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Practice the questions of McGraw Hill Math Grade 8 Answer Key PDF Lesson 17.2 Changing from Metric Units to Customary Units to secure good marks & knowledge in the exams. McGraw-Hill Math Grade 8 Answer Key Lesson 17.2 Changing from Metric Units to Customary Units Exercises CONVERT Question 1. 24 mm = _____ in. Answer: 0.936 in, Explanation: 1 mm = 0.039 in, 24 mm = 24 X 0.039 in = 0.936 in. Question 2. 143 cm = _____ in. Answer: 56.342 in, Explanation: 1 cm = 0.394 in, 143 cm = 143 X 0.394 in = 56.342 in. Question 3. 3 m = _____ in. Answer: 118.11 in, Explanation: 1 meter = 39.37 in, 3 m = 3 X 39.37 in = 118.11 in. Question 4. 4 km = _____ mi Answer: 2.484 miles, Explanation: 1 kilometer = 0.621 miles, 4 km = 4 X 0.621 miles = 2.484 miles. Question 5. 20 g = _____ oz Answer: 0.7 oz, Explanation: 1 gram = 0.035 ounces, 20 g = 20 X 0.035 ounces = 0.7 oz. Question 6. 6 L = _____ qt Answer: 6.342 qt, Explanation: 1 liter = 1.057 quarts, 6 L = 6 X 1.057 qt = 6.342 qt. Question 7. 3 kL = _____ gal Answer: 792.6 gal, Explanation: 1 kL = 264.2 gallons, 3 kL = 3 X 264.2 gal = 792.6 gal. Question 8. 4.5 kg = _____ lb Answer: 9.9223 lb, Explanation: 1 kg = 2.205 lb, 4.5 kg = 4.5 X 2.205 lb = 9.9223 lb. Question 9. 242 mm = _____ in. Answer: 9.44 in, Explanation: 1 millimeter = 0.039 in, 242 mm = 242 X 0.039 = 9.438 or 9.44 in. Question 10. 13 kg is about how many oz? _____ Answer: 458.64 oz, Explanation: 1 kg = 35.28 oz, 13 kg = 13 X 35.28 oz = 458.64 oz. Question 11. 1100 mm = _____ in. Answer: 42.9 in, Explanation: 1 millimeter = 0.039 in, 1100 mm =1100 X 0.039 in = 42.9 in. Question 12. 2 kg + 32 g = _____ oz Answer: 71.68 oz, Explanation: 1 kg = 35.28 oz, 2 kg = 2 X 35.28 oz = 70.56 oz, 1 g = 0.035 oz, 32 g = 32 X 0.035 oz = 1.12 oz, 70.56 oz + 1.12 oz = 71.68 oz. Question 13. The average player on the school basketball team is 190 centimeters tall. The average volleyball player is 6 ft 4 inches tall. Which team has a taller average height? Answer: 6 ft 4 in volleyball players are taller on average than school basketball team, Explanation: The average player on the school basketball team is 190 centimeters tall. The average volleyball player is 6 ft 4 inches tall. 1 cm = 0.0328084 ft, 190 cm = 190 X 0.0328084 ft = 6.233596 ft, As 6.4 ft > 6.233596 ft, So, 6 ft 4 in volleyball players are taller on average than school basketball team. Question 14. The Booster Club sponsored a 10-km walk to raise money for charity. About how many miles is the length of the walk? Answer: 6.21 miles is the length of the walk, Explanation: The Booster Club sponsored a 10-km walk to raise money for charity. 1 km = 0.621 miles, 10 km = 10 X 0.621 miles = 6.21 miles.

You should spend about 20 minutes on Questions 27-40 which are based on Reading Passage 3 below. Insight or evolution? Two scientists consider the origins of discoveries and other innovative behavior Scientific discovery is popularly believed to result from the sheer genius of such intellectual stars as naturalist Charles Darwin and theoretical physicist Albert Einstein. Our view of such unique contributions to science often disregards the person's prior experience and the efforts of their lesser-known predecessors. Conventional wisdom also places great weight on insight in promoting breakthrough scientific achievements, as if ideas spontaneously pop into someone's head – fully formed and functional. There may be some limited truth to this view. However, we believe that it largely misrepresents the real nature of scientific discovery, as well as that of creativity and innovation in many other realms of human endeavor. Setting aside such greats as Darwin and Einstein – whose monumental contributions are duly celebrated – we suggest that innovation is more a process of trial and error, where two steps forward may sometimes come with one step back, as well as one or more stops to the right or left. This evolutionary view of human innovation undermines the notion of creative genius and recognizes the cumulative nature of scientific progress. Consider one unheralded scientist: John Nicholson, a mathematical physicist working in the 1910s who postulated the existence of 'proto-elements' in outer space. By combining different numbers of weights of these proto-elements' atoms, Nicholson could recover the weights of all the elements in the then-known periodic table. These successes are all the more noteworthy given the fact that Nicholson was wrong about the presence of proto-elements: they do not actually exist. Yet, amid his often fanciful theories and wild speculations, Nicholson also proposed a novel theory about the structure of atoms. Niels Bohr, the Nobel prize-winning father of modern atomic theory, jumped off from this interesting idea to conceive his now-famous model of the atom. What are we to make of this story? One might simply conclude that science is a collective and cumulative enterprise. That may be true, but there may be a deeper insight to be gleaned. We propose that science is constantly evolving, much as species of animals do. In biological systems, organisms may display new characteristics that result from random genetic mutations. In the same way, random, arbitrary or accidental mutations of ideas may help pave the way for advances in science. If mutations prove beneficial, then the animal or the scientific theory will continue to thrive and perhaps reproduce. Support for this evolutionary view of behavioral innovation comes from many domains. Consider one example of an influential innovation in US horseracing. The so-called 'acey-deucy' stirrup placement, in which the rider's foot in his left stirrup is placed as much as 25 centimeters lower than the right, is believed to confer important speed advantages when turning on oval tracks. It was developed by a relatively unknown jockey named Jackie Westrope. Had Westrope conducted methodical investigations or examined extensive film records in a shrewd plan to outrun his rivals? Had he foreseen the speed advantage