Parents play a large role in ensuring their baby's health and well-being. How might a child's early relationships influence his relationships later in life?
In this unit, you will learn how infants grow and develop during their first twelve months. You will also learn about the important role of parents and caregivers in a baby’s physical and mental health. In your unit thematic project, you will explore how caregivers can support a baby’s healthy growth and development.

**My Journal**

**Healthy Development**  Write a journal entry about one of the topics below. This will help you prepare for the project at the end of this unit.

- How can a parent or caregiver help a baby grow up physically healthy?
- How can a parent or caregiver help a baby develop trusting relationships with adults and siblings?
- How can a parent or caregiver help a baby develop language skills?
Chapter Objectives
After completing this chapter, you will be able to:
- **Identify** the four major influences on an infant’s growth and development.
- **Summarize** how a baby typically grows in the first year.
- **Explain** how to safely hold a baby.
- **Identify** how to meet a baby’s nutritional needs.
- **Describe** the best type of clothing suitable for a baby.
- **Describe** how to bathe a baby.
- **Explain** why checkups and immunizations are important for babies.

Growing a Happy Baby  During the first year of life, babies grow and develop in many ways. Caregivers have many responsibilities to make sure a baby’s needs are met. For example, the caregiver must feed the baby and change the baby’s diapers. These are just two of the many physical needs. Infants also have emotional needs that must be met. Write a paragraph in which you describe what you think makes a happy, healthy baby.

**Writing Tips**  To write a good paragraph, follow these tips:
1. Make sure the paragraph focuses on one main idea.
2. Use transition words to link ideas. These include words such as then, however, and because.
3. Make sure all the sentences in each paragraph support the main idea.
Explore the Photo
Interaction with parents and caregivers is important to an infant’s development. Why do you think an infant needs to interact with adults?
Section 7.1

Infant Growth and Development

Reading Guide

Before You Read
Contribute Share at least one piece of information you expect to learn with your classmates.

Read to Learn
Key Concepts
- Identify the four major influences on an infant’s growth and development.
- Summarize how a baby typically grows in the first year.

Main Idea
There are four main influences on a baby’s growth and development. An infant’s growth and development follow many patterns.

Content Vocabulary
- developmental milestone
- depth perception
- stimulating environment
- gross motor skill
- growth chart
- fine motor skill
- proportion
- hand-eye coordination

Academic Vocabulary
You will find these words in your reading and on your tests. Use the glossary to look up their definitions if necessary.
- makeup
- accommodate

Graphic Organizer
As you read, list the six areas an infant develops in his first year of life. Use a diagram like the one shown to help organize your information. The first area has been filled in for you.

Academic Standards

English Language Arts
NCTE 4 Use written language to communicate effectively.

Science
NSES C Develop understanding of molecular basis of heredity; biological evolution; matter, energy, and organization in living systems.
NSES A Develop abilities necessary to do scientific inquiry, understandings about scientific inquiry.

NCTE National Council of Teachers of English
NCTM National Council of Teachers of Mathematics
NSES National Science Education Standards
NCSS National Council for the Social Studies
Influences on Growth and Development

Babies experience a tremendous amount of physical growth and development in their first year of life. In just twelve months, babies who begin as helpless newborns learn to stand alone, feed themselves, and even walk. While babies typically follow the same development patterns, they do so at their own rate. Parents have the responsibility to help their baby grow and develop normally.

The terms growth and development are often used interchangeably, but they are not the same things. Growth refers to changes in size, such as weight and length. Development refers to increases and changes in physical, emotional, social, or intellectual skills.

Researchers have found that both heredity and environment play important roles in a baby’s growth and development. Heredity is sometimes referred to as nature. It includes the physical make-up, or structure, that a baby inherits from his or her parents. Environment is a more complex concept. It includes influences such as nutrition, amount of stimulation, health, and relationships. Environment is also known as nurture. All these factors work together to influence a baby’s physical growth and development. However, at various times one or more of these factors can play a larger role than the others in an infant’s growth and development.

Development experts have studied the range of ages to determine the average ages at which children acquire certain skills. A key skill used to check a child’s progress is called a developmental milestone. For example, Jeffrey may inherit a strong, healthy body from his parents. But if Jeffrey becomes sick for an extended period, he may miss out on opportunities for active play that would strengthen the large muscles of his legs. As a result, he may reach some developmental milestones, such as learning to walk or climb steps, later than a healthy baby. Another baby, Aisha, inherits a strong, healthy body and enjoys good health. She therefore has more opportunities for physical play than Jeffrey had and will more likely develop at a normal rate.

Heredity

As explained in Chapter 4, genes provide a blueprint for the development of the human body and how it functions throughout life. Children inherit a unique combination of genes...
from their parents. This combination of genes determines traits such as eye and hair color, when the teeth first emerge, whether certain diseases are likely to develop, and much more. The genes also shape or influence larger traits, such as a person’s intellectual potential or artistic abilities.

Having certain genes, though, does not mean a person will automatically exhibit those traits. Nature and nurture both play a role in determining how a child grows and develops. For example, a girl’s genes may give her the potential to be musically gifted, but if she is never given the opportunity to sing or play an instrument, her talent may never emerge. Think of people you know who seem to have inherited physical characteristics or artistic abilities from their parents.

**Nutrition**

The body needs essential nutrients to grow and develop. Eating foods that contain these nutrients is vital to a child’s lifelong health. Even newborns who spend most of their time sleeping are growing and developing. Proper nutrition fuels that development. Research has shown that nutrition affects many aspects of a baby’s physical growth and development, including bone strength, brain development, and height. When a baby does not get enough calories or necessary nutrients, he or she is at risk for illness, delayed growth, or even death. You will learn more about proper nutrition for an infant in Section 7.2 of this chapter.

**Health**

Staying healthy is closely linked to other factors that influence growth and development. A baby who is healthy is more likely to eat well and have the energy to be active. A healthy baby is more likely to have varied experiences that stimulate the brain and aid in muscle development. An infant with poor health is at risk of falling behind developmentally.

Parents and other caregivers must guard children’s health. In addition to providing good nutrition, they must provide a safe environment. Children also need regular medical checkups and care.

**Environment**

An infant’s experiences are an important part of development. Brain development, which impacts all areas of development, is linked to the quantity and variety of experiences a child has. Infancy is a critical period. Failure to achieve normal brain development at this stage can have lifelong effects.

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**Interactive Play**

Babies may seem too young to play games, but even a six-month-old infant can enjoy simple interactive play. All that is usually needed is an adult, a baby, and some creativity. Peek-a-boo and hide-and-seek with toys are favorites. Babies also enjoy listening to music and clapping hands together. They like to hear an adult sing nursery rhymes or mimic animal sounds. Whatever the activity, it is important to remember that it is not the type of play that matters. It is the benefits that count. Playing with babies is not only fun, it helps promote physical development, brain development, and social interaction. The contact that occurs during play also helps nurture a baby’s sense of security and well-being.

**Think About It**

Imagine that you are helping care for your seven-month-old niece. She is not hungry or tired, but she is getting fussy. What could you do to help entertain her?
A stimulating environment promotes brain development. A **stimulating environment** is an environment in which the baby has a wide variety of things to see, taste, smell, hear, and touch. A world with plenty of ways to use all the senses provides wonderful opportunities for an infant. While investigating their world, all that they experience is stored in the brain. As associations form, such as the high chair means food, more brain connections are made.

An environment lacking in stimulation can result in fewer or weaker connections in the brain and delayed or slow development in other areas. For example, infants are not born with language skills. During the first few months of life, connections form in the part of the brain responsible for language. This eventually allows the child to begin speaking. If the child is not exposed to language and not encouraged to speak during this time, there will be fewer connections in the brain. This can delay normal language development.

Other environmental factors can have a harmful impact on a child’s development as well. For example, children who breathe secondhand smoke are more likely to suffer from poor health. It increases the risk of sudden infant death syndrome. Other possible health problems can include respiratory infections, ear infections, bronchitis, and asthma. These conditions can make it more difficult for a child to develop normally. They also increase the chances of lung cancer and heart disease later in life.

**The Developing Brain**

**Language Development**

Some people think, “How silly!” when they see adults talking to newborns. Is it a waste of time? How can a baby possibly understand? In fact, talking to and playing with infants are important for brain development and learning. These activities help babies to learn language and to develop social skills.

**Science Inquiry** Babies need interaction with humans to develop their language and social skills. Would a baby develop language skills if adults did not talk to them?
A baby’s length and weight increase rapidly during the first year. Should a parent be concerned if their child’s length or weight does not match the averages on this growth chart?

### Growth and Development During the First Year

Babies go through remarkable changes during their first year. They grow faster physically than during any other time of their life. They also grow emotionally, socially, and intellectually.

### Growth During the First Year

From birth to age one, babies typically triple their birth weight. They usually increase their length by about 50 percent. One way doctors can judge whether a baby is growing at a healthy pace is by using growth charts. A **growth chart** shows the average weight and height of girls and boys at various ages. Figure 7.1 focuses on average heights and weights for boys and girls from birth to age one. Boys and girls are shown separately because their growth rates and patterns differ.

Very few babies match the average measurements on growth charts. That is because children grow at their own rate. Instead of focusing on any one measurement, doctors watch for a steady pattern of growth. Sudden drops in a baby’s weight could indicate health concerns. If parents are concerned about their baby’s growth, they should talk to the doctor.

