

CRITICAL REASONING

(6 questions)

1) Because no employee wants to be associated with bad news in the eyes of a superior, information about serious problems at lower levels is progressively softened and distorted as it goes up each step in the management hierarchy. The chief executive is, therefore, less well informed about problems at lower levels than are his or her subordinates at those levels.

The conclusion drawn above is based on the assumption that:

- (a) Problems should be solved at the level in the management hierarchy at which they occur.
- (b) Employees should be rewarded for accurately reporting problems to their superiors.
- (c) Problem-solving ability is more important at higher levels than it is at lower levels of the management hierarchy.
- (d) Chief executives obtain information about problems at lower levels from no source other than their subordinates.
- (e) Some employees are more concerned about truth than about the way they are perceived by their superiors.

2) Springfield Fire Commissioner: The vast majority of false fire alarms are prank calls made anonymously from fire alarm boxes on street corners. Since virtually everyone has access to a private telephone, these alarm boxes have outlived their usefulness. Therefore, we propose to remove the boxes. Removing the boxes will reduce the number of prank calls without hampering people's ability to report a fire. Which of the following, if true, most strongly supports the claim that the proposal, if carried out, will have the announced effect?

- (a) The fire department traces all alarm calls made from private telephones and records where they came from.
- (b) Maintaining the fire alarm boxes costs Springfield approximately \$5 million annually.
- (c) A telephone call can provide the fire department with more information about the nature and size of a fire than can an alarm placed from an alarm box.
- (d) Responding to false alarms significantly reduces the fire department's capacity for responding to fires.
- (e) On any given day, a significant percentage of the public telephones in Springfield are out of service.

3) Plan: Concerned about the welfare of its senior citizens, the government of Runagia decided two years ago to increase by 20 percent the government provided pension paid to all Runagians age sixty-five and older.

Result: Many Runagian senior citizens are no better off financially now than they were before the increase.

Further information: The annual rate of inflation since the pension increase has been below 5 percent, and the increased pension has been duly received by all eligible Runagians.

In light of the further information, which of the following, if true, does most to explain the result that followed implementation of the plan?

- (a) The majority of senior citizens whose financial position has not improved rely entirely on the government pension for their income.
- (b) The Runagian banking system is so inefficient that cashing a pension check can take as much as three weeks.
- (c) The prices of goods and services that meet the special needs of many senior citizens have increased at a rate much higher than the rate of inflation.
- (d) The pension increase occurred at a time when the number of Runagians age sixty-five and older who were living below the poverty level was at an all-time high.
- (e) The most recent pension increase was only the second such increase in the last ten years.

4) Many people suffer an allergic reaction to certain sulfites, including those that are commonly added to wine as preservatives. However, since there are several winemakers who add sulfites to none of the wines they produce, people who would like to drink wine but are allergic to sulfites can drink wines produced by these winemakers without risking an allergic reaction to sulfites.

Which of the following is an assumption on which the argument depends?

- (a) These winemakers have been able to duplicate the preservative effect produced by adding sulfites by means that do not involve adding any potentially allergenic substances to their wine.
- (b) Not all forms of sulfite are equally likely to produce the allergic reaction.
- (c) Wine is the only beverage to which sulfites are commonly added.
- (d) Apart from sulfites, there are no substances commonly present in wine that give rise to an allergic reaction.
- (e) Sulfites are not naturally present in the wines produced by these winemakers in amounts large enough to produce an allergic reaction in someone who drinks these wines.

5) The average hourly wage of television assemblers in Vernland has long been significantly lower than that in neighboring Borodia. Since Borodia dropped all tariffs on Vernlandian televisions three years ago, the number of televisions sold annually in Borodia has not changed. However, recent statistics show a drop in the number of television assemblers in Borodia. Therefore, updated trade statistics will probably indicate that the number of televisions Borodia imports annually from Vernland has increased. Which of the following is an assumption on which the argument depends?

- (a) The number of television assemblers in Vernland has increased by at least as much as the number of television assemblers in Borodia has decreased.
- (b) Televisions assembled in Vernland have features that televisions assembled in Borodia do not have.
- (c) The average number of hours it takes a Borodian television assembler to assemble a television has not decreased significantly during the past three years.
- (d) The number of televisions assembled annually in Vernland has increased significantly during the past three years.
- (e) The difference between the hourly wage of television assemblers in Vernland and the hourly wage of television assemblers in Borodia is likely to decrease in the next few years.

6) Businesses are suffering because of a lack of money available for development loans. To help businesses, the government plans to modify the income-tax structure in order to induce individual taxpayers to put a larger portion of their incomes into retirement savings accounts, because as more money is deposited in such accounts, more money becomes available to borrowers.

Which of the following, if true, raises the most serious doubt regarding the effectiveness of the government's plan to increase the amount of money available for development loans for businesses?

- (a) When levels of personal retirement savings increase, consumer borrowing always increases correspondingly.
- (b) The increased tax revenue the government would receive as a result of business expansion would not offset the loss in revenue from personal income taxes during the first year of the plan.
- (c) Even with tax incentives, some people will choose not to increase their levels of retirement savings.
- (d) Bankers generally will not continue to lend money to businesses whose prospective earnings are insufficient to meet their loan repayment schedules.
- (e) The modified tax structure would give all taxpayers, regardless of their incomes, the same tax savings for a given increase in their retirement savings.

