



Sample

# Mathematics

## Short Course



**ASDAN**



Mathematics®  
Education  
Innovation

Student name:

Centre name:

ASDAN tutor:



Developed in association with MEI (Mathematics in Education and Industry), with grateful thanks to them for authoring and providing content expertise.

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# Mathematics Short Course

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# Achieving your Short Course

How long will the Short Course take?	Hours	Credits
You have the option of accrediting up to 60 hours of Mathematics activities. For every 10 hours, you are awarded one credit, for example:	10	1
	30	3
	60	6

These credits can contribute towards other programmes and qualifications.

The **Mathematics Short Course** can lead to:

**ASDAN Personal Development Programmes**  
(Bronze, Silver, Gold or Universities)

**ASDAN Qualifications (Levels 1 and 2)**

AoPE (Award of Personal Effectiveness) Levels 1 and 2

CoPE (Certificate of Personal Effectiveness) Levels 1 and 2

and could eventually lead on to:

**ASDAN Qualifications (Level 3)**

CoPE (Certificate of Personal Effectiveness) Level 3

## What must I do?

**Read through** these introductory pages carefully.

**Look at the modules and challenges** and decide which challenges you wish to complete – your tutor will be able to help you decide.

**Create an evidence portfolio** to safely store all the material you'll need to have in place before your tutor can claim your Short Course certificate.

**Plan, organise and carry out** your chosen challenges, collecting evidence as you go and storing it safely in your evidence portfolio.

**Before asking your tutor to check your work** and claim your certificate make sure your portfolio contains the following:

1. A student book
2. A completed Record of Progress (page 5)
3. Evidence for each challenge completed
4. The correct number of Short Course Skills Sheets (see pages 43-50)
5. A completed Summary of Achievement (yellow centre pages)
6. A completed Personal Statement (yellow centre pages)

## What will I need?

- Your own copy of this Short Course book
- A portfolio (file or folder), into which you will put your evidence

## Information for tutors

To download guidance documents, go to:  
**[members.asdan.org.uk/my-courses/short-courses](https://members.asdan.org.uk/my-courses/short-courses)**

A Quick Guide to ASDAN Short Courses contains step-by-step guidance for delivering any Short Course, from registering with ASDAN to certification.

The Mathematics Short Course Tutor Notes provide challenge-by-challenge advice, lesson ideas and suggested resources.



# Recording Your Skills

## Recording your skills

Next to each challenge is a set of tick boxes where you can record the skills you have been developing during the activity.

These help you link your achievements to the national standards for these skills.

Mathematics activities provide an excellent opportunity to develop the skills of:

- Learning
- Teamwork
- Coping with Problems
- Use of IT
- Use of English
- Use of Maths

## The importance of Key/Core Skills

These are an everyday part of adult and working life. You need to be able to make yourself understood when speaking and writing, planning your own learning, working with others, carrying out basic calculations and using information technology.

Every job needs some or all of these skills and they are just as useful in Further and Higher Education.

## Learning

This skill is about how you manage your personal learning and development. It is about planning and working towards targets to improve your performance and reviewing your progress.

## Teamwork

This skill is about how you work with others when planning and carrying out activities to get things done and achieving shared objectives. This will involve working with a group of people.

## Coping with Problems

This skill is about recognising problems and doing something about them. It is about using different methods to find a solution and checking to see if they work.



## Use of IT

This skill is about being able to make the best use of computers and other items such as printers, scanners and digital cameras. Being familiar with how to use this equipment is vitally important, not only in the workplace but also in the home.

## Use of English

This skill is not only about how you talk to people but also about the ways you find out information and let other people know about your views and opinions. It also includes all aspects of writing and reading.

## Use of Maths

This skill is about your ability to use numbers. If, for example, you've measured or calculated something you will have used numeracy skills. Being able to use numbers is a skill highly valued by employers; many of the challenges in this Short Course will give you opportunity to practise your numeracy skills.



# Module 1

## Probability and Statistics

Sample



# Module 1

## Probability and Statistics

**Section A:** Complete at least FOUR challenges over 10 hours (1 credit)

**1** Keep a record of how you use your time every day for a week. Make charts to show the percentage of time you spend on each type of activity.

Compare your charts with other people's and write **five** statements that compare how much time you each spend on different activities.