### Weight

Weight gain is one of the best signs of good health. Most newborns lose about 10 percent of their birth weight in the first five days of life. After that, they begin to gain weight rapidly. In the first six months, a healthy baby gains about one to two pounds (0.45 to 0.9 kilograms) per month. In the following six months, the average monthly weight gain is about one pound (0.45 kilograms). A baby’s birth weight usually doubles in the first few months and triples by the twelfth month. The average weight of a one-year-old is 20 to 22 pounds (9 to 10 kilograms). However, boys tend to weigh slightly more than girls during infancy.

### Length

In the first year, physicians talk about the length of a baby rather than the height. This is because babies are measured while lying down.
Babies steadily grow in length during the first year, in part because bone growth is rapid at that time. For example, the average newborn measures 20 inches (51 cm) long. One year later, the average is about 30 inches (76 cm) long.

Again, not all babies grow at the same rate, and boys tend to be slightly longer than girls. Heredity has a stronger influence on height than weight. A baby with tall parents is more likely to be tall as an adult than a baby with short parents.

**Body Shape**

Newborns tend to hold themselves in a tightly curled position with their fists clenched, legs bent, and feet curved inward. The head may have an elongated shape from moving through the birth canal. Arms and legs are skinny, and the abdomen is large. The umbilical cord stump usually dries up and drops off within about three weeks after birth, revealing the navel. Babies will gradually stretch out their arms and legs and uncurl their fingers. Their legs and feet generally straighten out over the first six months.

Babies typically look chubby by three months of age, but they usually lose that look as they grow longer and become more active. After about eight months, when babies begin to practice standing, their typical posture includes a protruding belly and a slight lean forward.

**Measuring Growth**

During the first year, physicians talk about and track an infant’s length rather than height. *Why do doctors track a baby’s length instead of height?*

**Interpreting Infant Development**

One way that doctors monitor infants’ growth is by measuring their length. By recording this information each month, the doctor can ensure that the baby is continuing to grow and develop.

**Procedure**

Make a bar graph of the following data.

<table>
<thead>
<tr>
<th>Infant Development</th>
<th>End of Month</th>
<th>Length (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>25.5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>27.5</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>28</td>
<td></td>
</tr>
</tbody>
</table>

**Analysis**

1. During which month does the greatest increase in length occur?
2. On average, how many inches does the baby grow per month?

---

**NSES A** Develop abilities necessary to do scientific inquiry, understandings about scientific inquiry.
**Dramatic Changes**

The growth and development of a child during the first year of life is dramatic. What changes are obvious from these two photos?

**Proportion**

In child growth, proportion refers to the size relationship between different parts of the body. Compared to the rest of the body, a baby’s head and abdomen are large. The legs and arms are short and small. A baby’s head grows rapidly during the first year to accommodate, or make room for, the swiftly developing brain. More than half the total growth of the head occurs during this time. As you read in Chapter 6, the bones of a newborn’s skull have gaps called fontanels, where bones of the skull have not yet joined together. During birth, these gaps allowed the head to change shape to pass through the birth canal. During infancy, they allow the head to grow as the brain develops. They later close up permanently.

**Development During the First Year**

A baby’s growth and development are both quite rapid during the first year. Each month brings changes and new abilities. Growth and development are not nearly as obvious in older children. There are dramatic changes in appearance and abilities between a one-year-old and a two-year-old. The same is true of a two- and three-year-old. In a group of teens you could probably tell older teens from younger ones, but it would be difficult to guess their exact age. A fifteen-year-old and a sixteen-year-old sister look and act much alike.

**Patterns of Physical Development**

An infant’s physical development follows three basic patterns. Infants develop from head to foot, from near to far, and from simple to complex. Understanding these patterns can help you understand and follow the sequence of a typical baby’s development.

**Head to Foot** This pattern of development begins long before birth. It starts during the prenatal stage, when a baby’s head takes the lead in development. This pattern continues after birth and can be seen in the increasing control that babies gain over their body.

Babies first develop some control of head movement. For example, they will support their own head when being held. Then they will raise their head to see an object. Control of muscles then moves down the body to the arms and hands. Control of the baby’s legs and feet occurs more slowly. It is not until about the age of one that a baby develops all the skills needed to walk.
Down syndrome is a genetic condition that affects the development of the body and brain. It is the most common cause of birth defects in humans. Children with Down syndrome have certain physical characteristics. The head may be smaller than normal and abnormally shaped. The inner corner of the eyes may be rounded instead of pointed. They also may have decreased muscle tone at birth, a flattened nose, a single crease in the palm of the hand, small ears, a small mouth, upward slanting eyes, or wide, short hands with short fingers. Physical development in children with Down syndrome is often slower than normal. Most children with Down syndrome never reach their average adult height. Social and mental development may also be delayed. According to the National Institute of Child Health and Human Development, most people with Down syndrome have mild to moderate mental retardation.

**Critical Thinking** Children with Down syndrome often have one or more medical conditions. Research some of those conditions and write a one-page report of your findings.

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**Near to Far** An infant’s development also starts close to the body and moves outward. For example, babies will first simply wave their arms when they see an object they want. Later, they develop more precise hand and finger control and can point to an object they want. Later still, they can reach out and grasp for an object with their fingers.

**Simple to Complex** In the developmental pattern of simple to complex, babies first develop their large muscle groups. This includes those in the neck, arms, torso, and legs. The torso is the upper body. As babies strengthen and gain control over these muscles, they learn to do increasingly complex tasks. These tasks begin with controlling the head, rolling, reaching, and crawling. They continue through to walking. Even more complex movements that need small muscle development come later. Coloring, for example, requires good control of the fingers to grasp, hold, and direct a crayon.

**Senses**

As babies grow and develop during their first year, their senses are also developing. Babies’ perception of the world increases through their vision, hearing, touch, smell and taste.

**Vision** A baby’s eyesight improves rapidly during the first year. At first, vision is blurry. Within a week or so, a newborn is increasingly aware of the environment and can focus on objects that are seven to ten inches away. Babies’ eyes can also follow an object moved slowly past their face. By one month, babies can focus on objects up to three feet away. By six months, their eyesight reaches the clarity and sharpness of the adult level.

At first, a baby sees the world in two-dimensions. This means it is like looking at a picture. Infants begin to demonstrate depth perception in their second month of life. **Depth perception** is the ability to perceive objects that are three-dimensional. This ability has a major impact on a child’s interaction with the world. They can track people’s movements. They also learn to reach for objects by judging how far away they are.

Patterns and colors are also important to a baby’s world. Young babies seem to prefer patterns that show high contrast, such as alternating stripes, bull’s-eyes, or simple faces. When shown the same object in different colors, they typically look at red or blue objects most often. Aside from an inability to focus in the early days, some babies appear to have...
Do?

What Would eyes that are slightly crossed, or one eye that seems to wander outward. This condition typically improves by the fourth month as the eye muscles strengthen.

Hearing A baby’s sense of hearing develops even before birth. Unborn babies often respond to sounds with changes in heart rate or activity level. A young pregnant woman who attended a loud concert found that out first hand. For an hour after the concert, the baby continued to move to the beat of the music.

At birth, a full-term baby can already tell the general direction that a sound comes from. Newborns respond to the tone of a voice, rather than to the words. A soothing, loving voice calms them, and an angry or loud voice alarms them. By the age of seven months, babies recognize their parents and other caregivers by their voices. Some people believe the baby will recognize these voices at birth if they heard them enough in the womb.

Language development begins with hearing spoken words first, and then imitating and understanding them. Premature babies and those who have had frequent ear infections tend to have more hearing problems. This can delay language development.

Exploring the World
For much of the first year, children explore the world through the senses of sight, sound, and taste. After they learn to grasp objects, they begin to explore more of the world through touch. What kinds of small objects can present hazards for babies?

Getting Help
Three-month-old Landon was a happy baby. He smiled and gurgled when his parents held him and talked to him. He also ate well and had good sleeping habits. Landon’s father commented that his son was so easygoing that even the dog’s loud bark at the door did not seem to bother him. But his mother was puzzled that Landon was not starting to imitate sounds. When she stood a few feet behind him and clapped, Landon flinched and looked around, but when she gently rustled paper by his right ear, he did not seem to notice. Landon’s mother was not sure what to do. Landon’s father told her not to worry. He said that Landon was just a calm, quiet child. Landon’s mother did not know whether Landon’s behavior was normal though. She wanted to believe her husband but was afraid something was wrong.

Write About It Suppose Landon’s mother wrote a letter to the local paper asking advice. Write an advice column for Landon’s mother with suggestions for what she should do.
**Touch** Newborns lack both sufficient brain development and movement skills to explore their world through the sense of touch. However, they rely on the touch of others to teach them about their environment. Meeting a young baby’s needs promptly and with a gentle touch builds trust.

Touch becomes a more important sense for learning as the first year progresses. At first, a baby may begin to notice different textures such as a soft blanket or a father’s scratchy chin. As the ability to reach and grab objects develops, a baby uses touch for exploration.

**Smell and Taste** Since babies are surrounded by amniotic fluid until birth, their sense of smell does not have an opportunity to develop until after birth. A study has shown, however, that even newborns have some sense of smell. They respond differently to different scents. The sense of smell develops quickly. Within ten days, they can distinguish their mother from another person by smell.