that would be conferred by riding acey-deucy? No. He suffered a leg injury, which left him unable to fully bend his left knee. His modification just happened to coincide with enhanced left-hand turning performance. This led to the rapid and widespread adoption of riding acey-deucy by many riders, a racing style which continues in today's thoroughbred racing. Plenty of other stories show that fresh advances can arise from error, misadventure, and also pure serendipity – a happy accident. For example, in the early 1970s, two employees of the company 3M each had a problem: Spencer Silver had a product – a glue which was only slightly sticky – and no use for it, while his colleague Art Fry was trying to figure out how to affix temporary bookmarks in his hymn book without damaging its pages. The solution to both these problems was invention of the brilliantly simple yet phenomenally successful Post-It note. Such examples give lie to the claim that ingenious, designing minds are responsible for human creativity and invention. Far more banal and mechanical forces may be at work; forces that are fundamentally connected to the laws of science. The notions of insight, creativity and genius are often invoked, but they remain vague and of doubtful scientific utility, especially when one considers the diverse and enduring contributions of individuals such as Plato, Leonardo da Vinci, Shakespeare, Beethoven, Galileo, Newton, Kepler, Curie, Pasteur and Edison. These notions merely label rather than explain the evolution of human innovations. We need another approach, and there is a promising candidate. The Law of Effect was advanced by psychologist Edward Thorndike in 1898, some 40 years after Charles Darwin published his groundbreaking work on biological evolution, On the Origin of Species. This simple law holds that organisms tend to repeat successful behaviors and to refrain from performing unsuccessful ones. Just like Darwin's Law of Natural Selection, the Law of Effect involves an entirely mechanical process of variation and selection, without any end objective in sight. Of course, the origin of human innovation demands much further study. In particular, the provenance of the raw material on which the Law of Effect operates is not as clearly known as that of the genetic mutations on which the Law of Natural Selection operates. The generation of novel ideas and behaviors may not be entirely random, but constrained by prior successes and failures – of the current individual (such as Bohr) or of predecessors (such as Nicholson). The time seems right for abandoning the naïve notion of intelligent design and genius, and for scientifically exploring the true origins of creative behavior. Questions 27-31 Choose the correct letter, A, B, C or D. Write the correct letter in boxes 27-31 on your answer sheet. 27 The purpose of the first paragraph is to A defend particular ideas. B compare certain beliefs. C disprove a widely held view. D outline a common assumption. 28 What are the writers doing in the second paragraph? A criticising an opinion B justifying a standpoint C explaining an approach D supporting an argument 29 In the third paragraph, what do the writers suggest about Darwin and Einstein? A They represent an exception to a general rule. B Their way of working has been misunderstood. C They are an ideal which others should aspire to. D Their achievements deserve greater recognition. 30 John Nicholson is an example of a person whose idea A established his reputation as an influential scientist. B was only fully understood at a later point in history. C laid the foundations for someone else's breakthrough. D initially met with scepticism from the scientific community. 31 What is the key point of interest about the 'acey-deucy' stirrup placement? A the simple reason why it was invented B the enthusiasm with which it was adopted C the research that went into its development D the cleverness of the person who first used it Questions 32-36 Do the following statements agree with the claims of the writer in Reading Passage 3? In boxes 32-36 on your answer sheet, write YES if the statement agrees with the claims of the writer NO if the statement contradicts the claims of the writer NOT GIVEN if it is impossible to say what the writer thinks about this 32 Acknowledging people such as Plato or da Vinci as geniuses will help us understand the process by which great minds create new ideas. 33 The Law of Effect was discovered at a time when psychologists were seeking a scientific reason why creativity occurs. 34 The Law of Effect states that no planning is involved in the behaviour of organisms. 35 The Law of Effect sets out clear explanations about the sources of new ideas and behaviours. 36 Many scientists are now turning away from the notion of intelligent design and genius. Questions 37-40 Complete the summary using the list of words, A-G, below. Write the correct letter, A-G, in boxes 37-40 on your answer sheet. The origins of creative behaviour The traditional view of scientific discovery is that breakthroughs happen when a single great mind has sudden 37 ..... . Although this can occur, it is not often the case. Advances are more likely to be the result of a longer process. In some cases, this process involves 38 ....., such as Nicholson's theory about proto-elements. In others, simple necessity may provoke innovation, as with Westrope's decision to modify the position of his riding stirrups. There is also often an element of 39 ....., for example, the coincidence of ideas that led to the invention of the Post-It note. With both the Law of Natural Selection and the Law of Effect, there may be no clear 40 ..... involved, but merely a process of variation and selection. A invention B goals C compromise D mistakes E luck F inspiration G experiments SECTION 1 Questions 1—14Read the text below and answer Questions 1—5.Want to rent a property?Here is a brief description of some rental property agencies to choose fromA Aynho PropertiesWith over 50 years' experience, we offer a comprehensive