Halloween maths activities for CBSE Class 10: Class 11: answers

CBSE Math Revision · CBSE Class 11 (no calculator) · 31 October · Teacher answers and notes

No calculator. Every answer works out exactly.

Teacher notes

- For CBSE Class 11. No calculator: every answer works out exactly, as in board exams.

Starter

1. **1536**
   - $a = 3$, $r = 2$: $a_{10} = 3 \times 2^9 = 3 \times 512 = 1536$
2. **120**
   - 5 different letters: $5! = 120$
3. **2**
   - $(11 - 3)/(6 - 2) = 8/4 = 2$
4. **5**
   - $A \cup B = \{1, 2, 3, 4, 5\}$

Task A: Zombie doubling

a. **160**
- $5 \times 2^5 = 160$

b. **1275**
- $S_8 = 5(2^8 - 1)/(2 - 1) = 5 \times 255 = 1275$

c. **11 days**
- $5(2^n - 1) > 10\,000$ gives $2^n > 2001$.
- $2^{10} = 1024$ is too small and $2^{11} = 2048$ is enough, so $n = 11$

Task B: The haunted house plan

a. **10 units**
- $\sqrt{((7 - 1)^2 + (10 - 2)^2)} = \sqrt{(36 + 64)} = \sqrt{100} = 10$

b. **$y = 4x/3 + 2/3$**
- Slope $m = 8/6 = 4/3$.
- $2 = (4/3)(1) + c$ gives $c = 2/3$

c. **(0, 9)**
- The midpoint of AB is (4, 6) and the perpendicular slope is $-3/4$.
- $y - 6 = -3/4\ (x - 4)$; at $x = 0$, $y = 6 + 3 = 9$

d. **74**
- All committees: ${}^9C_3 = 84$. With no witch: ${}^5C_3 = 10$.
- $84 - 10 = 74$

Extension

1. **676**
   - They are 10, 17, 24, ..., 94: an AP with $a = 10$, $d = 7$.
   - Number of terms: $(94 - 10)/7 + 1 = 13$.
   - Sum $= 13/2 \times (10 + 94) = 676$

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