The sense of taste also develops rapidly in children. Research studies have shown that two-week-old babies can taste the difference between water, sour liquids, sugar solutions, salt solutions, and milk. Even at this early age, babies show a preference for sweet tastes.

Throughout the first year, babies put anything and everything into their mouths. This is one of the main ways babies learn about their world. It is important to be sure that anything a baby grabs is clean, not sharp, and not so small that it could cause choking. Any object that can fit into a paper towel tube is likely too small for a baby to play with. Even food can be harmful for an infant.

**Voice**

The newborn’s cry is shrill, but it softens as the baby’s lungs mature. The change in the voice of the child also results from the physical growth of the throat muscles, tongue, lips, teeth, and vocal cords. The tongue and the inside of the mouth change in shape and proportion during the first months of life. This growth makes speech development possible. Babies prepare for speech by making word-related sounds. They begin babbling vowel sounds, such as ooh and ah as early as three months of age. By the age of one year, many babies can imitate some speech sounds and understand simple phrases. It is important to talk and sing to babies as much as possible. The more babies hear speech, the more opportunities they have to learn it.
## Physical Developmental Milestones—1st Year

### 1 Month
- Lifts head and turns it from one side to the other when placed on stomach
- Focuses on objects from about 10 inches to up to 3 feet away
- Reacts to parent’s voice

### 2 Months
- Makes sounds such as “ooh” and “aah”
- Watches objects moved about 6 inches away from face
- Responds to more sounds and different pitches of voice

### 3 Months
- Opens and closes hands
- Holds head steadily when held up
- Lifts head and chest when on stomach
- Swipes at objects
- Brings hands together

### 4 Months
- Supports upper body on hands when lying on stomach
- Shows preference for red and blue over yellow
- May begin to use vowels and consonants in babbling, such as “ah ga”
- Grasps rattle
- Puts hands in mouth
- Rolls from tummy to back

### 5 Months
- Rocks on stomach while kicking legs and making swimming motions with arms
- Reaches out and grabs toys
- Turns head in direction of sound
- Knows positive speech from unhappy speech

### 6 Months
- Passes a block from one hand to the other
- Puts objects to mouth with hand
- May begin creeping
- Recognizes basic sounds of native language

During the first year babies reach many developmental milestones. **At which age does a baby typically begin to pull herself up?**
<table>
<thead>
<tr>
<th>Age</th>
<th>Developmental Milestone</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 Months</td>
<td>♦ Rolls over both ways</td>
</tr>
<tr>
<td></td>
<td>♦ Sits up steadily</td>
</tr>
<tr>
<td></td>
<td>♦ Stands with assistance</td>
</tr>
<tr>
<td></td>
<td>♦ Knows parents and caregivers by their voices and by sight</td>
</tr>
<tr>
<td></td>
<td>♦ Can follow a path of moving objects with eyes</td>
</tr>
<tr>
<td></td>
<td>♦ Babble with strings of vowels and consonants, such as “ba, ba, ba”</td>
</tr>
<tr>
<td></td>
<td>♦ Grabs for objects with raking motion</td>
</tr>
<tr>
<td>8 Months</td>
<td>♦ Pulls self up to standing</td>
</tr>
<tr>
<td></td>
<td>♦ Bangs blocks together</td>
</tr>
<tr>
<td></td>
<td>♦ Propels self by arms, knees, or squirming motion</td>
</tr>
<tr>
<td></td>
<td>♦ Looks at objects with sustained attention</td>
</tr>
<tr>
<td>9 Months</td>
<td>♦ Uses index finger to poke</td>
</tr>
<tr>
<td></td>
<td>♦ Puts objects in containers</td>
</tr>
<tr>
<td></td>
<td>♦ Leans forward to pick up toy</td>
</tr>
<tr>
<td></td>
<td>♦ Notices small objects</td>
</tr>
<tr>
<td></td>
<td>♦ May start associating sounds with objects</td>
</tr>
<tr>
<td>10 Months</td>
<td>♦ Crawls well</td>
</tr>
<tr>
<td></td>
<td>♦ Can put objects in containers</td>
</tr>
<tr>
<td></td>
<td>♦ Uses index finger to start pointing</td>
</tr>
<tr>
<td></td>
<td>♦ Imitates new word sounds more frequently</td>
</tr>
<tr>
<td>11 Months</td>
<td>♦ Walks while holding onto furniture or crib rails for support</td>
</tr>
<tr>
<td></td>
<td>♦ Uses gestures like shaking head for no</td>
</tr>
<tr>
<td></td>
<td>♦ Releases objects intentionally</td>
</tr>
<tr>
<td></td>
<td>♦ Grasps with thumb and forefinger</td>
</tr>
<tr>
<td>12 Months</td>
<td>♦ May walk a few steps alone</td>
</tr>
<tr>
<td></td>
<td>♦ Stands alone for short time</td>
</tr>
<tr>
<td></td>
<td>♦ Picks up small objects using thumb and forefinger</td>
</tr>
<tr>
<td></td>
<td>♦ Puts objects into and takes them out of containers</td>
</tr>
<tr>
<td></td>
<td>♦ Holds and drinks from cup</td>
</tr>
</tbody>
</table>
Reflexes
At birth, babies have little control over their muscles. Most movements are due to reflexes. A reflex is an instinctive, automatic response, such as grasping or sucking. Newborns begin life with many reflexes to help them survive in the first weeks of life. Most of these reflexes go away within a few months. Babies learn to control their muscles and develop motor skills.

The Sucking Reflex This reflex is stimulated when something is put in a baby’s mouth. This reflex allows a newborn baby to feed from the mother’s breast or a bottle.

The Rooting Reflex This happens when the baby’s cheek is stroked. The baby turns toward the side of his or her face that was stroked.

Other Automatic Reflexes These include shutting the eyes under bright lights, grabbing a finger when it is placed in the hand, or stepping motions when the feet touch the floor. The Moro reflex causes a baby to throw the arms back with fists clenched when the arms are held and suddenly released.

Motor Skills
Much of a baby’s physical development in the first year is in muscle movement, also called motor skills. These skills depend mainly on direct control and use of muscles. For example, the arms and legs must get stronger and become coordinated before a baby can crawl.

There are two basic types of motor skills. A gross motor skill is a skill that involves the large muscles of the body such as those of the legs and shoulders. These are sometimes called large motor skills. Gross motor skills have to do with the ability to make large movements, such as jumping and running.

A fine motor skill involves the smaller muscles of the body such as those in the fingers. These are also called small motor skills. Fine motor skills require small, precise movements, such as using scissors or writing.

During their first year, babies’ gross motor skills develop more rapidly than fine motor skills. Figure 7.2 on pages 204–205 shows some of the major gross motor and fine motor skill milestones during the first year.

Gross Motor Skills The large muscles of the body involved in gross motor skills are primarily in the legs, arms, torso, and neck. Newborns can turn their head, wave their arms, and kick their legs. However, these movements occur as the result of reflexes and not because the baby purposefully controls the muscles.

One of the first motor skills that infants acquire is control of the head. A newborn’s head is large and heavy, and the neck muscles are weak. For example, by age one month, when Chen was placed on his stomach he could lift his head slightly. By three months, he was able to prop himself up with his arms and lift his
head and chest. In the next few months, Chen learned to roll over, and keep his head steady when he was held in a sitting position. By his first birthday, he could stand while holding on to something. This sequence of development is typical during a baby’s first year.

By about nine months, many babies are crawling. They begin to explore their world. This is an exciting time for babies. They have more independence than ever before. This newfound mobility adds many new opportunities for learning.

**Fine Motor Skills** Fine motor skills involve the smaller muscles of the body, such as those of the fingers. By three months of age, babies’ clenched fists have relaxed and they can open and close their hands. This is an important milestone in the development of fine motor skills. It means the child can grab objects by choice. By about five or six months, babies can reach for toys and pass a block from one hand to the other. By about seven months, babies can pick up objects by raking at them with the fingers and hand. Between nine and twelve months, babies fine-tune the ability to self-feed. They also learn to pick up objects with the thumb and forefinger.

**Hand-Eye Coordination**

The ability to move the hands and fingers precisely in relation to what is seen is called hand-eye coordination. This is an essential skill for many tasks in life. It is what allows people to eat, catch a ball, color pictures, and tie shoes.

Newborns have poor hand-eye coordination. It develops as vision and motor skills improve. Around the age of three or four months, babies begin to reach and grab for objects they see and bring them to their mouths. By the end of their first year, babies can pick up an object and put it in another place.

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**Review Key Concepts**

1. **Explain** how growth differs from development.
2. **Describe** the head to foot, near-to-far, and simple to complex patterns of development.

**Practice Academic Skills**

**English Language Arts**

3. Imagine that you have a friend who is pregnant for the first time. How would you explain to her the importance of an infant’s health and environment? Write a letter to your friend describing the effect they might have on the baby’s growth and development.

4. Gina’s baby weighed 7 pounds when she was born. The baby has been sick and is now a year old and weighs 15 pounds. Gina is concerned that the baby does not weigh enough. Should Gina be concerned? Write a paragraph explaining whether Gina should be concerned and what advice you would offer her.