sales and lettings service. Our firm has been based in Shipton Street since its foundation and so we have a thorough knowledge of the surrounding neighborhood. Our staff make every effort to match clients' needs to an appropriate property, whether you are looking to rent an apartment, a bungalow or a house.B Danesdale AgencyAs soon as you walk in our door, we will make every effort to find the right flat for you to rent. Everything we do is based on good practice — you supply written references and pay the rent on time, and in return we'll visit the property every four months to ensure it is maintained and that any necessary repairs are done.C Jakesford PropertiesAs a family—run business with over 20 years' experience in the property market, we pride ourselves on treating every client with kindness and consideration. The landlords on our books have been selected with great care so that you can be sure they will look after your interests. Thousands of customers from all over the world have written to us to express their appreciation for the service we have offered them.D Kasama LettingOur highly experienced team works hard to provide peace of mind for both tenants and landlords. James Kettering, our customer liaison officer, is always at the end of the phone to answer any queries you may have. We also have an administration officer, who deals with contracts, rents and personal queries.E Leftfield LettingWhile the main objective of some letting agents is to get as much money as possible for their properties, we aim to secure a fair deal for tenants and a trouble-free service for landlords. We use modern marketing techniques that include price comparisons for similar properties with other agencies in the area so that you can make a fully informed decision.Read the text below and answer Questions 6—14.Cycle lightsWhat are the legal requirements?You must have approved front and rear lights that are lit, clean and working properly when cycling between sunset and sunrise. It's no defence to say that it was past sunset but not yet dark. The legal lighting obligations for cyclists are determined by sunset and sunrise times — not the 'hours of darkness', which start 30 minutes after the former, end 30 minutes before the latter and dictate when motorists must switch from sidelights to headlights.Cycling UK's guide to cycling regulations explains the Road Vehicles Lighting Regulations in detail, but in summary you need a white light at the front and a red light at the rear, visible from the front and rear respectively and fixed to your bike. A light obscured by a saddlebag isn't legal and neither is a torch on your head, though there's nothing to stop you using a head-torch as an additional light.The regulations also now allow flashing lights, provided they flash between 60 and 240 times per minute. The legal requirements for reflectors include a red rear reflector and four amber pedal reflectors, one at the front and rear of each pedal. Common sense might suggest that a reflective heel strip or ankle band could replace an amber pedal reflector, but unfortunately these do not meet the legal requirements. This is an annoying problem for riders who use bikes where the feet are attached to the pedals and cannot slip. These pedals are not designed with enough space to accommodate reflectors and make this an area of legislation in need of change.Unlike with other vehicles, lights are not a legal requirement for cyclists when there is seriously reduced visibility during the daytime, although we wouldn't recommend cycling through dense fog without lighting up.SECTION 2 Questions 15—27Read the text below and answer Questions 15—20. Maintaining a safe environment for employees working on computersUnder health and safety law, you must ensure that the working environment meets certain minimum requirementsWorkstation furnitureThe work desk or work surface should be big enough to allow the user to arrange the screen, keyboard and documents, etc. in a flexible way. It should be stable and positioned so that it's comfortable when an employee uses a document holder, but also big enough to let the user work comfortably and to alter their position.The working environmentYou need to assess noise levels. The equipment shouldn't be so noisy that it distracts the user. If you can't use quieter equipment, consider soundproofing or moving the equipment. You could use partitions between noisy equipment and the rest of the workstation as an alternative.Lighting is also an important consideration. Surrounding windows must have curtains or blinds which users can adjust to prevent reflected glare. If needed, provide users with lighting appropriate to their tasks and particular workstation. Users should have control over their lighting to prevent reflected glare.Temperature-wise, the equipment should not give out so much heat that the user becomes uncomfortable, so monitor this. It's also important that you maintain ventilation, and you control humidity so that it is at a level which keeps the user comfortable. Task design and rest breaksGood design of the task can be as important as the right choice of furniture and equipment. Whenever possible you should design jobs so that employees have a mix of activities and some control over which tasks they perform and when. You should match staffing levels to workload so that individuals are neither overworked nor underworked and give employees some say in the way work is carried out and the planning that goes into it.An employee's need for rest breaks will vary depending on the type of work they are doing and how intensely they are working. As a general rule, however, short, frequent breaks are better than longer, less frequent ones. A 5—10-minute break after 50—60 minutes' work is better than a 15—20-minute break after two hours. The employee should, at times. has a choice over when to take breaks and they should be encouraged to do non-work activities during their break, ideally away from the workstation.Read the text below and answer Questions 27—27.Using