

## SECTION II

Time—35 minutes

24 Questions

**Directions:** Each group of questions in this section is based on a set of conditions. In answering some of the questions, it may be useful to draw a rough diagram. Choose the response that most accurately and completely answers each question and blacken the corresponding space on your answer sheet.

**Questions 1–6**

A piano instructor will schedule exactly one lesson for each of six students—Grace, Henry, Janet, Steve, Tom, and Una—one lesson per day for six consecutive days. The schedule must conform to the following conditions:

Henry's lesson is later in the schedule than Janet's lesson.

Una's lesson is later in the schedule than Steve's lesson.

Steve's lesson is exactly three days after Grace's lesson.

Janet's lesson is on the first day or else the third day.

1. If Janet's lesson is scheduled for the first day, then the lesson for which one of the following students must be scheduled for the sixth day?
  - (A) Grace
  - (B) Henry
  - (C) Steve
  - (D) Tom
  - (E) Una
2. For which one of the following students is there an acceptable schedule in which the student's lesson is on the third day and another acceptable schedule in which the student's lesson is on the fifth day?
  - (A) Grace
  - (B) Henry
  - (C) Steve
  - (D) Tom
  - (E) Una
3. Which one of the following is a complete and accurate list of the students any one of whom could be the student whose lesson is scheduled for the second day?
  - (A) Grace
  - (B) Tom
  - (C) Grace, Tom
  - (D) Henry, Tom
  - (E) Grace, Henry, Tom
4. If Henry's lesson is scheduled for a day either immediately before or immediately after Tom's lesson, then Grace's lesson must be scheduled for the
  - (A) first day
  - (B) second day
  - (C) third day
  - (D) fourth day
  - (E) fifth day
5. If Janet's lesson is scheduled for the third day, which one of the following could be true?
  - (A) Grace's lesson is scheduled for a later day than Henry's lesson.
  - (B) Grace's lesson is scheduled for a later day than Una's lesson.
  - (C) Henry's lesson is scheduled for a later day than Una's lesson.
  - (D) Tom's lesson is scheduled for a later day than Henry's lesson.
  - (E) Tom's lesson is scheduled for a later day than Una's lesson.
6. Which one of the following is a complete and accurate list of days any one of which could be the day for which Tom's lesson is scheduled?
  - (A) first, second, third
  - (B) second, third, fourth
  - (C) second, fifth, sixth
  - (D) first, second, third, fourth
  - (E) second, third, fourth, sixth

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Questions 7–11

Five children—F, G, H, J, and K—and four adults—Q, R, S, and T—are planning a canoeing trip. The canoeists will be divided into three groups—groups 1, 2, and 3—of three canoeists each, according to the following conditions:

There must be at least one adult in each group.

F must be in the same group as J.

G cannot be in the same group as T.

H cannot be in the same group as R.

Neither H nor T can be in group 2.

7. If F is in group 1, which one of the following could be true?
- (A) G and K are in group 3.
  - (B) G and R are in group 3.
  - (C) J and S are in group 2.
  - (D) K and R are in group 1.
  - (E) Q and S are in group 2.
8. If F and S are in group 3, which one of the following must be true?
- (A) G is in group 2.
  - (B) H is in group 3.
  - (C) K is in group 1.
  - (D) Q is in group 2.
  - (E) R is in group 1.

9. If G and K are in group 3, which one of the following must be true?
- (A) H is in group 3.
  - (B) J is in group 1.
  - (C) R is in group 2.
  - (D) S is in group 3.
  - (E) T is in group 1.
10. If Q is in group 1 and S is in group 3, which one of the following CANNOT be true?
- (A) G is in group 2.
  - (B) T is in group 1.
  - (C) There is exactly one child in group 1.
  - (D) There is exactly one child in group 2.
  - (E) There is exactly one child in group 3.
11. If G is the only child in group 1, which one of the following must be true?
- (A) F is in group 3.
  - (B) K is in group 3.
  - (C) Q is in group 2.
  - (D) R is in group 1.
  - (E) S is in group 2.

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Questions 12–17

Lara, Mendel, and Nastassia each buy at least one kind of food from a street vendor who sells only fruit cups, hot dogs, pretzels, and shish kebabs. They make their selections in accordance with the following restrictions:

None of the three buys more than one portion of each kind of food.

If any of the three buys a hot dog, that person does not also buy a shish kebab.

At least one of the three buys a hot dog, and at least one buys a pretzel.

Mendel buys a shish kebab.

Nastassia buys a fruit cup.

Neither Lara nor Nastassia buys a pretzel.

