

Subject: Biology

Topic: Reproduction in Humans

Subtopic: Ovulation

Level: S.5

Background information:

This is the third lesson in a 6-lesson plan. Students have learnt the names of the main parts that make up the male and female reproductive systems.

Learning objective:

1. Content

Activity 1

Concept to be explained: Human gametes, development of secondary sexual characteristics.

2. Language

Rationale:

Activity 1 consists of 5 tasks.

Tasks 1 to 3 focus on the sub-topic "Human gametes". Task 1 involves reading. As they read, students are expected to transfer the information from the text and from the diagrams into another a table. The purpose of this table is to assist the main ideas in the text. After identifying the main ideas, the students are required to use this information to write a short paragraph in their own words in Task 2. a writing framework is provided to support students as they write. In Task 3, as students read their written responses in English to their partners they will listen for mistakes in each other written expression . Reading aloud the writings to partners provides students with an opportunity to speak in English. Marking others' works helps students find out the writing mistakes they usually make.

Tasks 4 and 5 focus on another sub-topic "Secondary sexual characteristics". As in Task 1, students are required to read and transfer information from an information text to table in task 4. Drawing on previous experience writing a paragraph to compare and contrast information in Task 2, students are asked to write a similar paragraph but on a different topic with less language support than was given previously.

S.5 Biology
Reproduction in Humans
Ovulation
Worksheet 1

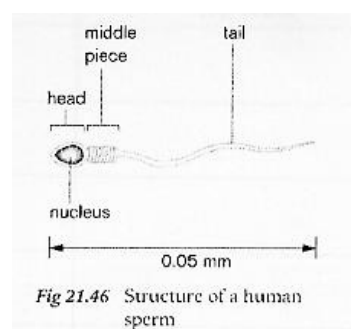
Name: _____ No: _____ Class: _____ Date: _____

Activity 1

State the similarities and differences between a human sperm and a human ovum.

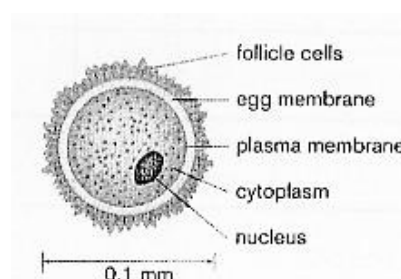
Sperm

- very small, about 0.05 mm
- looks like a tadpole
- consists of a head, a middle section and a tail
- The head make up of a nucleus which contains the **haploid** number of chromosomes.
- The middle section contains many **mitochondria** which supply energy.
- The tail assists the sperm to swim.



Ovum

- much larger than sperm, about 0.1 mm
- spherical-shaped with the nucleus situated towards the centre
- surrounded by a protective membrane outside the cell membrane
- cannot move by themselves
- contains food reserves which supplies food for the early development of the embryo



(The above texts and diagrams are included in the students' textbooks and it is not necessary for this information to be included in the worksheets.)

Task 1



Work in pairs. Study the diagrams and the texts shown in P. 141 of your textbook. Then complete the following table to compare and contrast the main similarities and differences between a sperm and an ovum

	A sperm	An ovum
Size		
Shape		
Amount of mitochondria		
Amount of food reserves		
Mobility		
External protection		
Location of nucleus		
Number of chromosomes		

Activity 2

Complete the writing framework provided below, write a short paragraph which states **TWO** similarities and **TWO** differences between a human sperm and an ovum.

Sperm and ova are reproductive cells in human. *Both of them* _____.

Besides, _____.

However, there are some differences between the two. A sperm _____ *while an ovum* _____.

They also differ in that a sperm _____ *whereas an ovum* _____.

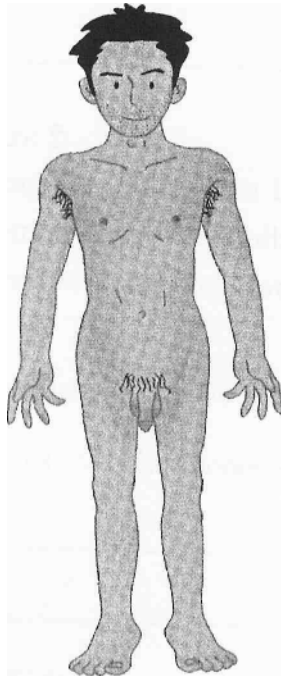
Activity 3

Read your text aloud to your partners. Then check your partners text.

Compare and contrast the secondary sexual characteristics of a man and a woman

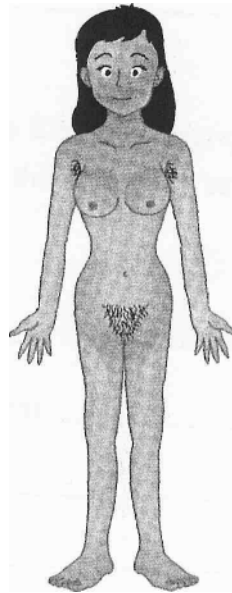
Activity 4

Work in pairs. Study the diagrams shown on P.142 of your textbook. Then complete the following table to summarize the male and female secondary sexual characteristics. Two examples have already done for you.



Boys at puberty

- 1 The penis and **testes** grow larger.
- 2 Hair grows on the face, armpits and around the penis (genital area)
- 3 The larynx enlarges and the voice deepens.
- 4 The shoulder broadens, the body becomes more muscular.



Girls at puberty

- 1 The hips broaden giving the characteristic figure of the female body.
- 2 Hair grows on the armpits and around the genital area.
- 3 The breasts develop.
- 4 More **fat** (at deposits on the body beneath the skin.

