

# Prenatal Development Timeline

- |   |  |  |   |
|---|--|--|---|
| <span style="color: blue;">■</span> Nervous           | <span style="color: red;">■</span> Cardiovascular      | <span style="color: darkred;">■</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: olive;">■</span> Renal/Urinary     | <span style="color: lightgreen;">■</span> Reproductive | <span style="color: green;">■</span> Movement         |

## Unit 1: The First Week

Day 0	—	<span style="color: teal;">■</span> Embryonic period begins
Day 1	—	<span style="color: teal;">■</span> Embryo is spherically shaped with 12 to 16 cells
		<span style="color: teal;">■</span> Fertilization resulting in zygote formation
Day 1 - Day 1	—	<span style="color: teal;">■</span> Fertilization - development begins with a single-cell embryo!!!
Day 2	—	<span style="color: cyan;">■</span> Early pregnancy factor (EPF)
		<span style="color: teal;">■</span> Activation of the genome
		<span style="color: teal;">■</span> Zygote divides into two blastomeres (24 - 30 hours from start of fertilization)
Day 4	—	<span style="color: teal;">■</span> Embryonic disc
		<span style="color: teal;">■</span> Free floating blastocyst
		<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
Day 5	—	<span style="color: teal;">■</span> Hatching blastocyst
Day 6	—	<span style="color: teal;">■</span> Embryo attaches to wall of uterus
1 week	—	<span style="color: teal;">■</span> Chorion
		<span style="color: teal;">■</span> Placenta begins to form
























## Unit 2: 1 to 2 Weeks

1 week, 1 day	—	<span style="color: cyan;">■</span> Positive pregnancy test
		<span style="color: teal;">■</span> Amnioblasts present; amnion and amniotic cavity formation begins
1 week, 2 days	—	<span style="color: teal;">■</span> Cells in womb engorged with nutrients
1 week, 4 days	—	<span style="color: teal;">■</span> Longitudinal axis
1 week, 5 days	—	<span style="color: teal;">■</span> Implantation complete
		<span style="color: teal;">■</span> Yolk sac
1 week, 6 days	—	<span style="color: red;">■</span> Primordial blood vessels
		<span style="color: teal;">■</span> Amnion with single cell layer
		<span style="color: teal;">■</span> Chorionic villi
2 weeks	—	<span style="color: teal;">■</span> Yolk sac
		<span style="color: teal;">■</span> Yolk sac















## Unit 3: 2 to 3 Weeks
















2 weeks, 1 day	—	<span style="color: teal;">■</span> 3 germ layers
		<span style="color: teal;">■</span> Rostral-caudal orientation
2 weeks, 2 days	—	<span style="color: magenta;">■</span> Erythroblasts in yolk sac
		<span style="color: magenta;">■</span> Three types of blood-forming cells in yolk sac
		<span style="color: teal;">■</span> Amnion with two cell layers
		<span style="color: teal;">■</span> Secondary villi

