










# Prenatal Development Timeline

- |   |  |  |   |
|---|--|--|---|
| <span style="color: blue;">■</span> Nervous           | <span style="color: red;">■</span> Cardiovascular      | <span style="color: maroon;">■</span> Muscular         | <span style="color: teal;">■</span> Early Events      |
| <span style="color: yellow;">■</span> Special Senses  | <span style="color: orange;">■</span> Respiratory      | <span style="color: grey;">■</span> Skeletal           | <span style="color: gold;">■</span> Growth Parameters |
| <span style="color: magenta;">■</span> Blood & Immune | <span style="color: purple;">■</span> Gastrointestinal | <span style="color: cyan;">■</span> Endocrine          | <span style="color: white;">■</span> General          |
| <span style="color: pink;">■</span> Skin/Integument   | <span style="color: green;">■</span> Renal/Urinary     | <span style="color: lightgreen;">■</span> Reproductive | <span style="color: limegreen;">■</span> Movement     |

## Unit 1: The First Week

<b>Day 0</b>  $\frac{1}{2}$ $\frac{1}{2}$	<span style="color: teal;">■</span> Embryonic period begins
	<span style="color: teal;">■</span> Fertilization resulting in zygote formation
<b>Day 1</b>  $\frac{1}{2}$ $\frac{1}{2}$	<span style="color: teal;">■</span> Embryo is spherically shaped and called a morula comprised of 12 to 16 blastomeres
<b>Day 2</b>  $\frac{1}{2}$ $\frac{1}{2}$	<span style="color: cyan;">■</span> Early pregnancy factor (EPF)
	<span style="color: teal;">■</span> Activation of the genome <span style="color: teal;">■</span> Blastomeres begin rapidly dividing
<b>Day 3</b>  $\frac{1}{2}$ $\frac{1}{2}$	<span style="color: teal;">■</span> Compaction
<b>Day 4</b>  $\frac{1}{2}$ $\frac{1}{2}$	<span style="color: teal;">■</span> Embryonic disc  <span style="color: teal;">■</span> Hypoblast & epiblast <span style="color: teal;">■</span> Inner cell mass <span style="color: teal;">■</span> See where the back and chest will be
<b>Day 5</b>  $\frac{1}{2}$ $\frac{1}{2}$	<span style="color: teal;">■</span> Hatching blastocyst
<b>Day 6</b>  $\frac{1}{2}$ $\frac{1}{2}$	<span style="color: teal;">■</span> Embryo attaches to wall of uterus  <span style="color: teal;">■</span> Solid syncytiotrophoblast & cytotrophoblast
<b>1 week</b>  $\frac{1}{2}$ $\frac{1}{2}$	<span style="color: teal;">■</span> Chorion  <span style="color: teal;">■</span> Chorionic cavity <span style="color: teal;">■</span> Extra-embryonic mesoderm (or mesoblast) <span style="color: teal;">■</span> Placenta begins to form

## Unit 2: 1 to 2 Weeks

<b>1 week, 1 day</b>  $\frac{1}{2}$ $\frac{1}{2}$	<span style="color: teal;">■</span> Amnioblasts present; amnion and amniotic cavity formation begins  <span style="color: teal;">■</span> Bilaminar embryonic disc <span style="color: teal;">■</span> Positive pregnancy test
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<b>1 week, 2 days</b> $\frac{1}{2}$ $\frac{1}{2}$	<ul style="list-style-type: none"> <li>Corpus luteum of pregnancy</li> <li>Cells in womb engorged with nutrients</li> <li>Exocoelomic membrane</li> <li>Isolated trophoblastic lacunae</li> <li>Embryonic disc 0.1 mm diameter</li> </ul>
<b>1 week, 4 days</b> $\frac{1}{2}$ $\frac{1}{2}$	<ul style="list-style-type: none"> <li>Intercommunicating lacunae network</li> <li>Longitudinal axis</li> <li>Prechordal plate</li> <li>Trophoblastic vascular circle</li> </ul>
<b>1 week, 5 days</b> $\frac{1}{2}$ $\frac{1}{2}$	<ul style="list-style-type: none"> <li>Implantation complete</li> <li>Embryonic disc diameter: 0.15 to 0.20 mm</li> </ul>
<b>1 week, 6 days</b> $\frac{1}{2}$ $\frac{1}{2}$	<ul style="list-style-type: none"> <li>Blood islands in umbilical vesicle</li> <li>Angiogenesis in chorionic mesoblast</li> <li>Blood vessels in villi</li> <li>Connecting stalk</li> <li>Primordial blood vessels</li> <li>Amnion with single cell layer</li> <li>Chorionic villi</li> </ul>
<b>2 weeks</b> $\frac{1}{2}$ $\frac{1}{2}$	<ul style="list-style-type: none"> <li>Embryonic epiblast gives rise to primitive streak and primitive node and</li> <li>Yolk sac</li> <li>Yolk sac</li> </ul>
<b>Unit 3: 2 to 3 Weeks</b>	
<b>2 weeks, 1 day</b> $\frac{1}{2}$ $\frac{1}{2}$	<ul style="list-style-type: none"> <li>3 germ layers</li> <li>Cloacal membrane</li> <li>Primitive groove</li> <li>Rostral-caudal orientation</li> </ul>
<b>2 weeks, 2 days</b> $\frac{1}{2}$ $\frac{1}{2}$	<ul style="list-style-type: none"> <li>Erythroblasts in yolk sac</li> <li>Three types of blood-forming cells in yolk sac</li> <li>Primordial germ cells</li> <li>Allantoic diverticulum</li> <li>Allantoic diverticulum</li> <li>Amnion with two cell layers</li> <li>Notochordal process</li> <li>Secondary villi</li> </ul>

<b>2 weeks, 4 days</b> $\frac{1}{2}$ $\frac{1}{2}$	<ul style="list-style-type: none"> <li>Foregut, midgut, and hindgut</li> </ul>
	<ul style="list-style-type: none"> <li>Uteroplacental circulation well established</li> </ul>
	<ul style="list-style-type: none"> <li>Prechordal plate with 1 retinal field</li> </ul>
	<ul style="list-style-type: none"> <li>Brain is first organ to appear</li> </ul>
	<ul style="list-style-type: none"> <li>Caudal eminence</li> </ul>
	<ul style="list-style-type: none"> <li>Neural ectoderm</li> </ul>
	<ul style="list-style-type: none"> <li>Neural groove and neural folds</li> </ul>
	<ul style="list-style-type: none"> <li>Notochordal and neurenteric canals</li> </ul>
	<ul style="list-style-type: none"> <li>Notochordal plate</li> </ul>
	<ul style="list-style-type: none"> <li>Connecting stalk</li> </ul>
	<ul style="list-style-type: none"> <li>Primitive pit (or notochordal pit)</li> </ul>
<b>2 weeks, 5 days</b> $\frac{1}{2}$ $\frac{1}{2}$	<ul style="list-style-type: none"> <li>Prechordal plate with 2 retinal fields</li> </ul>
<b>2 weeks, 6 days</b> $\frac{1}{2}$ $\frac{1}{2}$	<ul style="list-style-type: none"> <li>Numerous blood islands in umbilical vesicle</li> </ul>
	<ul style="list-style-type: none"> <li>Septum transversum (primitive diaphragm)</li> </ul>
	<ul style="list-style-type: none"> <li>Foregut</li> </ul>
	<ul style="list-style-type: none"> <li>Oropharyngeal membrane</li> </ul>
	<ul style="list-style-type: none"> <li>Pharyngeal pouch 1</li> </ul>
	<ul style="list-style-type: none"> <li>Stomodeum forming</li> </ul>
	<ul style="list-style-type: none"> <li>Blood vessels emerge simultaneously in umbilical vesicle, embryo proper, amnion, and connecting stalk</li> </ul>
	<ul style="list-style-type: none"> <li>Common umbilical artery</li> </ul>
	<ul style="list-style-type: none"> <li>Dorsal aortae (paired)</li> </ul>
	<ul style="list-style-type: none"> <li>First pair of aortic arches</li> </ul>
	<ul style="list-style-type: none"> <li>Heart: Cardiogenic plate, cardiac jelly, myocardial mantle, and endocardial plexus</li> </ul>
	<ul style="list-style-type: none"> <li>Left ventricle, right ventricle, conotruncus</li> </ul>
	<ul style="list-style-type: none"> <li>Paired pericardial cavities</li> </ul>
	<ul style="list-style-type: none"> <li>Paired tubular heart</li> </ul>
	<ul style="list-style-type: none"> <li>Hindbrain with four rhombomeres</li> </ul>
	<ul style="list-style-type: none"> <li>Isthmus rhombencephali demarcates midbrain and hindbrain</li> </ul>
	<ul style="list-style-type: none"> <li>Mesencephalon (or midbrain)</li> </ul>
	<ul style="list-style-type: none"> <li>Neural cord within caudal eminence</li> </ul>
	<ul style="list-style-type: none"> <li>Neural groove deepens substantially</li> </ul>
	<ul style="list-style-type: none"> <li>Primary neuromeres</li> </ul>
	<ul style="list-style-type: none"> <li>Three main divisions of brain</li> </ul>
	<ul style="list-style-type: none"> <li>Cephalic and caudal folds</li> </ul>
	<ul style="list-style-type: none"> <li>Neural crest: Rostral and facial</li> </ul>
	<ul style="list-style-type: none"> <li>Primitive streak reaches neurenteric canal</li> </ul>
	<ul style="list-style-type: none"> <li>Somites with central somitocoels: Pairs 1 through 3</li> </ul>

**Unit 4: 3 to 4 Weeks**

**3 weeks, 1 day**  
 $\frac{1}{2}$ / $\frac{1}{2}$

Thyroid primordium emerges from floor of pharynx

- Nephrogenic cord emerges (at 10 somites)
- Cloaca
- Common coelomic cavity divides into peritoneal, pericardial, and pleural cavities
- Liver: Hepatic plate (endoderm)
- Midgut emerging
- Pharyngeal arches 1 and 2
- Pharyngeal cleft 1
- Second pharyngeal cleft and pouch
- Pharyngeal groove and ridge with laryngotracheal sulcus
- Respiratory outgrowth
- Atria (right and left) far apart
- Bulbis cordis
- Endocardial tubes fuse forming tubular heart
- Heart begins beating
- Pericardial sac
- Pericardium
- Primary head vein
- Sinus venosus
- Tubular heart begins folding
- Umbilical arteries
- Umbilical veins (right and left)
- Optic primordia fill neuromere D2
- Otic pits
- Chiasmatic plate
- Mesencephalic flexure
- Neural tube
- Neuromeres D1 and D2 (in diencephalon)
- Optic sulcus in forebrain
- Pontine region identifiable near cranial nerves VII and VIII
- Segment D in rhombencephalon
- Some secondary neuromeres
- Superior colliculus
- Telencephalon
- Telencephalon (or telencephalic) medium
- Body cavities
- Hyoid arch
- Mandibular arch and maxillary process
- Neural crest: Trigeminal, facioacoustic, glossopharyngeal-vagal, and occipitospinal

