

PHYSIOLOGY

Fertilization, Pregnancy, Labor
Study Guide

Name: _____

Block: _____

FERTILIZATION

Males release _____ of ejaculate.

Average sperm/ml = _____

Sterility = _____

Why is it necessary for males to produce so many sperm?

- 1.
- 2.
- 3.
- 4.
- 5.

Describe ovulation.

Ova have _____ chromosomes.

Sperm have _____ chromosomes.

The single cell that results from fertilization is called a _____, and has _____ chromosomes.

Explain how the ova moves into and down the uterine tube to the site of fertilization.

Sperm swim through the uterus and uterine tubes by:

- 1.
- 2.

Sperm reach the uterine tubes after approximately _____ minutes.

Why do so many sperm reach the egg when only one can enter?

Why must only one sperm enter the egg?

What does the egg do to ensure that only one sperm will enter?

What happens to the rest of the sperm?

Describe what happens to the nuclei of both the sperm and the egg when a sperm enters.

Males have ___ and ___ chromosomes.

Females have ___ and ___ chromosomes.

Describe what happens to the zygote as it travels towards the uterus.

- 1.
- 2.
- 3.
- 4.

An embryo of 16 cells is called a _____, and reaches the uterus in approximately _____ days.

Describe a blastocyst –

A blastocyst has _____ layers

1.

2.

What happens to the blastocyst when it enters the uterus?

Name the two layers of the blastocyst and tell what they become.

1.

2.

IMPLANTATION

Hormones of pregnancy:

Hcg –

FSH –

LH –

Progesterone –

Estrogen –

Relaxin –

Aldosterone –

Parathyroid hormone –

Lactogen –

FETAL DEVELOPMENTAL STAGES

Embryonic period –

3 layers of the inner cell mass:

1.

2.

3.

4.

Membranes of the trophoblast:

1.

2.

3.

4.

5.

6.

7.

8.

9.

Fetal period –

LABOR AND DELIVERY

Birth should occur _____ from conception
_____ from the last period

Calculate the due date of a woman who started her last period on January 13

Hormones of labor and delivery:

Progesterone –

Prostaglandins –

Oxytocin –

Describe a positive feed back system that controls labor and delivery.

1.

2.

3.

4.

5.

DELIVERY

1.

2.

3.

Time**Changes/accomplishments**

8 weeks
(end of embryonic
period)



Head nearly as large as body; all major brain regions present
Liver disproportionately large and begins to form blood cells
Limbs present; though initially webbed, fingers and toes are free by the end of this interval
Bone formation begun
Heart has been pumping blood since the fourth week

8 weeks

All body systems present in at least rudimentary form
Approximate crown-to-rump length: 30 mm (3 cm; 1.2 inches); weight: 1 gram (0.03 ounces)

9–12 weeks
(third month)



Head still dominant, but body elongating; brain continues to enlarge
Facial features present in crude form

12 weeks

Walls of hollow visceral organs gaining smooth muscle
Blood cell formation begins in bone marrow
Bone formation accelerating
Sex readily detected from the genitals

13–16 weeks
(fourth month)



Approximate crown-to-rump length at end of interval: 90 mm (9 cm)
General sensory organs are present; eyes and ears assume characteristic position and shape; blinking of eyes and sucking motions of lips occur
Face looks human and body beginning to outgrow head
Kidneys attain typical structure

16 weeks

Most bones are distinct and joint cavities apparent
Approximate crown-to-rump length at end of interval: 140 mm (14 cm)

17–20 weeks
(fifth month)

Vernix caseosa (fatty secretions of sebaceous glands) covers body; silklike hair (lanugo) covers skin
Fetal position (body flexed anteriorly) assumed because of space restrictions
Limbs achieve near-final proportions

Quickening occurs (mother feels spontaneous muscular activity of fetus)
Approximate crown-to-rump length at end of interval: 190 mm (19 cm)

21–30 weeks
(sixth and
seventh
months)

