

## Chapter 2: Cognitive Development and Language

### Multiple-Choice Questions

1) Which one of the following is an example of maturation?

- A) Gaining weight from age two to age three
- B) Losing weight due to exercise
- C) Losing weight during a brief illness
- D) Learning which foods produce the most weight

Answer: A

Explanation: A) *Maturation refers to changes that occur naturally and spontaneously* rather than as a result of environmental circumstances. An example would be gaining weight from age two to age three. [Note: losing weight due to illness or exercise is not a natural occurrence, but one that is caused by particular environmental events.]

Page Ref: 26

Skill: Understanding

P: .77

D: .28

2) As time goes on, Tina becomes a happier individual, more in touch with life, and content with her situation. This description emphasizes what kind of development for Tina?

- A) Cognitive
- B) Personal
- C) Physical
- D) Social

Answer: B

Explanation: B) In contrast with social development that involves relations with others, *personal development* is illustrated in the scenario on changes in Tina's personality (such as being happier, changes in self-concept, etc.).

Page Ref: 26

Skill: Understanding

P: .83

D: .24

3) All developmental theories have the following general principle in common

- A) Development is balanced.
- B) Development is gradual.
- C) Development occurs in a random way.
- D) Individuals develop at the same rate.

Answer: B

Explanation: A) Development is gradual, occurs in an orderly way, and occurs at variable rates. *Development is NOT considered to be balanced*, i.e., development is not balanced across physical, personal, social, and cognitive development.

Page Ref: 28

Skill: Knowledge

P: .83  
D: .25

4) What part of the brain coordinates and orchestrates skilled movements?

- A) Cerebellum
- B) Cortex
- C) Cerebrum
- D) Frontal lobe

Answer: A

Explanation: A) The *cerebellum* is the part of the brain that coordinates and orchestrates skilled movements. The thalamus is associated with the ability to learn new information, while the cerebral cortex controls sensory input, the formation of associations, and voluntary movement.

Page Ref: 28

Skill: Knowledge

5) If John is introduced to the concept of fractions today, he will not be able to start adding and subtracting them tomorrow. What general principle of development is illustrated?

- A) Development proceeds through identifiable stages.
- B) Development takes place gradually.
- C) Maturation is the basis for development.
- D) John lacks personal development.

Answer: B

Explanation: B) *Development takes place gradually*. John will need to acquire more experience and skills with fractions before he can perform specific operations such as adding and subtracting.

[He may, however, acquire those skills at different rates than others.]

Page Ref: 28

Skill: Understanding

P: .79

D: .24

6) The last part of the brain to develop fully is the

- A) cerebellum.
- B) cerebral cortex.
- C) frontal lobe.
- D) thalamus.

Answer: C

Explanation: C) The last section of the brain to develop fully is the *frontal lobe* in the cerebral cortex.

Page Ref: 30

Skill: Knowledge

7) The part of the cerebral cortex that matures first controls

- A) higher-order thinking processes.
- B) physical movements.
- C) the processing of language.
- D) the formation of associations.

Answer: B

Explanation: B) *Control of physical movements* matures in the cerebral cortex before other

functions, such as activities that involve verbalization.

Page Ref: 30

Skill: Knowledge

8) Specialization of the two hemispheres of the brain involves

- A) Broca's area.
- B) lateralization.
- C) the primary auditory cortex.
- D) Wernicke's area.

Answer: B

Explanation: B) Specialization in the two hemispheres of the brain relates to *lateralization*.

Page Ref: 30

Skill: Knowledge

9) Messages sent by releasing chemicals that jump across synapses involve

- A) lateralization.
- B) myelination.
- C) neurons.
- D) transformations.

Answer: C

Explanation: C) *Neurons* send messages by releasing chemicals that jump across synapses in the brain.

Page Ref: 28

Skill: Knowledge

10) According to Piaget, the foundation for development in all humans is supplied by

- A) activity.
- B) exploration.
- C) maturation.
- D) social transmission.

Answer: C

Explanation: C) The fundamental basis for development in people is biological *maturation*, the characteristics that are genetically determined.

Page Ref: 32

Skill: Knowledge

11) Piaget's basic blocks of thinking and memory are

- A) actions.
- B) accommodations.
- C) adaptations.
- D) schemas.

Answer: D

Explanation: D) *Schemas* are Piaget's basic blocks of thinking. These schemas are an organized system of thought or action that permit us to represent objects and thoughts in our own words.

Page Ref: 32

Skill: Knowledge

12) The two processes involved in adaptation are

- A) assimilation and accommodation.
- B) assimilation and equilibration.
- C) equilibration and organization.
- D) social transmission and schema.

Answer: A

Explanation: A) The two processes of adaptation are *assimilation and accommodation*.

