

**YOU & MATHS**

Which of the following numbers is equal to the sum

$$8^8 + 8^8 + 8^8 + 8^8 + 8^8 + 8^8 + 8^8 + 8^8?$$

☐ **A**  $8^8$

☐ **B**  $8^9$

☐ **C**  $64^8$

☐ **D**  $8^{64}$

☐ **E**  $64^{64}$

(USA University of South Carolina: High School Math Contest, 2002)

Since  $8^8 + 8^8 + 8^8 + 8^8 + 8^8 + 8^8 + 8^8 + 8^8$  is the sum of eight times  $8^8$ , we can rewrite it as:

$$8 \cdot 8^8.$$

Using the definition of exponent, we have:

$$8 \cdot 8^8 = 8 \cdot 8 \cdot 8 \cdot 8 \cdot 8 \cdot 8 \cdot 8 \cdot 8 \cdot 8 = 8^9.$$

Our answer is therefore B.