	<ul style="list-style-type: none"> <li>Somites: Pairs 4 through 12</li> </ul>
<p><b>3 weeks, 3 days</b> <math>\frac{1}{2}</math> <math>\frac{1}{2}</math></p>	<ul style="list-style-type: none"> <li>Primordial germ cells begin moving from umbilical vesicle to hindgut</li> </ul>
	<ul style="list-style-type: none"> <li>Face: Maxillary and mandibular processes (bilaterally)</li> </ul>
	<ul style="list-style-type: none"> <li>Cloacal membrane</li> </ul>
	<ul style="list-style-type: none"> <li>Mesonephric duct emerges from nephrogenic cord</li> </ul>
	<ul style="list-style-type: none"> <li>Nephric vesicles</li> </ul>
	<ul style="list-style-type: none"> <li>Cystic primordium</li> </ul>
	<ul style="list-style-type: none"> <li>Hepatic diverticulum</li> </ul>
	<ul style="list-style-type: none"> <li>Liver</li> </ul>
	<ul style="list-style-type: none"> <li>Membrane between future mouth and throat may begin to rupture</li> </ul>
	<ul style="list-style-type: none"> <li>Angiogenesis along surface of central nervous system</li> </ul>
	<ul style="list-style-type: none"> <li>Aortic sac</li> </ul>
	<ul style="list-style-type: none"> <li>Atrioventricular canal</li> </ul>
	<ul style="list-style-type: none"> <li>Capillary plexus begins forming around brain and spinal cord</li> </ul>
	<ul style="list-style-type: none"> <li>Conotruncus</li> </ul>
	<ul style="list-style-type: none"> <li>Conus cordis emerging from right ventricle</li> </ul>
	<ul style="list-style-type: none"> <li>Endocardium</li> </ul>
	<ul style="list-style-type: none"> <li>Heart contractions produce peristaltic blood flow</li> </ul>
	<ul style="list-style-type: none"> <li>Internal carotid arteries</li> </ul>
	<ul style="list-style-type: none"> <li>Interventricular septum</li> </ul>
	<ul style="list-style-type: none"> <li>Primordium of myocardium</li> </ul>
	<ul style="list-style-type: none"> <li>Sinus venosus separating from left atria</li> </ul>
	<ul style="list-style-type: none"> <li>Trabeculated outpouches along primary cardiac tube representing primordia of left and right ventricles</li> </ul>
	<ul style="list-style-type: none"> <li>Trigeminal and otic arteries</li> </ul>
	<ul style="list-style-type: none"> <li>Facio-vestibulocochlear ganglia (CN VII, CN VIII)</li> </ul>
	<ul style="list-style-type: none"> <li>Glossopharyngeal and vagal ganglia</li> </ul>
	<ul style="list-style-type: none"> <li>Optic evagination (starting at 14 somites)</li> </ul>
	<ul style="list-style-type: none"> <li>Otic vesicle</li> </ul>
	<ul style="list-style-type: none"> <li>Trigeminal ganglia (CN V)</li> </ul>
	<ul style="list-style-type: none"> <li>Neural crest: Optic crest emerges during Carnegie Stages 11 and 12</li> </ul>
	<ul style="list-style-type: none"> <li>Nose: Nasal plate</li> </ul>
	<ul style="list-style-type: none"> <li>Optic vesicles form (17 to 19 somites)</li> </ul>
	<ul style="list-style-type: none"> <li>Adenohypophysial pouch</li> </ul>
	<ul style="list-style-type: none"> <li>Adenohypophysis</li> </ul>
	<ul style="list-style-type: none"> <li>Lamina terminalis</li> </ul>
	<ul style="list-style-type: none"> <li>Mesencephalon contains tectum and tegmentum</li> </ul>
	<ul style="list-style-type: none"> <li>Neural crest production and migration continue</li> </ul>
	<ul style="list-style-type: none"> <li>Neurohypophysial primordia</li> </ul>
	<ul style="list-style-type: none"> <li>Neuropore (near brain) closes</li> <li>Notochord</li> </ul>

	<ul style="list-style-type: none"> <li>Segmentation of mesoblast alongside neural tube bilaterally</li> </ul>
	<ul style="list-style-type: none"> <li>Somites: Pairs 13 through 20</li> </ul>
<b>3 weeks, 3 days - 5 weeks, 6 1/2 days</b>	<ul style="list-style-type: none"> <li>All eight rhombomeres (Rh 1 through Rh 7, Rh D) - Present in stages 11 through 17</li> </ul>
<b>3 weeks, 5 days 1/2</b>	<ul style="list-style-type: none"> <li>Telopharyngeal bodies</li> </ul>
	<ul style="list-style-type: none"> <li>Alimentary epithelium invades stroma of liver</li> </ul>
	<ul style="list-style-type: none"> <li>Alimentary epithelium proliferates in primordia of stomach, liver, and dorsal pancreas</li> </ul>
	<ul style="list-style-type: none"> <li>First part of pancreas</li> </ul>
	<ul style="list-style-type: none"> <li>Gastric portion of foregut elongates (25 to 28 somites)</li> </ul>
	<ul style="list-style-type: none"> <li>Hepatic primordium with abundant vascular plexus</li> </ul>
	<ul style="list-style-type: none"> <li>Omental bursa</li> </ul>
	<ul style="list-style-type: none"> <li>Oropharyngeal membrane is ruptured</li> </ul>
	<ul style="list-style-type: none"> <li>Pharyngeal arch 3</li> </ul>
	<ul style="list-style-type: none"> <li>Pharyngeal arches with dorsal and ventral parts</li> </ul>
	<ul style="list-style-type: none"> <li>Umbilical vesicle elongates</li> </ul>
	<ul style="list-style-type: none"> <li>Cervical sinus</li> </ul>
	<ul style="list-style-type: none"> <li>Laryngotracheal groove</li> </ul>
	<ul style="list-style-type: none"> <li>Lung bud</li> </ul>
	<ul style="list-style-type: none"> <li>Tracheo-esophageal septum</li> </ul>
	<ul style="list-style-type: none"> <li>Atrioventricular canal</li> </ul>
	<ul style="list-style-type: none"> <li>Common cardinal veins (right and left)</li> </ul>
	<ul style="list-style-type: none"> <li>Descending aorta</li> </ul>
	<ul style="list-style-type: none"> <li>Heart circulates blood to and from central nervous system, umbilical vesicle, and chorion</li> </ul>
	<ul style="list-style-type: none"> <li>Hepatocardiac channels (right and left)</li> </ul>
	<ul style="list-style-type: none"> <li>Rostral and caudal cardinal veins along brain and spinal cord feeding common cardinal veins</li> </ul>
	<ul style="list-style-type: none"> <li>Septum primum and foramen primum sometimes present</li> </ul>
	<ul style="list-style-type: none"> <li>Septum primum, foramen primum</li> </ul>
	<ul style="list-style-type: none"> <li>Sinu-atrial foramen prevents backflow into sinus venosus</li> </ul>
	<ul style="list-style-type: none"> <li>Sinus venosus collects venous blood from entire embryo</li> </ul>
	<ul style="list-style-type: none"> <li>Superior vena cava, inferior vena cava, and sinus venosus collecting all venous blood</li> </ul>
	<ul style="list-style-type: none"> <li>Unidirectional circulation</li> </ul>
	<ul style="list-style-type: none"> <li>Vitelline arteries and veins</li> </ul>
	<ul style="list-style-type: none"> <li>Hypoglossal cord (CN XII) enters pharyngeal arch 4</li> </ul>
	<ul style="list-style-type: none"> <li>Otocyst nearly closed</li> </ul>
	<ul style="list-style-type: none"> <li>Nasal discs form part of ectodermal ring</li> </ul>
	<ul style="list-style-type: none"> <li>Optic vesicles covered by sheath (formed by mesencephalic and optic crest)</li> </ul>

	Brain involves 40% of neural tube
	Brain: Embryonic commissural plate
	Ectodermal ring complete
	Hypoglossal nucleus (CN XII)
	Lowermost spinal cord formation begins
	Mamillary recess
	Marginal layer in rhombencephalon
	Mesencephalic flexure at 90 degrees
	Mesencephalon with two neuromeres: M1 and M2
	Motor neurons in basal plate of rhombencephalon
	Neural tube closes (lower back)
	Neurofibrils form in rhombencephalon
	Primary neurulation ends
	Primordia of ventral thalamus and subthalamus in diencephalon
	Sulcus limitans
	Sulcus limitans in midbrain
	Somites: Pairs 21 through 29
	Upper limb primordium at level of somites 8 to 10
	Progressively C-shaped embryo
<b>4 weeks</b> ½ ½	Spleen primordia
	Thymic primordia
	Lower lip forms from merging of mandibular processes
	Melanoblasts in epidermis
	Gonadal ridge extends from C-7 to T-8 levels
	Primordial germ cells migrate to mesonephric ridges
	Primordial germ cells number several hundred
	Urorectal septum
	Thyroid bilobed and attached to pharynx by thyroglossal duct
	Diaphragm primordia
	Glomeruli emerge in mesonephros
	Mesonephric duct attached to cloaca
	Nephric tubules now S-shaped
	Urogenital sinus
	Urorectal cleavage line
	Diverticulum ilei marks division between foregut and hindgut
	Intestines growing in length
	Mesentery from end of duodenum to proximal half of colon
	Opening between gut and umbilical vesicle decreases
	Pancreas: Ventral pancreas
	Pharyngeal pouches 1 through 4

	Pharynx
	Pleuroperitoneal canals
	Stalk of umbilical vesicle lengthens and narrows
	Stomach assumes shape of a spindle
	Umbilical vesicle at height of development
	Vitelline duct
	Bronchial buds
	Mesenchyme from coelomic epithelium surrounds esophagus and lung buds
	Trachea
	Anterior, middle, and posterior cerebral plexuses
	Aorta branches include dorsal intersegmental, lateral segmental, and ventral segmental arteries
	Aortic arches 4 and 6
	Artery from the common iliac artery feeds each lower limb bud
	Atrioventricular bundle
	Cardiac contractions still under myogenic control
	Celiac artery, superior and inferior mesenteric arteries
	Circulatory system "well established"
	Common iliac arteries (right and left, from dorsal aorta bifurcation)
	Contractions well coordinated and sequential from sinus venosus to atria to ventricles
	Functioning two-chamber heart
	Gas exchange through placenta begins
	Gelatinous reticulum (or cardiac mesenchyme)
	Heart chambers bulging with fluid
	Heart now functions as two parallel pumps
	Heart: Atrioventricular cushions (rostroventral and caudodorsal)
	Heart: Myocardium wall 3 to 4 cells thick
	Primary head veins (right and left) drain anterior, middle, and posterior cerebral plexuses and feed precardinal veins
	Small arteries emerging throughout mesoderm
	Ventricle walls trabeculated
	Vertebral arteries
	Vitelline veins empty exclusively into hepatic plexus
	Most cranial nerve ganglia
	Trigeminal, glossopharyngeal, and vagal preganglia
	Basement membrane of otic disc surrounds otic vesicle
	Endolymphatic appendage
	Otic invagination
	Otic vesicle closes
	Terminal-vomeronasal neural crest
	Brain: Commissural plate