Accommodation is defined by Piaget as the process of changing existing schemas to respond to a new situation. Assimilation is the process of changing what is learned to fit existing schemas.

Page Ref: 33

Skill: Knowledge

P: .91

D: .13

13) Which of the following pairs of factors that influence thinking is thought by Piaget to be genetic or inherited tendencies?

- A) Accommodation and assimilation
- B) Adaptation and organization
- C) Assimilation and schemas
- D) Schemas and equilibration

Answer: B

Explanation: B) Based on his work in biology, Piaget concluded that all species inherit two basic tendencies: *organization* (the combining of behaviors into coherent systems) and *adaptation* (adjusting to the environment).

Page Ref: 32

Skill: Knowledge

14) Which one of the following is the clearest example of Piaget's concept of assimilation?

- A) Learning that a green light means "go" and a red light means "stop."
- B) Learning to paint with a new type of brush.
- C) Looking at teachers as they lecture.
- D) Looking at a worm and thinking that it is a snake.

Answer: D

Explanation: D) The clearest example of assimilation of the choices given is *looking at a worm and thinking that it is a snake*. The observer is "fitting" the stimulus (worm) into her mental schema at the moment, which is apparently oriented to expect to see a snake or which assigns (based on experiences) greater saliency to a snake than to a worm. The environmental stimulus is being mentally "changed" in accord with the learner's existing schemas.

Page Ref: 33

Skill: Understanding

P: .61

D: .23

15) Jeannie observed rocks sinking in water and said, "I already knew that. All rocks sink." Then she saw a piece of pumice floating on water and was told that pumice is rock. Several days later, she was asked again if rocks sink in water. She replied, "Well, most do." In Piaget's terms, what process did Jeannie use to draw this conclusion?

- A) Accommodation
- B) Assimilation
- C) Classification
- D) Conservation

Answer: A

Explanation: A) Jeannie is using *accommodation* by changing her ideas about whether rocks sink or float based on her experience in observing a floating piece of pumice. Assimilation would have involved resisting the idea that rocks float, perhaps by failing to accept pumice as a type of rock.

Page Ref: 33

Skill: Understanding

P: .77

D: .37

16) According to Piaget, the process of searching for a balance between cognitive schemas and environmental information is called

- A) accommodation.
- B) adaptation.
- C) assimilation.
- D) equilibration.

Answer: D

Explanation: D) *Equilibration* is defined by Piaget as the process of searching for a balance between cognitive schemas and environmental information. When a balance occurs, equilibrium is felt; imbalance causes disequilibrium.

Page Ref: 33

Skill: Knowledge

P: .81

D: .29

17) When we try a particular strategy and it does not work, the discomfort we experience is called

- A) assimilation.
- B) centration.
- C) disequilibrium.
- D) non-adaptation.

Answer: C

Explanation: C) *Disequilibrium* is the discomfort we feel when a schema does not work as expected. It promotes new learning by motivating us to continue searching for a solution.

Page Ref: 33

Skill: Knowledge

P: .95

D: .12

- 18) According to Piaget, people pass through the four stages of cognitive development
- A) at the same levels of competence.
  - B) at the same rates, adjusted for intelligence.
  - C) in specifically determined ages.
  - D) in the same sequence.

Answer: D

Explanation: D) Piaget theorized that people pass through the four stages of cognitive development *in the same sequence*. However, they do this at different rates, depending on individual development.

Page Ref: 33

Skill: Knowledge

P: .81

D: .18

- 19) The best way to determine what cognitive stage a person has reached is by
- A) interpreting the person's scores on a mental ability test.
  - B) knowing the person's age.
  - C) knowing the person's rate of development.
  - D) observing how the person solves problems.

Answer: D

Explanation: D) The best way of determining the cognitive stage that a person has reached is to *observe how that individual solves problems*. The Piagetian stages concern ways of thinking, not particular age levels or levels of intelligence.

Page Ref: 33

Skill: Understanding

- 20) What of the following sayings best conveys a child's thinking before the notion of object permanence is acquired?
- A) "A bird in the hand is worth two in the bush."
  - B) "A penny saved is a penny earned."
  - C) "A stitch in time saves nine."
  - D) "Out of sight, out of mind."

Answer: D

Explanation: D) Before object permanence is acquired, a child thinks that an object that is no longer visible has disappeared. *Out of sight, out of mind* is the saying goes.

Page Ref: 33

Skill: Understanding

P: .98

D: .05

- 21) In Piaget's theory, an understanding of object permanence is acquired during what period of development?
- A) Early preoperations
  - B) Operations
  - C) Late preoperations



D) Sensorimotor

Answer: D

Explanation: D) Object permanence, the understanding that objects exist even if not visible, is acquired during the *sensorimotor period*.