<b>2 weeks, 4 days</b>	<ul style="list-style-type: none"> <li><span style="color: purple;">■</span> Foregut, midgut, and hindgut</li> <li><span style="color: blue;">■</span> Brain is first organ to appear</li> <li><span style="color: blue;">■</span> Neural plate induced by notochordal process</li> <li><span style="color: cyan;">■</span> Connecting stalk</li> </ul>
<b>2 weeks, 6 days</b>	<ul style="list-style-type: none"> <li><span style="color: magenta;">■</span> Numerous blood islands in umbilical vesicle</li> <li><span style="color: purple;">■</span> Foregut</li> <li><span style="color: purple;">■</span> Stomodeum forming</li> <li><span style="color: red;">■</span> Beginnings of the heart can be seen</li> <li><span style="color: red;">■</span> Blood vessels emerge simultaneously in umbilical vesicle, embryo proper, amnion, and connecting stalk</li> <li><span style="color: red;">■</span> Dorsal aortae (paired)</li> <li><span style="color: red;">■</span> Paired tubular heart</li> <li><span style="color: blue;">■</span> Forebrain, midbrain, and hindbrain</li> <li><span style="color: blue;">■</span> Neural groove deepens substantially</li> <li><span style="color: blue;">■</span> Three main divisions of brain</li> <li><span style="color: cyan;">■</span> Neural crest: Rostral and facial</li> </ul>
<b>3 weeks</b>	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Blood and blood vessels</li> </ul>
<b>Unit 4: 3 to 4 Weeks</b>	
<b>3 weeks, 1 day</b>	<ul style="list-style-type: none"> <li><span style="color: purple;">■</span> Midgut emerging</li> <li><span style="color: orange;">■</span> Respiratory outgrowth</li> <li><span style="color: red;">■</span> Atria (right and left) far apart</li> <li><span style="color: red;">■</span> Circulatory system function begins</li> <li><span style="color: red;">■</span> Endocardial tubes fuse forming tubular heart</li> <li><span style="color: red;">■</span> Heart begins beating</li> <li><span style="color: red;">■</span> Pericardium</li> <li><span style="color: red;">■</span> Primary head vein</li> <li><span style="color: red;">■</span> Sinus venosus</li> <li><span style="color: red;">■</span> Tubular heart begins folding</li> <li><span style="color: red;">■</span> Umbilical arteries</li> <li><span style="color: red;">■</span> Umbilical veins (right and left)</li> <li><span style="color: blue;">■</span> Neural tube</li> <li><span style="color: cyan;">■</span> Body cavities</li> <li><span style="color: cyan;">■</span> Hyoid arch</li> </ul>
<b>3 weeks, 3 days</b>	<ul style="list-style-type: none"> <li><span style="color: cyan;">■</span> Thyroid complete</li> <li><span style="color: purple;">■</span> Cystic primordium</li> <li><span style="color: purple;">■</span> Liver</li> <li><span style="color: purple;">■</span> Membrane between future mouth and throat may begin to rupture</li> <li><span style="color: red;">■</span> Internal carotid arteries</li> <li><span style="color: blue;">■</span> Neuropore (near brain) closes</li> <li><span style="color: blue;">■</span> Notochord</li> </ul>
<b>3 weeks, 5 days</b>	<ul style="list-style-type: none"> <li><span style="color: purple;">■</span> First part of pancreas</li> <li><span style="color: purple;">■</span> Pharyngeal arch 3</li> <li><span style="color: orange;">■</span> Lung bud</li> <li><span style="color: red;">■</span> Descending aorta</li> </ul>



























	 Unidirectional circulation
	 Brain involves 40% of neural tube
	 Lowermost spinal cord formation begins
	 Neural tube closes (lower back)
	 Somites: Pairs 21 through 29
	 Upper limb primordium at level of somites 8 to 10
	 Progressively C-shaped embryo
<b>4 weeks</b>	 Skin is so thin, you can see through it!
	 Esophagus primordia
	 Intestines growing in length
	 Pancreas: Ventral pancreas
	 Pharynx
	 Small & large intestines
	 Bronchial buds
	 Lungs begin filling chest cavity
	 Trachea
	 Circulatory system "well established"
	 Functioning two-chamber heart
	 Heart chambers bulging with fluid
	 Heart now functions as two parallel pumps
	 Heart rate (about) 113 beats/min
	 Most cranial nerve ganglia
	 Cerebellum
	 Fourth ventricle
	 Amnion surrounds embryo
	 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**

<b>4 weeks, 3 days</b>	 Early eyes
<b>4 weeks, 3 days - 5 weeks</b>	 Germ cells migrate to gonads
<b>4 weeks, 4 days</b>	 Lungs: Right and left primary (or main stem) bronchi
	 Sinu-atrial (SA) node
	 Eyes located on sides of head
	 Lens pits
	 Nose: Nasal pits
	 Brain enlarges 50% since Carnegie Stage 13
	 Brain: Cerebral hemispheres appear and begin rapid growth
	 Brain: Lateral ventricles
	 Hypothalamus
<b>4 weeks, 5 days</b>	 Caecum
	 Blood vessels penetrate diencephalon
	 Coronary arteries (terminal end)

	 Optic chiasm
	 Brain with five main sections
	 First nerve fibers
	 Most cranial nerves seen
	 Synapses among motor neurons in spinal cord
	 Third ventricle
<b>5 weeks</b>	 ACTH [adrenocorticotropin hormone]
	 Growth hormone
	 Pituitary gland
	 Limb buds form hand plates
	 Permanent kidneys
	 Bronchial tree branching accelerates
	 Lobar pattern mimics adult pattern
	 Pacemaker cells
	 Head is one third of entire embryo