portable laddersWorkers use portable ladders for a variety of jobs outside, such as first- and second-floor window cleaning and building repairsEmployers need to oversee all ladders that are owned by their company. Detailed visual inspections should be carried out on a regular basis, and they should have an up-to-date record of these. Before starting a job, employers are also responsible for ensuring any ladder is the right length to meet the needs of the task; reaching out from the very top of a ladder is highly dangerous. Once you get a ladder, you, as user of the ladder, should conduct a pre-use check each working day. Conducting pre—use checks should have been part of your training and should be done in accordance with the manufacturer's guidelines. When doing a check, it is important to focus on the steps and make sure they are not loose as this could cause an accident. Similarly, a cracked joint in the ladder could cause it to fail.Almost all falls from ladders happen because the ladder moves unexpectedly. The key factor in preventing falls from ladders is to ensure your ladder is stable whilst being used. First, make sure that you choose level ground on which to set up your ladder. There are specially designed tools you can use to ensure this — don't just use a piece of wood. Second, check the ground surface is dirt-free and solid, so the feet can grip and the ladder doesn't sink.Before you go up your ladder, look at the surrounding environment. Make sure the ladder cannot be struck by vehicles. If necessary, safeguard the area by placing red and white cones around it. Ensure it will not be pushed over by other hazards such as opening doors. Doors and windows may need to be secured where possible. Finally, think about the hazards to the general public and make sure they cannot walk underneath it or get too near to it. A 'danger' sign at the base is often the best way of doing this.To secure the ladder, tie it to a suitable point, such as a window or railing, making sure both sides are attached. Where this is not practical, secure it to the wall near the base of the ladder with ties; avoid using blocks to wedge the ladder in place as they can easily move.SECTION 3 Questions 28—40Read the text below and answer Questions 28—40.The story of the Fosbury FlopA On October 20, 1968, a 21-year-old university student from the USA called Dick Fosbury completely transformed the sport of high jumping with a gold-medal and Olympic-record jump of 2.24 meters at the Mexico City games. Fosbury accomplished this fabulous feat by sailing over the crossbar head first and backward! As colorfully described that clay by the Los Angeles Times, "Fosbury goes over the bar like a guy being pushed out of a 30-story window."B At first, when asked about how this unorthodox maneuver originated, Fosbury would joke with sportswriters, informing some that, because of his university background in physics and engineering, he had initially designed the Flop on paper, and telling others that he had accidentally discovered this technique when he once tripped and fell backward on his take-off. However, in later interviews, Fosbury revealed that the technique actually unfolded over many years and involved countless trials and errors. "It was simply a natural technique that evolved," he said. "I never thought about how to change it, and I'm sure my coach was going crazy because it kept evolving. I didn't know anyone else in the world would be able to use it."C Fosbury explained that when he first learned to high jump at the age of 10 or 11, he tried jumping with the "scissors" style. He said, "I used that style until I went into high school, where my coach explained that I was never going to get anywhere with that technique. He started me with the 'belly roll' technique. However, I was really lousy with that style. I expressed my frustration to coach and he said that if I really wanted, I could still use the 'scissors."So, in his next competition, Fosbury went back to the "scissors" style. He explained: "As the bar was raised each time, I began to lift my hips up and my shoulders went back in reaction to that- At the end of the competition, I had improved my best by 15 cm to 1 m 78 and even placed third! The next two years in high school with my curved approach, I began to lead with my shoulder and eventually was going over head first like today's floppers."D In this way, the Flop evolved, not from design, but from a trial-and-error process which combined repeated effort with the biomechanics of Fosbury's gangling 1 m 93 physique. Sports Illustrated writer Richard Hoffer wrote: "It was on-site engineering, his body and mind working together, making reflexive adjustments with only one goal, getting over the bar." Hoffer explained that although Fosbury's arms and legs seemed to be all over the place, those movements that served to get him a centimeter higher were retained, while the others were gradually eliminated as the technique evolved.E What did Fosbury think of the seeming awkwardness of his Flop? "I believe that the Flop was a natural style," he said, "And I was just the first to find it. I can say that because the Canadian jumper Debbie Brill was a few years younger than I was and also developed the same technique only a few years after me and without ever having seen me." A striking coincidence? Yes indeed. But perhaps not as striking as the fact that a high school student called Bruce Quande was photographed on May 24, 1963 flopping backward over the crossbar. This was the same month that Fosbury recalls having flopped for the first time in the competition when he was at high school.F But completing the Flop successfully was only half the battle the return to earth still had to be negotiated. Few would even consider such an experiment knowing they had have to land on their necks. When Fosbury was jumping in high school he had to land in pits which were filled with wood chips, sawdust or sand. On one occasion Fosbury hit his head on the wooden border or the pit. Another time he landed