1. E pg 57 IC

2 B p. 139

*3. D

*4 E

5 D

6. D

7. B

8 A

9 C

10. B

11. A

12. D

13. E

14. C pg 159

15. E

SOLUTION #15

A line is perpendicular to a plane at a point B if and only if it is perpendicular to every line in the plane that passes through B. Thus we can assume $\angle ACD$ and $\angle ACB$ are right angles. Therefore AC must be less than any of the segments in the figure since it is always a side of a triangle that is opposite a lesser angle of the triangle. Certainly $AE < BE$ since the angle opposite BE in $\triangle AEB$ is $110°$ while the angle opposite AE is only $40°$. But what of AB and AD? In $\triangle ABD$, AB is opposite the greater angle.

TEST-TAKING TIP for *3,4

Look back at the format of this question. Some descriptive information is given. Three statements, each designated by a Roman numeral, are given. You must decide which must be true. There are really eight different outcomes or combinations of possible outcomes: I only; II only; III only; I and II; I and III; II and III; I, II, and III; and none. The test makers eliminate three possibilities and ask you which of the remaining five choices is correct.

This format is used in several questions on each Level IC exam.

Occasionally, as in this case, the truth of one statement guarantees the truth of another. Because all of the points lie on the same line (statement II), they all lie in the same plane (statement III). Also, the truth of one statement may guarantee the falsity of another. Because the points lie on the same line, lines connecting them in pairs cannot be parallel as required by statement I. Test makers prefer, however, not to give you these "two for one" opportunities. As much as possible, they construct statements that are independent of each other.

#9. Draw a diagram. Write the given down in notation form. Authors of tests avoid abbreviations because differen books use different abbreviations, but work faster by writing the information in notation you understand.

QUES. 11   TEST-TAKING TIP

When a figure is "not drawn to scale," it can be misleading. $\angle AOB$ is given to be a right angle but is acute in the diagram. When figures are not drawn to scale, it can be helpful to redraw them to avoid making incorrect inferences.

#13   TEST-TAKING TIP

At first the figure seems to make no sense. The right angles don't look like right angles. Therefore, you may suspect that it is not drawn to scale or represents an impossible situation. When you view the diagram as a three-dimensional figure, however, it does depict a real situation. When a figure doesn't seem to make sense, be sure to consider the possibility it represents three dimensions. Note that if the figure were two-dimensional, the two adjacent right angles would make BDC a straight line and it would have to coincide with the dotted line BC.

(over)

16.. E   pg. 160

17. A   pg. 160

18. A   pg. 156

19. A

20. B

You think this is a question about pentagons, but it is
really about triangles. Draw a pentagon roughly in pro-
portion to the given information and then draw one of its
diagonals. Each diagonal forms a triangle with two sides.

21. i   C   The statement is false only when $(p \lor q)$ is
true and p is false. If p is false, $(p \lor q)$ is true only
when q is true.

22. i   C   The statement "q is necessary for p" is equiva-
lent to "p is sufficient for q" (I) and "p only is q"
(II), but *not* "q implies p" (III).

23. i   B   The negation of "if p, then q" is "p and not q."

24. i   E   Counterexamples of each answer can be
found.

25. i   B   Since "some smarties do not smoke cigars"
and "all men smoke cigars," a necessary conclu-
sion is "some smarties are not men."

26. i   C   The statement "p', only if c' " is equivalent to
"if p', then c'," which is equivalent to its contra-
positive, "if c, then p."

27. i   D   By definition the contrapositive is $q \rightarrow p'$.