Figure 1.12 The nine abdominopelvic regions. In (a) the superior transverse plane is just inferior to the ribs; the inferior transverse plane is just superior to the hip bones; and the parasagittal planes lie just medial to the nipples.

- **Middle ear cavities.** The middle ear cavities in the skull lie just medial to the eardrums. These cavities contain tiny bones that transmit sound vibrations to the hearing receptors in the inner ears.

- **Synovial cavities.** Synovial (si-no’ve-al) cavities are joint cavities. They are enclosed within fibrous capsules that surround freely movable joints of the body (such as the elbow and knee joints). Like the serous membranes, membranes lining synovial cavities secrete a lubricating fluid that reduces friction as the bones move across one another.

**Check Your Understanding**

15. Joe went to the emergency room where he complained of severe pains in the lower right quadrant of his abdomen. What might be his problem?

16. Of the uterus, small intestine, spinal cord, and heart, which is/are in the dorsal body cavity?

17. When you rub your cold hands together, the friction between them results in heat that warms your hands. Why doesn’t warming friction result during movements of the heart, lungs, and digestive organs?

For answers, see Appendix H.

**Chapter Summary**

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**An Overview of Anatomy and Physiology** (pp. 2–3)

1. Anatomy is the study of body structures and their relationships. Physiology is the science of how body parts function.

**Topics of Anatomy** (p. 2)

2. Major subdivisions of anatomy include gross anatomy, microscopic anatomy, and developmental anatomy.

**Topics of Physiology** (pp. 2–3)

3. Typically, physiology concerns the functioning of specific organs or organ systems. Examples include cardiac physiology, renal physiology, and muscle physiology.

4. Physiology is explained by chemical and physical principles.

**Complementarity of Structure and Function** (p. 3)

5. Anatomy and physiology are inseparable. What a body can do depends on the unique architecture of its parts. This principle is called the complementarity of structure and function.