Learning Activities
1. c, f, g, p, o, b, i, n, e, j, k, m, h, d, l, a
2. a. Transparent and loose
   b. Easily seen beneath the abdomen and scalp
   c. Minimal subcutaneous fat
   d. Covers forehead, shoulders, arms
   e. Abundant
   f. Few creases
   g. Protuberant
   h. Short
   i. Small; labia majora open in girls
3. a. Surfactant
   b. 34 weeks
   c. Artificial surfactant may be given at birth or if symptoms of respiratory distress syndrome occur.
4. A corticosteroid, such as betamethasone or dexamethasone
5. a. Bradycardia
   b. Cyanosis
6. a. Inadequate brown fat
   b. Large surface area in relation to weight
   c. Immature heat regulating center in the brain
   d. Immature sweat glands
   e. Inactivity due to immature muscles
   f. Extended position
   g. High metabolic rate, which can deplete glucose
7. a. <40 mg/dL; <30 mg/dL
   b. i. Low stores of glycogen
      ii. Low stores of fat
   c. Low and/or unstable temperature, apnea episodes, respiratory distress, weak suck
8. a. Deficiency of prothrombin
   b. Fragile capillaries, particularly in the head
9. a. Small stomach capacity
   b. Prone to regurgitation and vomiting because of weak sphincters
   c. Immature suck and swallow reflexes
   d. Poor ability to absorb fats and fat-soluble vitamins
   e. Inadequate prenatal stores of nutrients
10. a. Inflammation and necrosis of the bowel due to hypoxia or sepsis
    b. Abdominal distention, bloody stools, diarrhea, bilious vomiting
11. a. 24 hours, 5 mg/dL
    b. 4 days, 3, 5
    c. Breast milk does not contain substances that conjugate bilirubin; therefore, formula may be substituted for breast milk to allow the infant's body to reduce high bilirubin levels.
12. Breast (human) milk
13. a. Orally (sucking)
    b. Gavage
    c. Parenterally (total parenteral nutrition)
14. a. Side, prone with head of crib slightly elevated
    b. Term newborns are usually placed on their back to sleep to reduce risk for sudden infant death syndrome (SIDS).
15. a. Asphyxia due to chronic intrauterine hypoxia
    b. Meconium aspiration
    c. Poor nutritional status and hypoglycemia related to depleted glycogen
    d. Polycythemia due to intrauterine hypoxia
    e. Possible increased fetal size with difficult birth
    f. Birth defects
    g. Seizures related to intrauterine hypoxia
16. a. Long, thin; looks as if weight loss has occurred; loose skin, especially around thighs and buttocks
    b. Minimal lanugo
    c. Little or no vernix caseosa
    d. Skin is dry, cracks and peels, has parchment-like texture

Review Questions
1. Answer: 4
   Rationale: Superficial veins of the scalp and abdomen are less obvious with maturation of the fetus. The other options are signs associ-
1. Answer: 2
Rationale: Blood glucose levels in an infant should be a minimum of 30 mg/dL in the preterm infant or 40 mg/dL in the term infant. 150 mg/dL is excessive for infants, children, and adults.

2. Answer: 4
Rationale: Breast milk is the ideal food for infants, including premature infants. Glucose does not provide sufficient nutrients for growth. Commercial formula that is specially formulated for the preterm infant is one alternative to breast milk, although not as good because it lacks factors made by the mother’s body for temporary immunity in her baby. Only infants who cannot digest nutrients or who must rest their gastrointestinal tract need the more invasive total parenteral nutrition.

3. Answer: 2
Rationale: The preterm infant has a large surface area relative to his/her weight. Muscles are weak, and activity is minimal in the preterm infant. Sweat glands are immature. Fat stores are minimal, allowing internal heat to escape.

4. Answer: 2
Rationale: Radiant warmers keep the infant warm while allowing caregivers easy access. They can also be used to provide phototherapy. Although skin probes and alarms are used on radiant warmers, these do not guarantee that overheating will not occur. A neutral thermal environment must be maintained, regardless of whether superficial dryness occurs. The kidneys primarily regulate fluid and electrolytes, not maintenance of warmth.

