

1. Graham and Shaheen each go for their driving test on the same day. Their driving instructor reckons that the probability that Graham will pass is 0.55 and the probability that Shaheen will pass is 0.75.
- (a) Draw the probability tree which illustrates this (3)
  - (b) What is the probability that Shaheen and Graham will both pass the test? (2)
  - (c) What is the probability that Graham will pass but Shaheen will not pass? (2)
  - (d) What is the probability that one of them, but only one of them, will pass? (3)
2. A game uses two dice: a red die and a blue die.
- To win, Ava needs to throw less than six on the red die and more than two on the blue die.
- (a) Draw the probability tree. (4)
  - (b) What is the probability that Ava will *not* make a winning throw? (3)
3. In the game “Beat your neighbour out of doors” (it has other names as well) the fifty two cards in a pack are divided into twelve “faces” (four Jacks, four Queens, four Kings) and forty “pips”.
- Each player in turn puts down single cards until one of them turns up a Face. Then the next player has to put down one card on a Jack, two cards for a Queen, or three for a king. If the second player turns up a Face during this process, s/he stops. If *none* of the cards placed on top of the picture is itself a face card, the first player scoops the pile.
- Adam has just put down a Queen as the first card in the game.
- Beth is about to put down cards on top of it.
- (a) Use a tree diagram to show the possible outcomes and their probabilities. (5)
  - (b) What is the probability that Adam will scoop the pile? (1)
  - (c) What is the probability that Beth will play only one card and then stop? (2)