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 parchmentlike texture

Review Questions

1. Answer: 4
   Rationale: Superficial veins of the scalp and abdomen (4) are less obvious with maturation of
the fetus. The other options—square window sign assessed at 0 degrees, small amount of lanugo and vernix, and labia majora cover labia minora of the female (1, 2, and 3)—are signs associated with an infant who has matured fully in utero.

2. Answer: 4  
Rationale: Well-known signs of intrauterine physical and neurologic maturation (4) give the best estimate of an infant’s gestation. Infants vary widely in their weights (1), even if they have achieved the same intrauterine maturity. Blood glucose levels (2) may fall in infants for a variety of reasons, although the preterm and postterm infants have a greater risk. Assessing developmental milestones (3) is not a method to assess the gestation, but to determine if the baby is developing normally after birth.

3. Answer: 2  
Rationale: The preterm infant has a large surface area relative to his/her weight (2), which allows body heat to escape. Muscles are weak, and activity is minimal in the preterm infant (1). Sweat glands are immature, not overactive (3). Fat stores are minimal (4), and thus do not insulate the infant from radiant heater warmth.

4. Answer: 2  
Rationale: Blood glucose levels in an infant should be a minimum of 30 mg/dL in the preterm infant (2), and no less than that (1); or 40 mg/dL in the term infant (3). 150 mg/dL (4) is excessive for infants, children, and adults.

5. Answer: 4  
Rationale: Capillaries of the immature infant are fragile and prone to bleeding (4). This includes those in the brain, which are also present but fragile—as opposed to not developed at all (1). Prothrombin is also low. Clotting is less likely (2) due to deficient prothrombin. Capillaries are not more or less sensitive to clotting factors in the preterm infant (3), although they are tiny.

6. Answer: 2  
Rationale: Radiant warmers keep the infant warm while allowing caregivers easy access (2). 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 (1). A neutral thermal environment must be maintained, regardless of whether superficial dryness occurs (3). The kidneys primarily regulate fluid and electrolytes, not maintain warmth (4).

7. Answer: 2  
Rationale: Breast milk (2) is the ideal food for infants, including premature infants. Glucose (1) does not provide sufficient nutrients for growth. Commercial formula that is specially formulated for the preterm infant (3) 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 (4).

8. Answer: 3  
Rationale: This infant shows signs typical of the postterm infant rather than the term infant (38–42 weeks) (3). Maternal prenatal nutrition may have been inadequate (1), but does not explain the appearance, which indicates recent placental insufficiency. No signs of intrauterine infection (2) are present. Before birth, the infant receives glucose from the mother and does not have to produce it (4).

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 (1). Simply touching the infant helps her to begin seeing the infant as belonging to her, not the nurse. Reassurance is a good action (2), but it does not actively promote bonding or attachment. Stressing frequent visits to her baby (3) does not actively involve the parent in care. Demonstrating skills needed for home care (4) 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 grunting, respiratory rate of 65/min, and nasal flaring (2) as they try to keep their airways open and take more oxygen in. Apical heart rate of 144/min, protruding abdomen, irregular respiration, weak movements, and extended posture (1, 3, and 4) are not classic signs of RDS.

11. Answer: 2  
Rationale: Preterm infants commonly “forget” to breathe. Gentle stimulation, like gentle back rub (2), 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, so contacting the physician is unnecessary at this point (1). Interventions for true apnea should occur immediately to maintain adequate brain oxygenation. An Ambu bag for ventilation (3) is not yet indicated. The stem does not suggest that the baby has excessive secretions that need suction (4).

12. Answer: 4  
Rationale: High blood oxygen levels are associated with retinopathy of prematurity.
Observing pulse oximeter readings (4) 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. Providing feedings as early as possible (2) prevents hypoglycemia; avoiding unnecessary movement (2) helps prevent bleeding, especially intracranial bleeding. Finally, eliminating potential sources of infection can reduce (but does not eliminate) risk for infection.

13. Answer: 1
Rationale: As the placenta ages (1), it gradually loses its ability to pass oxygen and nutrients to the fetus and to remove waste products. Reduced blood clotting factors and increased susceptibility to infection (2 and 3) are characteristics of the preterm infant. Thicker subcutaneous fat deposits (4) are characteristic of the term or large-for-gestational age infant.

Thinking Critically
1. This infant was born about 8 weeks before term. The growth is expected to be about the chronologic 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.

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.