Page Ref: 33

Skill: Knowledge

22) Michelle covers her own eyes, because she thinks her friends will not see her when playing a game of hide-and-seek. What stage of Piaget's cognitive theory does this account best illustrate?

- A) Concrete operations
- B) Formal operations
- C) Preoperational thought
- D) Sensorimotor

Answer: D

Explanation: D) Michelle is demonstrating an early form of egocentrism as well as a lack of object permanence. As is common during early stages of the *sensorimotor period*, she believes that if she can't see others, others can't see her.

Page Ref: 33

Skill: Understanding

P: .57 / D: .27

23) In the sensorimotor stage of development, a child begins to develop

- A) goal-directed actions.
- B) mental operations.
- C) preoperational thought.
- D) semiotic functions.

Answer: A

Explanation: A) Toward the end of the *sensorimotor period*, children begin to use logical, goal-directed actions in which they play with objects in an orderly fashion (for a purpose, with a goal in mind). By the preoperations period, these types of actions are well established.

Page Ref: 34

Skill: Knowledge

24) Nathan is shown two balls of clay that he identifies as equal in quantity. When one of the balls is then rolled into a sausage, Nathan says that piece (i.e., sausage) now has more clay. In what stage of development is he likely to be?

- A) Concrete operations
- B) Goal-directed operations
- C) Preoperational thought
- D) Sensorimotor

Answer: C

Explanation: C) Nathan is probably in the *preoperational stage* because he is failing to demonstrate conservation. If he were in the concrete operations or formal operations stages, he would indicate that both pieces contain the same amount of clay because the quantity of the sausage-like piece has not changed.

Page Ref: 34

Skill: Understanding

P: .81

D: .30

25) Billy refuses to drink his orange juice from the 1/2 full glass that his mother gives to him. He wants her to pour the juice into his favorite cup and watches his mother fill it to the brim. Billy likes his cup better because he gets more juice in it. With what cognitive concept in Piaget's theory is Billy having trouble?

- A) Accommodation
- B) Assimilation
- C) Conservation
- D) Semiotic function

Answer: C

Explanation: C) The cognitive concept illustrated by Billy's thinking that he gets more juice in his small cup than in the half-full larger cup is an example of a child who has not yet developed Piaget's concept of *conservation*.

Page Ref: 35

Skill: Understanding

P: .89

D: .31

26) After stringing beads from a large necklace onto a smaller empty string, a child states that there are now more beads on the small string than there were on the larger string. What cognitive concept (Piaget's theory) does this behavior best illustrate?

- A) Accommodation
- B) Assimilation
- C) Conservation
- D) Equilibration

Answer: C

Explanation: C) The child is apparently preoperational. He or she is *failing to conserve quantity by thinking that the small string contains more beads* (because it "appears" more loaded with beads).

Page Ref: 35

Skill: Understanding

P: .68

D: .36

27) A teacher pours juice from a larger glass into two tiny glasses, and the child beams, happy now that he has "more juice." What cognitive stage (Piaget's theory) does the account best illustrate?

- A) Concrete operations
- B) Formal operational thought
- C) Preoperational thought
- D) Sensorimotor

Answer: C

Explanation: C) The child is in the *preoperational stage*. We can conclude this because he has *failed to demonstrate conservation* by thinking that the tiny glasses contain more juice.

Page Ref: 34

Skill: Understanding

P: .96

D: .05

28) In his first game of hide-and-seek, Andy covers his eyes so that his friends cannot see him. His thinking can be described as

- A) decentered.
- B) egocentric.
- C) schematic.
- D) seriation.

Answer: B

Explanation: B) Andy is acting in an *egocentric manner*. He assumes that just because he cannot see his friends, they cannot see him. [Ostriches are said to act the same way!]

Page Ref: 35

Skill: Understanding

P: .86

D: .28

29) A preoperational child's belief that a tall, narrow glass contains more liquid than a short, wide glass is probably due to difficulties in

- A) decentering.
- B) egocentrism.
- C) serration.
- D) object permanence.

Answer: A

Explanation: A) *Decentering* is the ability to focus on more than one aspect of a situation at a time. This occurs, for example, when the preoperational child perceives that, because a glass is taller, it must also have more liquid. In this case, the child is unable to see that the amount of liquid has not changed.

Page Ref: 35

Skill: Knowledge

30) Corinne has mastered this type of problem: "If the white house is bigger than the blue house, and the blue house is bigger than the red house, is the white house bigger or smaller than the red house?" What stage of Piaget's cognitive theory does this situation best illustrate?

