18. What is the largest integer k whose square k^2 is a factor of 10!?
[$10! = 10 \times 9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1.$]

A 6   B 256   C 360   D 720   E 5040

18. **D** Expressed as a product of its prime factors, 10! is
$2 \times 5 \times 3 \times 3 \times 2 \times 2 \times 2 \times 2 \times 7 \times 2 \times 3 \times 5 \times 2 \times 2 \times 3 \times 2$ which is $2^8 \times 3^4 \times 5^2 \times 7$. This can be written as $(2^4 \times 3^2 \times 5)^2 \times 7$ so the largest integer k such that k^2 is a factor of 10! is $2^4 \times 3^2 \times 5$ which is 720.