**The stages of prenatal development**  
*Prenatal development* is the period of time from conception to birth when the developing individual undergoes a series of transformations from a single-celled zygote, to an embryo, to a fetus. The period of time from about the seventh month of pregnancy to twenty-eight days after birth is the *perinatal period. Postnatal development* begins once the baby is born.

1. **Fertilization**  
   Fertilization can take place when a mature egg cell, or ovum, is released from the female's ovary into the Fallopian tube and male sperm cells are present. A successful sperm cell will penetrate the egg cell, and the chromosomes of the sperm and egg will combine to form a fertilized egg, called the zygote, which contains the full forty-six chromosomes necessary for further development. If unfertilized, the ovum survives only about 24 hours.
2. **The germinal period**  
   Within a day of fertilization, the newly formed zygote migrates down the fallopian tube and begins a series of mitotic cell divisions called cleavages to form the morula, a solid sphere of sixteen cells. Each cell has the identical ability to become a separate organism, because at this early stage the cells are undifferentiated. The cells begin to differentiate when they segregate into an outer and an inner layer of cells collectively called the blastocyst. The blastocyst implants itself in the lining of the uterus about ten days following conception. An *ectopic pregnancy* occurs if the zygote implants somewhere other than the uterus. Such pregnancies are normally terminated because of the enormous risk they pose for a pregnant woman.
3. **The embryonic period**  
   Following implantation of the blastocyst, a three-layered embryo is formed. The endoderm or inner layer will become the lining of most inner organs, and the mesoderm will become the skeletal, muscular, and cardiovascular systems. The mesoderm, or middle layer develops into the skeleton and muscles. Finally, the ectoderm or outer layer, forms the neural tube, which will develop into the spinal cord, nerves, and brain. Anencephaly and spina bifida are abnormal conditions in which the cephalic region or the caudal region of the neural tube, respectively, fails to close, resulting in death or severe nervous system damage.
4. **The fetal period**  
   The fetal period begins at eight weeks, when bone starts to form, and ends at birth. The fetus is recognizably human early in this stage, and most structures and organs have already formed. The second trimester, or second three months of the pregnancy, is characterized by rapid growth in body size, and the mother can begin to feel fetal movements, called quickenings. During the final three months of pregnancy, the third trimester, the brain continues to undergo considerable development. Sensory systems develop and the fetus is now capable of smelling, tasting, hearing, seeing, and feeling. In the third trimester the fetus attains *viability,* the ability to survive outside the womb. *Gestational age* is counted from the first day of the mother's last menstrual period. Birth typically occurs when the fetus reaches 277 gestational days.