- A) Concrete operations
- B) Formal operations
- C) Preoperational thought
- D) Sensorimotor

Answer: A

Explanation: A) By demonstrating an ability to understand ordering and seriation, Corinne is

evidently in the *concrete operations stage*. She would be less capable at this task, however, if she were dealing with abstractions rather than with concrete objects (houses of different colors).

Page Ref: 35

Skill: Understanding

P: .73

D: .40

31) David has just purchased a car and is intensely interested in it. When the car has engine trouble, he is able systematically to locate the problem. What cognitive stage of Piaget's theory does this situation best illustrate?

- A) Concrete operations
- B) Formal operations
- C) Preoperational thought
- D) Sensorimotor

Answer: B

Explanation: B) David appears to be in the *formal operations stage*. He is able to use logical thinking to locate the engine trouble systematically. He is evidently using formal thought to solve unique problems.

Page Ref: 37

Skill: Understanding

P: .73

D: .30

32) What is the hallmark of Piaget's stage of formal operations?

- A) Semiotic function
- B) Hypothetical-deductive reasoning
- C) Organized thinking of dependent elements
- D) Reversible thinking

Answer: B

Explanation: B) The hallmark of Piaget's stage of formal operations is *hypothetical-deductive reasoning*. This ability involves both deductive and inductive reasoning to solve real as well as hypothetical problems.

Page Ref: 38 / Skill: Knowledge

33) Janie was having some difficulty deciding how to organize her defense for the debate competition. She prepared several hypothetical arguments that her opponents might raise, and how she might reply. What cognitive stage of Piaget's theory does this account best illustrate?

- A) Concrete operations
- B) Formal operations
- C) Preoperational thought
- D) Sensorimotor

Answer: B

Explanation: B) Janie's problem with organizing her defense for the debate reflects the *characteristics of formal operations*, including hypothetical-deductive reasoning, problem solving, and scientific thought.

Page Ref: 37-38

Skill: Understanding  
P: .71  
D: .26

34) Perry is able to solve hypothetical problems by mentally working through a set of possibilities. What characteristic of cognitive development does Perry illustrate?

- A) Compensatory reasoning
- B) Inductive thinking
- C) Organized thinking
- D) Reversible reasoning

Answer: C

Explanation: C) Perry is probably in the *formal operations stage* because he is able to solve hypothetical problems by working through a set of possible actions. Such skills would be difficult for a concrete-minded child.

Page Ref: 38

Skill: Understanding

P: .81

D: .22

35) When Mary returned from the high-school prom, she complained, "Everyone hated my dress!" What specific concept does this account best illustrate?

- A) Adolescent egocentrism
- B) Interpsychological action
- C) Reversible thinking
- D) Semiotic function

Answer: A

Explanation: A) Mary is probably in the formal operations stage. She is demonstrating *adolescent egocentrism* by believing that everyone is focusing on her appearance.

Page Ref: 39

Skill: Understanding

P: .75

D: .22

36) Which one of the following statements best reflects Piaget's position on the question of speeding up cognitive development?

- A) Acceleration is both inefficient and useless.
- B) Acceleration is effective for only the brightest students.
- C) Keeping cognitive development "on track" is a teacher's role.
- D) Speeding up cognitive development is a teacher's role.

Answer: A

Explanation: A) Because biological maturation is genetically programmed, parents and teachers have little impact on this facet of cognitive development. Consequently, Piaget would contend that forced *acceleration is both inefficient and useless*. [See Point-Counterpoint.]

Page Ref: 41

Skill: Understanding

37) Current views about Piaget's theory generally support the idea that

- A) Piaget's tasks appear to have been invalid for judging cognitive ability.
- B) Piaget's tasks appear to have generally been too easy for subjects.
- C) Piaget tended to overestimate children's abilities and underestimate their social differences.
- D) Piaget tended to underestimate children's abilities and overlook the social and cultural issues.

Answer: D

Explanation: D) It appears that Piaget *underestimated children's abilities* by using tasks that were too difficult and directions that were too confusing. He also *overlooked social and cultural issues*. Recent studies have shown that children can reason at higher levels than Piaget had thought.

Page Ref: 41

Skill: Knowledge

P: .82

D: .33

- 38) According to Robbie Case, cognitive development in one domain of thought
- A) cannot be explained by assimilation and accommodation.
  - B) differs from one domain to another.
  - C) is similar from one domain to another.
  - D) transfers from one domain to another.

Answer: B

Explanation: B) Cognitive development in one domain of thought *does not seem to transfer to other domains of thought*, according to Case. In other words, *development in one domain differs from development in other domains*. Development of mathematical thinking, for example, does not progress at the same pace as development of verbal thought.

Page Ref: 40

Skill: Knowledge

- 39) An increasingly influential view of cognitive development proposed by Vygotsky is based on
- A) concrete experiences.
  - B) creation of complex schemas of thought.
  - C) culture and socioculture theory.
  - D) mastery of scientific thinking.

