RISKS AND LIMITS
MISCONCEPTIONS ABOUT PROBABILITY

Misconceptions about probability may include:

1. **All events are equally likely**

2. **Later events may be affected by or compensate for earlier ones**

3. **When determining probability from statistical data, simple size is irrelevant**

4. **Results of games of skill are unaffected by the nature of the participants**

5. **"Lucky/Unlucky" numbers, etc. can influence random events**

6. **In random events involving selection, results are dependent on numbers rather than ratios**

7. **If events are random then the results of a series of independent events are equally likely, e.g. Heads Heads (HH) is as likely as Heads Tails (HT)**

8. **When considering spinners, probability is determined by number of sections rather than size of angles.**

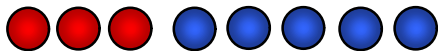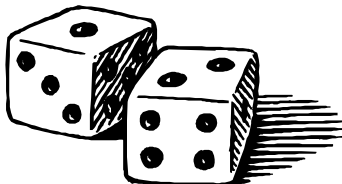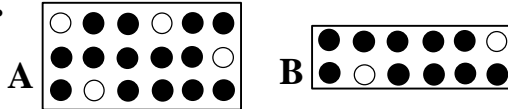|	
1. I've spun an *unbiased* coin 3 times and got 3 heads. It is more likely to be tails than heads if I spin it again.	**2.** The Regina Rams play Saskatoon Huskies. The Regina Rams can win, lose or draw, so the probability that Rams will win is .
3. There are 3 red beads and 5 blue beads in a bag. I pick a bead at random. The probability that it is red is 3/5.	**4.** I roll two dice and add the results. The probability of getting a total of 6 is 1/12 because there are 12 different possibilities and 6 is one of them.
5. It is harder to throw a six than a three with a die.	**6.** Tomorrow it will either rain or not rain, so the probability that it will rain is 0.5.
7. Mr. Brown has to have a major operation. 90% of the people who have this operation make a complete recovery. There is a 90% chance that Mr. Brown will make a complete recovery if he has this operation.	**8.** If six fair dice are thrown at the same time, I am less likely to get 1, 1, 1, 1, 1, 1 than 1, 2, 3, 4, 5, 6.
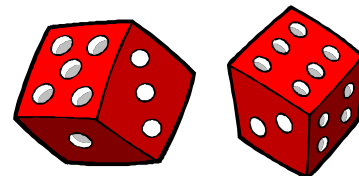
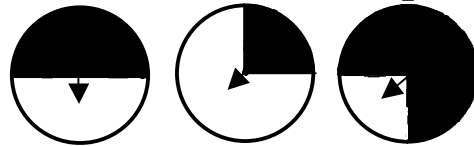|	
9. There are more black balls in box A than in box B. If you choose 1 ball from each box you are more likely to choose a black ball from A than from B. A [grid of balls] B [grid of balls]	**10.** I spin two coins. The probability of getting heads and tails is 1/3 because I can get Heads and Heads, Heads and Tails or Heads and Tails.
11. John buys 2 raffle tickets. If he chooses two tickets from different places in the book he is more likely to win than if he chooses two consecutive tickets.	**12.** Each spinner has two sections – one black and one white. The probability of getting black is 50% for each spinner.
13. 13 is an unlucky number so you are less likely to win a raffle with ticket number 13 than with a different number.	**14.** My Granpa smoked 20 cigarettes a day for 60 years and lived to be 90, so smoking can't be bad for you.
15. It is not worth buying a national lottery card with numbers 1, 2, 3, 4, 5, 6, on it as this is less likely to occur than other combinations.	**16.** I have thrown an unbiased dice 12 times and not yet got a six. The probability of getting a six on my next throw is more than 1/6.