Product Rule for Counting

(a) How many ways are there of arranging the word MATHS?
(b) Ishaq wants to make a PIN code from the digits 1, 3, 5 and 7, using each digit once only. How many different PIN codes can he make?
(c) How many different numbers can be made from the digits 2, 3, 4, 5 and 6?

(a) 10 people are called for an interview. How many ways are there of arranging the order of the interviews?
(b) 8 flags are to be flown outside a building hosting a world leaders' conference. How many ways are there for arranging the flags?
(c) At a dog show, there is a gold, silver and bronze certificate for three top dogs. If 20 dogs enter, how many ways are there of awarding the certificates?

(a) Using the digits 5, 6, 7 and 8 once each, how many possible numbers can be made that are multiples of 5?
(b) Using the numbers 2, 3, 5, 7 and 9 once each, how many even numbers is it possible to make?

Dr Austin randomly chooses 2 of her 24 students to compete in a quiz against Mrs Barber's class.
(a) How many ways are there of Dr Austin selecting her 2 students?
Mrs Barber has 26 students in her class and must also select 2 students at random.
(b) How many different possible selections of the 4 students competing in the quiz are there?