

the first 9 months



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People have marveled at and tried to understand the miracle of life for centuries. The mystery of how two microscopic cells can unite and develop into a human being has puzzled and delighted everyone from poets and philosophers to scientists and parents since the beginning of time. Now, thanks to recent advances in medical science and imaging techniques, we have the unequalled privilege of observing the developing life within the mother's womb. With this technology, we can see the miraculous fusion of two cells that culminates in a fully formed human life in a mere 266 days. Witness this miracle in the making as we journey through the first nine months of life.



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a clear picture

It's human nature to be frightened by what you don't know . . . a future you can't see, changes you don't understand or a relationship you think you can't live without. Pregnancy can be a time of mixed emotions; and if you think you might be pregnant, you may have many questions about the changes you'll see in your body and wonder what your future holds.

As you open this booklet and begin to look for answers to your questions, you're taking a step in the right direction. Facts are always a great place to start, don't you think? Let's begin to look at what we know from science and medicine about what is happening inside your womb right now. These facts will help you make informed decisions with confidence.

Fetal lengths and weights given are merely averages. Note: babies are measured from the top of the head to the rump, or bottom, before 20 weeks. After that, they're measured from head to heel.



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D A T I N G Y O U R P R E G N A N C Y

Pregnancy terminology can be confusing. There are two ways of dating pregnancy:

Gestational age is the reference traditionally used by medical providers to date pregnancy and refers to how long it's been since the first day of the mother's last menstrual period (**LMP**). The gestational age (in **bold blue** throughout this booklet) begins about two weeks before the fertilization of the egg by the sperm.

Fertilization age (shown in **bold red**) refers to how long it's been since **conception**: the fertilization of the egg by the sperm. Most women ovulate (release a mature egg from the ovary) in the middle of their monthly cycle. For instance, if a woman has a 28-day cycle, she will typically ovulate around the 14th day after her last period began. If the sperm fertilizes the egg, a new life begins and this becomes the first fertilization day.

	s	m	t	w	t	f	s
week 1		LMP	begin gestational age				
week 2							
week 3		conception	begin fertilization age				
week 4							

We believe the dates shown, though approximate, to be fully accurate.

The pregnancy test was positive! How far along am I?

Today's date : _____

First day of your last menstrual period: _____

How many weeks has it been since then? _____

If you are pregnant, this is the **gestational age** of your pregnancy, shown in **bold blue** in this booklet.

Based on this information, your baby will be due 40 weeks from the first day of your last period: Due Date: _____



conception day

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Before a woman even misses her menstrual period, if an egg has been fertilized, this is what occurs in a normal pregnancy:



2 Weeks / Conception day The egg and sperm most often unite in the fallopian tube (tube from the ovary to the uterus) to form a single cell called a zygote. This tiny new cell, smaller than a grain of salt, contains all the genetic information for every detail of the newly created life—the color of the hair and eyes, the intricate fine lines of the fingerprint, the physical appearance, the gender, the height and the skin tone.

Days 2–5 This new life is now called an embryo, and his or her cells continually divide while traveling down the fallopian tube before arriving at the uterus, around days 3 to 4. Meanwhile, the lining of the uterus prepares to receive this new life.

3 Weeks / Days 6–10 The embryo begins to implant in the lining of the uterus on about day 6. Once this occurs, hormones trigger the mother's body to nurture the pregnancy and prevent her monthly periods. Around day 8 the baby is about the size of the “period” used in this sentence.

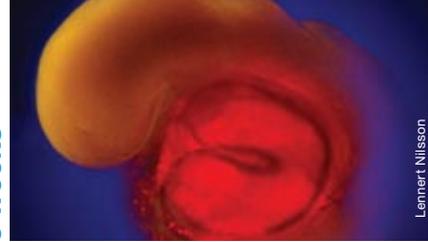
4 Weeks / Week 2 A pregnancy test taken at this point can measure hCG, the pregnancy hormone in the mother's urine, and tell her if she is pregnant. By now, the embryo is completely attached to the lining of the uterus and draws nourishment from its mother.



Lenmatt Nilsson

8 weeks

5 weeks



Lenmatt Nilsson

5 Weeks The heart, about the size of a poppy seed, is the first organ to function—it begins beating just **21 days after fertilization!** The first signs of brain development are evident and the foundation for every organ system is already established and beginning to develop.

6 Weeks Just **4 weeks after fertilization**, the baby is growing rapidly and measures 1/8 of an inch long. The basic structure for the entire central nervous system (brain and spinal cord) has formed. The eyes are developing and the arm and leg buds are now visible. The heart is beating about 80 times a minute. An ultrasound can provide further medical confirmation of pregnancy.

7 Weeks The baby is now 1/3 of an inch long and his or her beating heart can be seen on a Doppler ultrasound. The embryo makes its own blood. The arm buds now look like tiny paddles, and the leg buds look like little flippers. Depending on the baby's gender, the testicles or ovaries are beginning to form.

8 Weeks The baby is now about 1/2 of an inch long from head to bottom. The elbows and fingers can be seen. Some reports show that the embryo can move its trunk and limbs and can respond to touch by reflex. Lungs begin to develop. Taste buds are forming on the tongue, tooth buds for “baby teeth” are taking shape in the jaw, and eyelids begin to form.



10 weeks

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9 weeks



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9 Weeks The baby measures $\frac{3}{4}$ of an inch long and weighs almost $\frac{1}{8}$ of an ounce. The developing ears and nose are visible, and there is pigment in the retina. Nipples can now be seen on the chest. The limbs and fingers are growing rapidly, and the bones in the arms begin to calcify and harden.