*Fig 21,48 The secondary sexual characteristics which appear at puberty
(The above diagrams are shown in the students' textbooks and it is not necessary to provide them in the worksheets.)*

Differences and similarities between the male and female
secondary sexual characteristics

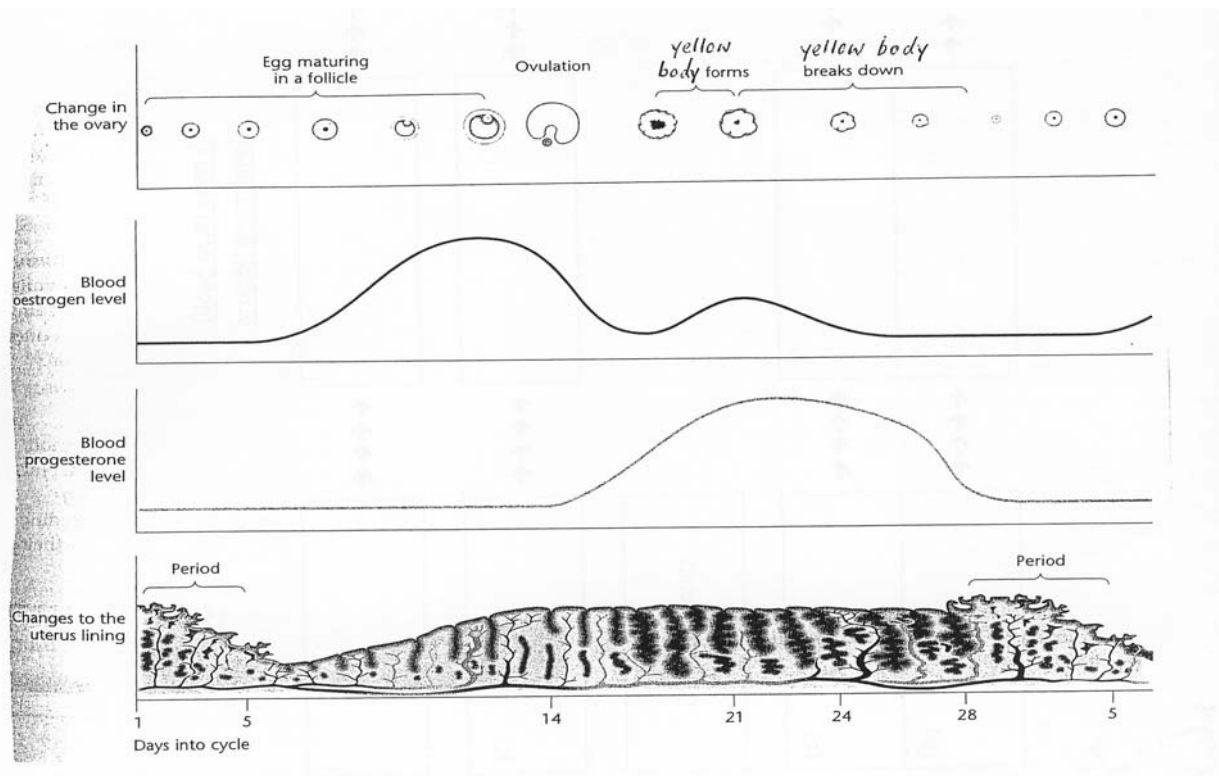
	Man	Woman
Larynx	enlarges	
Armpits		Hair grows on armpits

Task 5

Using the information in the above table, write a short paragraph to *compare and contrast* (state the similarities and differences) between male and female secondary sexual characteristics.

In humans the development of secondary sexual characteristics is stimulated by various sex hormones. Both men and women

However, _____



Period	Ovary		Blood oestrogen/ Progesterone level		Uterine lining
Day 1 to 5		→→→→		→→→→	
Day 5 to 14		→→→→		→→→→	
Day 14	Ovulation occurs				
Day 14-28		→→→→		→→→→	
		→→→→		→→→→	

Task 2



With the aid of the chart in Task 1, write a short essay to describe the processes that make up the menstrual cycle. In each paragraph, you should show the relationships between the changes in ovary, blood hormone levels and the uterine lining.

The following sentence patterns help to show the "cause and effect" relationship:

... due to ... /Due to ..., ... This in turn makes ... and therefore...

From day 1 to day 5, menstruation occurs *due to* _____
_____.

The unfertilized egg and the unused uterine lining _____
_____.

At the same time, _____.

From day 5 to day 14, _____

_____.

On day 14 _____
_____.

From day 14 to day 28, _____

_____.

Later, _____

_____.

Sample writing

From day 1 to day 5, menstruation occurs due to low levels of oestrogen and progesterone in the blood. The unfertilized egg and the unused uterine lining are discharged through the vagina. At the same time, the follicle in the ovary starts to develop.

From day 5 to day 14, the follicle continues to develop and matures. Due to the release of oestrogen by the follicle, oestrogen levels in the blood increases. This in turn makes the uterine lining start to add thicken.

On day 14, **ovulation** occurs. The mature ovum is released from the ovary into the oviduct. From day 14 to day 28, the follicle cells remained in the ovary develop to form the yellow body. Due to the release of progesterone by the yellow body, the progesterone level in the blood increases. This in turn makes the uterine lining thickened. Later, the yellow body degenerates and therefore the progesterone level decreases. Due to the low levels of both oestrogen and progesterone, the uterine lining breaks down and is discharged with the unfertilized ovum through the vagina. The menstrual cycle repeats.