5. Answer: 2
Rationale: Ambu bag for ventilation is not yet indicated. Preterm infants commonly “forget” to breathe. Gentle stimulation is usually all that is needed to end the apnea and will not awaken the baby. This infant’s pink color and probably pulse oximeter readings will reassure the nurse that oxygenation is normal. Interventions for true apnea should occur immediately to maintain adequate brain oxygenation. An Ambu bag for ventilation is not yet indicated. The stem does not suggest that the baby has excessive secretions.

6. Answer: 2
Rationale: As the placenta ages, it gradually eliminates risk for infection. The stem does not suggest that the baby has matured fully in utero.

7. Answer: 2
Rationale: Well-known signs of intrauterine maturation give the best estimate of an infant’s gestation. Infants vary widely in their weights, even if they have achieved the same intrauterine maturity. Blood glucose levels may fall in infants for a variety of reasons, although the preterm and postterm infants have a greater risk. Assessing developmental milestones is not a method to assess the gestation, but to determine if the baby is developing normally after birth.

8. Answer: 3
Rationale: This infant shows signs typical of the postterm infant rather than the term infant (38–42 weeks). Maternal prenatal nutrition may have been inadequate, but does not explain the appearance, which indicates recent placental insufficiency. No signs of intrauterine infection are present. Before birth, the infant receives glucose from the mother and does not have to produce it.

9. Answer: 1
Rationale: The mother is probably overwhelmed by the high-tech appearance of the neonatal intensive care unit. Gently guide her to provide simple care, such as a diaper change. Simply touching the infant helps her to begin seeing the infant as belonging to her, not the nurse. Reassurance is a good action, but it does not actively promote bonding or attachment. Stressing frequent visits to her baby does not actively involve the parent in care. Demonstrating skills needed for home care is inappropriate at this early gestation and does not actively involve the parent in care.

10. Answer: 2
Rationale: Infants with respiratory distress syndrome (RDS) often display these signs as they try to keep their airways open and take more oxygen in.

11. Answer: 2
Rationale: Preterm infants commonly “forget” to breathe. Gentle stimulation is usually all that is needed to end the apnea and will not awaken the baby. This infant’s pink color and probably pulse oximeter readings will reassure the nurse that oxygenation is normal. Interventions for true apnea should occur immediately to maintain adequate brain oxygenation. An Ambu bag for ventilation is not yet indicated. The stem does not suggest that the baby has excessive secretions.

12. Answer: 4
Rationale: High blood oxygen levels are associated with retinopathy of prematurity. Observing pulse oximeter readings gives a continuous and accurate assessment of skin oxygen levels so that they may be kept in a range low enough to prevent eye damage and high enough to adequately oxygenate tissues. 1. Prevents hypoglycemia; 2. Prevents bleeding, especially intracranial bleeding; 3. Reduces (but does not eliminate) risk for infection.

13. Answer: 1
Rationale: As the placenta ages, it gradually loses its ability to pass oxygen and nutrients to the fetus and to remove waste products. Reduces blood clotting factors and increased susceptibility to infection are characteristics of
the preterm infant. Thicker subcutaneous fat deposits are characteristic of the term or large-for-gestational age infant.

14. Answer: 1
Rationale: These levels represent a rise of 8 mg/dL in 18 hours, even though the initial level was normal. All other values, time frames, and related observations are normal.

Case Study
1. Michael’s respiratory syndrome resembles respiratory distress syndrome (RDS) but it also has features of transient tachypnea of the newborn (TTN, Chapter 14). The rapid self-correction of the tachypnea is more characteristic of TTN. Case study encourages students to compare and contrast the two similar conditions.

Thinking Critically
1. This infant was born about 8 weeks before term. The growth is expected to be about the chronological age minus the number of weeks born prematurely. Since this baby is 6 months old, development is expected to be at about the level of a 4-month-old infant who was born at term. (Have students look up infant growth and development in the pediatric section for more information.) Both growth and development have usually caught up by about 2 years.

Applying Knowledge
Answers will vary.