

Extension and deeper thinking:

Nrich problem 1:

Red die: ~~1 1 1 1 1 1~~ 1 1 6 6 8 8

Green die: 2 2 4 4 9 9

Blue die: 3 3 5 5 7 7

$$P(R1) = \frac{2}{6} = \frac{1}{3}$$

$$P(G2) = \frac{1}{3}$$

$$P(B3) = \frac{1}{3}$$

$$P(R6) = \frac{1}{3}$$

$$P(G9) = \frac{1}{3}$$

$$P(B5) = \frac{1}{3}$$

$$P(R8) = \frac{1}{3}$$

$$P(G9) = \frac{1}{3}$$

$$P(B7) = \frac{1}{3}$$

Red	Green	Blue
Mode = no mode	Mode = no mode	Mode = no mode
Median = 6	Median = 4	Median = 5
Mean = 5	Mean = 5	Mean = 5

If Charlie picks Red then Alison should pick Green.
If Charlie picks Green then Alison should pick Blue.
If Charlie picks Blue then Alison should pick Red.

~~Alison should pick Red but if Charlie~~

Nrich problem 2:

~~6 7 8~~ 6 7 8 9

$$\begin{array}{r} 6 \times 9 + 7 \times 8 = 110 \\ \vee \quad \vee \\ 54 + 56 \\ \hline 110 \end{array}$$

$$\begin{array}{r} 1 \quad 2 \quad 3 \quad 4 \\ 1 \times 4 + 2 \times 3 = 10 \\ \vee \quad \vee \\ 4 + 6 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 5 \quad 6 \quad 7 \quad 8 \\ 5 \times 8 + 6 \times 7 = \\ \vee \quad \vee \\ 40 + 42 \\ \hline 82 \end{array}$$

The consecutive numbers

$$n \quad n+1 \quad n+2 \quad n+3$$

$$\text{Outer pair} = n(n+3) = n^2 + 3n$$

Inner pair will always be two more than the outer pair

$$\text{Inner pair} = (n+1)(n+2) = n^2 + 3n + 2$$

Superb effort on these extensions