

What numbers can we make?

1, 3, 5, 7

$$1 + 3 + 5 + 7$$

$$7 + 7 + 1 + 1$$

$$3 + 3 + 5 + 5$$

$$3 + 3 + 3 + 7$$

$$5 + 5 + 5 + 1$$

$$= 16$$

I can't make 25 using six numbers because 25 is odd and we are trying to make it using an even number of odd numbers which is impossible because an even \times odd = even and 25 is odd

①, 4, 7, 10

When you choose three numbers you ~~choose~~ ^{get} a multiple of 3 with a minimum of three and a maximum of thirty because $3 \times ① = 3$ and $3 \times 10 = 30$.

When you choose 4 numbers you get 1 more than a multiple of 3, with a minimum of 4 and a maximum of 40

When you choose 5 numbers you get 2 more than a multiple of 3 with a minimum of 5 and a maximum of 50

When you choose 6 numbers $sum = 3x + 3$
 x is a whole number $1 \leq x \leq 169$

x is a variable used to define all the possible sums

$z = d - c$ = difference between the numbers in the bags

n = number of numbers picked

$x = na \leq x \leq \frac{(nd) - (n-z)}{z}$ where x is a whole number

a = Smallest number from the bags

b = lower medium number from the bags

c = higher medium number from the bags

d = largest number from the bags.

$$Sum = z x + (n - z)$$

and finally... 3, 7, 11, 15

$$z = 4 \quad n = 30 \quad 90 \leq x \leq 450$$

$$\begin{aligned} 412 &= 4(x) + 26 \quad \downarrow -26 \\ 386 &= 4x \quad \downarrow \div 4 \\ 96.5 &= x \end{aligned}$$

x is not a whole number

So you can't make 412 when choosing 30 numbers from 3, 7, 11 and 15