

Prophets, Lovers and Giraffes

Giordano Bruno and the Kabbalah. The Emblems of the Nine Lovers from Eroiçi Furori. Appendix 3: How Giraffes Work. Exercise in Giraffes. Exercise in Giraffes. Observation of giraffes reveal that they can run at very high speeds ($\sim 60 \text{ km h}^{-1}$) for short periods (~ 5 minutes) but can also run at lower speeds (40 km h^{-1}) for much longer periods. This combination of these two types of exercise capabilities is unusual. Their short periods of high speed running have the characteristics of anaerobic exercise. Analysis of the fiber types in their gastrocnemius muscle, and estimates of the available anaerobic energy sources support that conclusion. Longer periods depend on aerobic exercise and requires an adequate supply of oxygen to the lungs, adequate delivery of oxygen to muscles, and sufficient mitochondria to use oxygen. Despite the limitations of giraffe airway and lung anatomy the respiratory system of giraffes can supply sufficient oxygen. The volume of mitochondria in giraffe muscles far exceeds the volume required for maximum aerobic exercise. The cardiovascular system has evolved to generate high blood pressure rather than the circulation of high blood volumes, but if the maximum cardiac output is combined with an increase in the number of circulating erythrocytes, then oxygen delivery to muscles can match oxygen demand. Metabolic demand for oxygen can be reduced by an increase in running economy through storage of metabolic energy as elastic energy in tendons, and it is likely that because leg tendons of giraffes are long ($\sim 2 \text{ m}$) that the requirement for metabolic energy can be reduced by 30–40%.

. How Giraffes Work. The Skeleton of Giraffes. The Skeleton of Giraffes.

The giraffe skeleton consists of ~ 170 bones. The dry mass of the skeleton is 70 g.kg^{-1} body mass. The average chemical composition of their bones is 33% minerals (mainly calcium and phosphorus in a ratio of 2:1), 34% collagen, and 33% water. The skull contributes $\sim 10\%$, the vertebrae $\sim 25\%$ and the limb bones $\sim 65\%$ to skeleton mass. The average density of all bones is 1.6 g cm^{-3} , ranging from 0.8 g cm^{-3} (cervical vertebrae) to 2.0 g cm^{-3} (limb bones). Resistance to fracture by vertebrae

depends on their cross-sectional area, and is greatest in cervical and the first few thoracic vertebrae. Resistance to fracture by limb bones depends on wall thickness (the difference between inner and outer diameter), which is uniquely thick. The growth of all limb bones except the humerus follows a geometric pattern (length and diameter increase at the same rate) which confers resistance to compression stress. The humerus follows an elastic pattern (diameter increases faster than length) a pattern that resists bending stress. Giraffes bones are exceptionally straight which further reduces bending stresses. The torque generated by the mass of the head and neck is resisted by the ligamentum nuchae which is exceptionally well-developed in giraffes, extends from the lumbar vertebrae to the occipital crest, can have a diameter of ~10 cm, and can support loads of ~1.8 tonnes before rupturing. As a giraffe grows muscle cross-sectional area (and contraction strength) declines and the duty factor reduces, both of which reduce the risk of fracture.

. How Giraffes Work. Water Balance in Giraffes. Water Balance in Giraffes.

Wild giraffes live in arid environments. Having access to water and minimizing water requirements are critical. The main sources of water are the water in browse and water generated by metabolism. Giraffes rely less on surface water: intermittent use of surface water is a legendary characteristic of giraffes. The volume of water needed depends on body mass. For a giraffe weighing 750 kg, ~25 L of water is needed daily. The water content of browse is ~60%, and as a giraffe of that mass will eat ~35 kg of fresh browse daily, it simultaneously will acquire ~20 L of water. Metabolism of the fat, carbohydrates, and proteins in 35 kg of fresh browse will produce ~10 L of water. These two sources of water exceed daily requirements and reduce the need to drink surface water. Water is lost through feces, evaporation from the skin and respiratory tract, and in urine. Fecal water loss and water lost in exhaled air amount to ~4 L daily (~2 L each). It is not known if giraffes sweat, but their skin contains active sweat glands. The volume of water lost as sweat will vary according to what thermoregulatory mechanisms are activated to minimize sweating, but may be 5 L daily. Obligatory excretion of water-soluble wastes in urine can account for most water lost daily, and that amount is related to kidney anatomy and function. In a 750-kg giraffe, obligatory urine volume is ~10 L daily.

. How Giraffes Work. The Blood Pressure of Giraffes. The Blood Pressure of Giraffes.

