Probability Rules

The "AND" and "OR" Rule	
The probability that **A and B** both occur	P(A and B) = P(A) × P(B)
The probability that either **A or B** occur	P(A or B) = P(A) + P(B)

Instructions: Answer the probability questions below.

	In your closet, there are fourteen blue shirts, eight black shirts, three white shirts, four pink shirts and one red shirt. There are also three pairs of black pants and five pairs of blue pants.
1	What is the probability of selecting a blue shirt with black pants?
2	What is the probability of selecting a red, black, pink or white shirt?
3	What is the probability of selecting a white or pink shirt with blue pants?
4	What is the probability of wearing all black on two separate days?

Hannah and Cedric play a game with marbles. In a bag, there are sixteen red, thirteen blue, nine orange, five yellow and six green marbles. For each marble picked, there is a one in three chance that the player may change their mind and pick a new marble.

1 What is the probability that a green, blue or orange marble is picked?

2 What is the probability that Hannah picks a yellow or red marble but then changes her mind?

3 What is the probability that Cedric picks a blue, red or green marble but then changes his mind?

A 560-piece jigsaw puzzle has equal numbers of pink, purple, green, blue, white, black and yellow pieces. Three quarters of all these pieces form an image when joined together, with the rest of the pieces forming the background.

1 What is the probability that a jigsaw piece chosen at random is pink or white?

2 What is the probability that a jigsaw piece chosen at random is a purple image piece?

3 What is the probability that a jigsaw piece chosen at random is a black, blue or green and is a background piece?

Probability Rules

The "AND" and "OR" Rule	
The probability that **A and B** both occur	$P(A \text{ and } B) = P(A) \times P(B)$
The probability that either **A or B** occur	$P(A \text{ or } B) = P(A) + P(B)$

Instructions: Answer the probability questions below.

	A group of 96 men work at a factory. During a working day, a worker will be involved in an accident one out of six times. These accidents are not serious three quarters of the time. In addition, the probability of a worker working over-time on a given day is 50%.
1	What is the probability that a worker will work over-time and be involved in an accident?
2	What is the probability that a worker will not work over-time and will not be involved in an accident?
3	What is the probability of a worker being involved in a non-serious accident or working over-time?
4	What is the probability of a worker being involved in a serious accident while working during normal hours?

In a study of 132 drivers (84 females, 48 males), 22 of them have never received a traffic ticket. Two thirds of these drivers are young.

1	What is the probability that a female driver never received a traffic ticket?
2	What is the probability that a driver is young or male?
3	What is the probability of an older driver has received a traffic ticket?

A Year 7 cohort (60 females, 48 males) was surveyed about the type of sport they like. In this survey, a student can choose to tick one or more sport. In total, an eighth of students chose basketball, a sixth chose soccer, a third chose tennis and the remaining ticked *other*. Three quarters of students ticked more than one sport.

1	What is the probability that a student is female or ticked one sport?
2	What is the probability that a student only ticked *other?*
3	What is the probability that a male student ticked basketball and soccer?