**Q: Find the minimum three values of n such that the person standing at the n/3-th position survives**

J(n) = n/3

J(n)=n/3 🡺 2*l*+1 = ( 2m+*l* ) / 3 🡺 5*l* = 2m– 3 **Remember: Always *J*(n) = J(2m+*l*) = 2*l*+1**

🡺 *l* = 1/5 \*(2m– 3) 🡺 m = 1,2, **3**, 4, 5, 6, **7**, 8, 9, 10, **11 *J*(n) = 2*l*+1**

**Accept/Take only those values of m for which *l* is integer 🡺**

m = (3, 7, 11);

*l* = (1, 25, 409)

n = 2m+*l* = (9, 153, 2457)

survivor = J(n) = 2*l*+1 = 3, 51, 819 **[ Note: *J*(9) = 3, *J*(153) = 51, *J*(2457) = 819 …. Thus *J*(n) = n/3]**

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Q. Find FIVE values of n for which the last person survives

**J(n) = n** 🡺 2*l*+1 = ( 2m+*l* ) 🡺 ***l* = 2m– 1** 🡺

for *m* = 0, 1, 2, 3, 4, 5, …

and *l* = 0, 1, 3, 7, 15, 31, …

n = 2m+*l* = 1, 3, 7, 15, 31, 63 …

J(n) = 2*l*+1 = 1, 3, 7, 15, 31, 63 (same values J(n) = n)

**=================================================**

Q: Find the minimum three values of n for which J(n) = n/4

J(n)=n/4 🡺 2*l*+1 = ( 2m+*l* ) /4 🡺 7*l* = 2m– 4

🡺 *l* = 1/7 \*(2m– 4) 🡺 m = 1, **2**, 3, 4, **5**, 6, 7,  **8**, …

Take only those values of m for which *l* is integer 🡺

m = (2, 5, 8);

*l* = (0, 4, 36)

n = 2m+*l* = (4, 36, **292)**

survivor = J(n) = 2*l*+1 = 1, 9, **73**

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Q: Find the minimum three values of n such that the person standing at the n/4-th position survives. It is given that n >= 100 (at least 100 people were present)

Ans: From previous solution, n = 292 and *l* = 73 (When n=292 persons were present, then n/4 = 73-rd person survives)

Q: Find the minimum three values of n such that J(n) = 25

J(n)=25 🡺 2*l*+1 = 25 🡺 *l* = 12

n = 2m+*l*  => put m=0, 1,2,3,4,5,6,7 … => **n = 13, ~~14, 16, 20,~~ 28, 44, 76, 140**