Exercise 3

Paper 2 style · Graphic display calculator

3 7 marks SL 1.2 ●●○ Typical

The first row of a cinema has 15 seats. Each row has 2 more seats than the row in front of it.

(a) Find the number of seats in the 12th row. **[2]**

(b) Find the total number of seats in the first 12 rows. **[2]**

(c) The cinema must have at least 800 seats. Find the least number of rows it needs. **[3]**

The markscheme is on the next page: try the question first. Written and verified by a practising IB mathematics teacher, produced with AI assistance; solved twice and recomputed by software. Not affiliated with or endorsed by the International Baccalaureate Organization.
© 2026 Hence

Exercise 3 — markscheme

Paper 2 style · Graphic display calculator

3 7 marks SL 1.2 ●●○ Typical

The first row of a cinema has 15 seats. Each row has 2 more seats than the row in front of it.

(a) Find the number of seats in the 12th row. [2]

(b) Find the total number of seats in the first 12 rows. [2]

(c) The cinema must have at least 800 seats. Find the least number of rows it needs. [3]

MARKSCHEME (a)

$15 + 11 \times 2$ (M1)

$= 37$ A1

Total 2 marks

MARKSCHEME (b)

$\frac{12}{2}(15 + 37)$ (M1)

$= 312$ A1

Total 2 marks

MARKSCHEME (c)

$\frac{n}{2}(30 + 2(n-1)) \geq 800$ M1

$n \geq 22.1 \quad (22.137\ldots)$ (A1)

23 rows A1

Total 3 marks

Note Or $S_{22} = 792$ and $S_{23} = 851$.