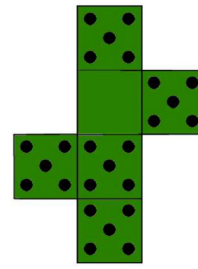
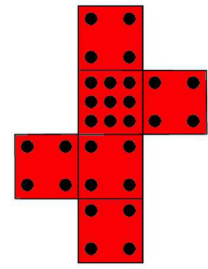


GRIME DICE

DICE THAT ALLOW YOU TO ALWAYS WIN!



GREEN



RED

Red versus Green

Throw both dice at the same time. The one with the highest value wins.

Which dice do you predict should win MOST OFTEN? _____

Take turns to throw the two dice until you have ²⁰ 10 throws in total.

Person A: Record which colour wins each time (you do not need to record the values on the dice). Write the totals on the class results table.

Person B: Calculate the relative frequency of red winning and of green winning from YOUR results.

Which dice won overall? Green *relative freq = $\frac{143}{200}$ Green*

Which dice won overall from the whole class results? Red *$\frac{51}{200}$ Red*

experimental probability

relative freq = $\frac{143}{200}$ Green

$\frac{51}{200}$ Red

Tally Charts

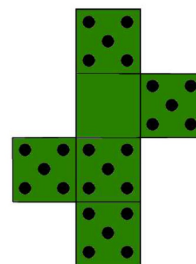
RED vs. GREEN sample space diagram

Green \ Red	4	4	4	4	4	9
0	●	●	●	●	●	●
5	●	●	●	●	●	●
5	●	●	●	●	●	●
5	●	●	●	●	●	●
5	●	●	●	●	●	●
5	●	●	●	●	●	●

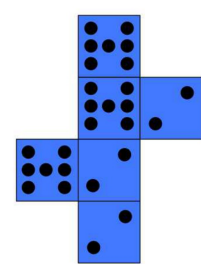
green wins $\frac{25}{36}$

red wins $\frac{11}{36}$

green beats red



GREEN



BLUE

Blue versus Green

Throw both dice at the same time. The one with the highest value wins.

Which dice do you predict should win MOST OFTEN? _____

Take turns to throw the two dice until you have 10 throws in total.

Person B: Record which colour wins each time (you do not need to record the values on the dice). Write the totals on the class results table.

Green = $\frac{83}{200}$
Blue = $\frac{117}{200}$

Person A: Calculate the relative frequency of blue winning and of green winning from YOUR results.

Which dice won overall? Blue

Which dice won overall from the whole class results? _____

BLUE VS. GREEN sample space diagram

Calculate theoretical probabilities

0	B	2	2	2	7	7	7
0		●	●	●	●	●	●
5		●	●	●	●	●	●
5		●	●	●	●	●	●
5		●	●	●	●	●	●
5		●	●	●	●	●	●
5		●	●	●	●	●	●

Blue = $\frac{21}{36}$

Green = $\frac{15}{36}$

Blue → beats → Green
Blue → beats → Green → beats → Red

Red versus Blue

Throw both dice at the same time. The one with the highest value wins.

Which dice do you predict should win MOST OFTEN? _____

Take turns to throw the two dice until you have 10 throws in total.

Person A: Record which colour wins each time (you do not need to record the values on the dice). Write the totals on the class results table.

Person B: Calculate the relative frequency of red winning and of blue winning from YOUR results.

Which dice won overall? _____

Which dice won overall from the whole class results? _____

BLUE VS. RED sample space diagram

	R	4	4	4	4	4	9
B		●	●	●	●	●	●
2		●	●	●	●	●	●
2		●	●	●	●	●	●
2		●	●	●	●	●	●
7		●	●	●	●	●	●
7		●	●	●	●	●	●
7		●	●	●	●	●	●

Red → beats → Blue → beats → Green
Red → beats → Green

What happens with PAIRS of dice?

If one person throws 2 red dice and the other 2 green dice, who will win?

Which pair of dice do you predict should win MOST OFTEN? _____

Each throw your 2 dice until you have 10 throws in total.

Person B: Record which colour wins each time (you do not need to record the values on the dice). Write the totals on the class results table.

Person A: Calculate the relative frequency of red winning and of green winning from YOUR results.

Which dice won overall? _____

Which dice won overall from the whole class results? _____

Probability Calculations

Person A: Calculate all the totals possible from throwing 2 green dice. Calculate the probability of throwing each of the totals. Record here:

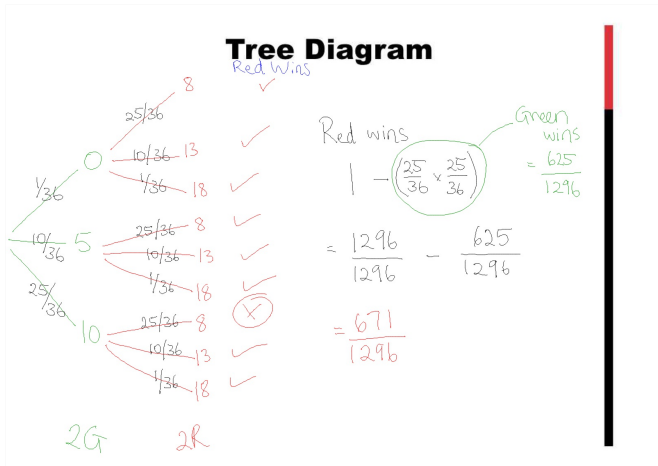
10 = $\frac{25}{36}$
5 = $\frac{19}{36}$
0 = $\frac{1}{36}$

	5	5	5	5	0
5	●	●	●	●	●
5	●	●	●	●	●
5	●	●	●	●	●
5	●	●	●	●	●
0	●	●	●	●	●

Person B: Calculate all the totals possible from throwing 2 red dice. Calculate the probability of throwing each of the totals. Record here:

8 = $\frac{25}{36}$
18 = $\frac{1}{36}$
13 = $\frac{10}{36}$

	4	4	4	4	9
4	●	●	●	●	●
4	●	●	●	●	●
4	●	●	●	●	●
4	●	●	●	●	●
9	●	●	●	●	●



What happens with PAIRS of dice?

If you have time: Repeat the process with 2 green and 2 blue dice – play 10 games and then calculate the totals and probabilities to use in a tree diagram. Try 2 blue and 2 red dice also.