**Unit 6: 5 to 6 Weeks**

<b>5 weeks, 1 day</b>	 Wrist joints are forming
<b>5 weeks, 2 days</b>	 Thyroid detaches from pharynx
	 Atrioventricular (AV) node
	 Circle of Willis almost complete
	 Cochlear nerve present
	 Musculocutaneous, radial, ulna, and median nerves enter upper limb bud
	 All cranial nerves identifiable
<b>5½ weeks</b>	 Initial tooth formation
<b>5½ weeks - 6 weeks</b>	 Subtle movement begins
<b>5 weeks, 4 days</b>	 Cartilage formation
<b>5 weeks, 5 days</b>	 Nerve cells differentiating
<b>5 weeks, 5 days - 7 weeks, 1 day</b>	 Melanocytes in epidermis
<b>5 weeks, 6 days</b>	 Cartilage in occipital sclerotomes (1-4)
	 Primordial vermiform appendix
	 All spinal nerves present
	 Dura begins forming in basal area
	 Frontal and temporal poles of cerebral hemispheres
	 Somites: Pairs 38 and 39
	 Synapses in spinal cord between interneurons and primary afferent neurons
<b>6 weeks</b>	 Face withdraws from light touch around mouth
	 Blood forming in liver
	 Nipples along side of trunk
	 Adrenal glands
	 Glucagon in pancreas
	 Handplates develop subtle flattening
	 Joints

	□ Tooth buds (primary teeth)
	■ Diaphragm is largely formed
	■ Intestines fill base of umbilical cord
	■ External ears
	■ Synapses form in spinal cord
	□ Crown-heel length 1.6 cm

**Unit 7: 6 to 7 Weeks**

<b>6 weeks, 2 days</b>	□ Elbow regions sometimes identifiable
	□ Hands polygon-shaped
	□ Humerus, radius, and ulna
	□ Toe rays sometimes present
	■ Deltoid muscle
	■ Submandibular gland primordia
	■ Inferior vena cava
	■ Origin of left coronary artery
	■ Optic fibers
	■ Eyelid folds sometimes present
	■ Brainwave activity has begun
	■ Cerebrospinal fluid production begins
<b>6½ weeks</b>	■ The hands begin to move
	□ Volar pads on palms
	□ Bones first form in the collar bones and lower jaw
<b>6 weeks, 5 days</b>	□ Beginnings of occipital and sphenoid bones
	□ Cartilaginous styloid process
	■ Anal membrane
	■ Lung, left: Oblique fissure defines upper and lower lobes
	■ Circulus arteriosus (Circle of Willis) complete
	■ Origin of right coronary artery
	■ Tricuspid and mitral valves
	■ Primitive nasal cavity
	■ Eyelids: Upper and lower lids present and growing
	■ Occipital pole of cerebral hemispheres
<b>6 weeks, 6 days</b>	□ Feet polygon-shaped
	■ Cloacal membrane ruptures
<b>7 weeks</b>	■ Head rotates
	■ Leg movements
	■ B lymphocytes in liver
	■ Ovaries
	■ Testes begin to differentiate
	■ Insulin in pancreas
	□ Foot plates notched
	■ Hiccups
	■ Tendons attach muscle to bone
	■ The heart has four chambers and is nearly complete.

