

Bingo

Start smaller?

Money

1-41

$$\frac{\text{total pay } 41 \cdot 42}{\text{avg. pay } 2} = 861$$

$$\text{avg. pay } \frac{861}{41} = 21 \times \frac{41}{74}$$

expected value

$$\frac{861}{74} = 11.6325$$

$$\underline{26.3108}$$

MORE

Try 50:

$$\text{Low } \frac{49}{74} \cdot \frac{(1 + \dots + 49)}{49}$$

$$\text{HIGH } \frac{25}{74} \cdot \frac{(51 + \dots + 75)}{25} \quad 42-75$$

38 is 50/50 cutoff,
but pick higher

First ball n .

Pick lower? E.V. = $\frac{(1+2+\dots+(n-1))}{74} = \frac{n(n-1)}{2} \cdot \frac{1}{74}$

Pick higher? E.V. = $\frac{((n+1)+(n+2)+\dots+74+75)}{74} = \left(2850 - n - \frac{n(n-1)}{2}\right) \cdot \frac{1}{74}$

Want these equal.

$$\frac{n(n-1)}{2} = 2850 - n - \frac{n(n-1)}{2}$$

$$n(n-1) = 2850 - n$$

$$n^2 - \cancel{n} = 2850 + \cancel{n}$$

$$n = \sqrt{2850} \approx \underline{53.38}$$

All 1-75 Pick Low

Geometer's Volunteer