	■ Cerebellum
	■ Common afferent tract
	■ Fourth ventricle
	■ Interstitial nucleus (part of medial longitudinal fasciculus)
	■ Isthmus rhombencephali (a new neuromere)
	■ Oculomotor (CN III) and trochlear nuclei (CN IV) in mesencephalon (midbrain) and isthmus respectively
	■ Retinal and lens discs
	■ Amnion surrounds connecting stalk and vitelline stalk
	■ Hyoid arch subdivides into dorsal and ventral segments
	■ Limb buds - the first sign of arms and legs
	■ Lower limb buds
	■ Umbilical cord emerging
	■ Upper and lower limb buds

**Unit 5: 4 to 5 Weeks**

4 weeks, 4 days  $\frac{1}{2}$   $\frac{1}{2}$

	■ Thymus
	■ Parathyrogenic zones
	■ Thyroglossal duct
	■ Thyroid pedicel lengthens
	■ Dorsal contour develops depression at level of sclerotomes 4 and 5
	■ Muscular plates between upper and lower limb buds
	■ Glomerular capsules, partially vascularized
	■ Mesonephric corpuscle
	■ Metanephrogenic cap emerges from ureteric bud
	■ Ureteric buds
	■ Angiogenesis within peri-esophageal mesenchyme
	■ Epiploic foramen
	■ Lesser sac (omental bursa)
	■ Small intestine forming coils
	■ Tongue: Hypopharyngeal eminence
	■ Arytenoid swellings (right and left)
	■ Capillary network surrounds pulmonary mesenchyme
	■ Epithelial lamina of larynx
	■ Lungs: Right and left primary (or main stem) bronchi
	■ Mesenchyme covering esophagus and respiratory tree separates
	■ Mesenchyme surrounds bronchi
	■ Pleura (mesothelium) surrounds part of mesenchyme
	■ Right main bronchus longer than left
	■ Atria walls thin, ventricle walls thick and trabeculated
	■ Atrioventricular cushions not fused

	Common pulmonary vein drains pulmonary plexuses into left atrium
	Conotruncal ridges or cushions (remnants of cardiac jelly)
	Epicardium
	Left subclavian artery feeds left axillary artery, left vertebral artery, and left thyrocervical trunk
	Outflow tract still with one lumen
	Posterior communicating arteries
	Pulmonary arch (sixth aortic arch) forms from aorta and aortic sac
	Pulmonary capillary network fed by pulmonary arteries, drain into left atrium
	Sinu-atrial (SA) node
	Superior mesenteric artery and vein
	Upper limb buds with early marginal blood vessel
	Brachial plexus
	Cervical plexus
	Dorsal roots
	Hypoglossal nerve roots unite (CN XII)
	Lens and retina invaginate to form optic cup
	Primordium of cochlear duct
	Rami communicantes
	Spinal nerves reach muscle primordia
	Upper limb buds innervated
	External ear: Auricular hillocks merging
	Eyes located on sides of head
	Lens pits
	Lens vesicle open to surface (lens pore)
	Nose: Nasal pits
	Nose: Nasal plate (or disc) flat or concave
	Pigment in retina (external layer of optic cup)
	D1 and D2 no longer identifiable within diencephalon
	75% of midbrain covered by marginal layer
	All 16 secondary neuromeres
	Brain enlarges 50% since Carnegie Stage 13
	Brain: Cerebral hemispheres appear and begin rapid growth
	Brain: Lateral ventricles
	Cerebellum with intermediate and ventricular layers
	Cerebellum: Primordium found in alar plate of rhombomere 1
	Corpora striata primordia connected by commissural plate
	Cranial nerve 3
	Di-telencephalic sulcus
	Dorsal and ventral thalami

	<ul style="list-style-type: none"><li>Dorsal funiculus</li></ul>
	<ul style="list-style-type: none"><li>Hypothalamic sulcus</li></ul>
	<ul style="list-style-type: none"><li>Hypothalamus</li></ul>
	<ul style="list-style-type: none"><li>Mamillary region</li></ul>
	<ul style="list-style-type: none"><li>Medial and lateral longitudinal fasciculi</li></ul>
	<ul style="list-style-type: none"><li>Median ventricular eminence</li></ul>
	<ul style="list-style-type: none"><li>Pontine flexure</li></ul>
	<ul style="list-style-type: none"><li>Preoptic sulcus extends between optic evaginations</li></ul>
	<ul style="list-style-type: none"><li>Preoptico-hypothalamo-tegmental tract</li></ul>
	<ul style="list-style-type: none"><li>Primary meninx surrounds most of brain</li></ul>
	<ul style="list-style-type: none"><li>Rhombic lip</li></ul>
	<ul style="list-style-type: none"><li>Spinal cord wall with three zones: ventricular (ependymal) zone, mantle (intermediate) zone, and marginal zone</li></ul>
	<ul style="list-style-type: none"><li>Subthalamus with medial striatal ridge emerging</li></ul>
	<ul style="list-style-type: none"><li>Synencephalon</li></ul>
	<ul style="list-style-type: none"><li>Tegmentum</li></ul>
	<ul style="list-style-type: none"><li>Tentorium cerebelli, medial portion</li></ul>
	<ul style="list-style-type: none"><li>Terminal-vomeronasal crest contacts brain (olfactory area)</li></ul>
	<ul style="list-style-type: none"><li>Torus hemisphericus (TH)</li></ul>
	<ul style="list-style-type: none"><li>Velum transversum</li></ul>
	<ul style="list-style-type: none"><li>Ventral longitudinal fasciculus</li></ul>
	<ul style="list-style-type: none"><li>Ventral segment of hyoid arch subdivides</li></ul>
<b>4 weeks, 5 days</b> $\frac{1}{2}$ $\frac{1}{2}$	<ul style="list-style-type: none"><li>Primordium of antitragus emerges from ventral subsegment of hyoid arch</li></ul>
	<ul style="list-style-type: none"><li>Gonad framework found in coelomic epithelium</li></ul>
	<ul style="list-style-type: none"><li>Thyroid detached from epithelium of pharynx in some embryos</li></ul>
	<ul style="list-style-type: none"><li>Lower limb bud rounded proximally and tapered distally</li></ul>
	<ul style="list-style-type: none"><li>Mesenchymal skeleton in upper and lower limbs</li></ul>
	<ul style="list-style-type: none"><li>Right and left neural processes</li></ul>
	<ul style="list-style-type: none"><li>Sclerotomic material around notochord (rhombomere D level)</li></ul>
	<ul style="list-style-type: none"><li>Vertebrae well defined</li></ul>
	<ul style="list-style-type: none"><li>Vertebral centra</li></ul>
	<ul style="list-style-type: none"><li>Primary urogenital sinus</li></ul>
	<ul style="list-style-type: none"><li>Ureteric bud extends to pelvis of the ureter</li></ul>
	<ul style="list-style-type: none"><li>Bladder and rectum are separating caudal to ureters</li></ul>
	<ul style="list-style-type: none"><li>Dense mesenchyme surrounds much of gastrointestinal tract</li></ul>
	<ul style="list-style-type: none"><li>Esophagus elongates, passes dorsal to carina and between main stem bronchi</li></ul>
	<ul style="list-style-type: none"><li>Gall bladder and cystic duct</li></ul>
	<ul style="list-style-type: none"><li>Liver: Hepatic ducts</li></ul>

	<ul style="list-style-type: none"> <li>Ventral pancreas appears as an offshoot of the cystic duct</li> </ul>
	<ul style="list-style-type: none"> <li>Lobar bud swellings denote areas of secondary bronchi</li> </ul>
	<ul style="list-style-type: none"> <li>Remnants of coelomic epithelium forming visceral pleura</li> </ul>
	<ul style="list-style-type: none"> <li>Atrioventricular cushions apposed</li> </ul>
	<ul style="list-style-type: none"> <li>Blood flow divided into right and left streams through atrioventricular canal, ventricles, outflow tract, and aortic sac</li> </ul>
	<ul style="list-style-type: none"> <li>Blood vessels penetrate diencephalon</li> </ul>
	<ul style="list-style-type: none"> <li>Capillary plexus surrounds esophagus</li> </ul>
	<ul style="list-style-type: none"> <li>Capillary plexus surrounds lung buds</li> </ul>
	<ul style="list-style-type: none"> <li>Cardiac mesenchyme surrounds ventricles and outflow tract</li> </ul>
	<ul style="list-style-type: none"> <li>Coronary arteries (terminal end)</li> </ul>
	<ul style="list-style-type: none"> <li>Foramen secundum begins in septum primum</li> </ul>
	<ul style="list-style-type: none"> <li>Left ventricle with thicker walls and greater volume than right</li> </ul>
	<ul style="list-style-type: none"> <li>Right subclavian artery originates from brachiocephalic artery and feeds right thyrocervical trunk and axillary and vertebral arteries</li> </ul>
	<ul style="list-style-type: none"> <li>Semilunar cusps</li> </ul>
	<ul style="list-style-type: none"> <li>Capsule present around lens</li> </ul>
	<ul style="list-style-type: none"> <li>Corneal epithelium overlying optic cup</li> </ul>
	<ul style="list-style-type: none"> <li>Ear: Endolymphatic duct</li> </ul>
	<ul style="list-style-type: none"> <li>Geniculate and vestibulocochlear ganglia separating</li> </ul>
	<ul style="list-style-type: none"> <li>Lens body now present containing some lens fibers</li> </ul>
	<ul style="list-style-type: none"> <li>Lower limb buds innervated</li> </ul>
	<ul style="list-style-type: none"> <li>Optic stalk</li> </ul>
	<ul style="list-style-type: none"> <li>Utricle, endolymphatic duct, and endolymphatic sac</li> </ul>
	<ul style="list-style-type: none"> <li>Utriculo-endolymphatic fold</li> </ul>
	<ul style="list-style-type: none"> <li>External ear primordia emerges from caudolateral portion of mandibular arch</li> </ul>
	<ul style="list-style-type: none"> <li>Face: Lateral and medial nasal processes bilaterally</li> </ul>
	<ul style="list-style-type: none"> <li>Lateral nasal processes along dorsolateral lip of nasal pits</li> </ul>
	<ul style="list-style-type: none"> <li>Lens vesicles closed, pores absent</li> </ul>
	<ul style="list-style-type: none"> <li>Nose: Nasal discs recede forming nasal pits</li> </ul>
	<ul style="list-style-type: none"> <li>Optic chiasm</li> </ul>
	<ul style="list-style-type: none"> <li>Adult lamina terminalis</li> </ul>
	<ul style="list-style-type: none"> <li>Amygdaloid area</li> </ul>
	<ul style="list-style-type: none"> <li>Cerebellar plate</li> </ul>
	<ul style="list-style-type: none"> <li>Cerebellum with marginal layer</li> </ul>
	<ul style="list-style-type: none"> <li>Fibers of dorsal funiculus reach level of C1</li> </ul>
	<ul style="list-style-type: none"> <li>First axodendritic synapses in cervical spinal cord</li> </ul>
	<ul style="list-style-type: none"> <li>First nerve fibers</li> </ul>
	<ul style="list-style-type: none"> <li>Habenular nucleus</li> </ul>