	<ul style="list-style-type: none"> <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>
<b>Unit 8: 7 to 8 Weeks</b>	
<b>7 weeks, 1 day</b>	<ul style="list-style-type: none"> <li><span style="color: grey;">■</span> Upper limbs with slightly flexed elbows</li> <li><span style="color: blue;">■</span> Sacrocaudal spinal cord formation (secondary neurulation) complete</li> </ul>
<b>7 weeks, 1 day - 8 weeks</b>	<ul style="list-style-type: none"> <li><span style="color: purple;">■</span> Stomach: Folds in stomach wall</li> </ul>
<b>7 weeks, 2 days</b>	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Arteries and veins of heart complete</li> </ul>
<b>7 weeks, 3 days</b>	<ul style="list-style-type: none"> <li><span style="color: grey;">■</span> The knee joints have arrived</li> <li><span style="color: grey;">■</span> Wrists slightly flexed</li> <li><span style="color: yellow;">■</span> Eyelids growing rapidly</li> <li><span style="color: blue;">■</span> Cerebral hemispheres cover more than half of diencephalon</li> </ul>
<b>7½ weeks</b>	<ul style="list-style-type: none"> <li><span style="color: green;">■</span> Hands begin to touch face</li> <li><span style="color: green;">■</span> The hands touch each other as do the feet!</li> <li><span style="color: pink;">■</span> Fingertips thicken</li> <li><span style="color: pink;">■</span> Plantar pads toes</li> <li><span style="color: red;">■</span> EKG pattern similar to adult</li> </ul>
<b>7 weeks, 4 days</b>	<ul style="list-style-type: none"> <li><span style="color: grey;">■</span> The fingers are free</li> </ul>
<b>7 weeks, 5 days</b>	<ul style="list-style-type: none"> <li><span style="color: grey;">■</span> Bone-forming cells called osteoblasts emerge</li> <li><span style="color: grey;">■</span> Hands can reach one another and fingers can overlap</li> <li><span style="color: blue;">■</span> Brain: Internal capsule with connections to epithalamus, dorsal thalamus, and mesencephalon</li> <li><span style="color: blue;">■</span> Cerebral hemispheres cover 75% of diencephalon</li> <li><span style="color: blue;">■</span> Cortical plate expanding rapidly</li> </ul>
<b>7 weeks, 6 days</b>	<ul style="list-style-type: none"> <li><span style="color: grey;">■</span> The toes are free</li> </ul>
<b>8 weeks</b>	<ul style="list-style-type: none"> <li><span style="color: green;">■</span> Complex response to touch</li> <li><span style="color: green;">■</span> More frequent hand-to-face contact</li> <li><span style="color: green;">■</span> Mouth opens &amp; closes</li> <li><span style="color: green;">■</span> Squinting</li> <li><span style="color: green;">■</span> The embryo floats and rolls over in the womb</li> <li><span style="color: pink;">■</span> Hairs first appear in eyebrows &amp; around mouth</li> <li><span style="color: pink;">■</span> Skin multi-layered, loses transparency</li> <li><span style="color: cyan;">■</span> Male embryos are making testosterone already!</li> <li><span style="color: grey;">■</span> The embryo's joints are similar to adult joints</li> <li><span style="color: magenta;">■</span> Diaphragm complete</li> <li><span style="color: magenta;">■</span> Esophagus: Longitudinal muscles</li> <li><span style="color: olive;">■</span> Urethra</li> <li><span style="color: olive;">■</span> Urine production and release</li> <li><span style="color: purple;">■</span> Peristalsis in large intestine</li> <li><span style="color: orange;">■</span> Occasional breathing motions begin</li> <li><span style="color: red;">■</span> Blood supply to the brain closely resembles adult pattern</li> <li><span style="color: yellow;">■</span> Cranial nerve distribution mimics adult pattern</li> <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> <li><span style="color: blue;">■</span> "The hindbrain "presents striking resemblance to that of the newborn."</li> <li><span style="color: blue;">■</span> Brain represents 43% of embryo</li> <li><span style="color: blue;">■</span> Grey and white matter</li> <li><span style="color: blue;">■</span> Right- and left-handedness emerges</li> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em;"></span> Crown-heel length 4.3 cm</li> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em;"></span> Embryo contains approximately 1 billion (10<sup>9</sup>) cells</li> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em;"></span> Embryonic Period Ends</li> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em;"></span> The embryo has more than 4,000 parts (adults have about 4,500)</li> </ul>
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**Unit 9: 8 to 9 Weeks**









<b>8½ weeks</b>	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Eyelids completely fused</li> <li><span style="color: blue;">■</span> Neurons synapse in cerebral cortex (marginal zone)</li> </ul>
<b>9 weeks</b>	<ul style="list-style-type: none"> <li><span style="color: green;">■</span> Bends hip &amp; knee if sole of foot touched</li> <li><span style="color: green;">■</span> Drinking fluid is becoming routine</li> <li><span style="color: green;">■</span> Sucking the thumb</li> <li><span style="color: green;">■</span> The young fetus now sighs, stretches, moves the head, opens the mouth, and moves the tongue</li> <li><span style="color: green;">■</span> Tongue movement</li> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em;"></span> Female fetuses have early reproductive cells in their ovaries</li> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em;"></span> Thyroid gland weighs 2 grams</li> <li><span style="color: purple;">■</span> Small intestine peristalsis</li> <li><span style="color: blue;">■</span> Face, hands, and feet sense light touch</li> </ul>