**Science**

4. Gina’s baby weighed 7 pounds when she was born. The baby has been sick and is now a year old and weighs 15 pounds. Gina is concerned that the baby does not weigh enough. Should Gina be concerned? Write a paragraph explaining whether Gina should be concerned and what advice you would offer her.

**Check Your Answers** Check your answers at this book’s Online Learning Center at glencoe.com.

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**Section 7.1 After You Read**

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**NCTE 4** Use written language to communicate effectively.

**NSES C** Develop understanding of molecular basis of heredity; biological evolution; matter, energy, and organization in living systems.
How to Relieve Stress if a Baby Will Not Stop Crying

1. Explain how to safely hold a baby.
2. Identify how to meet a baby’s nutritional needs.
3. Describe the best type of clothing suitable for a baby.

Main Idea
Caregivers need to know the proper ways of handling, feeding, and dressing a baby. This knowledge will help keep a baby healthy.

Content Vocabulary
- shaken baby syndrome
- antibody
- weaning
- malnutrition

Academic Vocabulary
You will find these words in your reading and on your tests. Use the glossary to look up their definitions if necessary.
- aggravate
- curb

Graphic Organizer
As you read, look for things a frustrated caregiver might do when they are unable to get a baby to stop crying. Use a chart like the one shown to help organize your information.

<table>
<thead>
<tr>
<th>How to Relieve Stress if a Baby Will Not Stop Crying</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
</tr>
<tr>
<td>4.</td>
</tr>
</tbody>
</table>

Graphic Organizer  Go to this book’s Online Learning Center at glencoe.com to print out this graphic organizer.
Handling a Baby

A baby requires a huge amount of physical care. Each simple need, from a clean diaper to being comforted, requires someone’s help. When caregivers pick up and hold a baby they can strengthen emotional bonds as well.

Holding the Baby

Babies need to be held for many reasons. They need to be changed, fed, bathed, dressed, cuddled, and hugged. Safety, physical care, and emotional bonding are all involved in picking up and holding a baby.

Newborns and very young babies require the most careful handling. A newborn’s neck muscles are not strong enough to support the head. For that reason, anyone picking up and holding a newborn must support the baby’s neck and head at all times. Figure 7.3 on pages 210–211 shows how to safely pick up, hold, and put down a newborn.

By about four months of age, babies can hold up their head without support. Even then, handling babies gently and holding them close gives the babies a sense of security. Whenever picking up or putting down an infant, try to move smoothly and gently to avoid startling him. A crying baby can often be calmed by being picked up and held. Sometimes rocking the baby and gently patting the back can also be soothing.

Bedtime Routines

Sleep is essential for growth and development. It also appears to be necessary for the brain to work properly. In babies, children, and teens, sleep allows the release of chemicals in the body that contribute to growth. In addition, the body’s cells are hard at work during sleep, building and repairing themselves.

Some infants sleep more than others. Generally, a baby who is active needs more sleep than an inactive baby. Babies also need more sleep on some days than on others. Additional stimulation can cause a baby to sleep more, even if the baby is not more active.

As harmless as sleeping may seem, there are safety precautions to follow when putting babies to sleep. You need to do more than just choose a safe bed. Pillows, fluffy blankets, puffy bumper pads, and stuffed toys need to be removed. They can cause suffocation.
Babies should be placed face up when put to bed. This is to help prevent a death from sudden infant death syndrome. Read more about this in the Parenting Skills feature on page 212.

Putting a baby to sleep should be a relaxed and pleasant experience. A consistent bedtime routine is one of the best ways to help a baby calm down and go to sleep. Some common routines include a warm bath, reading a story, and rocking the baby gently. Parents need to find a routine that works for them. Put the baby in the crib, gently pat the baby goodnight, and leave the room. The baby may cry or whimper a bit but usually will fall asleep within a few minutes.

Lupe wants to begin a bedtime routine with her three-month-old son, Miguel. The first night, she gives Miguel a warm bath and puts a fresh diaper and some pajamas on him. She then rocks Miguel gently as she sings him a lullaby. After a few minutes, Miguel seems drowsy. Lupe gently lays him in his crib and creeps out of his room.

Experts vary in their advice about what to do if a baby continues to cry. Some recommend leaving the baby alone to cry it out. Others say the baby should be held and comforted immediately.

Today, many experts say to go to the baby after a few minutes of crying, offer comfort without picking up the baby, and then leave the room. If the baby cries again, stay away a bit longer than before and repeat the sequence. This process reassures the baby that a parent will always be near. However, any baby who continues to cry for more than 15 minutes should be checked for a wet diaper, sickness, or other problems.
Sleep Patterns

The amount of time a baby spends sleeping decreases greatly during the first year. A newborn may sleep a total of 12 to 20 hours a day. By one year, however, a baby often has as few as two or three sleep periods, including naps. Figure 7.4 on page 213 shows how much sleep babies typically need during the course of the first year.

Responding to Cries

It is important to respond to a baby’s cries. Doctors say that a prompt response to a very young baby does not spoil the baby. As discussed earlier, the only time parents and other caregivers may be advised to let a baby cry is at bedtime, when they are trying to establish good sleep habits. At other times, the reason for crying may be as simple as a wet diaper or feeling cold or hungry. Pain or sickness may also cause crying. Some babies may simply be startled by loud noises. First, make sure a crying baby is comfortable, fed, and dry. Next, try rocking, talking, singing, or other comforting techniques to soothe the baby.

Shaken Baby Syndrome

No one should ever vigorously shake or jiggle a baby. These actions are extremely dangerous. Every year thousands of babies suffer serious problems due to shaken baby syndrome. Shaken baby syndrome is a condition that occurs when someone severely shakes a baby, usually in an effort to make her stop crying. Shaken baby syndrome can lead to brain damage, including mental retardation, cerebral palsy, or blindness. Sometimes the shaking breaks bones or injures the neck and spine. It can even cause death.

Holding a Newborn Against Your Chest Hold the baby against your chest, so that the baby faces or peeks over your shoulder. Use your hand to support the baby’s neck and head.

Putting a Newborn Down Continue to support the neck, head, and body. Bend over and rest the child on a surface that can support the baby’s body. Then remove your arms.
The baby cries and cries and nothing you do seems to help. You are scared, frustrated, and angry. You are afraid you will lose control and hurt the baby. You may think this could never happen to you, but it might. Even experienced adults sometimes come close to losing control. For new parents and child care providers, the odds are higher. What can you do in such a situation?

- Put the baby down in a safe place, go into another room, and take some deep breaths or look out the window to calm down.
- Ask a friend or relative to care for the baby for a few hours.
- Call someone and talk about the problem.
- Call a parenting hotline or take the baby to a crisis nursery if available in your area. Both can give immediate help and teach you how to handle stress in the future.

Gently rocking or playfully bouncing a baby on the knee is not dangerous. However, shaking or hitting a baby can be deadly. A baby cannot purposely aggravate, or anger, a parent. If you or someone you know is ever in this situation, ask for help.

**Reading Check** Explain Why is it important to respond to a baby’s cries?

### Feeding an Infant

Mealtime provides babies with the nutrients they need to grow and develop. It also gives them much more though. It is an opportunity for babies to interact with others, learn more about their world, and practice skills. The cuddling, body contact, and encouragement that go along with feeding babies are almost as important as the food. Feeding an infant is a great opportunity for parents to bond with their child.

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**Parenting Skills**

### What Is Sudden Infant Death Syndrome?

Sudden infant death syndrome (SIDS) is the unexpected death of an infant with no obvious cause. The baby dies during sleep, with no crying and no evidence of struggle. The vast majority of children who die of SIDS are between two and four months old. However, SIDS can affect infants up to twelve months old. SIDS happens to about 2,500 infants each year in the United States.

The cause of SIDS is unknown, but researchers have identified some groups who are more at risk. Among those groups, the most likely victims are male babies who had a low birth weight. Premature babies, babies who live with a person who smokes, and babies who sleep on their stomachs also have a greater risk of SIDS.

To reduce the risk of SIDS:
- Put babies to sleep on their backs.
- Avoid smoking both during pregnancy and after the baby is born.
- Avoid exposing the baby to smoke from others.

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**Take Charge** Research to find out more about the Back to Sleep campaign sponsored by the National Institute of Child Health and Human Development. Create a flyer to explain the 10 ways you can help prevent SIDS.
Nutritional Needs

In the first year, a baby’s basic source of nutrition is breast milk or formula. In fact, for the first six months of life, a healthy baby’s nutritional needs can be met solely through breast milk or iron-fortified formula.

At about six months, solid foods can be introduced. Watery rice cereal is offered first, followed by other thin cereals and strained fruits and vegetables. These foods are key sources of the calories, or food energy, needed for growth. After about eight months of age, babies can get about half of their calories from solid food and half from breast milk or formula. The amount of solid food should continue to increase gradually. By the first birthday, most nutrition usually comes from solid foods.

Babies under age one should not be fed cow’s milk because it is hard for them to digest. It lacks important nutrients that breast milk and formula provide. Fruit juice seems like a nutritious food for infants. However, fruit juice promotes tooth decay and may curb, or limit, a child’s appetite for more nutritious foods. It is usually best to wait until the baby is six months old before introducing fruit juice. Then, it should be watered down for the baby. Parents should discuss their baby’s eating plan with the baby’s doctor.

