

OMK 2014 - MUA (3 July 2015)

(B2) ... Continued

Consider the following pattern for unit digits among the powers of 2:

|       |                    |   |   |
|-------|--------------------|---|---|
| $2^1$ | $\rightsquigarrow$ | 2 | } Cyclic with period 4:<br>2, 4, 8, 6, 2, 4, 8, 6 |
| $2^2$ | $\rightsquigarrow$ | 4 |   |
| $2^3$ | $\rightsquigarrow$ | 8 |   |
| $2^4$ | $\rightsquigarrow$ | 6 |   |
| $2^5$ | $\rightsquigarrow$ | 2 |   |

The fact above tells us distinctively that

( $2^N$  ends in either 2, 4, 6 or 8 only) (4)

Note that we're given (B as the 'reversed' digits of A) (5)

(4) and (5) imply together that

(the first digit of B is either 2, 4, 6 or 8 only) (6)

Recalling (3) it says that

(the first digit of A is 1) (3)

Comparing (6) and (3), since both A and B are 100-digit numbers, it's easy to see that

$$B > A$$

Since first digits 2, 4, 6 or 8 > 1.

Answer: B  
is larger