	■ Habenulo-interpeduncular tract
	■ Lateral striatal ridge (derived from telencephalon and comprised mainly of neostriatum)
	■ Lateral ventricular eminence
	■ Locus caeruleus
	■ Longitudinal zones in diencephalon
	■ Marginal layer throughout most of diencephalon
	■ Material for sympathetic trunks scattered in cervical region
	■ Median striatal ridge (paleostriatum)
	■ Mesencephalic tract of CN 5
	■ Most cranial nerves seen
	■ Olfactory fibers reach brain
	■ Optic groove (also called preoptic recess)
	■ Postoptic recess
	■ Primordium of epiphysis
	■ Rhombomeres still identifiable
	■ Superior colliculi and its commissure
	■ Superior medullary velum
	■ Supramamillary commissure
	■ Synapses among motor neurons in spinal cord
	■ Tectobulbar tract
	■ Tentorium
	■ Third ventricle
	■ Trigemino-cerebellar tract
	■ Trochlear nerve root and decussation (CN IV)
	■ Hand plate emerges from distal upper limb bud
	□ Frontonasal prominence
<b>5 weeks</b> $\ddot{\imath}\ddot{\imath}$ $\frac{1}{2}\frac{1}{2}$	■ Arytenoid and epiglottal swellings
	■ Lobar pattern mimics adult pattern
	■ T-shaped laryngeal inlet
	■ Pacemaker cells

**Unit 6: 5 to 6 Weeks**

<b>5 weeks, 2 days</b> $\ddot{\imath}\ddot{\imath}$ $\frac{1}{2}\frac{1}{2}$	■ Apical epidermal ridges
	■ Mammary ridge
	■ Maxillary and premaxillary fields still widely separated
	■ Nipples emerge from mammary crest
	■ Gonad region separates from mesonephros
	■ Gonadal primordium
	■ Labioscrotal swelling
	■ Urogenital fold and groove
	■ Suprarenal gland: Cortex primordium

	<ul style="list-style-type: none"> <li><span style="color: cyan;">■</span> Suprarenal gland: Medulla</li> <li><span style="color: cyan;">■</span> Thyroid detaches from pharynx</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: cyan;">■</span> Thyroid with right and left lobes connected by an isthmus</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: gray;">■</span> Cartilage in mandibular arch</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: gray;">■</span> Hand area with central carpal region and digital plate with marginal vein</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: gray;">■</span> Pre-chondrocranium: Otic capsule, nasal capsule, and parachordal condensations</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: gray;">■</span> Primordia of primary palate</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: gray;">■</span> Ribs: Primordia now present for all 12 pairs</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: gray;">■</span> Vertebral column with 36 levels of ganglia and myotomes</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: magenta;">■</span> Extra-ocular premuscle masses receive cranial nerve fibers [oculomotor (CN III), trochlear (CN IV), and abducens (CN VI) nerves]</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: magenta;">■</span> Gluteal mesoderm</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: magenta;">■</span> Infrahyoid premuscle masses</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: magenta;">■</span> Limb mesoderm</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: magenta;">■</span> Sternocleidomastoid-trapezius premuscle mass with spinal accessory nerve (CN11)</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: magenta;">■</span> Thigh and thigh mesoderm</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: magenta;">■</span> Tongue premuscle mass</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: green;">■</span> Metanephros at level of sacrum</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: green;">■</span> Urethral plate</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: purple;">■</span> Lesser omentum (ventral mesogastrun)</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: purple;">■</span> Peritoneal cavity</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: purple;">■</span> Rectum</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: purple;">■</span> Stomach: Greater and lesser curvatures</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: purple;">■</span> Yolk stalk disappears</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: orange;">■</span> Bronchial tree expanding</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: orange;">■</span> Cervical sinus diminished in size</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: orange;">■</span> Epiglottis</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: orange;">■</span> Primitive Larynx</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Anterior, middle, and posterior cerebral arteries</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Atrioventricular (AV) node</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Atrioventricular cushions fuse with interventricular septum</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Circle of Willis almost complete</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Conotruncal septum</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Endocardial cushions (rostroventral and caudodorsal) begin fusing around atrioventricular canal forming right and left atrioventricular canals and two separate blood streams</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> External carotid artery</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Foramen primum disappearing</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Hepatic portal vein</li> </ul>

	Infundibulum of right ventricle
	Jugular lymph sac
	Lateral atrioventricular cushions
	Mesencephalic artery
	Myelencephalic artery
	Perilental blood vessels
	Primitive cavernous sinus drains primitive maxillary and supraorbital veins
	Primitive renal plexus
	Right ventricle feeds sixth (pulmonary) aortic arches; left ventricle feeds fourth aortic arches
	Semilunar valves (aortic and pulmonary) are forming
	Ventricles each with three parts: inlet, trabecular pouch, and outflow tract
	Ventricles enlarge and deepen side-by-side forming an ever growing interventricular septum
	Celiac plexus
	Cochlear nerve present
	Femoral and obturator nerves innervate rostralateral part of lower limb
	Hypoglossal nerve (CN XII) reaches tongue
	Intercostal nerves
	Lumbar and sacral plexuses
	Musculocutaneous, radial, ulna, and median nerves enter upper limb bud
	Nasal pits face more ventrally, still widely separated
	Nasofrontal groove
	Olfactory fibers connect nasal pits with brain
	Olfactory fibers enter brain
	Olfactory tubercle present
	Peroneal and tibial nerves innervate caudomedial part of lower limb
	Phrenic nerve
	Pigment in retina visible externally
	Primordium of cochlear pouch
	Tibial nerve innervates foot area
	Auricular hillocks on hyoid arch (antitragus and helix)
	Auricular hillocks on mandibular arch (tragus and crus)
	Blind nasal sac
	Nasal fin
	Alar lamina emerging with dense rhombic lip
	All cranial nerves identifiable
	Archipallium, paleopallium, and neopallium
	Area epithelialis
	Brain: Primordial plexiform layer in area of future temporal lobe
	Cajal-Retzius cells

	■ Commissure of the trochlear nerve
	■ Diencephalic subthalamic nucleus
	■ Dorsal and ventral thalami separated by groove
	■ Dorsal funiculus fibers reach medulla oblongata
	■ Epiphysis cerebri
	■ Glial cells identifiable adjacent to neurons
	■ Greater petrosal nerve
	■ Hippocampus: Gyrus dentatus
	■ Infundibular recess and infundibulum
	■ Interventricular foramen large
	■ Marginal ridge
	■ Medial and lateral ridges of corpus striatum are continuous
	■ Median forebrain bundle
	■ Neurohypophysial outgrowth
	■ Olfactory tubercle
	■ Pontine flexure deepens
	■ Posterior commissure
	■ Recurrent laryngeal nerve
	■ Reticular formation more defined
	■ Retinal fissure closes
	■ Splanchnic nerve
	■ Sulcus limitans hippocampi
	■ Superior laryngeal nerve
	□ Second pharyngeal arch more prominent
	□ Third pharyngeal arch recedes
<b>5½ weeks - 6 weeks</b> ½ ½	□ Initial tooth formation
<b>5½ weeks - 6 weeks</b> ½ ½	■ Subtle movement begins
<b>5 weeks, 5 days - 7 weeks, 1 day</b> ½ ½	□ Melanocytes in epidermis
<b>5 weeks, 6 days</b> ½ ½	□ Facial growth centers grow and begin merging forming nose and upper jaw
	■ Genital eminence forms phallus or genital tubercle
	■ Gonad grows into oval shape with irregular surface
	□ Auditory ossicles identifiable in mesenchyme
	□ Cartilage in occipital sclerotomes (1-4)
	□ Digital rays in hand plate
	□ Femur: Chondrification begins
	□ Foot with rounded digital plate
	□ Hypoglossal foramen (or canal) through sclerotome 4 (area of future occipital bone)



	<ul style="list-style-type: none"> <li>Odontogenic epithelium emerges in six areas (four maxillary and two mandibular)</li> </ul>
	<ul style="list-style-type: none"> <li>Primary palate components (right and left) fuse in midline</li> </ul>
	<ul style="list-style-type: none"> <li>Primitive palatine groove</li> </ul>
	<ul style="list-style-type: none"> <li>Primordium of cartilage within nasal septum</li> </ul>
	<ul style="list-style-type: none"> <li>Vertebral centra begin chondrification</li> </ul>
	<ul style="list-style-type: none"> <li>Primordia of orbital muscles</li> </ul>
	<ul style="list-style-type: none"> <li>Calices</li> </ul>
	<ul style="list-style-type: none"> <li>Mesonephros can produce urine</li> </ul>
	<ul style="list-style-type: none"> <li>Pelvis of the ureter with three main divisions</li> </ul>
	<ul style="list-style-type: none"> <li>Vesico-urethral canal</li> </ul>
	<ul style="list-style-type: none"> <li>Biliary ducts within liver</li> </ul>
	<ul style="list-style-type: none"> <li>Dorsal and ventral pancreas fuse but retain separate ducts</li> </ul>
	<ul style="list-style-type: none"> <li>Duodenum enlarges proximal to and distal to bile and pancreatic ducts</li> </ul>
	<ul style="list-style-type: none"> <li>Esophagus developing a submucous coat surrounding epithelium</li> </ul>
	<ul style="list-style-type: none"> <li>Intestinal loop begins umbilical herniation</li> </ul>
	<ul style="list-style-type: none"> <li>Primordial vermiform appendix</li> </ul>
	<ul style="list-style-type: none"> <li>Stomach regions include gastric canal, fundus, corpus (or body), and pyloric antrum</li> </ul>
	<ul style="list-style-type: none"> <li>Trachea: Precursors of tracheal cartilages</li> </ul>
	<ul style="list-style-type: none"> <li>Condensing mesenchyme around junction between left and right atria and cardiac tube is precursor to mitral and tricuspid valves</li> </ul>
	<ul style="list-style-type: none"> <li>Outflow tract rotates counterclockwise</li> </ul>
	<ul style="list-style-type: none"> <li>Right and left atrioventricular canals totally separated</li> </ul>
	<ul style="list-style-type: none"> <li>All parasympathetic cranial nerve ganglia identifiable</li> </ul>
	<ul style="list-style-type: none"> <li>All spinal nerves present</li> </ul>
	<ul style="list-style-type: none"> <li>Cell islands in olfactory tubercle</li> </ul>
	<ul style="list-style-type: none"> <li>Crescentic lens cavity</li> </ul>
	<ul style="list-style-type: none"> <li>Geniculate ganglion separate from vestibulocochlear nerve</li> </ul>
	<ul style="list-style-type: none"> <li>Globular process emerges from each medial nasal process</li> </ul>
	<ul style="list-style-type: none"> <li>Nasal fin connecting nasal disc and surface epithelium</li> </ul>
	<ul style="list-style-type: none"> <li>Nasofrontal grooves</li> </ul>
	<ul style="list-style-type: none"> <li>Olfactory tubercle with cellular islands</li> </ul>
	<ul style="list-style-type: none"> <li>Hyomandibular groove enlarges (onset of concha and external auditory meatus formation)</li> </ul>
	<ul style="list-style-type: none"> <li>Medial rims of nasal pits form nasal septum</li> </ul>
	<ul style="list-style-type: none"> <li>Nostril becomes continuous with nasal sac</li> </ul>
	<ul style="list-style-type: none"> <li>Primary lens fibers</li> </ul>
	<ul style="list-style-type: none"> <li>Retinal fissure closed</li> </ul>
	<ul style="list-style-type: none"> <li>Capillaries between adenohypophysis and hypothalamus</li> </ul>

