Christmas maths escape room for IGCSE and GCSE: SL / AS: answers

IGCSE Math Revision · IB Maths SL and HL (AA and AI) · Teacher answers and notes

No GDC needed.

Teacher notes

- How to run it: print the student sheet and cut out the six lock cards. Give each team lock 1. When a team brings you the right code, give them the next card (the answer key is in the answers PDF). The first team to open lock 6 escapes. Teams can also have every card at once and race through them in order.
- Each code is used in the next lock, so check every code before the team moves on: one slip early on breaks the chain.

Starter

1. **1024**
   - $2^{10} = 1024$
2. **3**
   - $10^3 = 1000$
3. **10*x***
   - Multiply by the power and reduce it by 1.

Lock 1: The wrapping room

a. **32**

- $x = 2^5 = 32$

Lock 2: The list

a. **31**

- $n = 8$
- $u_8 = 3 + 7 \times 4 = 31$

Lock 3: The lights

a. **1023**

- $n = 10$
- $S_{10} = (2^{10} - 1)/(2 - 1) = 1023$

Lock 4: The power lock

a. **10**

- $1024 = 2^{10}$

Lock 5: The cracker

a. **45**

- ${}^{10}C_2 = 45$

Lock 6: The workshop door

a. **108**

- $a^2 = 36$, so $a = 6$
- $f'(x) = 3x^2$, so $f'(6) = 108$

Extension

1. **37/64**
   - $1 - (3/4)^3 = 1 - 27/64 = 37/64$

Every question is original and every answer was checked before publishing.