As discussed in this chapter, giraffes have, compared with any other mammal, a very high mean blood pressure of ~250 mmHg. Human blood pressure is ~90 mmHg. Its size is determined by the length of the neck, the height of the head above the heart, by hydrostatic pressure generated by gravity acting on the column of blood in the carotid artery, and contractions of the heart muscles: blood pressure must be high enough to ensure that blood reaches the brain. Uniquely in giraffes blood pressure is regulated by receptors that are located in both the carotid and occipital arteries. Once thought to be ~2.5% of body mass the heart is smaller (~0.5% of body mass) but its muscle walls, especially of the interventricular wall and left ventricle wall, are exceptionally thick (up to 8 cm). The relative cardiac output is the same as in other mammals (~5 L 100 kg⁻¹ of body mass) through a combination of a higher than predicted heart rate (70 b min⁻¹ vs 50 b min⁻¹) and smaller than predicted stroke volume (~0.7 ml kg⁻¹ body mass vs 1.2 ml kg⁻¹). Stroke volume is small because the left ventricle muscle wall is thick. The origin of high blood pressure is the resistance to blood flow, which is about twice what it is in other mammals. The higher resistance results from a combination of the thick muscular walls and narrow lumens of a giraffe's blood vessels and unique mechanisms that regulate blood flow to the brain.

. How Giraffes Work. Antitypes, Ancestors, and the Origin of Modern Giraffes.

Antitypes, Ancestors, and the Origin of Modern Giraffes.

Against the odds, over a period of 8 million years the genetic material in small gazelle-like Canthumerycids transformed by natural selection into modern long-legged, long-necked giraffes, *Giraffa camelopardalis*. How did that happen? The 8 million-year-long evolutionary gap between Canthumerycids and giraffes, during which the astonishing morphophysiological changes occurred, is filled by three ancestral species of Paleotragine giraffids—*Giraffokeryx*, *Paleotragus*, and *Samotherium*—that lived in southern central Europe, with each making small but significant evolutionary contributions. While all had elongated necks, their necks were never more than half the length of modern giraffes. All, though, had long legs. Long necks arose in *Bohlinia*, a unique species that evolved from the Paleotragine genetic pool. *Bohlinia* migrated to Asia and gave rise to Indian and Chinese giraffes, and also into North Africa. Relatively quickly the Indo-Asian giraffes became extinct. In Africa the giraffe lineage that produced modern giraffes began with the evolution

of *Giraffa jumae* from Bohlinia about 6 million years ago. *G. jumae* was the origin of three ancestors of modern giraffes—*G. stillei*, *G. gracilis*, and *G. pygmaea*—that made their appearance in East Africa around 3 million years ago. Their appearance then was a consequence of major episodes of climate change. From their genetic pool, modern giraffes, *G. camelopardalis*, emerged 1 million years ago.

. How Giraffes Work. How Giraffes Work.

There are few creatures more beautiful, more aloof, and more fascinating than giraffes. Once they were plentiful and filled African landscapes, but in 2016 they were re-classified from “least concern” to “vulnerable” by the International Union for Conservation of Nature. Their survival in the wild is not assured. Much has been written about their private lives, about their behavior, social biology, and ecology, and their history in art and diplomacy. But so far no book has been written about their private lives, their physiology, and their anatomy and biochemistry—in short, the normal functions of a free-living animal in its natural environment—and it is these aspects of their lives that are the focus of this book. The study of a single species could be concise and relatively simply told. In reality it is not. A species never evolves in isolation from the general biological milieu in which it finds itself. Tectonics, astronomical physics, climate, and purely biological factors affecting food and water resources all shape the path of their evolution and all interact with its morphology, its internal physiological and biochemical systems, and the behavior patterns that regulate its daily life. Giraffes are no exception, as is revealed as the story told here unfolds. How do giraffes work? The answers lie in a story filled not only with the internal workings of a unique creature, but with geography, climate changes of great magnitude, and the labors of extraordinary people who put many pieces of the puzzle together.

. African American Review. African American Review. "Firewater, that Lovers Pour for Prophets": Three African American Poets. How Giraffes Work. Respiration. Respiration.

This chapter discusses the respiratory system of giraffes. The respiratory system supplies oxygen, removes of carbon dioxide and produces the airflow needed to make sounds. Giraffes do not have the velocity of airflow through the airways to vibrate vocal cords sufficiently to generate sounds able to be heard by humans but can produce sounds able to be heard by giraffes. Air reaches alveoli for gas

exchange through a long trachea, which is relatively narrow (~4 cm in diameter). Dead space volume is large. A short trunk and rigid chest wall reduce the capacity of the thorax and consequently lung volume is small. Respiratory rate is low (~10 min⁻¹), but tidal volume is relatively big, and alveolar ventilation rate (V_A ; ~60 L min⁻¹) delivers sufficient air despite the large dead space volume. Laryngeal muscles act to prevent food from entering the trachea a process controlled by the (short) superior and (long) inferior (recurrent) laryngeal nerves. Air that has been delivered to alveoli comes into contact with pulmonary artery blood (=cardiac output, Q ; ~40 L min⁻¹). The V_A : Q ratio is ~1.5 (cf 0.8 in humans). Gas exchange occurs by diffusion. The surface area for diffusion is related to the number of alveoli which increase in number during growth from ~1 billion in a newborn giraffe to 11 billion in an adult. Gas carriage of oxygen and carbon dioxide is a function of erythrocytes which are small (MCV = 12 fL) but numerous (12×10^{12} L⁻¹) and each liter of blood contains ~150 g of hemoglobin.