	■ Commissure of the oculomotor nerves
	■ Cortical nucleus in amygdaloid body
	■ Dentate and isthmic nuclei in cerebellum
	■ Dura begins forming in basal area
	■ Epiphysis cerebri with intermediate layer
	■ First hint of septal nucleus
	■ Frontal and temporal poles of cerebral hemispheres
	■ Gustatory fibers separate from common afferent tract
	■ Hemispheric stalk
	■ Intermediate layer in tectum mesencephali
	■ Interventricular foramen
	■ Mesencephalon with intermediate layer
	■ Somites: Pairs 38 and 39
	■ Spinal cord reaches caudal tip of body
	■ Subarachnoid space
	■ Synapses in spinal cord between interneurons and primary afferent neurons
	■ Ventral thalamus with intermediate layer
	■ Anterior choroid artery
<b>6 weeks</b> $\ddot{\zeta} \ddot{\zeta}$ $\frac{1}{2} \frac{1}{2}$	■ Blood forming in liver
	■ Milk lines
	■ Handplates develop subtle flattening
	■ Medial skull cartilages: Parachordal, hypophyseal, and trabecular
	■ Tooth buds (primary teeth)
	■ Intestines fill base of umbilical cord
	■ Crown-heel length 1.6 cm

**Unit 7: 6 to 7 Weeks**

<b>6 weeks, 2 days</b> $\ddot{\zeta} \ddot{\zeta}$ $\frac{1}{2} \frac{1}{2}$	■ Angiogenesis begins inside gonads
	■ Gonad grows into oval shape with irregular surface
	■ Ostium (abdominal) of uterine tube at rostral end of paramesonephric duct (in female embryos)
	■ Paramesonephric duct forms from rostral end of mesonephric duct
	■ Testicular cords in gonads of male embryos
	■ Testicular cords in male gonad
	■ Elbow regions sometimes identifiable
	■ Embryo with cervical and lumbar flexures
	■ Embryo with dorsal concavity
	■ Finger rays with early interdigital notching
	■ Humerus, radius, and ulna
	■ Humerus: Chondrocytes in phases one through three

	<ul style="list-style-type: none"> <li>□ Scapula and clavicle</li> </ul>
	<ul style="list-style-type: none"> <li>□ Semicircular ducts form in order: anterior, posterior, and lateral</li> </ul>
	<ul style="list-style-type: none"> <li>□ Sternum: Episternal cartilage created from fusion of right and left sternal bars</li> </ul>
	<ul style="list-style-type: none"> <li>□ Tibia and fibula</li> </ul>
	<ul style="list-style-type: none"> <li>□ Toe rays sometimes present</li> </ul>
	<ul style="list-style-type: none"> <li>■ Deltoid muscle</li> </ul>
	<ul style="list-style-type: none"> <li>■ External and internal abdominal oblique muscles</li> </ul>
	<ul style="list-style-type: none"> <li>■ Levator scapulae muscle</li> </ul>
	<ul style="list-style-type: none"> <li>■ Longus cervicis and semispinalis cervicis muscles</li> </ul>
	<ul style="list-style-type: none"> <li>■ Pectoralis major muscles</li> </ul>
	<ul style="list-style-type: none"> <li>■ Platysma muscle</li> </ul>
	<ul style="list-style-type: none"> <li>■ Rectus abdominis muscle</li> </ul>
	<ul style="list-style-type: none"> <li>■ Rectus capitis posterior and semispinalis capitis muscles</li> </ul>
	<ul style="list-style-type: none"> <li>■ Serratus anterior muscles</li> </ul>
	<ul style="list-style-type: none"> <li>■ Splenius and longissimus muscles</li> </ul>
	<ul style="list-style-type: none"> <li>■ Stapedius muscle</li> </ul>
	<ul style="list-style-type: none"> <li>■ "Common excretory duct is disappearing"</li> </ul>
	<ul style="list-style-type: none"> <li>■ Cloacal membrane ruptures (stages 18-19)</li> </ul>
	<ul style="list-style-type: none"> <li>■ Primordia of secretory tubules</li> </ul>
	<ul style="list-style-type: none"> <li>■ Esophagus with muscular and submucous coats</li> </ul>
	<ul style="list-style-type: none"> <li>■ Submandibular gland primordia</li> </ul>
	<ul style="list-style-type: none"> <li>■ Bronchial tree with subsegmental buds</li> </ul>
	<ul style="list-style-type: none"> <li>■ Bronchial tree with well established segmental bronchi</li> </ul>
	<ul style="list-style-type: none"> <li>■ Lingula of left upper lobe</li> </ul>
	<ul style="list-style-type: none"> <li>■ Aortic and pulmonary valves assuming shape of a cup</li> </ul>
	<ul style="list-style-type: none"> <li>■ Brachiocephalic veins, right and left</li> </ul>
	<ul style="list-style-type: none"> <li>■ Inferior vena cava</li> </ul>
	<ul style="list-style-type: none"> <li>■ Interventricular septum: membranous part begins forming</li> </ul>
	<ul style="list-style-type: none"> <li>■ Left coronary artery arises from aorta</li> </ul>
	<ul style="list-style-type: none"> <li>■ Mesenchyme ridges in place of future mitral and tricuspid valves</li> </ul>
	<ul style="list-style-type: none"> <li>■ Pulmonary and aortic blood flows completely separate</li> </ul>
	<ul style="list-style-type: none"> <li>■ Secondary interventricular foramen sometimes closing (stage 18-21) interventricular septum</li> </ul>
	<ul style="list-style-type: none"> <li>■ Septum secundum and foramen ovale (stages 18-21)</li> </ul>
	<ul style="list-style-type: none"> <li>■ Bucconasal membrane</li> </ul>
	<ul style="list-style-type: none"> <li>■ Bucconasal membrane detaches opening up nasal airway</li> </ul>
	<ul style="list-style-type: none"> <li>■ Crus commune</li> </ul>
	<ul style="list-style-type: none"> <li>■ Ethmoidal epithelium emerges from upper medial nasal wall</li> </ul>
	<ul style="list-style-type: none"> <li>■ Frontonasal angle (marks location of future nasal bridge)</li> </ul>

	<ul style="list-style-type: none"> <li>Mesenchyme thickenings mark beginning of "sclera and its muscular attachments"</li> </ul>
	<ul style="list-style-type: none"> <li>Nasal tip emerges</li> </ul>
	<ul style="list-style-type: none"> <li>Nerve fibers in retina</li> </ul>
	<ul style="list-style-type: none"> <li>Optic fibers</li> </ul>
	<ul style="list-style-type: none"> <li>Retina's outer lamina heavily pigmented</li> </ul>
	<ul style="list-style-type: none"> <li>Vomer nasal nerve and ganglion</li> </ul>
	<ul style="list-style-type: none"> <li>Vomer nasal organ marked by groove and located in fold of lower medial nasal wall</li> </ul>
	<ul style="list-style-type: none"> <li>Choanae</li> </ul>
	<ul style="list-style-type: none"> <li>Conjunctival sac marked by groove</li> </ul>
	<ul style="list-style-type: none"> <li>Cornea and conjunctiva</li> </ul>
	<ul style="list-style-type: none"> <li>Ear: Stapes primordium surrounds stapedia artery</li> </ul>
	<ul style="list-style-type: none"> <li>External ear: Crus helices forming from auricular hillocks two and three (from mandibular arch)</li> </ul>
	<ul style="list-style-type: none"> <li>Eyelid folds sometimes present</li> </ul>
	<ul style="list-style-type: none"> <li>Nasal fin splits forming choanae and bucconasal membrane</li> </ul>
	<ul style="list-style-type: none"> <li>Nasolacrimal duct begins as epithelial strand emanating from nasomaxillary groove</li> </ul>
	<ul style="list-style-type: none"> <li>Nostrils, nasal wings, and nasal septum easily seen</li> </ul>
	<ul style="list-style-type: none"> <li>Olfactory bulb sometimes with olfactory ventricle</li> </ul>
	<ul style="list-style-type: none"> <li>Primary lens fibers filling lens vesicle cavity</li> </ul>
	<ul style="list-style-type: none"> <li>Adenohypophysis no longer open to pharyngeal cavity</li> </ul>
	<ul style="list-style-type: none"> <li>Archistriatum</li> </ul>
	<ul style="list-style-type: none"> <li>Brain: Dentate nucleus in internal cerebellar swellings</li> </ul>
	<ul style="list-style-type: none"> <li>Brain: Pineal recess emerges representing anterior lobe of epiphysis</li> </ul>
	<ul style="list-style-type: none"> <li>Cerebrospinal fluid production begins</li> </ul>
	<ul style="list-style-type: none"> <li>Choroid plexuses in fourth and lateral ventricles</li> </ul>
	<ul style="list-style-type: none"> <li>Corpus striatum much larger extending to preoptic sulcus; has subtle groove</li> </ul>
	<ul style="list-style-type: none"> <li>External cerebellar swellings contain future flocculus</li> </ul>
	<ul style="list-style-type: none"> <li>Four amygdaloid nuclei</li> </ul>
	<ul style="list-style-type: none"> <li>Fourth ventricle: Choroid folds</li> </ul>
	<ul style="list-style-type: none"> <li>Hippocampus reaches olfactory region</li> </ul>
	<ul style="list-style-type: none"> <li>Interpeduncular fossa</li> </ul>
	<ul style="list-style-type: none"> <li>Neurohypophysis walls are folded</li> </ul>
	<ul style="list-style-type: none"> <li>Nucleus ambiguus of the vagus (CN10)</li> </ul>
	<ul style="list-style-type: none"> <li>Prosencephalic septum</li> </ul>
	<ul style="list-style-type: none"> <li>Red nucleus</li> </ul>
	<ul style="list-style-type: none"> <li>Substantia nigra</li> </ul>
	<ul style="list-style-type: none"> <li>Supra-optic commissure</li> </ul>
<p>6½ weeks ½</p>	<ul style="list-style-type: none"> <li>Volar pads on palms</li> </ul>

