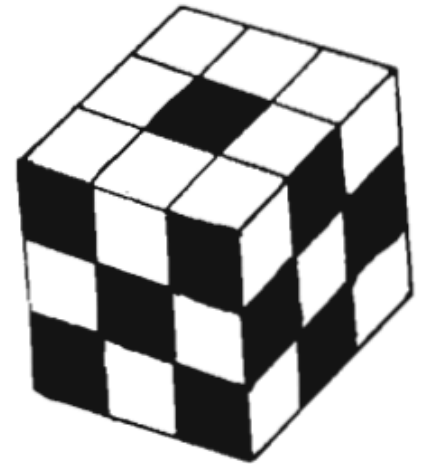


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## 1987 Q7

7. The large cube shown is made up of 27 identical sized smaller cubes. For each face of the large cube, the opposite face is shaded the same way. The total number of smaller cubes that must have at least one face shaded is

A) 10    B) 16    C) 20    D) 22    E) 24

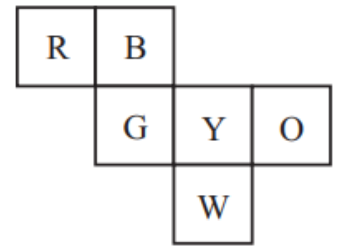


7. C The three faces shown of the larger cube must contain half the smaller shaded cubes, so there are  $2(4 + 5 + 1) = 20$  shaded smaller cubes. By carefully looking at the large cube, we see that each smaller cube has at most one face (contained in a face of the large cube) shaded.

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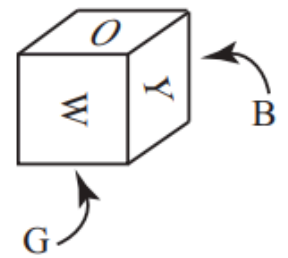
1999 Q8

8. Six squares are colored, front and back, (R=red, B=blue, O=orange, Y=yellow, G=green, and W=white). They are hinged together as shown, then folded to form a cube. The face opposite the white face is



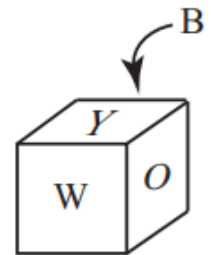
- (A) B    (B) G    (C) O    (D) R    (E) Y

8. **Answer (A):** When G is arranged to be the base, B is the back face and W is the front face. Thus, B is opposite W.



OR

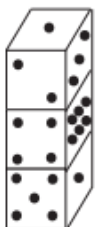
Let Y be the top and fold G, O, and W down. Then B will fold to become the back face and be opposite W.



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2000 Q8

8. Three dice with faces numbered 1 through 6 are stacked as shown. Seven of the eighteen faces are visible, leaving eleven faces hidden (back, bottom, between). The total number of dots NOT visible in this view is



- (A) 21    (B) 22    (C) 31    (D) 41    (E) 53

8. **Answer (D):** The numbers on one die total  $1 + 2 + 3 + 4 + 5 + 6 = 21$ , so the numbers on the three dice total 63. Numbers 1, 1, 2, 3, 4, 5, 6 are visible, and these total 22. This leaves  $63 - 22 = 41$  not seen.