

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