<p><b>6 weeks, 5 days</b> <math>\frac{1}{2}</math> <math>\frac{1}{2}</math></p>	<ul style="list-style-type: none"> <li><span style="color: magenta;">■</span> Greater thymic bud</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: lightcoral;">■</span> Cheeks form by merging of maxillary and mandibular processes</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: lightcoral;">■</span> Mammary gland primordium</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: lightcoral;">■</span> Mammary ridge disappears leaving only mammary gland primordium</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: lightgreen;">■</span> Female duct</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: lightgreen;">■</span> Gonads extend from levels T-10 to L-2</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: lightgreen;">■</span> Rete ovarii (in female embryos)</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: lightgreen;">■</span> Rete testis begins emerging from seminiferous cords (Stage 19-23) (in male embryos)</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: lightgreen;">■</span> Tunica albuginea in male embryos</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: cyan;">■</span> Suprarenal gland: Cortex</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: cyan;">■</span> Suprarenal gland: Medulla populated by prechromaffin cells</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: gray;">■</span> Beginnings of occipital and sphenoid bones</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: gray;">■</span> Bilateral cartilaginous sternal bars tie ribs together; sternal bars join cranially to form the episternal bar in the midline</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: gray;">■</span> Cartilage within otic capsule envelops semicircular canals and cochlear duct</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: gray;">■</span> Cartilaginous styloid process</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: gray;">■</span> Ear: Cartilaginous malleus, incus, and stapes (the middle ear ossicles)</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: gray;">■</span> Ectomeninx covers lateral and dorsal surfaces of brain (laying the foundation for the flat bones of the skull)</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: gray;">■</span> Intervertebral discs form from caudal condensed portion of sclerotomes</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: gray;">■</span> Ischium and ilium</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: gray;">■</span> Labiodental lamina: Inner dental lamina and outer labiokingival band</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: gray;">■</span> Laryngeal cartilages</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: gray;">■</span> Limbs point forward (ventrally)</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: gray;">■</span> Orbitosphenoid cartilage located within ectomeninx near optic stalk</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: gray;">■</span> Ossification begins in maxilla (stages 19 -20)</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: gray;">■</span> Primitive palate (or intermaxillary segment)</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: gray;">■</span> Rib primordia become cartilaginous</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: gray;">■</span> Ribs each have an identifiable head and shaft</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: gray;">■</span> Trachea: Tracheal cartilage</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: gray;">■</span> U-shaped labiodental lamina form along upper and lower oral cavity</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: gray;">■</span> Vertebral column represented by cartilaginous centrum, neural arch, and short transverse process</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: magenta;">■</span> Esophagus: Muscularis layer adjacent to esophageal plexus</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: magenta;">■</span> Gluteal muscle group</li> </ul>

	■ Iliopsoas muscles
	■ Infrahyoid muscles
	■ Internal intercostal muscles
	■ Limb extensor muscles located dorsally
	■ Limb flexor muscles located ventrally
	■ Midgut: Muscularis
	■ Muscle tissue forming around phrenic nerve within septum transversum portion of diaphragm
	■ Pharyngeal constrictor muscle
	■ Premuscle mass of the muscles of mastication innervated by mandibular nerve
	■ Quadratus lumborum muscle
	■ Rhomboid and scalene muscles
	■ Sternocleidomastoid and trapezius muscles distinct and innervated by separate branches of spinal accessory nerve (CN XI)
	■ Thenar and hypothenar eminences
	■ Tongue forms from swellings in floor of pharynx
	■ Tongue: Extrinsic muscles identifiable
	■ Tongue: Intrinsic muscles identifiable
	■ Transversospinal and erector spinae muscle groups
	■ Upper limb flexors innervated by musculocutaneous, median, and ulnar nerves
	■ Major calyces, cranial and caudal, with collecting tubules within metanephrogenic mass
	■ Mesonephros extends from T-9 to L-3
	■ Metanephros extends from T-12 to L-2
	■ Renal capsule covers distal collecting tubules
	■ Renal vesicles form in part of metanephros
	■ Ureter forms from "proximal segment of metanephric diverticulum"
	■ Urogenital sinus comprised of three parts: Bladder, pelvic, and phallic portions
	■ Anal folds adjacent to anal membrane
	■ Anal membrane
	■ Duodenum: "Assumes the shape of an arc"
	■ Greater omentum
	■ Lateral palatine process
	■ Liver: rapid growth, right side greater than left
	■ Median mandibular groove disappears as mandibular processes merge in midline
	■ Palatine fossa (from pharyngeal pouch 2)
	■ Primitive oral cavity
	■ Primitive rima oris replaces stomodeum
	■ Stomach wall layers: Mucosa, submucosa, muscularis, and serosa
	■ Submandibular and parotid gland buds

	<ul style="list-style-type: none"> <li><span style="color: purple;">■</span> Submandibular gland duct</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: orange;">■</span> Bronchial tree: First generation of subsegmental bronchi complete</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: orange;">■</span> Glottis, primitive</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: orange;">■</span> Lung sac, right: Oblique and horizontal fissures define upper, lower, and middle lobes</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: orange;">■</span> Lung sac: Apex and base</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: orange;">■</span> Lung, left: Oblique fissure defines upper and lower lobes</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> "Septum primum fuses with endocardial cushions" obliterating ostium primum and creating the ostium secundum</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Apex of left ventricle</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Circulus arteriosus (Circle of Willis) complete</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> External iliac arteries</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Iliac lymph sac</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Intercostal and subcostal arteries</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Internal thoracic artery and costocervical trunk</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Mesenteric lymph sac</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Mesonephric artery feeds mesonephros, gonads, and suprarenal glands</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Papillary muscles</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Pontine, superior cerebellar, and anterior and posterior inferior cerebellar arteries replace myelencephalic and metencephalic arteries</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Primitive marginal sinus drains diencephalon</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Primitive tentorial sinus drains cerebral vesical</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Primitive transverse and sigmoid sinuses</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Pulmonary arteries (right and left)</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Right coronary artery arises from aorta</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Splenic vein</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Tricuspid and mitral valves</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Anterior chamber between iridopupillary membrane and thickened ectoderm</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Auditory tube and primitive tympanic cavity form from tubotympanic recess pharyngeal pouch 1)</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Celiac, superior mesenteric, and inferior mesenteric preaortic ganglia</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Choana</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Cochlear duct tip grows upward</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Esophageal plexus formed by vagal nerves (CN X)</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Facial nerve (CN VII) branches: Chorda tympani, greater petrosal, posterior auricular, and digastric</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Facial nerve (CN VII) reaches cervicomandibular region</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Glossopharyngeal nerve (CN IX) innervates stylopharyngeus pre-muscle mass</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Hypoglossal nerve (CN XII) innervates separating tongue muscles</li> </ul>

	<ul style="list-style-type: none"> <li>Linguoingival groove</li> </ul>
	<ul style="list-style-type: none"> <li>Nasolacrimal duct forms from maxillonasal groove</li> </ul>
	<ul style="list-style-type: none"> <li>Nasolacrimal ducts extend from medial eyes to primitive nasal cavity</li> </ul>
	<ul style="list-style-type: none"> <li>Nerve fibers begin extending from retina</li> </ul>
	<ul style="list-style-type: none"> <li>Optic fibers enter chiasmatic plate</li> </ul>
	<ul style="list-style-type: none"> <li>Primitive nasal cavity</li> </ul>
	<ul style="list-style-type: none"> <li>Primordial vitreous body</li> </ul>
	<ul style="list-style-type: none"> <li>Superior, middle, and inferior cervical ganglia</li> </ul>
	<ul style="list-style-type: none"> <li>Trigeminal nerve (CN V) with ophthalmic, maxillary, and mandibular divisions reach their destinations</li> </ul>
	<ul style="list-style-type: none"> <li>Vagal trunks, anterior and posterior, extending into abdomen</li> </ul>
	<ul style="list-style-type: none"> <li>Eyelids: Upper and lower lids present and growing</li> </ul>
	<ul style="list-style-type: none"> <li>Sacculae and cochlear duct</li> </ul>
	<ul style="list-style-type: none"> <li>Adenohypophysis: Lateral lobes of pars tuberalis</li> </ul>
	<ul style="list-style-type: none"> <li>Adenohypophysis: Pars intermedia emerging</li> </ul>
	<ul style="list-style-type: none"> <li>Brain: Internal capsule formation underway</li> </ul>
	<ul style="list-style-type: none"> <li>Cerebral hemispheres cover half of diencephalon</li> </ul>
	<ul style="list-style-type: none"> <li>Dorsal and ventral cochlear nuclei</li> </ul>
	<ul style="list-style-type: none"> <li>Fourth ventricle: Lateral recesses</li> </ul>
	<ul style="list-style-type: none"> <li>Ganglion of nervus terminalis</li> </ul>
	<ul style="list-style-type: none"> <li>Globus pallidus externus in the diencephalon</li> </ul>
	<ul style="list-style-type: none"> <li>Habenular commissure</li> </ul>
	<ul style="list-style-type: none"> <li>Intermediate layer in dorsal thalamus</li> </ul>
	<ul style="list-style-type: none"> <li>Lemniscal decussation</li> </ul>
	<ul style="list-style-type: none"> <li>Lower limb nerves (femoral, obturator, sciatic, common peroneal, and tibial) identifiable</li> </ul>
	<ul style="list-style-type: none"> <li>Medial accessory olivary nucleus</li> </ul>
	<ul style="list-style-type: none"> <li>Neurohypophyseal bud</li> </ul>
	<ul style="list-style-type: none"> <li>Nuclei of forebrain septum</li> </ul>
	<ul style="list-style-type: none"> <li>Nucleus accumbens</li> </ul>
	<ul style="list-style-type: none"> <li>Occipital pole of cerebral hemispheres</li> </ul>
	<ul style="list-style-type: none"> <li>Optic stalk with barely discernible lumen</li> </ul>
	<ul style="list-style-type: none"> <li>Paraphysis marks dividing line in roof between telencephalon and diencephalon</li> </ul>
	<ul style="list-style-type: none"> <li>Primitive filum terminale</li> </ul>
	<ul style="list-style-type: none"> <li>Radial nerve innervates upper limb extensors</li> </ul>
	<ul style="list-style-type: none"> <li>Rhombomeres no longer distinguishable</li> </ul>
	<ul style="list-style-type: none"> <li>Subcommissural organ</li> </ul>
	<ul style="list-style-type: none"> <li>Zona limitans intrathalamica between dorsal and ventral thalami</li> </ul>
<p><b>6 weeks, 6 days</b> <math>\frac{1}{2}</math> <math>\frac{1}{2}</math></p>	<ul style="list-style-type: none"> <li>Cloacal membrane ruptures</li> </ul>



7 weeks ½½	<ul style="list-style-type: none"> <li><span style="color: green;">■</span> Head rotates</li> <li><span style="color: lightgreen;">■</span> Ovaries</li> <li><span style="color: red;">■</span> The heart has four chambers and is nearly complete.</li> <li><span style="color: red;">■</span> The heart rate peaks at 165 to 170 beats per minute.</li> <li><span style="color: black;">□</span> Crown-heel length 2.2 cm</li> </ul>
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**Unit 8: 7 to 8 Weeks**