Breast Milk

If a mother is capable, nutrition experts recommend breast-feeding. There are many advantages to breast milk:

- It contains all the nutrients a baby needs.
- It also contains antibodies. An antibody is a substance produced by the body to fight off germs. Antibodies boost a baby’s defenses against infection. Colostrum, or the first breast milk, is especially rich in nutrients and antibodies.
• It is germ-free and easy to digest.
• Breast-fed babies get fewer ear infections, respiratory infections, and allergies than formula-fed babies. They are also less likely to develop asthma.

Breast milk lacks vitamin D, a nutrient important for bone growth. Fortunately, the skin makes this vitamin when it is exposed to sunlight. A young baby in a cold climate might need extra vitamin D in the winter. Parents should check with the baby’s doctor.

The World Health Organization encourages mothers to breast-feed for at least one year. This gives babies the best possible nutrition and a good start in life. Refer back to Section 5.2 for more information on breast milk and baby formula.

**Baby Formula**

Many babies are fed formula for part or all of their infancy. Not every mother is physically able to breast-feed. Other parents choose to use formula.

Baby formula is specially made to meet babies’ nutritional needs. Milk-based formula is used most often. The cow’s milk used as an ingredient has been modified to eliminate digestive problems. Soy-based formula is also available. Formula comes in three forms: ready to use, a concentrated liquid that is mixed with water, and a powder that is mixed with water.

**Feeding Schedules**

A newborn’s schedule of eating and sleeping is unpredictable. Pediatricians recommend that newborns be fed as much and as often as they want to eat. A newborn will generally stop eating when he or she is full.

Frequent feedings are necessary because a newborn’s stomach can hold only a small amount. In the first few weeks of life, breast-fed babies may want to eat as many as eight to twelve times a day or more. Formula-fed babies may eat every three to four hours for the first few weeks.

**Bonding Through Feeding**

Bottle-feeding, whether with breast milk or formula, gives the father a chance to participate in the closeness of feeding an infant. *What do babies gain at mealtime besides nutrients?*
By the second or third month, most babies are eating on a regular schedule. They may wake for a feeding every three or four hours. Eventually babies no longer need a late-night feeding. This is typically when they weigh about 12 pounds (5.4 kg). At this weight, their stomach is usually large enough to allow them to sleep through the night, about six hours.

**Feeding Methods**

Most babies under the age of six months eat only breast milk or formula. This means there are only two ways they can be fed: by breast or bottle. With either method, babies should be allowed to eat until they are satisfied. Healthy babies usually eat only the amount they need, so overeating is generally not an issue with young babies.

**Breast-Feeding**

Breast-feeding is very natural, but it does not always come naturally. It can take practice. Many hospitals have consultants on staff to offer assistance if needed. They can help new mothers learn how to find the best way to hold the baby and get the baby to eat. They can also give advice on the mother's nutritional needs and how to deal with problems.

**Bottle-Feeding**

There are certain guidelines for bottle-feeding. The first deals with preparing the formula. If using a powdered or concentrated formula, mix it with sterile (germ-free) bottled water or water that has been boiled.

Bottles should be washed in a dishwasher or with hot, sudsy water followed by a boiling water rinse. Bottles with disposable liners are a popular alternative. Bottles can be prepared up to 24 hours ahead and stored in the refrigerator.

Most infants prefer their bottles at room temperature or warm. To warm a bottle, place it in a pan of warm water. Heat the formula until it is lukewarm. Special bottle warmers are also now available. Always test the temperature by dripping a small amount of formula onto the inside of your wrist. If it is hot, allow it to cool down before feeding. Formula should never be warmed in a microwave oven. The microwave can leave pockets of hot liquid that will burn a baby’s mouth.

For bottle-feeding, hold the baby close to you in a semi-upright position. The head needs support in the first few months. You should never prop up the baby and bottle and leave the baby to drink alone. It deprives the baby of important physical contact. In addition, babies should not be put to bed with a bottle. The milk can pool around the gums and cause decay in developing teeth. This practice also leads to an increased risk of ear infections.

If a baby does not finish the contents of the entire bottle, the remainder should be thrown away. Disease-causing bacteria can grow quickly in leftover formula and if eaten, could lead to illness.

**Burping the Baby**

Babies often swallow air as they drink whether they are bottle- or breast-fed. To feel comfortable, a baby must be burped from time to time to expel the air. Without burping, a

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**Food Poisoning**

Watching children enjoy new foods for the first time can be a wonderful experience. But there are some important things, such as food poisoning, to keep in mind as new foods are introduced. Botulism is a deadly form of food poisoning. Food poisoning can make children very sick. Some of the milder symptoms may include diarrhea, vomiting, nausea, stomachache, headache, weakness, and fever. Food poisoning is caused by eating foods that have not been handled properly, or by bacteria in the foods.

**Be Prepared** Research to find other common types of food poisoning parents and caregivers should be aware of. Write a brief report about one type of food poisoning. Explain what it is, how it might affect a baby, and how to avoid it.
baby may spit up, become irritable, or have gas. Burping is a technique that anyone who cares for a baby needs to know.
- Burp a baby at least twice during a feeding. Depending on how much the baby is drinking, try burping at least once during a feeding and once after a feeding.
- Find the most comfortable position to burp a baby. Many caregivers lay the baby across their knees. Others hold the baby across their chests with the baby’s head above their shoulders. Some prefer to hold the baby in a sitting position for burping.
- Pat the baby on the back to cause the burp. A gentle tap works as well as a firmer one, so be very gentle.
- Protect your clothing. Put a towel or cloth under the baby’s head to catch any liquid that comes up.
- Remember that it is perfectly normal for a baby not to burp each time. Each baby’s liquid intake is different. Although a baby may not burp each time, it is important to try.

It is also common for most babies to spit up from time to time. This may occur after the baby has eaten more than his or her stomach can hold. Sometimes a baby will spit up while burping. It is a good idea to protect your clothes with a cloth while holding or burping a baby. Avoid placing the baby in a seated position after eating because this can put pressure on the stomach and cause the baby to spit up. If a baby vomits forcefully, or does not appear to be gaining weight, consult a doctor.

**Introducing Solid Foods**

Babies are typically given their first solid foods around the age of four to six months. There is no rush to start, however. Once babies have started to eat cereal, other new foods can be introduced. It is not unusual for a baby to have a bad reaction to a certain food. It may cause a skin rash, digestive trouble, or an allergic reaction. By introducing new foods at least four days apart, it is easier to figure out which food is the problem.
Weaning

Sometime around their first birthday, many babies are ready for weaning. Weaning is changing from drinking from the bottle or breast to a cup. Weaning is an important sign of a baby’s increasing independence.

There is no absolute time at which a baby should be weaned. Many babies show signs that they are ready. They may show less interest in breast- or bottle-feeding. Typically this occurs between nine and twelve months of age. Other signs that a baby is ready to be weaned may include playing or looking around while feeding, pushing the breast or bottle away, or showing a preference for eating solids.

It is best to approach the weaning gradually. If a mother is breast-feeding, her body can adjust to decreasing demands on milk production. The slower transition also gives children time to get used to drinking formula or milk, depending on their age. Forced weaning may result in other feeding or behavior problems for the child.

Some pediatricians suggest going directly from breast-feeding to a cup if the child is old enough to drink from one. This avoids later transitions from bottles to cups. If an infant moves from breast-feeding to a bottle, the breast milk should slowly be replaced with formula or milk first.

Self-feeding

When babies can sit up steadily in a high chair, they can start to eat with their fingers and reach for a spoon. This is often at about eight or ten months. Being able to pick up food and self-feed is an important developmental milestone because it signals increased independence. Finger foods are small pieces of food that can easily be picked up with the fingers and eaten. They encourage self-feeding.

When a baby begins to self-feed, it is important to avoid foods that could get stuck in a baby’s throat. Some of these foods include raw vegetables, hot dogs, nuts, peanut butter, whole grapes, candy, chips, pretzels, and popcorn. Any hard, round food can get stuck in a baby’s throat. Foods that break up easily in the mouth are best. This might include dry toast, cereal pieces, small pieces of chicken, small pieces of cooked pasta, and chunks of banana.

A baby’s first efforts at self-feeding with a spoon will probably be fun for the baby but not very productive. At first, mealtime may consist of the baby trying to self-feed finger foods while the caregiver spoons in extra food whenever possible. Babies may not become expert spoon users until eighteen months of age or later. It takes patience and a sense of humor. You should allow plenty of time for each meal and anticipating some messiness.

Nutritional Concerns

Just like adults, babies who are eating solid foods should eat nutritious, well-balanced meals that include grains, fruits or vegetables, and protein. They should be able to eat whenever they are hungry, rather than on a rigid schedule. Foods should be soft and easy to gum or chew and swallow. Salty snack foods should be limited because they are likely to be low in nutritional value. Certain other foods may contain substances that are not good for a baby. Babies have very specific nutritional needs. They include the following:

- Enough calories to provide for activity and rapid growth
- Foods that provide key nutrients, such as vitamins and minerals
- Adequate amounts of liquid

Some babies do not receive enough of the right types of food. Others may have a medical condition that prevents them from absorbing enough nutrients after they eat. Malnutrition in infancy can cause lasting physical problems.