Answer: C

Explanation: C) *Culture and sociocultural theory* are becoming an increasingly more influential view of cognitive development than is Piaget's stage theory.

Page Ref: 42

Skill: Knowledge

- 40) According to Vygotsky, a child's cultural development is
- A) co-constructed learning and shared experiences.
  - B) created by emphasis on private speech.
  - C) internalized by self-thinking.
  - D) intrapsychologically determined.

Answer: A

Explanation: A) A child's cultural development is the result of *co-constructed learning* (i.e., learning with others) *and shared experiences*.

Page Ref: 43  
Skill: Knowledge

- 41) Vygotsky's view of cognitive development differs from Piaget's in the importance and emphasis placed on a person's
- A) experience.
  - B) genetic factors.
  - C) interpersonal interactions.
  - D) private speech.

Answer: C

Explanation: C) Vygotsky places more emphasis on *interpersonal interactions* than Piaget. Vygotsky viewed language as playing important roles in cognitive development, both in the form of private speech (self-communication) and in the verbal transmission of guidance from other, more capable individuals.

Page Ref: 43  
Skill: Knowledge  
P: .70  
D: .29

- 42) The role of cultural tools in cognitive development involves, according to Vygotsky,
- A) both real and symbolic tools.
  - B) essentially real tools.
  - C) predominantly symbolic tools.
  - D) primarily psychological tools.

Answer: A

Explanation: A) According to Vygotsky, the role of cultural tools in cognitive development involves *both real and symbolic tools*.

Page Ref: 44  
Skill: Knowledge

- 43) The role of "private speech" in Vygotsky's view is to
- A) call attention to oneself during play.
  - B) guide one's activities in solving a problem.
  - C) encourage children to learn new words.
  - D) stimulate the development of language from simple words to full sentences.

Answer: B

Explanation: B) According to Vygotsky, *private speech* serves the beneficial function of *guiding activities in solving a problem*. Use of private speech is most common in the five- to seven-year range.

Page Ref: 45  
Skill: Knowledge  
P: .77  
D: .40

- 44) Piaget called children's self-directed talk \_\_\_\_\_ while Vygotsky called the same behavior \_\_\_\_\_.  
A) egocentric speech; private speech  
B) private speech; egocentric speech  
C) private speech; social speech  
D) social speech; private speech

Answer: A

Explanation: A) Children's self-directed talk is Piaget's *egocentric speech* and Vygotsky's *private speech*.

Page Ref: 45-46

Skill: Knowledge

- 45) According to Vygotsky, scaffolding represents  
A) a barrier or a block to solving a problem.  
B) a plateau that children reach before progressing to a new stage.  
C) artificial support, such as notes, on which children can rely while learning.  
D) external support for helping children solve problems on their own.

Answer: D

Explanation: D) The zone of proximal development is the point at which a child cannot solve a problem alone but can do so *with support or scaffolding*. Teachers can help children move to higher reasoning levels by providing appropriate guidance during problem solving.

Page Ref: 47

Skill: Knowledge

P: .84

D: .30

- 46) The zone of proximal development is the area where students may solve a problem  
A) by themselves.  
B) with no disequilibrium.  
C) with support.  
D) without frustration.

Answer: C

Explanation: C) The zone of proximal development is the area between the learner's current development level and the level the learner could achieve with some support from a more capable peer or through adult guidance.

Page Ref: 47

Skill: Knowledge

P: .82

D: .31

- 47) Application of Vygotsky's zone of proximal development concept would include  
A) making new tasks slightly beyond the student's current level of ability.  
B) not introducing new tasks until prerequisite tasks are satisfactorily mastered.  
C) requiring the student to work completely independently, regardless of success or failure.  
D) using highly structured materials to introduce new content rather than semi-structured tasks.



Answer: A

Explanation: A) One implication of Vygotsky's zone of proximal development is to *make new tasks slightly beyond the child's current level of ability*. With support or "scaffolding" from others, where needed, this orientation will help the child progress to new levels of thinking.

Page Ref: 47

Skill: Understanding

P: .73

D: .38

- 48) The research of Luis Moll in Arizona has focused on the cultural "funds of knowledge," which include
- A) learning environments that require students to work on their own.
  - B) the knowledge the families and communities have that can become the basis for teaching.
  - C) learning activities funded under the law No Child Left Behind.
  - D) learning activities that require the use of a computer.

Answer: B

Explanation: B) Moll's work involves families and communities by including their knowledge about agriculture, economics, manufacturing, medicine, cooking, and more in the teaching process. This model may also involve community experts to evaluate students' assignments.