7 weeks, 1 day ½½	<ul style="list-style-type: none"> <li><span style="color: pink;">■</span> Facial processes no longer distinguishable</li> <li><span style="color: lightgreen;">■</span> Ovaries full of primitive oogonia, intermediate pregranulosa cells, and mesenchyme</li> <li><span style="color: lightgreen;">■</span> Testes with short straight tubules</li> <li><span style="color: grey;">■</span> Upper limbs with slightly flexed elbows</li> <li><span style="color: magenta;">■</span> Diaphragm: Central tendon</li> <li><span style="color: darkgreen;">■</span> Renal vesicles with S-shaped lumina</li> <li><span style="color: purple;">■</span> Submandibular gland: Solid epithelial ducts enlarge and begin to branch</li> <li><span style="color: red;">■</span> Adenohypophysis with new capillaries on rostral surface</li> <li><span style="color: red;">■</span> Scalp vascular plexus</li> <li><span style="color: yellow;">■</span> Cochlear duct tip growing horizontally</li> <li><span style="color: yellow;">■</span> Lens cavity completely filled</li> <li><span style="color: yellow;">■</span> Optic commissure</li> <li><span style="color: yellow;">■</span> Optic fibers extend to optic chiasma</li> <li><span style="color: yellow;">■</span> Cornea with three layers</li> <li><span style="color: blue;">■</span> Brain: Inferior colliculus (in mesencephalon)</li> <li><span style="color: blue;">■</span> Cerebral hemispheres expand beyond lamina terminalis</li> <li><span style="color: blue;">■</span> Cerebral hemispheres extend over two-thirds of diencephalon</li> <li><span style="color: blue;">■</span> Interpeduncular groove</li> <li><span style="color: blue;">■</span> Medial septal nucleus</li> <li><span style="color: blue;">■</span> Nigrostriatal fibers</li> <li><span style="color: blue;">■</span> Nucleus of diagonal band</li> <li><span style="color: blue;">■</span> Sacrocaudal spinal cord formation (secondary neurulation) complete</li> <li><span style="color: blue;">■</span> Sensory pathways: Cuneate and gracile decussating fibers</li> <li><span style="color: blue;">■</span> Septum verum</li> <li><span style="color: blue;">■</span> Spinothalamic tract</li> <li><span style="color: purple;">■</span> Stomach: Folds in stomach wall</li> </ul>
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7 weeks, 2 days ½½	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Arteries and veins of heart complete</li> </ul>
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<b>7 weeks, 3 days ½</b>	<ul style="list-style-type: none"> <li>□ Volar pads begin to emerge on fingertips</li> </ul>
	<ul style="list-style-type: none"> <li>□ Chondrocranium with dorsum sellae and hypophysial fossa</li> </ul>
	<ul style="list-style-type: none"> <li>□ Dens (of second cervical vertebrae)</li> </ul>
	<ul style="list-style-type: none"> <li>□ Sternoclavicular joint and manubrium</li> </ul>
	<ul style="list-style-type: none"> <li>□ Trachea: Thyroid cartilage</li> </ul>
	<ul style="list-style-type: none"> <li>□ Wrists slightly flexed</li> </ul>
	<ul style="list-style-type: none"> <li>■ Gluteus medius and gluteus minimus muscles</li> </ul>
	<ul style="list-style-type: none"> <li>■ Iliacus muscles</li> </ul>
	<ul style="list-style-type: none"> <li>■ Mylohyoid and infrahyoid muscles</li> </ul>
	<ul style="list-style-type: none"> <li>■ Orbicularis oculi muscles</li> </ul>
	<ul style="list-style-type: none"> <li>■ Submandibular gland: Solid ducts with definitive branches</li> </ul>
	<ul style="list-style-type: none"> <li>■ Anterior and posterior choroid arteries</li> </ul>
	<ul style="list-style-type: none"> <li>■ Left superior vena cava disappears (Stages 21-23)</li> </ul>
	<ul style="list-style-type: none"> <li>■ Scalp vascular plexus moving toward vertex</li> </ul>
	<ul style="list-style-type: none"> <li>■ Cornea: Substantia propria layer</li> </ul>
	<ul style="list-style-type: none"> <li>■ Fibers of optic nerve reach brain</li> </ul>
	<ul style="list-style-type: none"> <li>■ Eyelids growing rapidly</li> </ul>
	<ul style="list-style-type: none"> <li>■ Anterior and inferior horns of lateral ventricle</li> </ul>
	<ul style="list-style-type: none"> <li>■ Brain: Insula within cerebral hemisphere</li> </ul>
	<ul style="list-style-type: none"> <li>■ C-shaped lateral ventricle</li> </ul>
	<ul style="list-style-type: none"> <li>■ Cerebral hemispheres cover 75% of diencephalon</li> </ul>
	<ul style="list-style-type: none"> <li>■ Cerebral hemispheres cover more than half of diencephalon</li> </ul>
	<ul style="list-style-type: none"> <li>■ Cortical plate within primordial plexiform layer</li> </ul>
	<ul style="list-style-type: none"> <li>■ Glial and neurilemmal (Schwann) cells within cranial nerves</li> </ul>
	<ul style="list-style-type: none"> <li>■ Globus pallidus internus</li> </ul>
	<ul style="list-style-type: none"> <li>■ Internal fiber layer of cerebellum</li> </ul>
	<ul style="list-style-type: none"> <li>■ Lateral olfactory tract</li> </ul>
	<ul style="list-style-type: none"> <li>■ Primordium of dentate nucleus</li> </ul>
	<ul style="list-style-type: none"> <li>■ Pyramidal cells in hippocampus</li> </ul>
	<ul style="list-style-type: none"> <li>■ Subthalamic nucleus proper, entopeduncular nucleus, and globus pallidus externus within subthalamus</li> </ul>
	<ul style="list-style-type: none"> <li>■ Sulcus transversus rhombencephali</li> </ul>
	<ul style="list-style-type: none"> <li>■ Ventral part of lateral geniculate body</li> </ul>
<b>7 weeks ½</b>	<ul style="list-style-type: none"> <li>□ Fingertips thicken</li> </ul>
	<ul style="list-style-type: none"> <li>□ Plantar pads toes</li> </ul>
	<ul style="list-style-type: none"> <li>■ EKG pattern similar to adult</li> </ul>
<b>7 weeks, 5 days ½</b>	<ul style="list-style-type: none"> <li>□ Endolymphatic and jugular foramina</li> </ul>

	<input type="checkbox"/> Hands can reach one another and fingers can overlap
	<input type="checkbox"/> Optic foramen, foramen rotundum, internal acoustic foramen
	<input type="checkbox"/> Osteoblasts emerge
	<input type="checkbox"/> Pelvis: Obturator foramen
	<input checked="" type="checkbox"/> Obturator internus muscles
	<input checked="" type="checkbox"/> Rectus femoris muscle
	<input checked="" type="checkbox"/> Large glomeruli present within metanephros
	<input checked="" type="checkbox"/> Submandibular gland: Secondary branching with lumen formation starting at oral end of duct
	<input checked="" type="checkbox"/> Costodiaphragmatic recess of pleural cavity
	<input checked="" type="checkbox"/> Chordae tendineae (Stages 22 and 23)
	<input checked="" type="checkbox"/> Intradural veins (sinuses)
	<input checked="" type="checkbox"/> Scalp vascular plexus 75% of the way to the vertex
	<input checked="" type="checkbox"/> Cochlear duct's second loop growing upward
	<input checked="" type="checkbox"/> Scleral condensation
	<input checked="" type="checkbox"/> Tragus and antitragus taking shape
	<input checked="" type="checkbox"/> Eyelids continue growing rapidly over the surface of the cornea
	<input checked="" type="checkbox"/> Optic nerve acquires a sheath
	<input checked="" type="checkbox"/> Brain: Claustrum
	<input checked="" type="checkbox"/> Brain: Cortical plate within cerebral hemispheres
	<input checked="" type="checkbox"/> Brain: Internal capsule with connections to epithalamus, dorsal thalamus, and mesencephalon
	<input checked="" type="checkbox"/> Brain: Putamen
	<input checked="" type="checkbox"/> Cerebral hemispheres cover 75% of diencephalon
	<input checked="" type="checkbox"/> Commissural plate thickens
	<input checked="" type="checkbox"/> Cortical plate expanding rapidly
	<input checked="" type="checkbox"/> Folds in roof of third ventricle
	<input checked="" type="checkbox"/> Nerve fibers between neopallial subplate and internal capsule
	<input checked="" type="checkbox"/> Thalamocortical fibers
<b>8 weeks</b> $\frac{1}{2}$ $\frac{1}{2}$	<input checked="" type="checkbox"/> Ductus deferens
	<input checked="" type="checkbox"/> Interstitial cells forming within testis
	<input checked="" type="checkbox"/> Testicular tubules
	<input checked="" type="checkbox"/> Male embryos are making testosterone already!
	<input type="checkbox"/> Anterior inferior iliac spine
	<input type="checkbox"/> Costal cartilage
	<input type="checkbox"/> Enamel organ
	<input type="checkbox"/> Femur: Head and acetabular fossa
	<input type="checkbox"/> Glenoid fossa
	<input type="checkbox"/> Greater trochanter
	<input type="checkbox"/> Head of humerus
	<input type="checkbox"/> Inguinal ligament

	<ul style="list-style-type: none"> <li><input type="checkbox"/> Joint development: Cavitation underway in hip, knee, and ankle (in some embryos)</li> </ul>
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Joint development: Cavitation underway in shoulder, elbow, and wrist (in some embryos)</li> </ul>
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Nucleus pulposus (from notochord)</li> <li><input type="checkbox"/> Ossification underway in scapula and distal phalanges in some embryos</li> </ul>
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Pubic symphysis</li> <li><input type="checkbox"/> Scapular spine and notch</li> </ul>
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Skull: Foramen magnum (wide)</li> <li><input type="checkbox"/> Skull: Ossification underway in some embryos</li> </ul>
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Superior and inferior pubic rami</li> <li><input type="checkbox"/> Ulna: Styloid process and olecranon</li> </ul>
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Vertebrae cartilaginous (33 or 34 in number)</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Anterior digastric muscles</li> <li><input checked="" type="checkbox"/> Depressor anguli oris muscle</li> <li><input checked="" type="checkbox"/> Esophagus: Longitudinal muscles</li> <li><input checked="" type="checkbox"/> Obliquus superior capitis muscle</li> <li><input checked="" type="checkbox"/> Obturator externus, gluteus maximus, and hamstring muscles</li> <li><input checked="" type="checkbox"/> Posterior belly of the digastric muscle</li> <li><input checked="" type="checkbox"/> Psoas tendon</li> <li><input checked="" type="checkbox"/> Rectus sheath with anterior and posterior lamina</li> <li><input checked="" type="checkbox"/> Temporal and lateral pterygoid muscles</li> <li><input checked="" type="checkbox"/> Zygomaticus major muscle</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Kidneys at level of first three lumbar vertebrae</li> <li><input checked="" type="checkbox"/> Metanephros: Numerous large glomeruli</li> <li><input checked="" type="checkbox"/> Metanephros: Secretory tubules elongating and becoming convoluted</li> <li><input checked="" type="checkbox"/> Sinus tubercle</li> <li><input checked="" type="checkbox"/> Urethra</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Gastrolial ligament</li> <li><input checked="" type="checkbox"/> Nerves reaching intestinal loop</li> <li><input checked="" type="checkbox"/> Submandibular gland: Lumen present in terminal portions of duct</li> <li><input checked="" type="checkbox"/> Submandibular gland: Mesodermal sheath surrounds gland</li> <li><input checked="" type="checkbox"/> Unfused uvula (edge of unfused palatine shelf) and secondary palate</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Pseudoglandular stage begins</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Azygos vein</li> <li><input checked="" type="checkbox"/> Blood supply to the brain closely resembles adult pattern</li> <li><input checked="" type="checkbox"/> Hemiazygos veins</li> <li><input checked="" type="checkbox"/> Inferior epigastric artery</li> <li><input checked="" type="checkbox"/> Inferior vena cava valve at junction of right atrium</li> <li><input checked="" type="checkbox"/> Scalp vascular plexus nearing vertex</li> </ul>