“When you comfort your baby, you are letting her know the world is a safe place and that someone cares about her feelings.”

— Claire Lerner, LCSW; Amy Dombro, MS; and Karen Levine, coauthors, The Magic of Everyday Moments: 0–4 months
Malnutrition is inadequate nutrition. Poor nutrition is also linked to poor brain development, which can lead to learning difficulties.

There are many government and community programs working to eliminate infant and childhood malnutrition. Some of these programs provide food. Others teach parents how to make good nutritional choices for children.

While most babies eat only the amount they need, it is possible to overfeed a baby. This is more common with bottle-fed babies. They may be encouraged to drink all the formula in their bottle, even if they are already full. A chubby baby will not necessarily be an obese adult. Research shows that obesity in adults is linked to heredity. However, poor eating habits in the first year can lead to health problems later in life. Talk to your doctor about the best ways to meet a baby’s nutritional needs.

Allergies

An allergy is an oversensitivity to a particular common substance that is harmless to most people. When a person has an allergy, the body’s immune system attacks the substance. Allergy symptoms are the side effects of the attack. People may have an allergic reaction when they eat, breathe in, are injected with, or touch the thing they are allergic to. The reaction may be as mild as puffy, itchy eyes or as severe as anaphylactic shock, a life-threatening condition that makes it difficult to breathe.

It is important to watch for signs of allergies in babies. Parents who have allergies themselves should be especially careful, since the tendency to develop allergies runs in families. Signs of a food allergy in a baby may include excessive crying, vomiting almost all food after a feeding, or eight or more watery stools a day.

Babies should not eat eggs, citrus fruits, honey, peanut butter, corn, or shellfish during their first year of life. All of these foods can cause allergic reactions. Children often out-grow allergies to eggs, milk, and soy, but other food allergies are likely to continue throughout life. The best treatment for a food allergy is to avoid the food. Breast-feeding mothers should also avoid foods to which a baby is allergic.
Dressing a Baby

Have you ever seen babies who seem over- or under-dressed for the weather? Babies lose body heat more easily than adults do, but they are also sensitive to overheating. As a general rule, doctors recommend dressing babies in one more layer of clothing than an older child or an adult would wear.

A new baby does not need a lot of fancy clothing. Babies do need diapers, undershirts, and simple outer garments. Socks and booties are not always necessary for everyday wear. Many newborns spend their days and nights in a sleeper, a one-piece stretchy garment that has feet or a simple drawstring at the bottom. On hot days, just a diaper and an undershirt will do. It is not unusual to change a newborns clothes a couple of times during the day. They often spit up or drool on their clothes.

When babies begin to crawl, they need more durable clothes that allow for movement. Some baby clothes have padded knees to add durability. Shoes are not essential until a baby starts to walk outdoors. When babies are learning to walk, going barefoot gives them more flexibility at the ankle and allows them to grip the floor with the toes. Once the baby is ready for shoes, either flexible sneakers or soft leather shoes are good choices.

Choosing Clothing

Many clothes for infants are made of knit fabrics that are comfortable and stretchy, making it easy for the baby to move around.

Clothing size is determined by a baby’s weight and age, although weight is typically the more reliable guide. In general, clothes should not be so snug that the baby has trouble moving. Many parents buy clothes a little large so they will last longer and the baby can move around. However, they Clothes also should not be so large that they get wrapped around or stuck under the baby.

When choosing baby clothes, comfort and ease in dressing are important. Features such as snaps along the inner legs help make changing diapers easy. Shirts that snap rather than go over the head are also easy to use with young babies. To get longer use out of clothes, look for clothes with cuffs or generous hems that can be let down, extra buttons on shoulder straps, and elastic waistbands that allow for growth.

Dressing Baby

As you dress or undress a baby, it is important to work as quickly and smoothly as possible. Why might a baby not like being dressed and undressed?
How to Dress a Baby

Dressing and undressing a baby quickly and smoothly takes some practice. It is easy to understand why babies do not really like the process. There is usually an abrupt change in temperature, as well as being pushed and pulled through clothes. Here are some hints for dressing babies in different types of clothing.

Pullover Garments
These clothes have a stretchable neck opening. If the neck opening is large, put the opening around the baby's face first, and then pull it over the back of the head. If the opening is small, gather the garment into a loop and slip it over the back of the baby's head. Stretch the garment forward, down, and away from the face and ears. Put the baby's fist into the armhole and pull the arm through with the other hand. Repeat with the other arm, and then straighten out the bottom of the garment.

When undressing the child, carefully stretch the garment away from the chin and face as it is lifted off.

Open-Front Shirt
Set the shirt out, with the front open. Lay the baby down on the shirt, face up. Gently pull the baby's arms through the sleeves. Fasten the front.

One-Piece Garment with Feet
Putting on this type of garment is easier when the zipper or the snaps go from neck to toes. Lay the baby on the open garment. Start with the bottom part of the garment. If the zipper or snaps go down only one leg, put the baby's leg on the side without the zipper or snaps first. Follow this by putting in the other leg. Then gently pull the sleeves over the baby's arms. Finish by zipping or snapping the garment closed.

Review Key Concepts
1. Describe a possible routine to use when putting a baby to bed at night.
2. Identify signs that a baby has a food allergy.
3. List three factors you should consider when choosing a clothing gift for a newborn.

Practice Academic Skills

English Language Arts
4. Many new parents do not recognize when a young baby is not getting the proper nutrition. Do research to learn the warning signs of malnutrition in a baby. Use the information you learn to create a poster titled Signs of Malnutrition in Babies.

Social Studies
5. Research organizations in your community that help meet the nutritional needs and clothing needs of young children. Combine your findings with those of your classmates and create a directory to provide to parents of young children.

Check Your Answers Check your answers at this book's Online Learning Center at glencoe.com.
Before You Read

Understanding Write down any questions you have while reading. Many of them will be answered as you continue. If they are not, you will have a list ready for your teacher when you finish.

Read to Learn

Key Concepts
- **Describe** how to bathe a baby.
- **Explain** why checkups and immunizations are important for babies.

Main Idea
Keeping a baby healthy involves bathing, diapering, and taking care of baby’s teeth. A baby needs regular checkups and scheduled immunizations.

Content Vocabulary
- cradle cap
- diaper rash
- teething
- immunization
- vaccine

Academic Vocabulary
You will find these words in your reading and on your tests. Use the glossary to look up their definitions if necessary.
- designate
- emerge

Graphic Organizer
As you read, note the steps for changing a baby’s diaper. Use a chart like the one shown to record your information.

Academic Standards

**English Language Arts**
- **NCTE 4** Use written language to communicate effectively.

**Social Studies**
- **NCSS I A Culture** Analyze and explain the ways groups, societies, and cultures address human needs and concerns.

**Academic Standards**
- **NCTE** National Council of Teachers of English
- **NCTM** National Council of Teachers of Mathematics
- **NSES** National Science Education Standards
- **NCSS** National Council for the Social Studies
Keeps Baby Healthy

The first year of a baby’s life can be very demanding for the parents. Beyond the everyday care of a baby, parents have to maintain their baby’s overall wellness. Positive caregiving techniques include everything from bathing the baby to keeping the baby safe.

Bathing a Baby

Regular baths help keep babies clean and healthy. There are two types of baby baths: a sponge bath and a tub bath. Newborns should have sponge baths until the naval heals. This is usually about two weeks after birth. After that, the baby can be given a tub bath. Many parents use a portable baby bathtub or a sink. It is best to wait until a baby can sit up on his own before using a full-size tub.

A sponge bath can be done any time a baby needs to be cleaned. Use a soft, clean sponge and warm water to gently clean the baby. Avoid the naval area. Your doctor may advise you to clean the naval using rubbing alcohol and a cotton swab. Immediately pat dry the baby and dress her to prevent chills.

Around age two to three months, babies should have baths two or three times a week. By age seven to eight months, when most babies can sit up steadily in the bath, they tend to really enjoy bath time. They love to splash and play in the water with floating toys and plastic cups. Through much of early childhood, the bathtub can be a favorite play place. Bath toys and a child’s imagination merge for delightful play.

How to Bathe a Baby

Bath time can be a lot of fun for babies. Some like to kick and splash in the water or play with bath toys. Caregivers often talk, sing, or play games with a baby. It is important to handle a slippery baby carefully. Follow these guidelines for safely bathing a baby.

- **Prepare for the baby’s bath.** Gather everything needed for the baby’s bath ahead of time. Set up the baby bathtub, towels, washcloths, shampoo, and other supplies. Put about two inches of warm water in the baby’s bathtub. Test the temperature of the water with your arm. When the bath is ready, undress the baby.
- **Put the baby in the tub.** Support a very young baby’s head and neck with one hand and arm. Hold the baby’s body with the other hand. Lower the baby into the tub feet first. Many baby bathtubs will support the baby in a reclined position until they can sit up on their own. However, you must stay with the baby at all times.
- **Wash the baby’s face.** Use clear water and a damp, soft washcloth to wash the baby’s face. Then gently pat it dry.
- **Wash and rinse the baby’s hair.** About twice a week, wash the baby’s hair with baby shampoo. Wet the baby’s hair. Add a bit of shampoo and rub gently. Rinse by pouring water toward the sides and back of the baby’s head.
- **Wash the baby’s body.** While supporting the baby’s body, use your free hand to wash and rinse the baby.
- **Dry the baby’s body.** To prevent chills, wrap the baby in a clean towel immediately. Pat the baby dry. Diaper and dress the baby right away.