Page Ref: 51

Skill: Knowledge

P: .26

D: .02

- 49) Researchers have found the best time for a child to learn a second language on his/her own is
- A) during early or middle childhood
  - B) no one time is better than another
  - C) early childhood
  - D) adulthood when cognitive skills are developed

Answer: C

Explanation: C) Early childhood is the best time to *learn a second language* on one's own, however, early or middle childhood can be the best time to *teach a second language*. Also, there is no cognitive "penalty" for students who learn and speak a second language, in fact there may be long-term cognitive benefits.

Page Ref: 56

Skill: Knowledge

- 50) The period considered to be the most sensitive for language development occurs
- A) after puberty.
  - B) about the time of puberty.
  - C) during the first year of life.
  - D) during the preschool years.

Answer: D

Explanation: D) The most sensitive period for language growth appears to be the period before puberty, *especially the preschool years*. For example, the average child between the ages of two and six learns from six to 10 words a day.

Page Ref: 53-55

Skill: Knowledge

P: .39

D: .36

51) The area of language that specifically deals with the ordering of words is called

- A) awareness.
- B) scaffolding.
- C) semantics.
- D) syntax.

Answer: D

Explanation: D) *Syntax* is the area of language that deals specifically with the ordering of words.

Page Ref: 55

Skill: Knowledge

52) Generally, students are not ready to study the rules of a language formally until about age five. This is when most students have started to gain

- A) literacy.
- B) metalinguistic awareness.
- C) semantic speech.
- D) syntax.

Answer: B

Explanation: B) *Metalinguistic awareness*, which develops at about age five, is knowledge about the rules and conventions of a language. At this stage, children are ready to begin to study the rules of a language. They can understand, for example, rules for past tense, capitalization, using plurals, and so on.

Page Ref: 55

Skill: Knowledge

P: .79

D: .42

## Completion Questions

1) Developmental changes that are genetically programmed are a function of \_\_\_\_\_.

Answer: maturation

Page Ref: 26

2) The specialization of the two hemispheres of the brain is called \_\_\_\_\_.

Answer: lateralization

Page Ref: 30

3) According to Piaget, when environmental events cause changes in existing schemas, \_\_\_\_\_ occurs.

Answer: accommodation

Page Ref: 33

4) "Out of sight, out of mind" describes the behavior of children who have not acquired \_\_\_\_\_.

Answer: object permanence

Page Ref: 33

5) When a schema produces an unsatisfactory result, a student experiences \_\_\_\_\_.

Answer: disequilibrium

Page Ref: 33

6) The principle that changing the shape of an object does not change the amount of the object is called \_\_\_\_\_.

Answer: conservation

Page Ref: 35

7) Having the ability to focus on more than one aspect of a situation at a time is called \_\_\_\_\_.

Answer: decentering

Page Ref: 35

8) The process of making an orderly arrangement of objects from large to small or vice versa is called \_\_\_\_\_.

Answer: seriation

Page Ref: 36

9) The ability to reason abstractly and deductively occurs during the Piagetian stage of \_\_\_\_\_.

Answer: formal operations

Page Ref: 37

10) The basis of formal operations is \_\_\_\_\_.

Answer: hypothetical-deductive reasoning

Page Ref: 38

11) Kathleen Berger (2006) refers to the space between what the learner already knows and what he or she is not yet ready to learn as the \_\_\_\_\_.

Answer: Magic middle

Explanation: Berger refers to the magic middle as the space between what the learner already knows and what the learner is not yet ready to learn as the *magic middle*, which is similar to Vygotsky's notion of the Zone of Proximal Development (ZPD).

Page Ref: 50

12) Guided participation in the classroom is an example of \_\_\_\_\_ learning.

Answer: assisted

Page Ref: 50

13) The area of language that deals specifically with word order is called \_\_\_\_\_.

Answer: syntax

Page Ref: 55

14) When a student understands language and how it works, the student is said to have \_\_\_\_\_.

Answer: metalinguistic awareness  
Page Ref: 55

15) The support that children use to help them solve problems just beyond their capabilities is called \_\_\_\_\_.

Answer: scaffolding  
Page Ref: 47

16) Both Piaget and Vygotsky would most likely agree students need to be taught in the "magic \_\_\_\_\_" or the place where they are neither bored nor frustrated.