	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Submandibular glands: Angiogenesis begins around epithelial tree (ducts)</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Superior sagittal sinus</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Cochlear duct's 2.5 coils nearly complete</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Cranial nerve distribution mimics adult pattern</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Eye: Secondary vitreous body</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Lens: Secondary lens fibers emerging</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Retina: Eight layers present</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Retina: Four of the ten adult layers present</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Tympanic membrane</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Eyelids fusing laterally and medially</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Optic tract reaches ventral portion of lateral geniculate body</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> "The rhombencephalon...presents striking resemblance to that of the newborn."</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Amygdala area</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Brain represents 43% of embryo</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Brain: Caudate nucleus and putamen within corpus striatum</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Cerebellar commissures</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Cerebellum with external germinal layer</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Cerebral hemispheres cover lateral portion of diencephalon</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Choroid plexus now lobular</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Cortical plate covers nearly all of neopallial surface</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Dura lines entire vertebral canal</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Fasciculus cuneatus and fasciculus gracilis form the decussation of the medial lemnisci</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Greater palatine nerve</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Grey and white matter</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Hippocampus reaches temporal pole</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Inferior and superior cerebellar peduncles</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Most cisterns present</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Principal nucleus of inferior olivary nuclei</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Pyramidal decussations</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Right- and left-handedness emerges</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Suprapineal recess</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Suprascapular nerve</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Vermis of cerebellum</li> </ul>
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Crown-heel length 4.3 cm</li> </ul>
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Embryonic Period Ends</li> </ul>
	<ul style="list-style-type: none"> <li><input type="checkbox"/> The 8-week embryo has formed more than 4,000 permanent body parts.</li> </ul>

**Unit 9: 8 to 9 Weeks**

8 weeks, 1 day  $\frac{1}{2}$   $\frac{1}{2}$

■ Humerus: Bone marrow replaces cartilage

8 weeks, 1 day - 9 weeks $\frac{1}{2}$ $\frac{1}{2}$	<ul style="list-style-type: none"> <li>Anal canal patent</li> </ul>
8 $\frac{1}{2}$ weeks $\frac{1}{2}$ $\frac{1}{2}$	<ul style="list-style-type: none"> <li>Eyelids completely fused</li> </ul>
9 weeks $\frac{1}{2}$ $\frac{1}{2}$	<ul style="list-style-type: none"> <li>Neurons synapse in cerebral cortex (marginal zone)</li> <li>Drinking fluid is becoming routine</li> </ul>
	<ul style="list-style-type: none"> <li>Sucking the thumb</li> </ul>
	<ul style="list-style-type: none"> <li>External capsule</li> </ul>
	<ul style="list-style-type: none"> <li>Olivary nucleus with five components</li> </ul>
<b>Unit 10: 9 to 10 Weeks</b>	
9 weeks - 10 weeks $\frac{1}{2}$ $\frac{1}{2}$	<ul style="list-style-type: none"> <li>Larynx recanalizes</li> </ul>
10 weeks $\frac{1}{2}$ $\frac{1}{2}$	<ul style="list-style-type: none"> <li>Palatine tonsils</li> </ul>
	<ul style="list-style-type: none"> <li>Three-layered epidermis</li> </ul>
	<ul style="list-style-type: none"> <li>Now, all the bones are getting harder</li> </ul>
	<ul style="list-style-type: none"> <li>Tooth buds (secondary teeth)</li> </ul>
	<ul style="list-style-type: none"> <li>Physiologic herniation ends</li> </ul>
	<ul style="list-style-type: none"> <li>Commissure of the fornix</li> </ul>
	<ul style="list-style-type: none"> <li>Crown-heel length 7.5 cm</li> </ul>
<b>Unit 11: 10 to 11 Weeks</b>	
10 weeks - 12 weeks $\frac{1}{2}$ $\frac{1}{2}$	<ul style="list-style-type: none"> <li>Langerhans cells enter epidermis</li> </ul>
10 $\frac{1}{2}$ weeks $\frac{1}{2}$ $\frac{1}{2}$	<ul style="list-style-type: none"> <li>Volar and plantar pads regress</li> </ul>
11 weeks $\frac{1}{2}$ $\frac{1}{2}$	<ul style="list-style-type: none"> <li>Intermediate layer</li> </ul>
	<ul style="list-style-type: none"> <li>Intestines absorb water &amp; glucose</li> </ul>
	<ul style="list-style-type: none"> <li>Small intestine lined with villi</li> </ul>
	<ul style="list-style-type: none"> <li>Crown-heel length</li> </ul>
<b>Unit 12: 11 to 12 Weeks</b>	
12 weeks $\frac{1}{2}$ $\frac{1}{2}$	<ul style="list-style-type: none"> <li>Sebaceous glands</li> </ul>
	<ul style="list-style-type: none"> <li>Many different hormones are present in pituitary gland</li> </ul>
	<ul style="list-style-type: none"> <li>All facial muscles in final positions</li> </ul>
	<ul style="list-style-type: none"> <li>Bowel movements</li> </ul>
	<ul style="list-style-type: none"> <li>Liver: Bile production begins</li> </ul>
	<ul style="list-style-type: none"> <li>Corpus callosum</li> </ul>
	<ul style="list-style-type: none"> <li>Crura cerebri</li> </ul>

	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Myelination in spinal cord</li> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em; vertical-align: middle;"></span> Crown-heel length 12 cm</li> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em; vertical-align: middle;"></span> Head circumference 10 cm</li> </ul>
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**Unit 13: 3 to 4 Months**

<p><b>13 weeks</b> <math>\frac{1}{2}</math> <math>\frac{1}{2}</math></p>	<ul style="list-style-type: none"> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em; vertical-align: middle;"></span> Teeth are growing</li> </ul>
<p><b>14 weeks</b> <math>\frac{1}{2}</math> <math>\frac{1}{2}</math></p>	<ul style="list-style-type: none"> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em; vertical-align: middle;"></span> Crown-heel length 15 cm</li> <li><span style="color: green;">■</span> Girls move their jaws more than the boys do</li> </ul>
<p><b>15 weeks</b> <math>\frac{1}{2}</math> <math>\frac{1}{2}</math></p>	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Cerebellum resembles adult structure</li> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em; vertical-align: middle;"></span> Crown-heel length 17 cm</li> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em; vertical-align: middle;"></span> Crown-heel length 19.5 cm</li> </ul>
<p><b>16 weeks</b> <math>\frac{1}{2}</math> <math>\frac{1}{2}</math></p>	<ul style="list-style-type: none"> <li><span style="color: green;">■</span> Quickening</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: purple;">■</span> Colon lined with villi</li> <li><span style="color: orange;">■</span> Canalicular stage begins</li> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em; vertical-align: middle;"></span> Crown-heel length 21 cm</li> </ul>

**Unit 14: 4 to 5 Months**

<p><b>18 weeks</b> <math>\frac{1}{2}</math> <math>\frac{1}{2}</math></p>	<ul style="list-style-type: none"> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em; vertical-align: middle;"></span> Apocrine sweat glands</li> </ul>
<p><b>19 weeks</b> <math>\frac{1}{2}</math> <math>\frac{1}{2}</math></p>	<ul style="list-style-type: none"> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em; vertical-align: middle;"></span> Sweat glands</li> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em; vertical-align: middle;"></span> Melanin production</li> </ul>
<p><b>20 weeks</b> <math>\frac{1}{2}</math> <math>\frac{1}{2}</math></p>	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Sulci on surface of cerebral hemispheres</li> <li><span style="color: purple;">■</span> Peyer's patches</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: orange;">■</span> Surfactant production (low levels)</li> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em; vertical-align: middle;"></span> Crown-heel length 28 cm</li> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em; vertical-align: middle;"></span> Head circumference 20 cm</li> </ul>

**Unit 15: 5 to 6 Months**

<p><b>21 weeks</b> <math>\frac{1}{2}</math> <math>\frac{1}{2}</math></p>	<ul style="list-style-type: none"> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em; vertical-align: middle;"></span> Periderm disappears</li> </ul>
<p><b>22 weeks</b> <math>\frac{1}{2}</math> <math>\frac{1}{2}</math></p>	<ul style="list-style-type: none"> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em; vertical-align: middle;"></span> Stratum corneum</li> <li><span style="color: yellow;">■</span> Cornea structure</li> </ul>
<p><b>23 weeks</b> <math>\frac{1}{2}</math> <math>\frac{1}{2}</math></p>	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Behavioral states</li> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em; vertical-align: middle;"></span> Brain weight 100 grams</li> </ul>

24 weeks  $\frac{1}{2}$   $\frac{1}{2}$   Crown-heel length 34.5 cm

**Unit 16: 6 to 7 Months**

25 weeks  $\frac{1}{2}$   $\frac{1}{2}$   Intestinal lining contains all adult cell types

26 weeks  $\frac{1}{2}$   $\frac{1}{2}$   Terminal sac stage begins

28 weeks  $\frac{1}{2}$   $\frac{1}{2}$   Crown-heel length 39.5 cm

**Unit 17: 7 to 8 Months**

30 weeks  $\frac{1}{2}$   $\frac{1}{2}$   Head circumference 30 cm

32 weeks  $\frac{1}{2}$   $\frac{1}{2}$   Esophagus: Lower esophagus muscles functional

Crown-heel length 45 cm

**Unit 18: 8 to 9 Months**

36 weeks  $\frac{1}{2}$   $\frac{1}{2}$   Surfactant production accelerates

Brain weight 300 grams

Crown-heel length 48.5 cm

**Unit 19: 9 Months to Birth**

37 weeks  $\frac{1}{2}$   $\frac{1}{2}$   Fetus drinks an estimated 15 oz (or 450cc) of amniotic fluid/day

38 weeks  $\frac{1}{2}$   $\frac{1}{2}$   Heart beats 54 million times before birth

Spinal cord ends at third lumbar vertebrae

Brain weight 350 grams

Crown-heel length 50 cm

Head circumference 35 cm

Time to be born!

**Unit 20: 9 Months to Birth**

66 weeks, 5 days  $\frac{1}{2}$   $\frac{1}{2}$   Premuscle cells form sheets representing muscles of facial expression