totally out of the pit, flat on his back knocking the wind out of him. The next year Fosbury's high school became the first in the region to install foam rubber in its high jump pit thereby cushioning the jumper's fall and encouraging the use of the potentially dangerous Flop. The Fosbury Flop and cushioned landing areas thus appear to have co-evolved.G Fosbury explains how he came to name the Flop. "I am very proud that I received the naming rights. But the term by which the style is known did not appear overnight. To tell the truth the first time was that I was interviewed and asked 'What do you call this?' I used my engineering analytical side and I referred to it as a back lay out.' It was not interesting and the journalist didn't even write it down. I noted this. The next time that I was interviewed that's when I said: 'Well at home in my town they call it the Fosbury Flop' – and everyone wrote it down. I was the first time to call it that but it came from a caption on a newspaper photo that said: "Fosbury flops over bar.' The context was that our town was on a river, very popular for fishing an hour from the Pacific Ocean. And when you land a fish on the bank it's flopping. That's the action and so it's a good description by a journalist and I remembered it." Question: Strip Mining Answer: The extraction of a mineral by removing a strip of the layers of soil and rock on top of the mineral deposit COAL Question: Subsurface Mining Answer: The practice of digging shafts deep into the ground to find and remove a mineral COAL Question: Petroleum Answer: Dark, liquid fossil fuel (OIL) made up of mostly hydrocarbons Question: Petrochemical Answer: Chemical compounds that are derived from oil and used to make products Question: Oil Sands Answer: Deposits of moist sand and clay containing bitumen (would use if we wanted another option as opposed to crude oil…bc it's really expensive) Question: Oil Shale Answer: A rock filled with a mixture of hydrocarbons (would use if we wanted another option as opposed to crude oil…bc it's really expensive) Question: Methane Hydrate Answer: An ice like solid that consists of molecules of methane within a crystal network of water molecules Question: Fossil fuels are formed from… Answer: The remains of once-living organisms Question: Fossil fuels are comprised mostly of… Answer: Hydrocarbons Question: Fossils fuels are produced in areas that are composed of… Answer: Little or NO oxygen The Bedouin teenagers who found the scrolls were disappointed by how little money they received for them. Not given – first paragraph's sixth to eighth line. The teenagers took the seven scrolls to a nearby town where they were sold for a small sum to a local antiquities dealer.Explanation:- There is no information about whether they became happy or disappointed.There is agreement among academics about the origin of the Dead Sea Scrolls.False – second paragraph's first two lines. The origin of the Dead Sea Scrolls, which were written around 2,000 years ago between150 BCE and 70 CE, is still the subject of scholarly debate even today.Explanation:- 'Still a subject of scholarly debate' Scholars = Academics. If it is still a subject of debate, it means scholars (academics) do not agree about the origin of the Dead Sea Scrolls.Most of the books of the Bible written on the scrolls are incomplete.True – fourth paragraph's first to three line. The Dead Sea Scrolls include fragments from every book of the Old Testament of the Bible except for the Book of Esther. The only entire book of the Hebrew Bible preserved among the manuscripts from Qumran is Isaiah.Explanation:- Fragments = small parts (not whole). Only one book was complete that is Isaiah. So, the statement is true. The information on the Copper Scroll is written in an unusual way.True – fifth paragraph's eighth to ninth line. Using an unconventional vocabulary and odd spelling, it describes 64 underground hiding places that supposedly contain riches buried for safekeeping.Explanation:- In the fifth paragraph, from the third line, information about the Copper Scroll is given. In the eighth and ninth lines, it is written that this scroll describes 64 hiding places that might have treasure (riches) buried. This information is written in unconventional (unusual) vocabulary and odd (strange) spelling.Mar Samuel was given some of the scrolls as a gift.False – sixth paragraph's second to fourth line. Mar Samuel acquired four of the original seven scrolls from a Jerusalem shoemaker and part-time antiquity dealer, paying less than $100 for them.Explanation:- Mar Samuel purchased them for around $100. So, they (scrolls) were not a gift.In the early 1950s, a number of educational establishments in the US were keen to buy scrolls from Mar Samuel.False – sixth paragraph's fourth and fifth line. He then travelled to the United States and unsuccessfully offered them to a number of universities, including Yale.Explanation:- He was unsuccessful in selling scrolls to any university in the USA.The scroll that was pieced together in 2017 contains information about annual occasions in the Qumran area 2,000 years ago.True – last paragraph's last three lines. The scroll names celebrations that indicate shifts in seasons and details two yearly religious events known from another Dead Sea Scroll.Explanation:- The information about this scroll starts from the start of the last paragraph. But the last three lines of this paragraph describe that the scroll has the name of two yearly (annual) religious events (occasions). Academics at the University of Haifa are currently researching how to decipher the final scroll.Not given – last paragraph last line. Only one more known scroll remains untranslated.Explanation:- There is no information on whether academics are currently researching how to translate the final scroll or not. It is just said that only a few scrolls are untranslated.Which section contains the following information? 