. How Giraffes Work. Notes on Allometry and Prediction of Body Mass and Age of Giraffes. Notes on Allometry and Prediction of Body Mass and Age of Giraffes. Quantification of how biological structures change during growth is essential for understanding how giraffes work. Allometry is the best arithmetical tool for analyzing changes that occur during growth. It measures how well the rate of change in one structure is associated with the rate of change in another in the species of interest. If the association is close, then allometry can be used, as in this chapter, to predict the age of a giraffe (from, say, its height) or its body mass (from its length and girth), with great accuracy. The best predictions are made if the data used to make predictions are derived from the particular species, and this type is referred to as ontogenetic allometry. A second type—interspecific allometry—uses data collected from other species to make predictions about the species of interest (like giraffes). Predictions using this second method are less accurate but are useful for establishing anatomical, physiological, and biochemical differences between the species of interest and all other comparable species.

. Mammals of Africa : Pigs, Hippopotamuses, Chevrotain, Giraffes, Deer and Bovids. Order Cetartiodactyla – Pigs, Hippopotamuses, Chevrotain, Giraffes, Deer, Bovids. How Giraffes Work. The Antecedents. The Antecedents.

Giraffes are ruminant artiodactyls and their evolutionary origin can be traced back to the origin of the first artiodactyls about 55 million years ago. Their link to the first artiodactyls depended on the discovery and study of giraffe fossils. The first of those were uncovered in India and, later, in North Africa, the latter bringing recognition that the evolution of modern giraffes had occurred in Africa. The study of fossils was supplemented by simultaneous biological and biochemical studies of giraffes. The combination has allowed the creation of lineage of antecedents starting with a Dichobunid that lived in the Eocene era 55 million years ago, through Hypertragulids and Leptomerycids of the Eocene, to the Gelocids of the Oligocene and early Miocene. The Gelocids can be regarded as the key ancestral family of all ruminant artiodactyls. From Gelocids arose the sister group of giraffes, the Climacoceratids, and also the Canthumerycids from which giraffes evolved.

. How Giraffes Work. Some Firsts. Some Firsts.

Although the public lives and history of giraffes have been well recorded in many books, the story of giraffes told in this book would be incomplete without a brief review of how giraffes first entered into the consciousness of those humans who did not live in Africa. They did so via art and literature. The first appearance of giraffes in literature is probably in the Old Testament, but after that, many other authors wrote of them, in particular Pliny the Elder. Their appearance in art begins with rock paintings in southern and northern Africa, and artwork in Egypt over the period 6000 to 3000 BC. More modern images began appearing ~AD 500 in the first texts that dealt with the natural world. Julius Caesar brought the first living giraffe to Europe, followed by Lorenzo de Medici in the thirteenth century. By the late seventeenth century they had disappeared from public view in Europe except as a stellar constellation.

. How Giraffes Work. The World of Browsers. The World of Browsers.

This chapter discusses the metabolism of giraffes. Giraffes obtain their energy and all the other nutrients needed to support their metabolism by browsing on leaves, fruits, and flowers of trees and shrubs. Wherever they live in Africa giraffes select browse from very few species but principally they browse plants of the Acacia clade. Typically their diet will contain ~15% protein, ~5% fat, ~30% fiber, and minerals, especially calcium and phosphorus, and will provide ~8500 kJ of energy per kilogram of dry matter eaten. Acquisition of browse is facilitated by the elongated shape of

their heads, the anatomy of their atlanto-occipital joint, a long neck supported by a unique suspensory ligament, a long and flexible tongue, and high visual and olfactory acuity. The preferred height at which giraffes browse (~3 m) is higher than the height achievable by other browsers, is an advantage conferred by their shape, and is usual explanation for the evolution of their shape. Browse preferred by giraffes is protected from over-browsing by thorns, ants, and unpalatable plant secondary metabolites, especially tannins. Giraffes tolerate tannins partly by secretion of saliva rich in proline that binds tannins. Tannins are metabolized by a combination of a gene-based ability and a liver larger than it is in grazer-ruminants. Thorns are avoided but thick layers of keratin in the mouth and tongue provide protection. Browse containing ants also is avoided, but giraffes have well-developed anatomical protection for their faces especially their eyes and nostrils.

. How Giraffes Work. The Scientific Age. The Scientific Age.

Scientific study of giraffes depended on the scientists of Europe being able to study specimens. The first of those specimens was sent to Europe not long after the establishment of a settlement at the Cape of Good Hope in South Africa in 1652. Obtaining the specimens was difficult because the nearest giraffes were to be found along the Gariiep (Orange) River on the northern border of South Africa with Namibia, about 1,000 km from the Cape, across arid and inhospitable terrain. The first specimens were collected by Robert Jacob Gordon and William Paterson and were sent to Holland and England, respectively. Their arrival attracted zoologists and others to southern Africa, and further specimens became available for study. In the early 1800s establishment of zoos in Europe meant that living giraffes could be studied, and the first of these were taken to France and England. Among the prominent scientists who studied giraffes were Etienne Geoffroy St.-Hilaire in Paris and Richard Owen in London. Their studies established the scientific basis for the study of giraffes.