Substantial increase in weight (may survive if born prematurely at 27–28 weeks, but hypothalamus still too immature to regulate body temperature, and surfactant production by the lungs is still inadequate)

Myelination of spinal cord begins; eyes are open
Skin is wrinkled and red; fingernails and toenails are present
Body is lean and well proportioned

At birth



30–40 weeks (term)
(eighth and
ninth months)

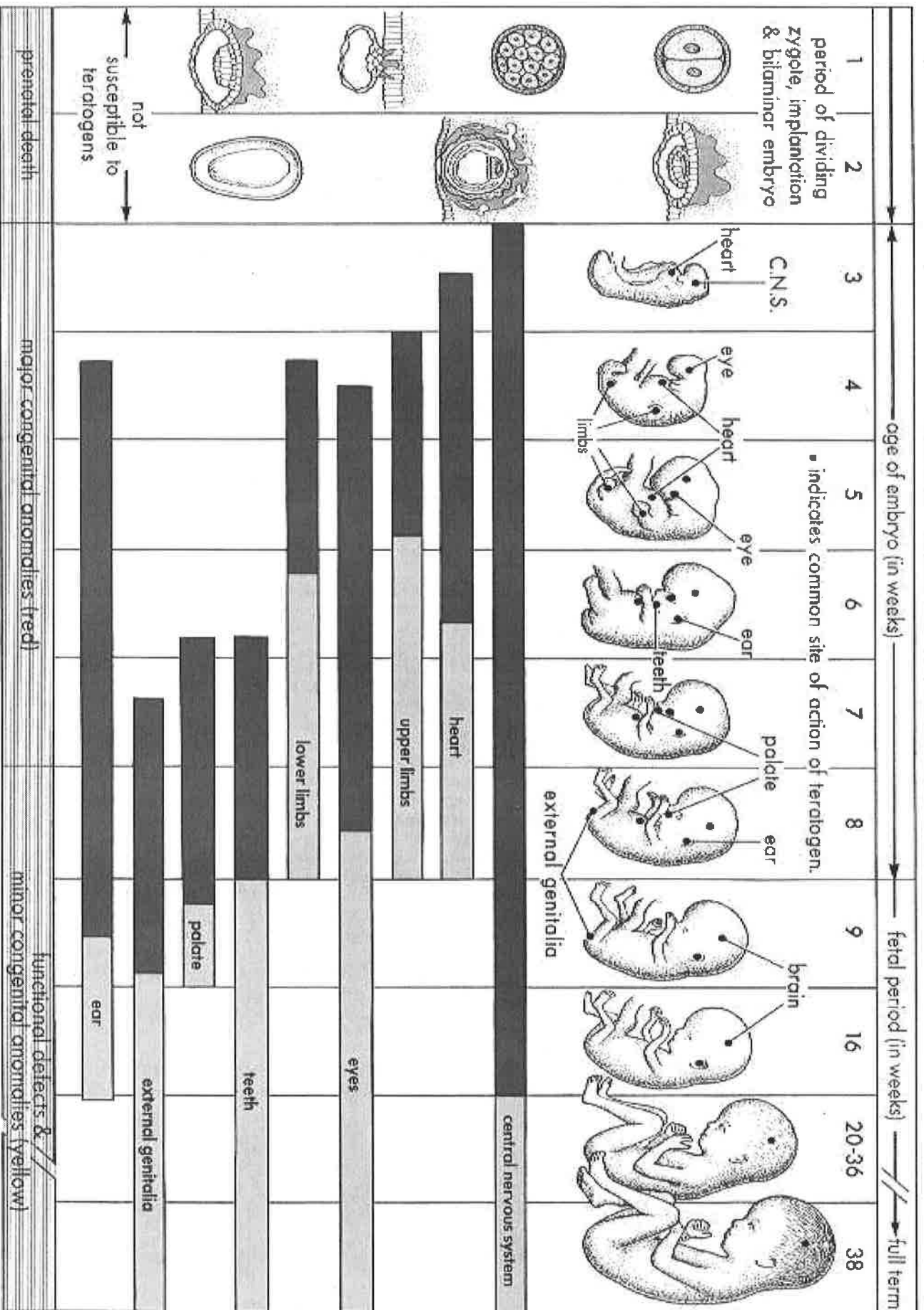
Bone marrow becomes sole site of blood cell formation
Testes enter scrotum in seventh month (in males)
Approximate crown-to-rump length at end of interval: 280 mm (28 cm)
Skin whitish pink; fat laid down in subcutaneous tissue
Approximate crown-to-rump length at end of interval: 350–400 mm (35–40 cm; 14–16 inches); weight: 2.7–4.1 kg (6–10 pounds)

