

1. If  $A$  is the event that an astronaut is a member of the armed services,  $T$  is the event that he or she was once a test pilot, and  $S$  is the event that he or she is a scientist, express each of the following probabilities symbolically:

- (i) the probability that an astronaut who was once a test pilot is a member of the armed services
- (ii) the probability that an astronaut who is a member of the armed services is a scientist but was never a test pilot
- (iii) the probability that an astronaut who is not a scientist was once a test pilot
- (iv) the probability that an astronaut who is a member of the armed services but was never a pilot is a scientist

2. There are 60 qualified applicants for teaching positions in a high school, of which some have had at least five years' teaching experience and some have not, some are married and some are single, with the exact breakdown being

	Married	Single
At least five years teaching experience	12	6
Less than five years teaching experience	24	18

If the order in which the applicants are interviewed by the principal is random,  $M$  is the event that the first applicant interviewed is married, and  $F$  is the event that the first applicant interviewed will have had at least five years' teaching experience, determine the following probabilities from the table:

- (i)  $P(M)$
- (ii)  $P(M^c)$
- (iii)  $P(F)$
- (iv)  $P(F^c)$
- (v)  $P(M \cap F)$
- (vi)  $P(M | F)$
- (vii)  $P(F | M)$
- (viii)  $P(M^c | F^c)$
- (ix)  $P(F^c | M^c)$
- (x)  $P(M^c \cap F^c)$