# 1A SRP WORKSHEET 2

NAME: CLASS: TUTOR:

5 Very good
4 Good
3 Satisfactory
2 Weak
1 Very weak

**Reading**
Kyburg, *Probability and Inductive Logic*, ch. 2
Steinhart, *More Precisely* ch. 5.
Papineau, *Philosophical Devices*, ss. 7.1-7.4, 8.2-8.4, 9.1-9.2.

| UNDERSTAND: |
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| DON'T UNDERSTAND: |
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# 1A SRP WORKSHEET 2

## SECTION A

1. You make two tosses of a coin that lands heads half the time. You want to know whether it will land heads this time.

(a) Write down the set of outcomes for the first toss
(b) Write down the field for the first toss
(c) Write down the sample space for the outcomes of both tosses
(d) What is the probability that it lands heads at least once?
(e) What is the probability that it lands heads twice?
(f) What is the probability that it lands heads at least once given that it lands tails at least once?

2. Two cards are drawn at random and without replacement from a standard pack of 52 cards. Calculate the probabilities of the following events:

(a) Both are aces
(b) One is an ace
(c) Both are aces given that one is an ace
(d) Both are aces given that one is the ace of spades
(e) The second is an ace given that the first is an ace
(f) The first is an ace given that the second is an ace

## SECTION B

1. Two cards are drawn at random and without replacement from a standard pack of 52 cards. What is the probability that:

(a) The first is a king or an ace
(b) They are both hearts given that one is a heart
(c) They are both hearts given that one is the queen of hearts. If (b) and (c) have different answers then explain briefly why.

2. You stop two random parents on the street.

(a) Jane has two children. You ask her: 'Is at least one of them a girl?'—Yes. What is the probability that she has two girls?
(b) Jill has two children. 'Is at least one of them a girl born on a Monday?'—Yes. What is the probability that she has two girls? If (a) and (b) have different answers then explain briefly why.

**3.** Billy is on trial for murder. CSI shows that somebody with Billy's DNA was at the scene. 0.01% of the UK population shares Billy's DNA. So, the prosecution argues, there is a 99.99% probability that Billy was at the scene. Not so, says the defence: the UK population is 60 million, so there are 6000 people with Billy's DNA, so the probability that Billy was at the scene is 1 / 6000. Who is right?