H. Given that

$$\log_{10} 2 = 0.3010 \text{ to 4 d.p. and that } 10^{0.2} < 2$$

it is possible to deduce that

(a) 2^{100} begins in a 1 and is 30 digits long;
(b) 2^{100} begins in a 2 and is 30 digits long;
(c) 2^{100} begins in a 1 and is 31 digits long;
(d) 2^{100} begins in a 2 and is 31 digits long.