MEDICAL ASSISTING

Chapters 18–20: Body Structure, Integumentary & Skeletal Systems

Student Answer Key · All Questions with Answers & Explanations

🔬 Chapter 18 — Body Structure & Cell Biology

1. The majority of a cell's DNA is located in the **nucleus**.
The nucleus houses the cell's chromosomes (DNA) and controls cell activity and reproduction.

2. The cell organelle responsible for energy production is the **mitochondria**.
Mitochondria produce ATP through cellular respiration — the cell's primary energy source.

3. To obtain an accurate weight measurement from a patient, the MA should first:

A. Ask the patient to remove their shoes
B. Ensure the scale is balanced (zeroed)
C. Have the patient stand with arms at their sides
D. Record the last known weight from the chart

Explanation: *A zeroed scale is required for an accurate baseline reading. An unbalanced scale produces incorrect measurements.*

4. To take a temperature using a temporal artery thermometer, place the device on the patient's **forehead**.
Temporal artery thermometers scan across the forehead over the temporal artery for a quick, non-invasive reading.

5. A patient with balance issues needs to be weighed. What is the correct approach?

✓ **Position the walker over the scale platform so the patient can hold it for support while standing on the scale.**
This allows a safe, accurate measurement without requiring the patient to stand unsupported.

6. Which of the following cell structures contains chromosomes?

A. Cell membrane
B. Nucleus
C. Mitochondria
D. Ribosome

Explanation: *The nucleus contains chromosomes (DNA). The cell membrane controls entry/exit; mitochondria produce energy; ribosomes synthesize proteins.*

7. Which of the following cellular structures produces energy as the cell's "powerhouse"?

A. Nucleus
B. Ribosome
C. Mitochondrion
D. Golgi apparatus

Explanation: *Mitochondria generate ATP through cellular respiration. Nucleus = DNA storage; ribosomes = protein synthesis; Golgi apparatus = packages and ships proteins.*

Chapter 19 — Integumentary System

6. Alopecia is the medical term for **baldness (hair loss)**.
Alopecia refers to partial or complete hair loss. It can be caused by autoimmune conditions (alopecia areata), hormonal changes, genetics, or medications.

7. Ringworm is caused by a **fungal** infection, not an actual worm.
Ringworm (tinea) is a dermatophyte fungal infection named for the ring-shaped rash it produces. Antifungal medications are the treatment.

8. A patient presents with a circular, scaly rash on their forearm. The provider suspects ringworm. Which organism causes this condition?

A. Virus
B. Bacterium
C. Fungus
D. Parasite

Explanation: *Ringworm (tinea corporis) is caused by dermatophyte fungi. Despite the name, no worm is involved. Treatment is antifungal, not antibacterial or antiviral.*

Chapter 20 — Skeletal System

9. Osteomalacia is the softening of bone caused by **Vitamin D** deficiency.
Vitamin D is essential for calcium absorption. Without adequate Vitamin D, bones fail to mineralize properly and soften (osteomalacia in adults; rickets in children). Reference: p. 547.

10. Osteoporosis is a bone density condition also associated with **Vitamin D** deficiency.
Both osteomalacia and osteoporosis are linked to Vitamin D deficiency. Osteoporosis involves decreased bone density leading to increased fracture risk; osteomalacia involves softening of bone structure.

11. Which of the following best distinguishes osteomalacia from osteoporosis?

A. Osteomalacia affects only women; osteoporosis affects both sexes
B. Osteomalacia is softening of bone; osteoporosis is decreased bone density
C. Osteoporosis is caused by Vitamin D deficiency; osteomalacia is not
D. Both conditions are treated identically with calcium alone

Explanation: *Both involve Vitamin D deficiency but differ in mechanism: osteomalacia = inadequate mineralization (soft bones); osteoporosis = loss of bone mass (brittle bones).*

12. A patient diagnosed with osteoporosis asks what supplements can help prevent further bone loss. What two supplements are commonly recommended, and why?

✓ **Vitamin D (required for calcium absorption) and Calcium (primary mineral in bone). Together they support bone density maintenance and reduce fracture risk.**
This is a patient education scenario — MAs regularly reinforce provider instructions about supplementation. Both supplements are needed; Vitamin D alone without calcium is insufficient.