14. a reference to a type of tomato that can resist a dangerous infectionC- C paragraph's last part's first three lines. The team in China re-domesticated several strains of wild tomatoes with desirable traits lost in domesticated tomatoes. In this way they managed to create a strain resistant to a common disease called bacterial spot race, which can devastate yields.Explanation:- Strain = a particular breed or variety. 15. an explanation of how problems can arise from focusing only on a certain type of tomato plant.B – B paragraph's the whole second part. But every time a single plant with a mutation is taken from a larger population for breeding, much genetic diversity is lost. And sometimes the desirable mutations come with less desirable traits. For instance, the tomato strains grown for supermarkets have lost much of their flavour.Explanation:- Problems that can arise from selecting a single type of plant are the loss of genetic diversity, less desirable results and loss of flavour. 16. a number of examples of plants that are not cultivated at present but could be useful as food sourcesE – E paragraph's the whole second part. The three teams already have their eye on other plants that could be 'catapulted into the mainstream', including foxtail, oat-grass and cowpea. By choosing wild plants that are drought or heat tolerant, says Gao, we could create crops that will thrive even as the planet warms.Explanation:- Examples of plants are foxtail, oat-grass and cowpea. They are not cultivated now, but when the earth is warm, these plants can be grown for obtaining food. 17. a comparison between the early domestication of the tomato and more recent researchA – A paragraph's first part's first three lines and second part's first three lines. It took at least 3,000 years for humans to learn how to domesticate the wild tomato and cultivate it for food. Now two separate teams in Brazil and China have done it all over again in less than three years. This approach relies on the revolutionary CRISPR genome editing technique, in which changes are deliberately made to the DNA of a living cell, allowing genetic material to be added, removed or altered.Explanation:- The first two lines talk about the early domestication of tomatoes, which started 3000 years ago. But now, such a domestication process took only three years. This recent process used the CRISPR technique that can change the DNA of living cells of plants. 18. a personal reaction to the flavour of a tomato that has been genetically edited C – C paragraph's third part. 'They are quite tasty,' says Kudla. 'A little bit strong. And very aromatic.Explanation:- This line expresses the reaction of Jorg Kudla to the flavor of a genetically edited tomato. Aromatic = having a pleasant and distinctive smell. 19. Domestication of certain plants could allow them to adapt to future environmental challenges.B – Caixia Gao, E paragraph's second full paragraph. The three teams already have their eye on other plants that could be 'catapulted into the mainstream', including foxtail, oat-grass and cowpea. By choosing wild plants that are drought or heat tolerant, says Gao, we could create crops that will thrive even as the planet warms.Explanation:- The environmental challenge about which Caixia Gao is talking is the warm earth. Foxtail, oat-grass and cowpea are drought and heat-tolerant plants that can be domesticated and adapt to the hot environment. 20. The idea of growing and eating unusual plants may not be accepted on a large scale.D – Jonathan Jones, E paragraph's first full paragraph. This approach could boost the use of many obscure plants, says Jonathan Jones of the Sainsbury Lab in the UK. But it will be hard for new foods to grow so popular with farmers and consumers that they become new staple crops, he thinks.Explanation:- Obscure = Not known. Jonathan Jones says that it is difficult for new food to become popular among farmers and consumers, which makes a new crop main or important for consumption (staple). 21. It is not advisable for the future direction of certain research to be made public. A – Jorg Kudla, E paragraph's whole third part. But Kudla didn't want to reveal which species were in his team's sights, because CRISPR has made the process so easy. 'Any one with the right skills could go to their lab and do this.'Explanation:- Jorg Kudla did not want to reveal (made public) his research because people with some knowledge about CRISPR can do the same as he did. 22. Present efforts to domesticate one wild fruit are limited by the costs involved.C – Joyce Van Eck, D paragraph's second paragraph, third line to last line. Van Eck's team has edited the plants to increase fruit size, make their growth more compact and to stop fruits dropping. 'There's potential for this to be a commercial crop,' says Van Eck. But she adds that taking the work further would be expensive because of the need to pay for a license for the CRISPR technology and get regulatory approval.Explanation:- Due to the expensive (costly) license fee for CRISPR technology and getting regulatory approval, Joyce Van Eck cannot further his efforts to domesticate groundcherry.Humans only make use of a small proportion of the plant food available on Earth.A – Jorg Kudla, A paragraph's fourth full paragraph. 'This could transform what we eat,' says Jorg Kudla at the University of Munster in Germany, a member of the Brazilian team. 'There are 50,000 edible plants in the world, but 90 percent of our energy comes from just 15 crops.'Explanation:- Out of 50,000 eatable (edible) plants on the earth, only 15(a small proportion compared to 50,000) crops are used for food.An undesirable trait such as loss of..... may be caused by a mutation in a tomato gene. Flavour – B paragraph's second full paragraph. But every time a single plant with a mutation is taken from a larger population for breeding, much genetic diversity is lost. And sometimes the desirable mutations come with less desirable traits. For instance, the tomato strains grown for supermarkets have lost much of their flavour. 