DATA SUFFICIENCY

(5 questions)

Directions: Each of the items below consists of a question followed by two statements, labeled (1) and (2). You must determine whether the information provided by the numbered statements is sufficient to answer the question asked. In addition to the information provided in the numbered statements, you should rely on your knowledge of mathematics and ordinary facts (such as the number of minutes in an hour).

On your answer sheet, write down:

- a. if statement (1), BY ITSELF is sufficient to answer the question, but statement (2) by itself is not sufficient to answer the question;
- b. if statement (2), BY ITSELF is sufficient to answer the question, but statement (1) by itself is not sufficient to answer the question;
- c. if BOTH statement (1) and (2) TOGETHER are sufficient to answer the question, but NEITHER statement BY ITSELF is sufficient to answer the question;
- d. if EACH statement BY ITSELF is sufficient to answer the question; and
- e. If the two statements, even when taken TOGETHER, are NOT sufficient to answer the question.

7) If $r > 0$ and $s > 0$, is $r/s < s/r$?

(1) $r/4s = 1/5$

(2) $s = r + 5$

(a)

(b)

(c)

(d)

(e)

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8) Material A costs \$3 per kilogram, and Material B costs \$5 per kilogram. If 10 kilograms of Material K consists of x kilograms of Material A and y kilograms of Material B, is $x > y$?

(1) $y > 4$

(2) The cost of the 10 kilograms of Material K is less than \$40.

(a)

(b)

(c)

(d)

(e)

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9) What is the maximum number of rectangular blocks, each with dimensions 12 centimeters by 6 centimeters by 4 centimeters, that will fit inside rectangular Box X?

(1) The inside dimensions of Box X are 48 centimeters by 24 centimeters by 16 centimeters.

(2) When Box X is filled with the blocks and rests on a certain side, there are 20 blocks in the bottom layer.

(a)

(b)

(c)

(d)

(e)

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10) In Jefferson School, 350 students study French or Spanish or both. If 150 of these students do not study French, how many of these students study both French and Spanish?

- (1) Of the 350 students, 60 do not study Spanish.
(2) A total of 290 of the students study Spanish.

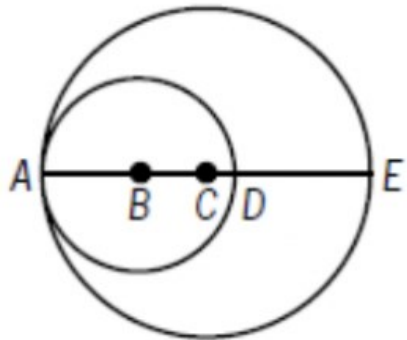
- (a)
- (b)
- (c)
- (d)
- (e)

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11) In the figure below, points A , B , C , D , and E lie on a line. A is on both circles, B is the center of the smaller circle, C is the center of the larger circle, D is on the smaller circle, and E is on the larger circle. What is the area of the region inside the larger circle and outside the smaller circle?



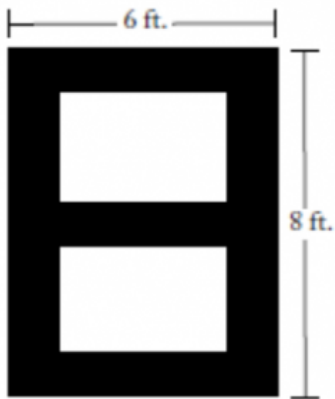
- (1) $AB = 4.5$ and $BC = 3.0$
(2) $CD = 1.5$ and $DE = 6.0$

- (a)
- (b)
- (c)
- (d)
- (e)

PROBLEM SOLVING
(4 questions)

DIRECTIONS: Solve the problems and choose the best answer.

12) The front of a 6-foot- by-8- foot rectangular door has brass rectangular trim, as indicated by the shading in the figure above. If the trim is uniformly 1 foot wide, what fraction of the door's front surface is covered by the trim?



- (a) $\frac{13}{48}$
- (b) $\frac{5}{12}$
- (c) $\frac{1}{2}$
- (d) $\frac{7}{12}$
- (e) $\frac{5}{8}$

DIRECTIONS: Solve the problems and choose the best answer.

13) Drum X is $\frac{1}{2}$ full of oil and Drum Y, which has twice the capacity of Drum X, is $\frac{2}{3}$ full of oil. If all of the oil in Drum X is poured into Drum Y, then Drum Y will be filled to what fraction of its capacity?

- (a) $\frac{3}{4}$
- (b) $\frac{5}{6}$
- (c) $\frac{11}{12}$
- (d) $\frac{7}{6}$
- (e) $\frac{11}{6}$

DIRECTIONS: Solve the problems and choose the best answer.

14) If 75 percent of a class answered the first question on a certain test correctly, 55 percent answered the second question on the test correctly, and 20 percent answered neither of the questions correctly, what percent answered both correctly?

- (a) 10%
- (b) 20%
- (c) 30%
- (d) 50%
- (e) 65%

DIRECTIONS: Solve the problems and choose the best answer.

15) Car A is 20 miles behind Car B, which is traveling in the same direction along the same route as Car A. Car A is traveling at a constant speed of 58 miles per hour and Car B is traveling at a constant speed of 50 miles per hour. How many hours will it take for Car A to overtake and drive 8 miles ahead of Car B?

- (a) 1.5
- (b) 2.0
- (c) 2.5
- (d) 3.0
- (e) 3.5

ANSWER KEY:

Question	Answer	Question	Answer
1	D	9	A
2	A	10	D
3	C	11	D
4	E	12	D
5	C	13	C
6	A	14	D
7	C	15	E
8	B		