Fetal Growth and Development During Pregnancy

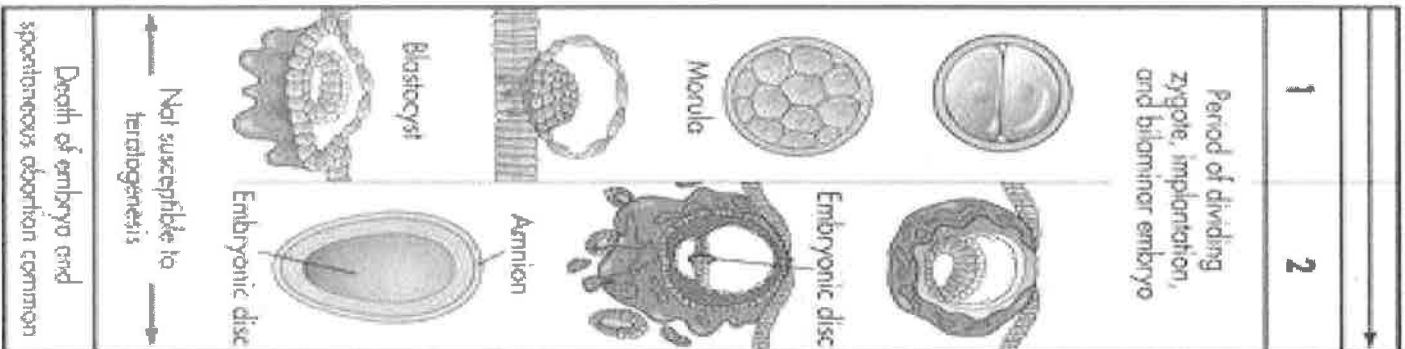


9	12	16	20	24	28	32	36	40
50mm CR length	90mm CR length	140mm CR length	190mm CR length	230mm CR length	270mm CR length	300mm CR length	340mm CR length	380mm CR length

CRITICAL PERIODS IN HUMAN DEVELOPMENT*



* Red indicates highly sensitive periods when teratogens may induce major anomalies.



Main Embryonic Period (in weeks)										Fetal Period (in weeks)	
3	4	5	6	7	8	9	16	32	38		
Neural tube defects (NTDs)											
TA, ASD, and VSD			Mental retardation			CNS					
Heart			Upper limb			Lower limb			Upper lip		
Anelia/Meromelia			Lower limb			Upper lip			Ears		
Anelia/Meromelia			Lower limb			Upper lip			Ears		
Cleft lip			Upper lip			Ears			Eyes		
Low-set malformed ears and deafness			Ears			Eyes			Teeth		
Microphthalmia, cataracts, glaucoma			Eyes			Teeth			External genitalia		
Enamel hypoplasia and staining			Teeth			External genitalia			External genitalia		
Cleft palate			Palate			External genitalia			External genitalia		
Masculinization of female genitalia			External genitalia			External genitalia			External genitalia		
<ul style="list-style-type: none"> Common site(s) of action of teratogens Less sensitive period Highly sensitive period 											
TA—Truncus arteriosus; ASD—Atrial septal defect; VSD—Ventricular septal defect											
Major congenital anomalies										Functional defects and minor anomalies	