Answer: middle  
Page Ref: 50

## True/False Questions

- 1) Developmental changes are genetically determined rather than environmentally determined.  
Answer: FALSE  
Page Ref: 27
- 2) The part of the brain directly associated with the coordination of physical movements is the cerebellum.  
Answer: TRUE  
Page Ref: 28
- 3) Assimilation takes place when a person uses existing schemas to respond to a new situation.  
Answer: FALSE  
Page Ref: 33
- 4) Understanding of object permanence occurs during the sensorimotor stage.  
Answer: TRUE  
Page Ref: 33
- 5) Seriation refers to the ability to work with symbols.  
Answer: FALSE  
Page Ref: 36
- 6) The cognitive stage associated with ability to understand hypothetical situations is formal operations.  
Answer: TRUE  
Page Ref: 38
- 7) Hypothetical-deductive reasoning is characteristic of adolescent egocentrism.  
Answer: FALSE  
Page Ref: 38
- 8) According to Piaget, most adults may be able to use formal operational thought in only a few areas in which they have the greatest interest or experience.  
Answer: TRUE  
Page Ref: 38-39
- 9) Neo-Piagetian theorists are concerned with how attention, memory, and strategy use relate to Piaget's theory of cognitive development.  
Answer: TRUE  
Page Ref: 40
- 10) One strategy for scaffolding complex learning is to use a reciprocal teaching approach, which requires students to play to role of the teacher by leading discussions and asking questions.  
Answer: TRUE  
Explanation: In reciprocal teaching, students rotate in playing the role of the teacher. The teacher becomes more of a facilitator of the learning process.  
Page Ref: 51
- 11) The basic difference between Piaget and Vygotsky's views of cognitive development is in attention

paid to genetic factors.

Answer: FALSE

Page Ref: 48-49

12) Vygotsky viewed children's private speech to be helpful for cognitive development.

Answer: TRUE

Page Ref: 46

13) When children are in a zone of proximal development, use of scaffolding is appropriate.

Answer: TRUE

Page Ref: 47

14) The development of language is associated with the concrete operational stage.

Answer: FALSE

Page Ref: 35

15) According to Luis Moll, medicine, agriculture, economics, and religion are funds of knowledge which should not be used in classroom instruction or serve as the basis of teaching.

Answer: FALSE

Explanation: Moll contends medicine, agriculture, economics, religion, and more can serve as knowledge that family and community members may have that can become the basis for teaching.

Page Ref: 51

16) Early childhood is the best time for a child to learn a second language on his/her own.

Answer: TRUE

Page Ref: 56

17) The basics of word orders, or *syntax*, are mastered by children well before they enter the first grade.

Answer: TRUE

Page Ref: 55

18) Metalinguistic awareness begins to develop at about the age of puberty.

Answer: FALSE

Page Ref: 55

## Short Answer Questions

1) Define development and identify specific types of forms it can take. Then explain how maturation relates to development.

Answer: Development refers to orderly and relatively long-term changes that take place over one's life span. Physical development involves bodily changes, personal development changes in personality, social development changes in the way one relates to others, and cognitive development changes in one's thinking. Maturation is the part of development that involves genetically-based changes that are not influenced by environmental factors.

Page Ref: 26-27

2) Describe Piaget's theoretical views on cognitive development using and defining the following terms in your answer: organization, adaptation, assimilation, accommodation, equilibration.

Answer: Humans inherit tendencies toward organization, arranging information into a coherent system, and adaptation, adjusting to the environment. The mental systems that are developed are

called schemas. When existing schemas are used to interpret new information, assimilation takes place. When existing schemas are changed in response to new situations, accommodation takes place. We search for balance through the process of equilibration, making adjustments whenever dissonance or imbalance between our thinking and reality occurs.

Page Ref: 32-34

3) Name and define the basic aspects of reasoning that must be mastered before a child is able to solve problems of conservation.

Answer: Conservation is mastered through the processes of *reversible thinking* (performing an operation and then "undoing" it), *decentering* (being able to focus on more than one property of a stimulus at a time), *identity* (knowing that changes in an object's shape do not change its quantity), and *compensation* (a change in one aspect, e.g., height, produces a compensating change in another aspect, e.g., width).

Page Ref: 35

4) Define Vygotsky's zone of proximal development and explain how it relates to the problem of matching cognitive stages with instructional strategies.

Answer: The zone of proximal development is the point when a child can master a task if given appropriate help and support. It suggests that students should have to reach a bit to understand, with the necessary support of parents, teachers, and peers. Such support is called *scaffolding*. Vygotsky's ideas suggest that students should be guided by explanations, demonstrations, and cooperative learning within their zone of proximal development. Use of private speech should also be encouraged in order to help organize thinking.

Page Ref: 47

5) Describe the steps or stages that children go through in the process of developing language. Include reference to the different ways that children use words and sentences in these stages.

