Problems for Gateway #1: Representing a Series Using Sigma Notation

1. If the series: $1 + 2 + 4 + ... + 1024$ was written in summation notation, it would resemble

(a) $\sum_{k=0}^{\infty} 2^k$ **(b)** $\sum_{k=0}^{10} 2k$

(c) $\sum_{k=0}^{10} 2^k$ **(d)** $\sum_{k=1}^{10} 2^k$

2. If the series: $1 + \frac{1}{2} + \frac{1}{3} + ... + \frac{1}{1324}$ was written in summation notation, it would resemble

(a) $\sum_{k=1}^{1324} \frac{1}{k}$ **(b)** $\sum_{k=0}^{1324} \frac{1}{k}$

(c) $\sum_{k=1}^{\infty} \frac{1}{k}$ **(d)** $\sum_{k=-1}^{1324} k^{-1}$

3. If the series: $1 + \frac{1}{2} + \frac{1}{6} + \frac{1}{24} + \frac{1}{120} + ...$ was written in summation notation, it would resemble

(a) $\sum_{k=1}^{120} \frac{1}{k}$ **(b)** $\sum_{k=1}^{60} \frac{1}{2k}$

(c) $\sum_{k=0}^{20} \frac{1}{k \cdot 2^k}$ **(d)** $\sum_{k=0}^{\infty} \frac{1}{k!}$

4. If the series: $1 + 3 + 5 + 7 + ... + 1023$ was written in summation notation, it would resemble

(a) $\sum_{k=0}^{512}(2k-1)$

(b) $\sum_{k=0}^{10}2^k$

(c) $\sum_{k=0}^{511}(2k+1)$

(d) $\sum_{k=1}^{10}(2^k-1)$

5. If the series: $1 + \frac{1}{4} + \frac{1}{9} + \frac{1}{16} + \frac{1}{25} + ...$ was written in summation notation, it would resemble

(a) $\sum_{k=0}^{\infty}\frac{1}{k^2}$

(b) $\sum_{k=0}^{\infty}\frac{1}{(k+1)^2}$

(c) $\sum_{k=1}^{\infty}\frac{1}{2k-1}$

(d) $\sum_{k=1}^{5}\frac{1}{k^2}$

6. If the series: $1 + 4 + 9 + ... + 10000$ was written in summation notation, it would resemble

(a) $\sum_{k=1}^{100}k^2$

(b) $\sum_{k=0}^{10}k^2$

(c) $\sum_{k=0}^{10000}(2k+1)$

(d) $\sum_{k=1}^{100}3^k$

7. If the series: $1 + \frac{1}{2^3} + \frac{1}{3^3} + ... + \frac{1}{130^3}$ was written in summation notation, it would resemble

(a) $\sum_{k=1}^{130}\frac{1}{k^3}$

(b) $\sum_{k=0}^{130}\frac{1}{2^k}$

(c) $\sum_{k=0}^{130}\frac{1}{(2k+1)^3}$

(d) $\sum_{k=-130}^{-1}k^{-3}$

8. If the series: $\frac{1}{6} + \frac{1}{12} + \frac{1}{24} + \ldots$ was written in summation notation, it would resemble

(a) $\sum_{k=0}^{\infty} \frac{1}{6^k}$

(b) $\sum_{k=0}^{\infty} \frac{1}{12^k}$

(c) $\sum_{k=0}^{\infty} \frac{1}{6 \cdot 2^k}$

(d) $\sum_{k=1}^{100} \frac{1}{6 \cdot 2^k}$

9. If the series: $2 + 4 + 6 + 8 + \ldots + 1000$ was written in summation notation, it would resemble

(a) $\sum_{k=1}^{1000} 2 \cdot k$

(b) $\sum_{k=1}^{500} 2^k$

(c) $\sum_{k=2}^{1000} (2k + 2)$

(d) $\sum_{k=1}^{500} 2 \cdot k$

10. If the series: $\frac{1}{4} + \frac{1}{9} + \frac{1}{16} + \frac{1}{25} + \ldots + \frac{1}{400}$ was written in summation notation, it would resemble

(a) $\sum_{k=4}^{400} \frac{1}{k^2}$

(b) $\sum_{k=2}^{20} \frac{1}{k^2}$

(c) $\sum_{k=0}^{20} \frac{1}{k^2}$

(d) $\sum_{k=0}^{400} \frac{1}{(k+2)^2}$

Answers

1.	C	2.	A	3.	D	4.	C	5.	B	6.	A
7.	A	8.	C	9.	D	10.	B				