explains. "They're all growing wonderfully." "We're bypassing several years of calcification growth that it takes to get to that base size," she says.

A robotic arm can graft or glue coral fragments to the seed plugs. Another places them in the base, using vision systems to make decisions about how to grab it." Every piece of coral is different, even within the same species, so the robots need to recognize coral fragments and how to handle them," says Nic Carey, senior principal research scientist at Autodesk. "So far, they're very good at handling the variability in coral shapes."

True/ False/ Don't know / Correct the false answers

1. The most popular coral in the Abrolhos Islands is the "Staghorn" coral. _____
2. Polyps have a soft and fragile outer shell. _____
3. In the coral reefs live less than a quarter of marine species. _____
4. Corals get damaged by the warmer and more acidic tropical waters. _____
5. Scientists think, that by 2075 we will still have up to 70% of the reefs left. _____
6. The new coral restoration system is cheaper and less time consuming. _____
7. Some coral skeletons have doubled in size during a few week period after testing the new system on them. _____
8. It is easy for the robot to recognize the corals fragments because of their similarities.

The answer key:

1. Don't know

2. False

3. False

4. True

5. False

6. True

7. Don't know

8. False