. How Giraffes Work. Reproduction and the Fetus. Reproduction and the Fetus.

The reproductive organs of male and female giraffes are similar to those of all other artiodactyls. Giraffes have 14 pairs of autosomes and a pair of sex chromosomes. A constant testis temperature depends on countercurrent heat exchange between a large pampiniform venous plexus and the testicular artery. The onset of puberty in males and females occurs at ~3 years of age and is marked by enlargement of

testes and the onset of oestrous cycles. Oestrus cycles are ~15 days long. Courtship, conception, and pregnancy are delayed until ~5 years of age. The giraffe placenta is polycotyledonous and epitheliochorial. Pregnancy is sustained by progesterone secreted by a single corpus luteum, the placenta and fetal ovaries and testes. Gestation lasts ~450 days and is ended by hormones secreted by the hypothalamic-pituitary axis of a mature fetus. Birth takes ~30 minutes. Daily milk yield ranges between 2.5 L and 10 L. Protein, fat, and lactose are higher than in cow's milk. Weaning occurs at ~6 months of age. The average calving interval is ~20 months but varies according to the degree of lactational stress itself partly determined by whether a calf survives. Female giraffes have ~8 calves of which ~3 will reach adulthood. Survival of giraffes as a species depends on fewer adults dying each year than the number of calves reaching adulthood.

. How Giraffes Work. Keeping Cool. Keeping Cool.

Measurement of giraffe body temperature has shown that it is ~38.5°C but it can vary by ~5°C over the course of a day. Body heat is derived from fermentation of browse, other metabolic processes and radiant heat. Heat loss mechanisms partly depend on body surface area. Despite their unusual shape the body surface area of giraffes is similar to that in other equivalent body mass mammals: a shorter trunk is offset by a longer neck and legs. Heat loss by radiation is constant, by conduction rare and minimal. Their long, slender legs and neck are an advantage for convective and evaporative heat loss from the skin: heat transfer is inversely proportional to the square root of diameter. Evaporation from the respiratory system occurs through the nasal mucosa, the surface area of which in giraffes is large. Cooling of the nasal mucosa and blood follows and cool blood drains in to the jugular vein and contributes to whole body cooling and cooling of the blood supplying the brain by heat exchange in the carotid rete. Similar heat exchange may occur across the surface of the ossicones. Behavior changes when ambient temperature exceeds skin temperature. Giraffes re-orientate their bodies to minimize radiant heat gain and seek shade. A unique arrangement of blood vessels supplying blood to skin patches allows patches to act as thermal windows through which heat can be lost an arrangement enhanced by evaporation: sweat gland density in the skin of patches is greater than it is elsewhere.

. How Giraffes Work. Edema, Fainting, and Strokes. Edema, Fainting, and Strokes.

High blood pressure in humans is often associated with heart failure, edema, strokes, and episodes of fainting. Giraffes never show these. Edema, the abnormal collection of fluid in the lower legs, is prevented in giraffes by a combination of thick basement membranes of capillary blood vessels, which probably reduce their permeability to proteins, a very high tissue pressure that resists flow of fluid out of capillaries, and efficient mechanisms for returning blood to the heart. Fainting occurs when blood flow (and thus oxygen and glucose supply) to the brain is reduced. When a giraffe lifts its head after drinking water there is a sudden reduction of blood flow to the head, and fainting should result. Fainting is avoided because the blood flow that remains is diverted completely to the brain by a unique arrangement of blood vessels and nerves, and by structures that maintain the perfusion pressure of the blood flowing through the brain. Strokes can be caused by rupture of small blood vessels in the brain when they are exposed to high blood pressure of the kind reached in the head of a giraffe when it drinks surface water. Rupture of brain blood vessels is prevented in giraffes by mechanisms that reduce pressure. The posture adopted while drinking, baroreceptor-mediated reduction in cardiac output, the effects of the carotid rete, diversion of blood away from the brain, an increase in cerebrospinal fluid pressure, and passive and active constriction of blood vessels, all contribute.

. How Giraffes Work. The Machinery of Digestion. The Machinery of Digestion.