Mendel does not buy any kind of food that Nastassia buys.

12. Which one of the following statements must be true?

(A) Lara buys a hot dog.  
(B) Lara buys a shish kebab.  
(C) Mendel buys a hot dog.  
(D) Mendel buys a pretzel.  
(E) Nastassia buys a hot dog.

13. If the vendor charges \$1 for each portion of food, what is the minimum amount the three people could spend?

(A) \$3  
(B) \$4  
(C) \$5  
(D) \$6  
(E) \$7

14. If the vendor charges \$1 for each portion of food, what is the greatest amount the three people could spend?

(A) \$5  
(B) \$6  
(C) \$7  
(D) \$8  
(E) \$9

15. If Lara and Mendel buy exactly two kinds of food each, which one of the following statements must be true.

(A) Lara buys a fruit cup.  
(B) Lara buys a hot dog.  
(C) Mendel buys a fruit cup.  
(D) There is exactly one kind of food that Lara and Mendel both buy.  
(E) There is exactly one kind of food that Lara and Nastassia both buy.

16. If Lara buys a shish kebab, which one of the following statements must be true?

(A) Lara buys a fruit cup.  
(B) Mendel buys a fruit cup.  
(C) Nastassia buys a hot dog.  
(D) Nastassia buys exactly one kind of food.  
(E) Exactly one person buys a fruit cup.

17. Assume that the condition is removed that prevents a customer who buys a hot dog from buying a shish kebab but all other conditions remain the same. If the vendor charges \$1 for each portion of food, what is the maximum amount the three people could spend?

(A) \$5  
(B) \$6  
(C) \$7  
(D) \$8  
(E) \$9

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Questions 18–24

A science student has exactly four flasks—1, 2, 3, and 4—originally containing a red, a blue, a green, and an orange chemical, respectively. An experiment consists of mixing exactly two of these chemicals together by completely emptying the contents of one of the flasks into another of the flasks. The following conditions apply:

The product of an experiment cannot be used in further experiments.

Mixing the contents of 1 and 2 produces a red chemical.

Mixing the contents of 2 and 3 produces an orange chemical.

Mixing the contents of 3 with the contents of either 1 or 4 produces a blue chemical.

Mixing the contents of 4 with the contents of either 1 or 2 produces a green chemical.

18. If the student performs exactly one experiment, which one of the following could be the colors of the chemicals in the resulting three nonempty flasks?  
(A) blue, blue, green  
(B) blue, orange, orange  
(C) blue, orange, red  
(D) green, green, red  
(E) green, orange, orange
19. If the student performs exactly two experiments, which one of the following could be the colors of the chemicals in the resulting two nonempty flasks?  
(A) blue, blue  
(B) blue, orange  
(C) blue, red  
(D) green, red  
(E) orange, orange
20. If the student performs exactly one experiment and none of the resulting three nonempty flasks contains a red chemical, which one of the following could be the colors of the chemicals in the three flasks?  
(A) blue, blue, green  
(B) blue, green, green  
(C) blue, green, orange  
(D) blue, orange, orange  
(E) green, green, orange
21. If the student performs exactly one experiment and exactly one of the resulting three nonempty flasks contains a blue chemical, which one of the following must be the colors of the chemicals in the other two flasks?  
(A) both green  
(B) both orange  
(C) both red  
(D) one green and one red  
(E) one orange and one red
22. If the student will perform exactly two experiments and after the first experiment exactly one of the resulting three nonempty flasks contains an orange chemical, then in the second experiment the student could mix together the contents of flasks  
(A) 1 and 2  
(B) 1 and 3  
(C) 1 and 4  
(D) 2 and 3  
(E) 3 and 4
23. If the student performs exactly one experiment and none of the resulting three nonempty flasks contains an orange chemical, then the student must have mixed the contents of  
(A) flask 1 with flask 2  
(B) flask 1 with flask 4  
(C) flask 2 with flask 4  
(D) flask 2 with one of the other flasks  
(E) flask 4 with one of the other flasks
24. If the student performs exactly two experiments and exactly one of the resulting two nonempty flasks contains an orange chemical, then it must be true that the contents of the other nonempty flask is  
(A) obtained by mixing flasks 1 and 2  
(B) obtained by mixing flasks 2 and 4  
(C) blue  
(D) green  
(E) red

S T O P

IF YOU FINISH BEFORE TIME IS CALLED, YOU MAY CHECK YOUR WORK ON THIS SECTION ONLY.  
DO NOT WORK ON ANY OTHER SECTION IN THE TEST.