25.By modifying one gene in a tomato plant, researchers made the tomato three times its original..... .size – c paragraph first two lines. For instance, they tripled the size of fruit by editing a gene called FRUIT WEIGHT, 26.A type of tomato which was not badly affected by..... , and was rich in vitamin C, was produced by a team of researchers in China.salt – c paragraph's fourth paragraph last line. They also created another strain that is more salt tolerant – and has higher levels of vitamin C.Choose the correct letter, A, B, C or D.The purpose of the first paragraph is toD – Outline a common assumption. First paragraph's first two lines. Scientific discovery is popularly believed to result from the sheer genius of such intellectual stars as naturalist Charles Darwin and theoretical physicist Albert Einstein.Explanation:- Popularly believed means commonly assumed. People commonly believed that discoveries were made by only genius people like Charles Darwin.What are the writers doing in the second paragraph?A – criticising an opinion. Second full paragraph. There may be some limited truth to this view. However, we believe that it largely misrepresents the real nature of scientific discovery, as well as that of creativity and innovation in many other realms of human endeavor.Explanation:– The writer is criticizing the viewpoint (breakthrough scientific achievements in which idea pop into someone's head) by saying it has limited truth and it misrepresents the real nature of scientific discovery. In the third paragraph, what do the writers suggest about Darwin and Einstein?A – They represent an exception to a general rule. Third paragraph's first to third line. Setting aside such greats as Darwin and Einstein – whose monumental contributions are duly celebrated we suggest that innovation is more a process of trial and error, where two steps forward may sometimes come with one step back, as well as one or more steps to the right or left.Explanation:- Here, the general rule is that innovation involves trial and error, steps backwards and forward, but the writer sets Darwin and Einstein aside from this general rule because their research followed proper procedure and arrangement (duly). John Nicholson is an example of a person whose ideaC – laid the foundations for someone else's breakthrough. Fourth paragraph last three line. Yet, amid his often fanciful theories and wild speculations, Nicholson also proposed a novel theory about the structure of atoms. Niels Bohr, the Nobel prize-winning father of modern atomic theory, jumped off from this interesting idea to conceive his now-famous model of the atom.Explanation:- The theory about the Structure of Atoms was proposed by John Nicholson first. But Neil Bohr got the idea from Nicholson and wrote modern atomic theory. It means the foundation was laid by Nicholson. What is the key point of interest about the 'acey-deucy' stirrup placement?A – the simple reason why it was invented. Sixth paragraph's seventh to ninth line. Had he foreseen the speed advantage that would be conferred by riding acey-deucy? No. He suffered a leg injury, which left him unable to fully bend his left knee. His modification just happened to coincide with enhanced left-hand turning performance.Explanation:- Jackie Westrope placed the left stirrup lower than the right stirrup to support his injury. But it gave an advantage in improving performance in left-hand turning, which was unknown to anyone before. The reason for this invention was a coincidence, which was the injury of Jackie Westrope.Acknowledging people such as Plato or da Vinci as geniuses will help us understand the process by which great minds create new ideas.No – eighth full paragraph. The notions of insight, creativity and genius are often invoked, but they remain vague and of doubtful scientific utility, especially when one considers the diverse and enduring contributions of individuals such as Plato, Leonardo da Vinci, Shakespeare, Beethoven, Galileo, Newton, Kepler, Curie, Pasteur and Edison. These notions merely label rather than explain the evolution of human innovations. We need another approach, and there is a promising candidate.Explanation:- The last two lines of this paragraph clearly explain that the notions of insight, creativity and genius just label the evolution of human innovation but do not explain how they (individuals) did such innovations. So, another method is needed to explain how great minds create new ideas.The Law of Effect was discovered at a time when psychologists were seeking a scientific reason why creativity occurs.Not given – ninth paragraph first two lines. The Law of Effect was advanced by psychologist Edward Thorndike in 1898, some 40 years after Charles Darwin published his groundbreaking work on biological evolution, On the Origin of Species.Explanation:- No relation between the Law of effect and finding reason for why creativity occurs is given.The Law of Effect states that no planning is involved in the behaviour of organisms.Yes – ninth paragraph, third to last line. This simple law (The law of effect) holds that organisms tend to repeat successful behaviors and to refrain from performing unsuccessful ones. Just like Darwin's Law of Natural Selection, the Law of Effect involves an entirely mechanical process of variation and selection, without any end objective in sight.Explanation:- As per the law of effect, organisms repeat successful behavior and avoid unsuccessful ones because they have no objectives (goals). In general, goals need planning and change of behaviour. No goal, no planning.The Law of Effect sets out clear explanations about the sources of new ideas and behaviours.No – tenth paragraph's first three lines. Of course, the origin of human innovation demands much further study. In particular, the provenance of the raw material on which the Law of Effect operates is not as clearly known as that of the genetic mutations on which the Law of Natural Selection operates.Explanation:- Provenance – the place of origin or earliest history of something.To understand the roots of human innovation, it is necessary to