This chapter discusses the machinery of digestion in giraffes. The shape of the mouth of giraffes, the shape and number of their teeth, the shape and size of their tongue and the arrangement of the muscles of eating are unique and have evolved to be perfectly suited to the task of browsing. Comminution of browse is eased by large volumes of saliva secreted from salivary glands that relative to body mass are small. The digestive tract of giraffes consists of a rumen, reticulum, and omasum in addition to the usual stomach and intestines found in any mammal. The forestomachs are smaller and the small and large intestines are longer than those of grazer-ruminants. The quality, succulence and consistency of browse reduces the need for prolonged rumination. Movement of browse through the rumen-reticulum is fast, and it is likely that a mixture of plant cell contents and saliva, can bypass the rumen via an esophageal groove, and be deposited directly into the stomach. 40% of daily energy (mainly in the form of volatile fatty acids) is provided by microbial

fermentation of browse in the rumen, and 60% derives from intestinal digestion mainly of glucose), rather than the reverse as found in grazer-ruminants. Significant fermentation of undigested fiber (mainly hemicellulose) occurs in the large intestine. The combination of digestive processes results in very efficient use of the nutrients and an apparent digestibility of ~85%, which is high. To provide the browse needed to meet daily energy demand giraffes need a home range of ~60 km².

. How Giraffes Work. A Shape to Die for?. A Shape to Die for?.

The product of natural selection over at least 15 million years is the elongated, slender shape of giraffes that fits the natural habitat giraffes now occupy. What selection pressures operated to produce their shape? Their shape is partly the product of gravity and could have been an accidental by-product of selection for a large body mass and the protection from predation that large size brings, but the prevailing explanation is that their shape confers a browsing advantage. Preferred browse is concentrated at a height easily reached by giraffes but not by other browsers and natural selection would have favored those giraffes that could reach it. An alternative hypothesis is that their shape confers thermoregulatory benefits in addition to improved vigilance. Another hypothesis is that a long neck evolved to counter long legs allowing giraffes to drink surface water. An attractive hypothesis is that their shape is a product of 'runaway' sexual selection by females for males with long heavy necks, but analysis of this hypothesis has shown that the morphology of male and female giraffe does not differ. Nevertheless, all these possibilities could have contributed. A consequence of selection for their shape is over-specialization: giraffes seem to be inextricably dependent on a narrow diet, a diet that is subject to the vagaries of climate and competition for resources. The greatest threat to their survival is, therefore, their shape.

anatomy of an epidemic by robert whitaker auto mechanic rate guide dissection of the sheep brain lab 29 answers ar test question and answers ict student workbook

ANATOMY OF AN EPIDEMIC BY ROBERT WHITAKER

What is anatomy of an epidemic about? A main stated purpose of the book is to challenge the reader to think about the biological base of mental illness and to come to conclusions about the author's assertion that there is a hidden epidemic that has been caused by rather than successfully treated through biological agents, eg, psychotropic medications and ...

What are the three elements of an epidemic?

What is the definition of epidemic in anatomy? Epidemic: The occurrence of more cases of a disease than would be expected in a community or region during a given time period. A sudden severe outbreak of a disease such as SARS. From the Greek "epi-", "upon" + "demos", "people or population" = "epidemos" = "upon the population." See also: Endemic; Pandemic.

AUTO MECHANIC RATE GUIDE

How to calculate mechanic labor? Just take your hourly rate, multiply it by how long you expect the job to take and add the cost of parts. However, there's more to the quote calculation process than that implies. You'll need to: Predict the materials needed – While you're pricing an auto repair job, add a markup for any materials you're likely to use.

How much do most mechanics charge per hour? According to recent labor statistics, the average hourly rate for mechanic work in the US is between \$75 and \$130 per hour. However, if you're looking for an exact number, it's unfortunately not that simple. Let's check out the factors influencing a mechanics' hourly labor rate.

What is a labor time guide? Labor time guides provide critical information before the repair so you can easily assign repair orders with efficiency and productivity in mind. In addition, mechanic labor time guides provide the following benefits: Cultivate trust and reputation among customers. Generate accurate estimates and invoices.

What is a flat rate manual? Flat rate manual is a listing of almost every job that can be done on a vehicle with the time required for a mechanic to do the work. It is used in service shops to determine labor charges. If a mechanic completes the job before the flat rate time, the customer is still charged the flat rate time.

How to calculate labor costs? The pay rate multiplied by the time spent working on the project yields the direct labor cost, or $\text{Direct Labor Cost} = \text{Pay Rate} * \text{Project Time}$.

How do you charge labor?

What do garages charge per hour? The average garage mechanic hourly rate is around £50 – £80 per hour – depending on where you live in the country.

What is a mechanic's hourly rate in Australia? Find out what the average Mechanic salary is The average mechanic salary in Australia is \$79,294 per year or \$40.66 per hour.

How much do most mechanics make an hour?

How do I calculate labor hours? The direct labor hours are the number of direct labor hours needed to produce one unit of a product. The figure is obtained by dividing the total number of finished products by the total number of direct labor hours needed to produce them.

What is normal labor guidelines? A commonly used standard is > 20 hours in nulliparous patients or > 14 hours in multiparous patients, although some studies have reported shorter and longer durations (3). The active phase is defined by accelerated cervical dilation. Regular contractions continue until the cervix becomes fully dilated.

What is the rule for labor timing? When you're in true labor, your contractions last about 30 to 70 seconds and come about 5 to 10 minutes apart. They're so strong that you can't walk or talk during them. They get stronger and closer together over time.

