Further Maths A-Level Starter Activity

Topic: Sums of Natural Numbers (1)

Chapter Reference: Core Pure 1, Chapter 3

10 minutes

1. Evaluate $\sum_{r=1}^{10} r$ **(2)**

2. $\sum_{r=1}^{20} r$ **(2)**

3. $\sum_{r=21}^{40} r$ **(3)**

4. $\sum_{r=1}^{3} (2r + 1)$ **(3)**

Solutions

1.

Use standard sum results	**M1**
55	**A1**

2.

Use standard sum results	**M1**
210	**A1**

3.

Express as difference of two series	**M1**
Use standard sum results	**M1**
610	**A1**

4.

Express as sum of two series	**M1**
Use standard sum results	**M1**
15 (Award full marks if correct answer obtained)	**A1**

Further Maths A-Level Starter Activity

Topic: Sums of Natural Numbers (2)

Chapter Reference: Core Pure 1, Chapter 3

10 minutes

5. Given that $\sum_{r=1}^{n} r = 528$, find the value of n. **(3)**

6. Given that $\sum_{r=1}^{k} r = \frac{1}{2}\sum_{r=1}^{20} r$, find the value of k. **(3)**

7. Find an expression for $\sum_{r=1}^{2n-1} r$. **(2)**

Solutions

1.

$\frac{1}{2}\times n\times(n+1)=528$	**M1**
$n^2+n-1056=0$	**M1**
$n=32$	**A1**

2.

$\frac{1}{2}k(k+1)=\frac{1}{2}\times\frac{1}{2}\times 20\times 21$	**M1**
$k^2+k-210=0$	**M1**
$k=14$	**A1**

3.

$\frac{1}{2}\times(2n-1)\times(2n-1+1)$	**M1**
$=n(2n-1)$	**A1**