ANSWERS TO HANDOUT 20–2

Sleep Stages, Waves, and REM

Sleep Stages	Brain Waves
Stage 1 —Slowed breathing, irregular brain waves —person easily awakened —usually lasts no more than 5 minutes —person may have dreamlike sensations	—Alpha waves, experienced while awake and relaxed, become irregular brain waves
Stage 2 —Brain waves become slower —Usually lasts around 20 minutes —Half the time of your overall sleep cycle is spent in this stage	—Spindles (little brain wave bursts)
Stage 3 —Begins approximately 30 minutes after falling asleep —Together with Stage 4, called *slow-wave sleep* or *delta sleep*	—*Delta sleep,* also called *slow-wave sleep* (increasing percentage of large, slow delta wave cycles per second)
Stage 4 —Follows stage 3 sleep —In the first nightly experience of the complete sleep cycle, the rejuvenating delta sleep lasts about 30 minutes —Stages 1 through 4 are called *non-rapid eye movement sleep* (N-REM), not characterized by eye movement or vivid dreams.	—*Delta sleep* —Brain waves slow down to less than 1 cycle per second compared with the 15 or so cycles per second experienced when a person just closes his or her eyes for sleep
REM Sleep —Person travels back through Stages 3, 2, and 1 and then enters the first period of *rapid eye movement* (REM) sleep—characterized by rapid eye movement and vivid dreams —Pulse quickens; breathing becomes fast, irregular; brainstem blocks messages from motor cortex (the brain structure that controls movement) —Sometime called *paradoxical sleep* because muscles are relaxed, even though other body systems are active —After REM sleep, person goes back to Stage 1	—After Stage 4, brain waves pick up speed and strength —Stage 1 through REM sleep = 90 minute cycle that repeats all night —*Slow-wave sleep* or *delta sleep* drops out of the cycle after the second or third time through —If you sleep 8 or 9 hours in a night, the last 4 hours are spent between Stage 2 (spindles) and REM —Brain patterns resemble those of relaxed wakefulness