What is standard flat rate? standard shipping. Flat rate service is attractive to many shippers since it essentially eliminates the need to weigh packages in order to

calculate shipping costs. As long as your package weighs under 70 pounds and is being sent to any state within the US, it can ship with USPS Priority Flat Rate service.

What are manual rates? A manual rate is one that applies uniformly to each exposure unit falling in some predetermined class or group, such as people of the same age, workers of one employer, drivers meeting certain characteristics, or all residences in a given area.

How many hours is flat rate? A flat rate is tied to a particular job. For example, Job X will take a good tech two hours to complete. If the tech finishes the job in one hour, they still get paid for two hours. The opposite is true, too: if the job takes four hours, the tech is still paid for two hours.

How do you calculate mechanic productivity? How can you calculate mechanic efficiency? The easiest way to understand mechanic efficiency is by looking at the total number of hours worked by your technician, dividing this number by their actual hours. Multiply this figure by 100 and you have a percentage showing how efficient your technician performance is!

What is the formula for total labor cost? ? Total annual labor cost = gross wage + other annual costs The total labor cost can be calculated after you've gathered all the expenditures your company has made on behalf of an employee, such as healthcare, taxes, etc. Let's take our previous example of Robert.

How do you calculate factory labor?

How to calculate parts to labor ratio? Your parts sales divided by your labor sales gives you the parts-to-labor ratio.

DISSECTION OF THE SHEEP BRAIN LAB 29

ANSWERS

How to dissect a sheep brain step by step?

What meninges was the sheep brain dissected in the lab was covered with?

The tough outer covering of the sheep brain is the dura mater, one of three meninges (membranes) that cover the brain. You will need to remove the dura mater to see most of the structures of the brain.

How do the sizes of the olfactory bulbs of the sheep brain compare with those of the human brain?

In sheep, the brain's olfactory bulb is two or three times the size of the human olfactory bulb. It provides the sheep with a strong sense of smell which is key for survival. A mother can use her sense of smell to find her baby in a flock. A baby can smell its way back to its mother if it gets lost.

What can you learn from dissecting a sheep brain?

Dissecting a sheep brain, students gain appreciation for the complexity of the brain. Students make observations, learning about the structure and function of brain regions, white and gray matter.

How to do brain surgery step by step?

How do you dispose of a sheep brain dissection?

Therefore, in most cases, they can be disposed of as regular waste destined for a landfill or incinerator. Specimens should be double-bagged and sealed before being placed in the trash. Extra holding fluids are not considered hazardous wastes and can usually be discarded down the drain into the sanitary sewer system.

How many cranial nerves does a sheep brain have?

Sheep Cranial Nerves. Ventral view of a sheep brain. Cranial nerves are marked with red pics and numerical labels. The myelencephalon, located between the pons and the spinal cord, gives rise to seven of the twelve cranial nerves (VI through XIII).

What is the outer layer of the sheep brain called?

The sheep brain is enclosed in a tough outer covering called the dura mater.

What do the pons do in the sheep brain?

Pons in the sheep's brain is next to the medulla. It connects the medulla and the upper brainstem and relays messages between the cerebrum and cerebellum.

How is the shape of a sheep brain different from a human? 4. The human brain is rounded, whereas the sheep's brain is elongated in shape because sheep are four-legged animals. 5. The human brain has a larger frontal lobe than the sheep's brain.

What is the difference between grey and white matter in a sheep's brain? Neurons account for the two types of tissue that can be distinguished: white matter and grey matter. The appearance of white matter is due to the myelin sheath found on the axons of some neurons. In contrast, cell bodies have no myelin sheath and as a result they look grey in color.

What is the principal structure of the sheep brain? Sheep cerebral cortices contain four lobes defined by external landmarks, similar to those of humans (15). Furthermore, the sub-cortical structures in particular, the dorsal striatum, are in two separate sections; caudate nucleus and putamen in sheep, similar to humans (14, 16).

What is sheep brain dissection? Sheep or pig brain dissections are conducted to explore the structure and function of the different parts of the brain. Sheep or pig brains are similar in their composition but have a simpler structure than a human brain.

What are the meninges of the sheep brain? The tough outer covering of the sheep brain is the dura mater, one of three meninges (membranes) that cover the brain. You will need to remove the dura mater to see most of the structures of the brain. Remove the dura mater while leaving other structures intact.

What part of the sheep's brain controls the heart rate? The medulla is located right under the cerebellum. In this the nerves cross over so the left hemisphere controls the right side of the body and vice versa. This area of the brain controls the vital functions like heartbeat and respiration (breathing).

How to get the brain out of a sheep? Levering the head open If the cranium has been cracked sufficiently, the whole head can be levered open and the brain and pituitary gland exposed. A boning knife (or scissors) is used to cut the nerve roots and dura mater as the brain is exposed and removed (Figure 8). The brain can be

removed whole and intact.

How to remove dura mater from sheep brain? To take the dura mater off, locate the ROSTRAL end of your sheep brain. Using your thumb and index finger, peel the dura mater back towards the CAUDAL side. You might have to use the scissors to snip part of the dura mater at the ROSTRAL end. Remove the dura mater.