Sometimes infants develop cradle cap. **Cradle cap** is a skin condition known for yellowish, crusty patches on the scalp. Most cases disappear after a few weeks or months. Parents can treat it after a few weeks or months. Parents can treat it by washing the baby’s scalp daily with a mild shampoo. Other treatments, such as baby oil or excessive shampooing, can worsen the scales or dry the skin.

Bath time is also a good time to trim a baby’s nails. If needed, use baby nail clippers or nail scissors to trim the nails. You might also want to use a baby file to help smooth the sharp edges. Baby nails are soft but sharp, and they can scratch the baby’s face.

### Diapering a Baby

Diapers are the most essential part of a baby’s wardrobe. A very young baby may need diaper changes 12 to 15 times each day. A newborn wets several times an hour but in small amounts that do not require changing each time. An older baby probably needs fewer diaper changes each day. The older baby might let you know when a clean diaper is needed. Many babies are uncomfortable in a wet or dirty diaper. They will cry when they need a clean diaper.

A common problem that occurs is diaper rash. **Diaper rash** is a condition that includes patches of rough, red, irritated skin in the diaper area. Sometimes painful raw spots develop. Controlling bacteria in diapers helps prevent this condition.
Mild cases of diaper rash can be treated by changing the diaper more frequently and being sure to thoroughly clean the baby at each changing. More severe cases need treatment such as a medicated cream. Exposing the area to air and avoiding waterproof pants can also help the rash heal.

**Diaper Options**

It is a personal choice whether to use disposable or cloth diapers. Some parents opt to use cloth at home but use disposable when they go out. Each has advantages and disadvantages. Parents will need to consider each option carefully before making the best decision for their child. Doctors and nurses can offer advice if needed when making these decisions. Here are a few things to consider in the decision.

- **Disposable Diapers** Many people feel that these are more convenient and more effective at keeping babies dry and comfortable than cloth diapers. Some babies develop a sensitivity to disposables, causing a rash. Infant care centers generally use disposable diapers for convenience and sanitation. Disposable diapers add significantly to environmental waste.

- **Cloth Diapers** These are the most economical choice if they are washed at home. However, they cost more than disposable diapers if they are provided and cleaned by a commercial diaper service. Cloth diapers are more environmentally friendly.

  You should designate, or specify, a changing area. This makes it easy to keep diapers and other supplies close at hand. Any flat, clean surface may be used. A changing table is a good choice because it has sides to help keep the baby from rolling off. However, it is never safe to leave a child alone on a raised surface. Diapering supplies may include wet washcloths, disposable wipes, and dry cloths for cleanup.

  For outings away from home, a diaper bag can hold diapers and supplies. It is also a good idea to include extra clothes and a plastic bag for diaper disposal.

**How to Change a Diaper**

Diaper changes are an opportunity for positive interaction by talking and laughing with the baby while changing the baby’s diaper. There are three basic steps to changing a diaper:

1. **Remove the diaper and clean the baby.** Thoroughly clean the diaper area with a damp washcloth or disposable wipe.

2. **Put on a fresh diaper.** Hold the baby’s ankles and lift the body to slide the diaper underneath the baby. With disposable diapers, be sure the adhesive tabs are on the back side of the diaper. With cloth diapers, place the folded side in the back for girls and in the front for boys. Then, bring the diaper up between the baby’s legs. Fasten a disposable diaper together with the adhesive tabs. Fasten a cloth diaper with diaper...
pins or diaper tape. When using pins, keep a finger between the pin and the baby’s skin. Parents may choose to add plastic or cloth diaper covers over cloth diapers.

3. **Dispose of used supplies.** Throw out all used wipes and disposable diapers, preferably in a trash container with a lid. Disposable diapers clog plumbing, so never flush one down a toilet. Dirty cloth diapers should be rinsed in a clean, flushing toilet and soaked in a covered container that is filled with water, detergent, and bleach. Later, they should be washed in hot water with mild detergent.

**Health Care**

Parents and caregivers must be careful to help keep the baby healthy. Cleaning teeth is one part of baby’s health care. Regular check-ups and immunizations and watching for illness are also important parts of maintaining a baby’s health.

**Teeth**

The development of a baby’s teeth begins about the sixth week of pregnancy. However, a baby’s teeth do not begin to break through the gums until about six months of age or later. The first set of teeth a baby gets are called primary teeth, or baby teeth. The complete set of primary teeth generally comes in by the time a child is twenty months old. The timetable for when each tooth will appear varies somewhat from child to child. Children can start teething as early as four months. Some children do not get the last primary teeth until they are almost three years old.

**Teething** is the process of the teeth pushing their way through the gums. The gums around the new teeth swell and become tender, so it can be a painful experience. During teething, a baby may become cranky, fuss during meals, drool a lot, develop a low-grade fever, and want to chew on something hard. Teething can cause different reactions in different children. Massaging the gums and allowing the baby to chew on a cold, hard, unbreakable object, such as a refrigerated teething ring, can bring relief to some. Babies will often put anything they can grab into their mouths at this time to chew for relief. Also note that what soothes one child may not work for another child.

Most physicians do not recommend using medications to soothe the pain. Teething medication does not always bring much relief because it washes out of the mouth in minutes. Also, numbing medications can make it difficult for the baby to eat. If a baby develops a higher fever or cannot be comforted, parents should check with a doctor. You should never give an infant any medication without first asking the baby’s doctor. This is true even for over-the-counter medications that are labelled for infants.

Once the baby’s first teeth **emerge**, or appear, it is a good idea to begin cleaning them regularly. The best way is to wipe them with a soft, damp cloth or gently brush them with a soft baby’s toothbrush. Some dentists recommend cleaning the gums even before the first teeth emerge.
It is important for babies to get fluoride after six months of age to build healthy teeth. However, most babies do not need fluoride toothpaste. Usually babies get enough fluoride from their drinking water or water used in formula. If their local drinking water does not contain fluoride, a doctor can determine if a baby needs fluoride supplements.

**Infant Safety Concerns**

Keeping children safe is one of a caregiver’s greatest responsibilities. Caregivers can help prevent accidents before they happen by learning how to keep infants safe. The following are some safety guidelines for infants:

- **Choking** Keep floors clear of small objects such as buttons, coins, and safety pins. Do not feed infants solid food until the child’s doctor says it is safe. Then be sure to follow the doctor’s guidelines on what foods are safe to eat. Some foods are choking hazards for children until they are three years old.
- **Suffocation** Soft, flexible objects that can cover an infant’s nose and mouth may cause suffocation. Keep all plastic bags away from infants. Do not put stuffed animals or loose blankets in a child’s crib.
- **Water** Never leave a baby alone near or in water. This includes water in a bucket, bathtub, or wading pool. A baby can drown in as little as one to two inches of water.

- **Falls** Do not leave a baby alone on any raised area, including an adult bed or a changing table.
- **Poisoning** Babies put everything into their mouths. Keep all medicines, household cleaners, paints, and other poisonous substances in locked storage areas.
- **Burns** Never leave children alone around hot liquids, ovens, or irons. Use safety covers on all electrical outlets. Keep the water heater set at no higher than 120°F (49°C).
- **Sun** Infants should wear sunglasses and hats with a brim when outdoors. Avoiding direct sun exposure and dressing babies in lightweight long pants and long-sleeved shirts are the best ways to protect them from sunburn. For infants older than six months of age, sunscreen should be used when adequate clothing and shade are not available.
- **Animals** Babies do not know how to act around animals, even pets. Never leave a child alone with any animal.
- **Clothing** It is very important that a baby’s clothing be flame retardant. This is especially true for sleepwear. Check clothing labels for this information.

**Regular Checkups**

An infant’s first checkup usually occurs within a day of birth. A doctor does a thorough check of the newborn, including all parts of the body, the baby’s reflexes, the fontanels, the heart rate and breathing, the skin color, the umbilical stump, the nostrils and mouth, and the eyes. The health care staff will also record the first measurement of the baby’s weight, length, and head circumference. These measurements will be tracked over the next year. A blood sample will be drawn to test for a range of disorders and diseases. A follow-up visit often occurs two or three days after a baby is born.

Additional checkups are often scheduled at 1 month, 2 months, 4 months, 6 months, 9 months, and 12 months. During these exams, the doctor will continue to track the baby’s growth and development, thoroughly examine and measure the baby, and respond to parents’ questions and concerns.
The Importance of Immunizations

Some checkups include immunizations. An **immunization** is a shot of a small amount of a dead or weakened disease-carrying germ given so that the body may build resistance to the disease. The most common way to immunize against a disease is with a vaccine. A **vaccine** is the disease-carrying germ that usually is injected in the body.

Immunizations are one of the most important ways caregivers can protect children against certain diseases. After being immunized, the body produces antibodies to fight off the germs for that disease. If the person is later exposed to the disease, he or she already has antibodies that fight it and will be less likely to get the disease or will only get a mild form of it. Only in very rare cases does a child have a bad reaction to a vaccine.

State regulations and schools typically require that children have certain immunizations before being admitted to a school. Many child care centers also require babies and toddlers to have immunizations before they are allowed in the center.