**Unit 10: 9 to 10 Weeks**















<b>9 weeks - 10 weeks</b>	<ul style="list-style-type: none"> <li><span style="color: orange;">■</span> Early vocal cords</li> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em;"></span> My weight will rise more than 75% this week</li> </ul>
<b>9½ weeks</b>	<ul style="list-style-type: none"> <li><span style="color: green;">■</span> I yawn when I want</li> </ul>
<b>9 weeks, 4 days</b>	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Yawns</li> </ul>
<b>10 weeks</b>	<ul style="list-style-type: none"> <li><span style="color: green;">■</span> Eyes roll downward reflexively</li> <li><span style="color: magenta;">■</span> Palatine tonsils</li> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em;"></span> Fingernails and toenails begin to grow!</li> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em;"></span> Three-layered epidermis</li> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em;"></span> Tiny unique fingerprints have arrived!</li> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em;"></span> Now, all the bones are getting harder</li> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em;"></span> Tooth buds (secondary teeth)</li> <li><span style="color: olive;">■</span> Glomeruli formation begins</li> <li><span style="color: purple;">■</span> Physiologic herniation ends</li> <li><span style="color: blue;">■</span> Corpus callosum begins</li> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em;"></span> Crown-heel length 7.5 cm</li> </ul>

**Unit 11: 10 to 11 Weeks**

<b>10 weeks - 12 weeks</b>	<ul style="list-style-type: none"> <li><span style="color: magenta;">■</span> Langerhans cells enter epidermis</li> </ul>
<b>10½ weeks</b>	<ul style="list-style-type: none"> <li><span style="border: 1px solid black; display: inline-block; width: 1em; height: 1em;"></span> Volar and plantar pads regress</li> </ul>
<b>11 weeks</b>	<ul style="list-style-type: none"> <li><span style="color: green;">■</span> The face now makes complex expressions</li> </ul>

	 Immunological competence
	 Intermediate layer
	 Nose & lips completely formed
	 Now you can tell if your baby is a girl or a boy!
	 Thyroid gland weighs 12 grams
	 Intestines absorb water & glucose
	 Auditory cells: inner & outer hair cells
	 Crown-heel length

**Unit 12: 11 to 12 Weeks**

<b>11 weeks - 12 weeks</b>	 Weight increases by 60% this week
<b>12 weeks</b>	 Hands touch the mouth up to 50 times per hour
	 T lymphocytes leave thymus
	 Many different hormones are present in pituitary gland
	 Thyroid gland produces hormone
	 Palate fuses
	 Upper limbs reach final proportion
	 Bladder resembles smooth muscle
	 Bile production begins in liver
	 Bowel movements
	 There are taste buds all over the mouth
	 Corpus callosum
	 Crown-heel length 12 cm
	 Head circumference 10 cm

**Unit 13: 3 to 4 Months**

<b>13 weeks</b>	 Teeth are growing
	 Cilia lining airways
	 Most of body sensitive to touch
	 Crown-heel length 15 cm
<b>14 weeks</b>	 Girls move their jaws more than the boys do
	 Light touch to mouth evokes turn toward stimulus
	 4-lobed cerebral cortex
	 Cerebellum resembles adult structure
	 Crown-heel length 17 cm
	 Fat deposits in cheeks
<b>15 weeks</b>	 Stem cells arrive in bone marrow
	 Body fat emerges throughout the body
	 Glucagon in fetal bloodstream
	 Digestive enzymes
	 Crown-heel length 19.5 cm
<b>16 weeks</b>	 Quickening
	 Fat deposits upper & lower limbs
	 Tooth enamel
	 Bronchial tree nearly complete
	 Hormonal stress response to invasive procedures