How many lobes does a sheep brain have? Sheep cerebral cortices contain four lobes defined by external landmarks, similar to those of humans (15). Furthermore, the sub-cortical structures in particular, the dorsal striatum, are in two separate sections; caudate nucleus and putamen in sheep, similar to humans (14, 16).

What is the brain structure of a sheep? The sheep brain is remarkably similar to the human brain. One major difference, however, is in proportion. For example, the sheep brain has a proportionately smaller cerebrum. Another difference is in orientation of the spinal cord.

AR TEST QUESTION AND ANSWERS

How to see AR quiz answers? Even when the option is off for students, teachers can see a student's individual quiz answers when they select Review/Rescore for a quiz in the AR Record Book. This preference applies only to quizzes taken in the current school year. Students cannot review questions for quizzes they took in past school years.

How do I retake my AR test? Always with monitor password means the student will see a "Retake Quiz" link for any complete quiz, and if they select the link, the teacher may enter the monitor password to allow the student to retake the quiz.

How many questions are on AR tests? AR quizzes are multiple choice and vary between 5 and 20 questions in length. AR quizzes are assigned a Book Level which is based somewhat on the difficulty of the vocabulary used in the book.

Can you take an AR test at home? AR tests are now available to be taken at home during school hours. Please have students take AR tests independently at home, without help from others.

How do I find answers to anything? Having a question that you don't know the answer to can be frustrating. Luckily, you can use a variety of different tools to solve your inquiry. Depending on the question, you can use a search engine, conduct extensive research, or contact a professional. Before long, you'll be that much closer to finding the answer.

How do you see Quizizz answers? You can do so on the Assessment page (or Quiz page)! Go into your library and select the Assessment/Quiz you want to see. On the Assessment/Quiz Details page, click on the 'Show answers' button to see answers. Options with a green dot imply the correct answer.

What percent do you need to pass an AR test? The higher passing percentage ensures that the student has read and comprehended the complete version of the book. Ultimately, finding a range of reading levels at which the student scores 85 percent correct or above on Accelerated Reader quizzes will provide optimal growth.

Can kids retake AR tests? There are no AR QUIZ RETAKES or deleting quizzes! AR is a one-time assessment of reading comprehension. AR Home Connect is a wonderful opportunity for parents to help monitor their child's AR progress.

How long is the AR test? This is given three times yearly to determine independent readability level. As questions are answered correctly the level of difficulty is increased. If the child misses a questions the level of difficulty is reduced. This is a multiple choice test and takes approximately 15 minutes.

How to prepare for AR tests?

What is a passing score for an AR test? Students can also earn points when they take the quiz for each book. They have to get a score of at least 80 to pass. But if they score higher than 60 percent, they get a fraction of the total points they could earn from it.

Can I take an AR test on my book? After you finish reading a myON book that has an AR quiz, on the book rating page, select the Take AR Quiz button. If you read a book outside of myON, you can still take the AR quiz (if one is available). Find the book in myON and select it. Then, in the book information window, select Take AR Quiz.

Do AR tests have a time limit? The test takes approximately 16 minutes to complete. Each questions has a set time limit. A clock will appear at the top of the screen when the time is almost up. If absolutely necessary, you may read the practice questions and possible answers to a student to help get 3 correct responses.

What does AR test stand for? Many K-12 schools encourage students to read Accelerated Reader (AR) books. Many books published for children and teens have been assigned an interest level (IL), an ATOS Book Level (BL) a Lexile measure, and accelerated reader points (AR pts).

Where do I find AR quizzes? From the Accelerated Reader Bookguide Home page, under Title and List Management, click Book/Quiz Search.

What are 10 good questions?

Where can I get test answers?

Which website gives answers to questions?

Does Quizizz detect cheating? You will be notified if students continue to switch tabs while attempting the Assessment/Quiz. Focus Mode is designed to prevent students from cheating by looking up answers from other tabs on their devices.

Is QuizBot free? Here's the scoop: Quizbot lets you create up to 50 questions for free.

Does Quizizz show the correct answers? If you select Validate only, your students will get feedback on whether or not they got a question correct, but they will not be shown the correct answer if they answered incorrectly. If you select ON, students get to see whether they got the question correct/incorrect, along with the correct answer.

How do I check my Google quiz answers?

How can I check my child's AR points? You can see the points that a student has earned on some reports (such as the Summary Diagnostic Report and the Student Performance Record Report), in the Student Details in the Record Book, and in the Record Book's Goals tab (if you are using the goal models for grades 3 and up).

What is the app that answers quizzes? With Quizard, you can quickly and easily get help with multiple-choice questions and short answer problems. You can quickly and easily prepare for quizzes, tests, and exams, allowing you to confidently ace them.

What does AR quiz stand for? Many K-12 schools encourage students to read Accelerated Reader (AR) books. Many books published for children and teens have been assigned an interest level (IL), an ATOS Book Level (BL) a Lexile measure, and accelerated reader points (AR pts).

