Q32.

a) Mammary glands.

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b) Homo sapien has a larger cerebral cortex and cranial capasity than the Australipithicus afarensis Homo sapiens also have a pronounced chin, smaller jaw and unspecialised den a flatter face unspecialised dentim. Australipithicus aferensis had no pronounced chin, a more projecting face, and a large jaw.

b) i) Information would be gathered via books, Internet, Encyclopedias, CD-Roms and a variety of sources. The Radiometric data would consist of Flurine dating, Carbond dating and other forms. Flurone dating → measure the amount of Flowrine in the bones, which is gathered by how long the bone is burried for. Carbon dating uses the isotope C-14. which is compared to C-12 as when organism dies C-14 production ceases. it compare C-14 to C-12 to determine the age of the fossil. The material gathered would be sourced and carefully referenced.

c) The variations among different races of people living throughout the world is demonstrative of the way that humans have adapted to their various environments. Humans are phenotypically different and have a variety of features which are polymorphic. An example of this is skin colour.

Humans living in Africa, South East Asia, etc have skin that contains a large amount of melanin & is therefore dark in colour. This is ~~significant~~ significant in terms of evolution as it is a characteristic that suits these individuals to their

environment, an environment which has a high UV light exposure. and therefore protects the tissue underneath of the outer layer of tissue from the damaging effects that the sun would have on the skin of say, a Scandanavian individual.

Likewise, people with very fair skin are well adapted to their environment, e.g. fair skinned people living in Scandinavian parts of Europe etc., have fair skin to allow the production of Vitamin D to occur. Unlike the dark skinned individuals of places like Africa, they do not require large amounts of UV protection.

Polymorphism in humans supports the theories of clinal gradation, which states that humans evolved from Homo erectus to Homo sapiens & then developed into the various 'races' as a result of adaption to their environment.

d) In performing this analysis of similarities and differences between prosimians, monkeys, apes and humans, information was gathered about the primates be skeletal structure, brain capacity, where which regions in the world they originated and culture (eg. communication, living arrangements, tools, clothes, eating habits, etc.)

It was found that all primates have opposable thumbs. This allows them to grasp objects tighter and also allows for easier movement and manipulation of objects, eg. tools, sticks, the swinging in trees, grasp doorhandles, etc.

Huge differences were found in the skeletal structure of primates. Humans have s-shaped spines, bowl-shaped pelvises and arched feet to allow for their bipedal, upright gait. The features ensure the weight of the body is placed directly over the feet giving balance. The arched feet makes standing for long periods of time not painful. On the other hand,

primates ~~brave~~ such as monkeys and apes have C-curved spines. They also have flat feet and a long narrow pelvis. ✱ This makes ~~to~~ standing upright for long periods uncomfortable, and painful, and as a result, these primates spend most of their time on 'all fours'.

In conclusion, it was found that primates basic structures are alike. Evolution ~~has~~ has made changes to certain parts of structures. ~~and~~ Cultures of primates vary, eg. humans are more advanced in communication, technology, look after young for longer. Cranial capacity has also developed over time.
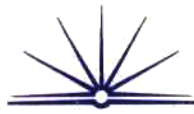
e) The next 100 years of biological evolution will be affected by technology. Technology in scientific fields, especially genetics and in medicine.

~~The use of scientific develo~~

The development of scientific understanding and technology, especially, in technology is impacting upon world now. Programs such as IVF, ~~and~~ the 'freezing' of eggs and sperm and artificial insemination all affect the gene pool, as do methods of contraception. These ~~are~~ methods go against the theory of natural selection and survival of the fittest, therefore changing the diversity of the genes.

Cloning and the development of transgenic ~~plant~~ species also affect genetic diversity. Cloning reduces diversity as clones are exact replicas of another organism a animal. Transgenic species includes the hybridisation of species that otherwise would not have bred, changing the genetic

01/WB8

makeup of species.

Medical advances such as antibooh antibiotics and the use of drugs such as insulin, further life ends increase lifespans. Diabetes is a disease that is easily controlled these day by the use of insulin. This has changed biological evolution, as in the past, diabetes sufferers would have died and the disease would have become obsolete. Sufferers now life long and prosperous lives without to much interference into daily life.

As medications continue to be developed people with diseases and illnesses that would once have caused death are living normal, full lives. The introduction of medications and prolonging these lives has changed the genes pool and genetic diversity

The use of medicine and genetic technology has changed the makeup of the genetic pool. and changed genetic diversity.

01/WB8

· These factors will affect human biological evolution in the future.