	<ul style="list-style-type: none"> <li>□ Crown-heel length 21 cm</li> </ul>
<b>Unit 14: 4 to 5 Months</b>	
17 weeks	<ul style="list-style-type: none"> <li>■ Retina has discrete layers</li> </ul>
18 weeks	<ul style="list-style-type: none"> <li>■ Cream-like substance protects skin</li> <li>■ Sweat glands</li> <li>■ Insulin secretion</li> <li>■ Speaking motion of larynx</li> <li>■ Corpus callosum complete</li> </ul>
19 weeks	<ul style="list-style-type: none"> <li>■ Melanin production</li> <li>■ Number of oogonia peak (at about 7 million) within fetal ovaries</li> <li>■ Daily cycles in biological rhythms</li> </ul>
20 weeks	<ul style="list-style-type: none"> <li>■ All skin layers and structures</li> <li>■ Surfactant production (low levels)</li> <li>■ Hearing and responding to sound begins</li> <li>■ Hearing and responding to sound begins</li> <li>□ Crown-heel length 28 cm</li> <li>□ Head circumference 20 cm</li> </ul>
<b>Unit 15: 5 to 6 Months</b>	
20 weeks - 24 weeks	<ul style="list-style-type: none"> <li>■ Eyelids separate, eyes open and close</li> </ul>
21 weeks	<ul style="list-style-type: none"> <li>■ Stratum corneum</li> </ul>
21 weeks - 22 weeks	<ul style="list-style-type: none"> <li>□ If born prematurely from this point on, survival is possible</li> </ul>
22 weeks	<ul style="list-style-type: none"> <li>■ Cornea structure</li> <li>■ Behavioral states</li> </ul>
23 weeks	<ul style="list-style-type: none"> <li>□ Brain weight 100 grams</li> </ul>
24 weeks	<ul style="list-style-type: none"> <li>■ Blink-startle response; females before males</li> <li>□ Crown-heel length 34.5 cm</li> </ul>
<b>Unit 16: 6 to 7 Months</b>	
25 weeks	<ul style="list-style-type: none"> <li>■ Intestinal lining contains all adult cell types</li> <li>■ Rods &amp; cones</li> <li>■ The ability to taste</li> </ul>
26 weeks	<ul style="list-style-type: none"> <li>■ Additional fat deposits decrease wrinkles</li> <li>■ Tear production</li> <li>■ The ability to smell has arrived</li> </ul>
26 weeks - 38 weeks	<ul style="list-style-type: none"> <li>■ Brain weight increases 400% to 500%</li> </ul>
27 weeks	<ul style="list-style-type: none"> <li>■ Pupils react to light</li> </ul>
28 weeks	<ul style="list-style-type: none"> <li>■ Distinguishes sounds of different frequencies</li> <li>□ Crown-heel length 39.5 cm</li> </ul>
<b>Unit 17: 7 to 8 Months</b>	
30 weeks	<ul style="list-style-type: none"> <li>■ Breathing motions are common even though there is no air in the womb</li> <li>■ 6-layered cerebral cortex</li> <li>□ Head circumference 30 cm</li> </ul>
32 weeks	<ul style="list-style-type: none"> <li>■ Esophagus: Lower esophagus muscles functional</li> </ul>

	<input checked="" type="checkbox"/> Glomeruli formation complete
	<input checked="" type="checkbox"/> Alveoli
	<input checked="" type="checkbox"/> Memory - music preferences
	<input type="checkbox"/> Crown-heel length 45 cm

**Unit 18: 8 to 9 Months**

<b>32 weeks - 36 weeks</b>	<input checked="" type="checkbox"/> Prenatal food affects newborn taste preferences
<b>34 weeks</b>	<input type="checkbox"/> Rapid weight gain
<b>35 weeks</b>	<input checked="" type="checkbox"/> Firm grip
	<input type="checkbox"/> Amniotic fluid volume peaks
<b>36 weeks</b>	<input checked="" type="checkbox"/> Surfactant production accelerates
	<input type="checkbox"/> Brain weight 300 grams
	<input type="checkbox"/> Crown-heel length 48.5 cm

**Unit 19: 9 Months to Birth**

<b>37 weeks</b>	<input checked="" type="checkbox"/> Fetus drinks an estimated 15 oz (or 450cc) of amniotic fluid/day
<b>38 weeks</b>	<input checked="" type="checkbox"/> Air breathing begins
	<input checked="" type="checkbox"/> By term, the typical umbilical cord measures 20 to 24 inches (50 to 60 cm)
	<input checked="" type="checkbox"/> Heart beats 54 million times before birth
	<input checked="" type="checkbox"/> Major circulatory changes
	<input checked="" type="checkbox"/> Spinal cord ends at third lumbar vertebrae
	<input type="checkbox"/> Brain weight 350 grams
	<input type="checkbox"/> Crown-heel length 50 cm
	<input type="checkbox"/> Fetus initiates labor
	<input type="checkbox"/> Head circumference 35 cm
	<input type="checkbox"/> Time to be born!