

**Age 14+ Level ★★  
Worksheet 1****1. Odd Dice**

Three fair, six-sided dice are numbered as follows:

A: 1, 1, 1, 2, 2, 2

B: 3, 3, 4, 4, 5, 5

C: 6, 7, 7, 8, 8, 8

The three dice are rolled once.

What is the probability that the sum obtained is an odd number?

**2. Takeaway Time**

35 teenagers were asked what takeaways they liked to eat.

24 answered Chinese

16 answered Indian

10 answered pizza

None of the teenagers liked all three. All who liked pizza also liked Chinese, and 9 of the Chinese fans didn't like either Indian or pizza.

If all the teenagers liked at least one, how many liked only Indian?

**3. XOXOXO**

3 tiles with the letter X on them and 3 tiles with the letter O on them are placed in a row. The order is chosen at random.

What is the probability that no two adjacent tiles have the same letter on them?

**4. CD Collection**

I have 3 Elvis Presley CDs, 2 Beatles CDs and 1 Queen CD.

How many different ways can they be lined up on a shelf if I must keep all the CDs by the same artist together?

**5. Switch On**

In how many different ways can a row of five "on/off" switches be set so that no two adjacent switches are in the "off" position?

**6. One or Both?**

A maths exam contained only two questions.

Every pupil correctly answered at least one of the questions.

Question one was correctly answered by 70% of the pupils.

Question two was correctly answered by 60% of them.

Nine pupils correctly answered both questions.

How many pupils took the exam?

*These problems are adapted from UKMT ([ukmt.org.uk](http://ukmt.org.uk)) and WMC ([competition.ac](http://competition.ac)) problems.*