10 Weeks The baby's brain is growing rapidly. Each minute it produces almost 250,000 new neurons, and for the first time in development, the brain can make the muscles move on purpose. The upper and lower portions of the arms and legs are clearly seen, and the bony tissues of the legs begin to calcify. The fingers and toes are lengthening and are separate digits. By now the external ear is fully developed. A baby boy begins to produce the male hormone, testosterone.

11 Weeks Because the baby has all of the major organ systems and is a distinctly recognizable human being, he or she is no longer called an embryo but is now known as a fetus, a Latin word for "young one." The baby is about 2 inches long and can yawn and suck. The eyelids are fully formed and closed to protect the developing eyes. The intestines are developing and the kidneys begin to produce urine. During the next several weeks, his or her body will grow rapidly, increasing in weight 30 times and tripling in length in the next two months!



20 weeks

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14 weeks



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14 Weeks Now 3 1/2 inches long, the “young one” is coordinated enough to find his or her thumb and suck it. You can see the beginnings of the fingernails and toenails and the baby is able to urinate and swallow.

16 Weeks The heart beats between 110 and 180 times per minute and pumps about 25 quarts of blood each day. You can see the gender of the baby on ultrasound. If she is a girl, millions of eggs are now forming in her ovaries. At almost 5 inches in length and weighing nearly 4 ounces, the baby can coordinate the movement of its arms and legs, though his or her mother will not likely feel it yet.

18 Weeks In just 2 weeks, the fetus has almost doubled its weight to 7 ounces. The skeleton is hardening and calcifying and is visible on ultrasound. Reflexes such as blinking and frowning are now developed. The baby has its own unique fingerprints and toe prints. Some studies show that the baby can feel pain as early as 18 weeks.

20 Weeks The fetus is now about 10 inches long from head to heel and weighs 11 ounces. Fetal movement, commonly known as “quickening,” can usually be felt by the mother. The baby has unique waking and sleeping patterns and even has a favorite position to sleep in. The pregnancy is about half over, and the mother is beginning “to show.”



22 weeks

Lenmar Nilsson

24 weeks



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22 Weeks The baby is about 11 inches long and weighs about 1 pound. If the baby is male, his testicles are beginning to descend from the abdomen to the scrotum. Hair is visible on his or her head and body. From now until about 32 weeks, the baby feels pain more intensely than at any other time in development.

24 Weeks The baby now weighs about 1 1/2 pounds and inhales amniotic fluid in preparation for breathing. The ear has developed to the point where the baby recognizes his or her mother's voice, breathing and heartbeat. About a week ago, rapid eye movements began, an activity associated with dreaming. The baby may have a blink-startle response resulting from sound applied to the mother's abdomen. Some babies born at this stage of development are able to survive.

26 Weeks Now the baby weighs almost 2 pounds and he or she can react to sounds outside the mother's body. Eyes can now respond to light and the permanent teeth buds are apparent in the gums. Eyelashes and eyebrows are well-formed and the hair on the baby's head is growing longer.



28 Weeks The baby is now about 15 inches long and weighs about 2 1/2 pounds. With the support of intensive care, a baby born at this stage is capable of breathing air. The brain is developed enough to coordinate rhythmic breathing and regulate body temperature. As the baby continues to gain weight, the skin becomes less wrinkled and more smooth.

34 Weeks The baby is now about 17 inches long, weighs 4 1/2 pounds and continues to grow and mature. By this stage of development, the eyes are wide open, and if a light were shone into them, the pupils would constrict. The head is covered in hair, the fingernails have reached the tips of the fingers, and the toenails are close behind.

40 Weeks The baby is now around 20 inches long and may weigh 7 to 8 pounds. He or she has a plump body and a firm grasp. Typically, the baby is head down in the mother's pelvis and awaiting birth. Be patient—only 4 percent of babies are born on their due date!

Facts about fetal development were taken from the following sources:

Publications:

Moore and Persaud. *The Developing Human: Clinically Oriented Embryology*, 7th Edition, Elsevier Science, Philadelphia, Penn.: Saunders, 2003.
Larsen, William J. *Essentials of Human Embryology*. New York: Churchill Livingstone, 1998.
Tallack, Peter. *In the Womb*. Washington, D.C: National Geographic, 2006.
Campbell, Stuart M.D. *Watch Me Grow!* St. Martin's Press, 2004.

Internet:

Mayo Foundation for Medical Education and Research. "Fetal development: What happens during the first (second, third) trimester?" mayoclinic.com/health/prenatal-care/PR00112 (as well as /PR00113 & /PR00114), accessed May 13, 2008.

LaRossa, Maureen Mulligan, R.N., and Sheena L. Carter, Ph.D. "Understanding How the Brain Develops." pediatrics.emory.edu/divisions/neonatology/dpc/brain.html, accessed May 13, 2008.

Other:

Anand, Kanwaljeet, M.B.B.S., D.Phil. "Expert Report of Kanwaljeet S. Anand, M.B.B.S., D.Phil." Expert testimony before the U.S. Department of Justice describing the capacity of the fetus to feel pain, Jan. 14, 2004.

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If you are pregnant, now you have the facts you need to make informed decisions to ensure a healthy pregnancy for you and your baby. You'll want to talk to your health care provider about getting regular prenatal care, making healthy nutritional choices, and deciding what kind of exercise will keep you feeling fit. As concerns come up, and they will, talk to your health care provider so that you can have confidence that you are taking good care of yourself and your baby. Of course, babies set their own timetables, and every pregnancy is different, but isn't it amazing to consider the incredible development that happens in the first nine months of life?



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