Answer: Children begin to communicate through gestures and inarticulate sounds, followed by imitating sounds that they hear. During the early stages of language development, adults rarely correct pronunciation and grammar. In order to encourage children's new understanding, adults will simplify their language to stay a bit more advanced than the children's current level of development. Moreover, adults will provide the kind of support, or *scaffolding*, that Vygotsky has recommended. This support may also create *disequilibrium* that also encourages development. According to some psychologists, children are born with special capacity for processing, understanding, and creating language. Reward and correction undoubtedly play important roles in correct language use, but children's own thinking is very important in putting together the parts of this very complicated system. By age 5 or 6, most children have mastered the basics of language, or *syntax*, and begin to develop *metalinguistic awareness*—knowledge about rules and conventions of language, a process that continues throughout their lives.

Page Ref: 52-54

## Case Studies

Trip, a seventh-grader, is having difficulty learning principles of fractions, such as two out of five is  $2/5$ ,  $3/5$  is less than  $2/3$ , and so on. While his classmates seem to follow most of the examples given in class



and in the textbook, Trip feels overwhelmed and confused by them. He is good at other subjects (such as reading and social studies) but is falling behind rapidly in mathematics. Being familiar with Piaget's stages of development, you suspect that Trip is very concrete in his thinking about mathematical principles compared to many of his classmates.

1) Based on the above assessment of Trip's situation, what teaching approaches would Piaget's ideas suggest for making the principles of fractions more understandable to Trip?

Answer: The teacher will want to provide Trip with hands-on learning experiences. For example, the teacher could give Trip two apples to cut into pieces. Trip could cut one apple into five pieces and the other apple into three pieces. He could then compare the combined physical amount of two of the pieces from the five-piece cut apple to two of the pieces from the three-piece cut apple.

Page Ref: 32

2) If Trip is a concrete thinker in mathematics, is he likely to think in similar ways in other subjects? Explain using appropriate ideas from Piaget and Vygotsky.

Answer: According to Piagetian theory, Trip is also likely to think in concrete ways in other subject areas. For example, he may struggle with comparing the human brain to a computer. Neo-Piagetians, however, believe Trip may show general patterns of concrete thinking and yet be able to use some more advanced schemas within a particular domain. Trip may reason differently about social situations and numerical concepts. From Vygotsky's perspective, the teacher would want to consider Trip's sociocultural factors, such as how language is used, rather than focusing on whether or not Trip had surpassed a specific stage.

Page Ref: 35, 44-45

Mason is another seventh grader who is having difficulty in math class. He stares blankly at the test paper asking him to compute fractions such as  $\frac{5}{7}$  and  $\frac{9}{12}$  as percentages. He can't remember at all how to determine whether  $\frac{4}{5}$  is larger or smaller than  $\frac{5}{8}$ , so he makes a guess. He hopes that, with some luck, he might manage in the class. On the weekend, Mason is watching his favorite sport, basketball. He remarks to his sister, "Oh, this guy made eight out of 11 shots last week; he's close to an 80 percent shooter so he should be for these free throws." After the player makes both shots, Mason looks down at the statistics sheet he's been keeping on the local teams' shooting percentages, and updates the statistics.

3) Is the inconsistency between Mason's performances on school test problems and in working with basketball statistics a problem for Piaget's stage theory? That is, if Mason is at a particular stage of reasoning, shouldn't he be able to deal with the school problems as successfully as the basketball ones? Explain.

Answer: The inconsistency noted in this case study is not a problem for Piaget's theory.

According to Piaget, experience and interest can affect the stage one can reach. Mason should be able to solve the school-based math problems equally as well as the basketball ones. The teacher may need to help Mason see the connection between the two situations. Also, Mason's interest is likely to be influenced by the extent to which the student can move beyond rote memorization of mathematical principles. The teacher may want to introduce a math game to facilitate interest. Also, it is important for the teacher to explain why it is important for students to have an understanding of fractions and percentages in our society.

Page Ref: 41

4) How might Vygotsky explain the role of other people in shaping Mason's math skills in the two contexts? Explain.

Answer: First, the teacher may want to look at the statistics sheet Mason created. This sheet is viewed as a cultural tool and it would be important to find out if Mason shares the sheet with any other persons. For instance, what do the headings on the columns for the data communicate to others? In addition, from Vygotsky's perspective it would be important to know if Mason typically watches basketball alone or with his brother who is four years older. It may be that his brother is providing scaffolding (cues, encouragement) to Mason as they watch the game together.

Page Ref: 43-44, 47

5) Knowing Mason's behaviors, how might a teacher work with him to improve his performances on the fractions and percentages unit?

Answer: The teacher may want to integrate a physical education unit on basketball with a mathematics lesson. Mason would get the concrete experience recommended by Piaget. He would also be involved in a highly social activity, which would be supported by both Piaget and Vygotsky's theories. The basketball team could be instructed to plan and monitor their basketball activities in order to solve the math problem.

Page Ref: 32,35, 43

