

## As outcomes, Year 8 pupils should, for example:

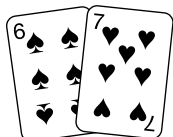
Know that if the probability of an event occurring is  $p$ , then the probability of it not occurring is  $1 - p$ .

Use this to solve problems. For example:

- Consider a pack of 52 playing cards (no jokers). If the probability of drawing a club from a pack of cards is  $\frac{1}{4}$ , then the probability of drawing a card that is not a club is  $1 - \frac{1}{4}$ , or  $\frac{3}{4}$ .

Calculate the probability that a card chosen at random will be:

- a red card;
- a heart;
- not a picture;
- not an ace;
- either a club or a diamond;
- an even numbered red card.



- There are 25 cars parked in a garage. 12 are red, 7 blue, 3 white and the rest black. Calculate the probability that the next car to leave the garage will be:
  - red;
  - blue;
  - neither red nor blue;
  - black or white.
- A set of snooker balls consists of 15 red balls and one each of the following: yellow, green, brown, blue, pink, black and white. If one ball is picked at random, what is the probability of it being:
  - red?
  - not red?
  - black?
  - not black?
  - black or white?
- Imrad threw a dart at a dartboard 60 times. Each time the dart hit the board. The maximum score for one dart is treble twenty. Imad scored treble twenty 12 times.

Imrad is going to throw the dart once more.

Estimate the probability that:

- he will score treble twenty;
- he will score less than 60.

Give your reasons.

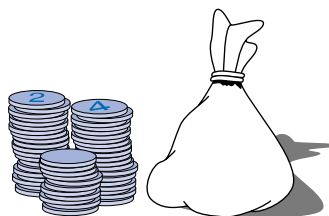
[Link to problems involving probability \(pages 22–3\).](#)

## As outcomes, Year 9 pupils should, for example:

Know that the sum of probabilities of all mutually exclusive outcomes is 1.

Use this to solve problems. For example:

- A number of discs are placed in a bag.



Most are marked with a number 1, 2, 3, 4 or 5. The rest are unmarked.

The probabilities of drawing out a disc marked with a particular number are:

$$\begin{aligned} p(1) &= 0.15 \\ p(2) &= 0.1 \\ p(3) &= 0.05 \\ p(4) &= 0.35 \\ p(5) &= 0.2 \end{aligned}$$

What is the probability of drawing a disc:

- marked 1, 2 or 3?
- not marked with a number?

- In an arcade game only one of four possible symbols can be seen in the final window. The probability of each occurring is:

Symbol	Probability
jackpot	$\frac{1}{16}$
moon	$\frac{1}{4}$
star	?
lose	$\frac{1}{2}$

- What is the probability of getting a star?
- What event is most likely to happen?
- What is the probability of not getting the jackpot?
- After many games, the jackpot had appeared 5 times. How many games do you think had been played?

[Link to problems involving probability \(pages 22–3\).](#)