conduct more research. Even the origin of the raw material on which the Law of Effect operates is unknown. So, it means this law does not explain the sources of new ideas and behaviours.Many scientists are now turning away from the notion of intelligent design and genius. Not given The traditional view of scientific discovery is that breakthroughs happen when a single great mind has sudden ..... . F – inspiration, first paragraph's last three lines. Conventional wisdom also places great weight on insight in promoting breakthrough scientific achievements, as if ideas spontaneously pop into someone's head – fully formed and functional.Explanation:- spontaneous – performed or occurring as a result of a sudden inner impulse or inclination and without premeditation or external stimulus. You can compare its meaning to inner inspiration.Advances are more likely to be the result of a longer process. In some cases, this process involves ..... , such asD – mistakes, third paragraph's first three lines. Setting aside such greats as Darwin and Einstein– whose monumental contributions are duly celebrated – we suggest that innovation is more a process of trial and error, where two steps forward may sometimes come with one step back, as well as one or more steps to the right or left.Error– MistakeThere is also often an element of ..... , for exampleE – luck, seventh paragraph first line. Plenty of other stories show that fresh advances can arise from error, misadventure, and also pure serendipity – a happy accident.Serendipity:- the occurrence and development of events by chance in a happy or beneficial way = LUCKWith both the Law of Natural Selection and the Law of Effect, there may be no clear ..... involvedB – goals, ninth paragraph's last three lines. Just like Darwin's Law of Natural Selection, the Law of Effect involves an entirely mechanical process of variation and selection, without any end objective in sight.Objective : a goal Transcript Name Date Organizing Life's Diversity Section 2 Modern Classification Main Idea Details Scan the illustrations in Section 2 of the chapter and read the captions. Select one illustration and state why you think it will be important. Illustration: Accept all reasonable responses. Why it will be important: Review Vocabulary evolution New Vocabulary Copyright © Glencoe/McGraw-Hill, a division of The McGraw-Hill Companies, Inc. phylogeny character Use your book or dictionary to define evolution. the historical development of a group of organisms Use your book or dictionary to define each term. The evolutionary history of a species inherited feature that varies among species; can be morphological or biochemical molecular clock a model that uses comparisons of DNA sequences to estimate how long species have been evolving independently cladistics cladogram a method of analysis that reconstructs phylogenies a branching diagram that represents the proposed phylogeny or evolution of a species or group Academic Vocabulary corresponding Define corresponding to show its scientific meaning. being similar or equivalent in character, quantity, origin, structure, or function Organizing Life's Diversity 173 Name Date Section 2 Modern Classification Determining Species I found this information . on page SE, pp. 490–491 RE, pp. 202–204 174 Details Compare the four concepts that biologists have used or are using to classify organisms. Basis of Concept Classification Limitations Typological species concept physical characteristics does not account for variations in species or the fact that species change over time Biological species concept group of organisms that can interbreed and produce fertile offspring in a natural setting does not account for extinct species or species that reproduce asexually Evolutionary species concept groups that evolve independently from their ancestral population unknown evolutionary histories for some species Phylogenetic species concept clusters of organisms that are distinct from other clusters and share a pattern of ancestry unknown evolutionary histories for some species Organizing Life's Diversity Copyright © Glencoe/McGraw-Hill, a division of The McGraw-Hill Companies, Inc. Main Idea (continued) Name Date Section 2 Modern Classification Main Idea Characters I found this information . on page (continued) Details Identify and give examples of the two types of characters in the concept map. Characters: Inherited features that vary among species SE, pp. 492–495 RE, pp. 204–205 Morphological Characters: Similar or analogous structures Copyright © Glencoe/McGraw-Hill, a division of The McGraw-Hill Companies, Inc. Example: hollow spaces in leg bones of oviraptors and birds Phylogenetic Reconstruction I found this information . on page SE, pp. 495–498 RE, pp. 206–207 Biochemical Characters: Similarities in genetic material (DNA and RNA) Example: feathers in oviraptors and birds Example: similar genetic makeup of broccoli, kale, and cauliflower Example: chromosome similarities among chimps, gorillas, and orangutangs Describe cladograms by completing the paragraph. A cladogram is a branching diagram that represents the proposed phylogeny or evolution of a The groups used in cladograms are called develop a cladogram, derived species clades or group. . To characters are identified. Then the ancestry of various species is identified based on the presence or absence of the derived characters in the species groups that recent . In making a cladogram, systematists assume that share more derived characters have a more common ancestor. S UMM ARIZE Describe a process scientists use to construct a cladogram that includes a new species of vascular plant that was recently discovered in the rainforest. Accept all reasonable responses. Scientists would identify derived characters and ancestral characters. They would place the new species close to other species that share the most derived characters. Organizing Life's Diversity 175 You can't perform that action at this time. H Matching Statements to People I Matching Statements to People H Matching