ICT STUDENT WORKBOOK

What is a workbook in ICT? A workbook is a spreadsheet program file that you create in Excel. A workbook contains one or more worksheets. A worksheet (also known as a spreadsheet) consists of cells in which you can enter and calculate data. The cells are organized into columns and rows. A worksheet is always stored in a workbook.

What is ICT as a student? ICT students gain knowledge and skills needed to effectively apply, use and manage technology when solving problems specifically related to information and communication. Classes provide a human and organizational focus on technology—teaching students how to be effective users of technology.

What does ICT stand for in textbooks? Such activities include gathering, processing, storing and presenting data. Increasingly these activities also involve collaboration and communication. Hence IT has become ICT: information and communication technology.

What is the difference between a workbook and a student book? The biggest difference between a book and a workbook is that a book serves the “who” and “what,” while a workbook serves the “how to.” A book is an opportunity for authors to introduce themselves and their ideas, and to create an emotional connection with readers.

What is a student workbook? Student workbook is an education material including components that support learning, help ensuring knowledge and ability to students in line with the acquisitions stated in teaching programs. Students have different learning styles and necessities.

What is a workbook example? Typically, a workbook has a single theme and contains worksheets with related data. For example, an annual budget workbook may comprise four worksheets that break down the budget in quarters. You can create a workbook from scratch or import an existing document.

What is an ICT example? Examples are: software applications and operating systems; web-based information and applications such as distance learning; telephones and other telecommunications products; video equipment and multimedia products that may be distributed on videotapes, CDs, DVDs, email, or the World Wide Web; office products such as ...

What does ICT stand for in school? Information and Communications Technology (ICT) can impact student learning when teachers are digitally literate and understand how to integrate it into curriculum.

What is ICT skills for students? ICT skills are abilities that help you understand and operate a wide range of technology software. This can include helping users with tasks on computers, such as making video calls, searching on the internet or using a mobile device like a tablet or phone.

What is ICT in simple words? Definition. Information and communication technologies (ICT) is defined as a diverse set of technological tools and resources used to transmit, store, create, share or exchange information.

What is ICT on education? ICT is a term meaning "Information and Communication Technology. In other words, ICT education refers to educational methods that incorporate information and communication technology.

What does ICT classroom stand for in education? What is ICT? An Integrated Co-Teaching (ICT) class has students with and without Individualized Education Programs (IEPs) learning together. There are two teachers in an ICT class, one general education or content area teacher and one special education teacher.

What is the difference between workbook and worksheet in ICT? A Worksheet is basically a single-page spreadsheet containing information. A workbook is a file that contains multiple spreadsheets. A worksheet contains a matrix of rectangular cells, organized in a form of rows and columns. A workbook contains one or more worksheets, consisting of related information.

Why is it called a workbook? In worksheets, you can enter and manipulate data. The cells in an Excel worksheet can contain text, numbers, dates, or formulas. In Excel, a workbook refers to a document containing one or more worksheets. This is called a workbook because it is a group of worksheets that may be treated as the pages of a book.

Is a workbook a textbook? A textbook is a book that is used in a classroom setting to teach students about a particular subject in a more formal way with background information. A workbook is a book that contains exercises and activities for students to do in order to practice and learn the material.

What is workbook as used in ICT? A workbook is a file format commonly used in spreadsheet applications, such as Microsoft Excel. It serves as a container for organizing and managing multiple related worksheets, which are individual sheets used for data entry, calculations, and analysis.

What is the main purpose of a workbook? Workbooks are used for solving extra problems and concepts which students have already studied from textbook. Workbooks are often used in schools for younger students, either in middle school or elementary school.

Do workbooks help students learn? In fact, one of the best ways to sharpen your child's skills is through the right workbooks. Workbooks have a proven track record of elevating concepts first introduced in class, which in turn boost skills in other areas, like overall reading comprehension.

What is the meaning of workbook for students? noun. work·?book -?bu?k. : a book of problems or practice examples for a student to use as part of a course of study.

What should be included in a workbook? To keep someone engaged, make your workbook easy to read and enjoyable. Chunk your information into bite-sized pieces. Include different types of images such as photos, cartoons, illustrations, graphs and charts, and screenshots. Consider printing costs and don't overdo your guide with too much colour.

How does workbook work? A workbook is a file that contains one or more worksheets to help you organize data. You can create a new workbook from a blank workbook or a template.

What is a workbook in a computer? A workbook is a file that contains one or more worksheets to help you organize data. You can create a new workbook from a blank workbook or a template. Play.

How can you define workbook?

What is the purpose of a workbook? Workbooks are used for solving extra problems and concepts which students have already studied from textbook. Workbooks are often used in schools for younger students, either in middle school or elementary school.

What is the difference between a worksheet and a workbook? In Microsoft Excel, a worksheet is a single spreadsheet. A workbook is a collection of two or more spreadsheets. The workbook can also be referred to as a file.