It is up to parents and other caregivers to keep a record of their child’s immunizations and to make sure that they receive immunizations on time. To find out what types of vaccines infants need and when they need them, refer to the recommended schedule of immunizations in Chapter 20.

Watching for Illness

Babies cannot say when they do not feel well. Therefore, it is important to watch for signs of illness. Such signs may include irritability, lack of energy, constipation, nasal congestion, persistent coughing, diarrhea, rashes, vomiting, or fever. Parents and caregivers should never hesitate to call the doctor if a child shows any significant symptoms that are of concern.

Many illnesses do not require medication. In fact, many experts now feel that infants should be allowed to fight off some infections on their own so they can build stronger immune systems. The child’s doctor can direct you on the best course of action for your child. For more information on illnesses, see Chapter 20.

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**Section 7.3 After You Read**

**Review Key Concepts**

1. **Explain** how a sponge bath is different from a tub bath.
2. **Describe** what happens during a baby’s regular checkup.

**Practice Academic Skills**

**English Language Arts**

3. Imagine that you are caring for a six-month-old baby. You have put her down for a nap but she begins to cry. What techniques could you use to get the baby to stop crying? Write a list of suggestions.

**Social Studies**

4. Methods for diapering a baby differ from country to country. Choose a country in a different part of the world and research the baby diapering methods used. Write step-by-step directions and demonstrate the method for the class.

**Check Your Answers** Check your answers at this book’s Online Learning Center at glencoe.com.
Pediatricians are doctors who specialize in treating children. Pediatricians work in offices, clinics, hospitals, and pharmaceutical companies. Some specialize in caring for children who have diseases such as cancer or diabetes.

**What Does a Pediatrician Do?**

Pediatricians keep track of children’s growth and development. They also vaccinate children against disease. They diagnose and treat injured or sick children. In addition, they show parents how to care for sick children. Many children are afraid of doctors, so pediatricians must be patient and kind.

**Where Do Pediatricians Work?**

Most pediatricians see patients in their offices. Some pediatricians work in a group office or hospital. Others have a private practice. They also visit patients in the hospital. The hours can be long, and some pediatricians remain on duty when they are at home. This means they can be called into the office for emergencies.

**Preparation and Skills**

**Education and Training**

Pediatricians earn bachelor’s and medical degrees. This is followed by three years of training in pediatric medicine. Pediatricians must pass a state exam to earn their medical license.

**Aptitudes, Abilities, and Skills**

Pediatricians must have strong communication skills and compassion to talk to both sick children and their families. They need keen observation abilities to analyze a child’s illness, even though children often cannot explain what is wrong. Respect for patients’ privacy is also a must.

**Academic Skills**

English language arts skills are used to talk to parents and medical associates. Pediatricians also need science and math skills to learn and understand anatomy and medical procedures.

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**Explore Careers**

Work with your teacher to set up a time when you can talk with or observe a pediatrician or pediatric nurse. Prepare questions in advance and take notes as you talk. Share the information in an oral report to your class.

**Careers Online**

For more information on careers, visit the Occupational Outlook Handbook Web site through the link on this book’s Online Learning Center at glencoe.com.
Chapter Summary

Heredity, nutrition, health, and environment all play a role in a baby's growth and development. Babies grow rapidly in the first year. Babies must be handled carefully and must never be shaken. Feeding babies breast milk or formula meets the nutrition needs for the first six months. Other foods should be introduced gradually. A baby's clothing should be comfortable and easy to put on and take off. Babies should be bathed regularly but never be left alone in the bathtub. Parents should follow a recommended schedule of checkups and immunizations.

Vocabulary Review

1. Create a fill-in-the-blank sentence for each vocabulary term. The sentence should contain enough information to help determine the missing term.

**Content Vocabulary**
- developmental milestone (p. 195)
- stimulating environment (p. 197)
- growth chart (p. 198)
- proportion (p. 200)
- depth perception (p. 201)
- reflex (p. 206)
- gross motor skill (p. 206)
- fine motor skill (p. 206)
- hand-eye coordination (p. 206)
- shaken baby syndrome (p. 211)
- antibody (p. 213)
- weaning (p. 217)
- malnutrition (p. 218)
- cradle cap (p. 223)
- diaper rash (p. 223)
- teething (p. 225)
- immunization (p. 227)
- vaccine (p. 227)

**Academic Vocabulary**
- makeup (p. 195)
- accommodate (p. 200)
- aggravate (p. 211)
- curb (p. 213)
- designate (p. 224)
- emerge (p. 226)

Review Key Concepts

2. **Identify** the four major influences on an infant's growth and development.
3. **Summarize** how a baby typically grows in the first year.
4. **Explain** how to safely hold a baby.
5. **Identify** how to meet a baby's nutritional needs.
6. **Describe** the best type of clothing suitable for a baby.
7. **Describe** how to bathe a baby.
8. **Explain** why checkups and immunizations are important for babies.

Critical Thinking

9. **Compare and Contrast** the role heredity and nutrition play in an infant's growth and development.
10. **Examine** why it is or is not acceptable for an eight-month-old to drink the same milk as the rest of the family.
11. **Interview Caregivers**  Work with your teacher to set up an interview with a parent or caregiver. Ask the caregiver about the techniques he or she uses to bathe and diaper an infant. Take good notes during the interview. Using your notes, write a report in which you compare and contrast the techniques described in the interview with the techniques described in this text. End your report with a brief summary of any differences noted. Why do you think the caregiver used a different technique?

12. **Research State Rules**  Contact a local licensed childcare facility and ask for an answer to this question: What are the state rules for appropriate sanitation and hygiene for infants, toddlers, children, and staff at a licensed childcare facility? If necessary, conduct additional research to adequately answer the question. Write a brief essay to report your findings.

13. **Observe a Baby**  Work with your teacher to arrange to observe a baby in a home or childcare center. The baby should be under the age of 12 months. Children this age are developing more physical abilities and independence.

   **Procedure**  Be sure to note the age of the baby and if there are other children present. As you observe, note how interested the baby is in moving around independently. What signs of such interest do you see?

   **Analysis**  Complete an observation record to formally record the baby's actions. You can use an anecdotal record or a running record. Share your findings in an oral report to your class. Be sure not to reveal personal information such as the child's name in your report.

   NCTE 7 Conduct research and gather, evaluate, and synthesize data to communicate discoveries.

14. **Work in Teams**  Follow your teacher’s instructions to form into groups. Work with your group to practice dressing and undressing baby-sized dolls. As team members take turns, offer comments about their techniques. Be sure your comments are constructive and not critical. Then, as a group, create a list of tips for dressing and undressing an infant.

15. **Create a Time Line**  Use graphics software to create a time line that shows the physical developmental milestones for a baby’s first year. Refer to Figure 7.2 for information to include on your time line.

16. **Determine Baby Food Costs**  Your friends have been paying $0.23 per ounce for baby food. They can make their own baby food with the same nutritional value for about $0.08 per ounce. How much will they save on 200 ounces of baby food by making their own?

**Real-World Skills**

**Interpersonal and Collaborative Skills**

14. **Work in Teams**

**Technology Skills**

15. **Create a Time Line**

**Financial Literacy**

16. **Determine Baby Food Costs**

**Additional Activities**  For additional activities, go to this book’s Online Learning Center at glencoe.com.
Academic Skills

**English Language Arts**

17. **Use Your Knowledge**  Research has found that infants who are confined to carriers, strollers, and playpens for extended periods of time will roll over, crawl, and walk later than other children. Write a one-page essay to describe interactive activities that can help children develop gross motor skills.

_NCTE 4_ Use written language to communicate effectively.

**Mathematics**

18. **Rolling Distance**  An infant four to six months of age can roll over. The amount of distance an infant can cover in one turn is 1½ feet. If an infant is placed in the middle of a play yard that is 6 feet wide, how many rolls can the baby make before reaching the side?

**Math Concept**  Dividing with Fractions  To divide a whole number by a fraction, first convert the fraction to a decimal.

**Starting Hint**  Since the baby is in the middle of the play yard, divide 6 by 2. to find out how many total feet are between the baby and the side. Then divide your answer by the amount of feet covered in each roll (1½).

For math help, go to the Math Appendix at the back of the book.

**Science**

19. **Motor Skills Development**  Research has found that an iron deficiency in infants leads to lower mental functioning and delays in motor skills development. In addition, infants need more iron as their growth accelerates during the second half of the first year.

**Procedure**  Use print or online resources to identify good sources of iron for infants. Remember that the sources will probably change as an infant gets older and is able to eat more foods. Explain why this information is important for parents and other caregivers.

**Analysis**  Create a brochure for parents and caregivers that states the reasons children need iron as well as good sources of iron for infants.

_NSES F_ Develop understanding of personal and community health.

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**Standardized Test Practice**

**OPEN-ENDED RESPONSE**

Read the passage and follow the directions.

20. Cara is caring for her 15-month-old nephew, Jamie. Jamie is asleep and Cara is on the phone with her best friend. Jamie wakes up and begins to cry. He cries for several minutes while Cara continues to talk with her friend. Write a paragraph that describes what Cara should do.

**Test-Taking Tip**  Open-ended test questions are often looking for a specific response rather than an opinion. These may include definitions, comparisons, or examples.