

Animal Survival *Checklist*

Reproduction (* = Credit outcomes)

1. **Sperm** are the **gametes** or sex cells produced by males. They have a **head** containing the **nucleus with genetic material** and a **tail for locomotion** (allowing it to swim towards the egg).
2. **Eggs** or ova are the gametes produced by females. They are **much larger** than sperm because the cytoplasm usually contains a **large food store**. They also have a nucleus with genetic material.
3. **Fertilisation** is the **fusion** or joining together of the nucleus of the egg with the nucleus of the sperm.
4. **Fish** mainly have **external fertilisation** where the sperm are shed into the water close to the eggs.
5. **Mammals** have **internal fertilisation** where the sperm are placed inside the female's body.
- 6.* Land-living animals must have internal fertilisation since there is **no water** to allow the sperm to swim to the egg.
7. Human females have a **womb** or uterus where the baby develops; two **ovaries** which produce and release eggs in a monthly cycle; a **vagina** through which the sperm pass; and **oviducts** or fallopian tubes connecting the ovaries to the womb and **where fertilisation occurs**.
8. Human males have two **testes** which produce sperm cells; **sperm tubes** to carry sperm from each testis; a **urethra** which is the common exit through the penis for sperm and urine; and a **penis** to deposit the sperm inside the female's vagina.
9. In fish the eggs have a **flexible covering** which allows **oxygen to diffuse** from the water. They contain a **yolk sac** to provide **food for the developing embryo** which hatches out in a state where it has to **fend for itself**.
10. In humans the egg is fertilised in the oviduct when one sperm cell penetrates the cell membrane. A **fertilisation membrane** immediately forms to prevent other sperm cells from entering. When the nuclei fuse a **zygote** is formed. The zygote divides many times as it travels down the oviduct towards the womb. The ball of cells now called an **embryo** sinks into the wall of the womb and continues development.

11. The embryo develops inside a **fluid-filled** sac called the **amniotic sac** which cushions the embryo from knocks. An **umbilical cord** joins the embryo to the wall of the womb from where the embryo **receives food from the mother's circulation** and gets rid of its' waste.

- 12.* Some of the embryo's cells and some of the mother's cells form a joint organ called the **placenta**.
This allows the mother's blood and embryo's blood to come **very close without touching**.
Glucose and **oxygen** pass over the placenta by **diffusion** and through the umbilical cord to the embryo and waste such as **urea** and **carbon dioxide** pass from the embryo to the mother in the opposite direction. Harmful substances such as **alcohol**, **nicotine** and **other drugs** can also pass to the embryo.

13. There is a great degree of **parental care** in mammals and fewer eggs are produced and fertilised as a result. Parental care is low in fish so large numbers of eggs are released and fertilised.