- Skills I used:**
- Learning
  - Teamwork
  - Coping with Problems
  - Use of IT
  - Use of English
  - Use of Maths

**2** Find data about the weather each day for one month in **three** holiday destinations and in your home area. Collect data for at least three measures (e.g. rainfall, sunshine, minimum temperature) and compare your results.

State where you would most like to be that month and give reasons for your choice.

- Skills I used:**
- Learning
  - Teamwork
  - Coping with Problems
  - Use of IT
  - Use of English
  - Use of Maths

**3** Investigate the relationship between height and shoe size by asking or measuring at least 20 people. Draw a scatter graph of your results and explain your conclusions.

- Skills I used:**
- Learning
  - Teamwork
  - Coping with Problems
  - Use of IT
  - Use of English
  - Use of Maths



# Module 3

## Number

Sample



# Module 3

## Number

**4** Find out the value of the pound against the Euro, the US dollar and one other currency.

Make a table and a graph that a tourist from another country could use to convert between currencies when on holiday in London. Use your table to give the cost of **five** common purchases in the tourist's own currency.

- Skills I used:**
- Learning
  - Teamwork
  - Coping with Problems
  - Use of IT
  - Use of English
  - Use of Maths

**5** Choose **three** models of car or motorbike and find out the price of each vehicle when new, when one year old and when five years old. Calculate the percentage depreciation for each model:

- for the first year; and
- over the full five-year period

Choose one car and draw a graph of its price against year. Using the graph, predict the price when the car was three years old and see how close you were.

- Skills I used:**
- Learning
  - Teamwork
  - Coping with Problems
  - Use of IT
  - Use of English
  - Use of Maths

**6** Create a puzzle using a crossword grid and numbers. Your 'crossnumber' should be a grid of no more than 12 by 12 and should have one digit in each box. Write all your clues below the grid and swap your puzzle with someone else's to try them out.

Remember that crossword grids have some blacked out squares and are usually arranged symmetrically.

- Skills I used:**
- Learning
  - Teamwork
  - Coping with Problems
  - Use of IT
  - Use of English
  - Use of Maths

**7** Other agreed challenge:

- Skills I used:**
- Learning
  - Teamwork
  - Coping with Problems
  - Use of IT
  - Use of English
  - Use of Maths



# Module 6

## Mathematical Discovery

Sample



# Module 6

## Mathematical Discovery

**Section B:** Complete TWO challenges over 10 hours (1 credit)

**1** The first four terms of the Fibonacci sequence are:  
1, 1, 2, 3, 5

Find the next six terms and explain how you found them.

Investigate relationships between various terms in the following sequences:

- Divide each Fibonacci number by the one before it
- Divide each Fibonacci number by the one after it
- Take sets of three consecutive Fibonacci numbers – multiply the first and the third and square the middle one. State what happens
- Add together the squares of consecutive Fibonacci numbers<sup>12</sup>  
 $1^2 + 1^2$   
 $1^2 + 1^2 + 2^2$   
 $1^2 + 1^2 + 2^2 + 3^2$
- Find the products of consecutive Fibonacci numbers. State what happens.

Research where Fibonacci numbers are found in nature.

- Skills I used:**
- Learning
  - Teamwork
  - Coping with Problems
  - Use of IT
  - Use of English
  - Use of Maths

**2** A company has to make open storage boxes from cardboard. To do this, they cut squares out of the corners of a sheet of card of a particular size and fold in the edges to make a box.

They wish to manufacture the box that has the largest volume, starting with a square measuring 30cm x 30 cm. Find the length of the side of the square that must be cut out from each corner to maximise the volume.

Investigate how to maximise the volume of a box when you start with different sizes of sheets of cardboard – both squares and rectangles.

Illustrate your work with nets, tables and graphs.

- Skills I used:**
- Learning
  - Teamwork
  - Coping with Problems
  - Use of IT
  - Use of English
  - Use of Maths

# Adding Value

Your Mathematics Short Course is recognised with an ASDAN certificate, and has a credit rating to reflect the time you have spent on Mathematics activities. This course can also be linked to other programmes and qualifications, which add value and give you further options for continuing to develop your skills and experience.



★ If you are aiming to achieve any of these qualification outcomes you should seek advice from ASDAN before starting your Mathematics Short Course.

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