

# Questionmark Thinking Skills by Cambridge Assessment – Test Specification

## Introduction

Applicants for university courses and the workplace have studied a wide range of qualifications, bring a wide variety of experience and come from very different backgrounds. To assess their ability to thrive in their chosen courses or role, universities and employers ask applicants, as part of the overall application process, to take the Questionmark Thinking Skills by Cambridge Assessment (QM Thinking Skills).

QM Thinking Skills is an assessment of two important, widely applicable, generic skills:

### *Problem Solving – reasoning using numerical and spatial skills*

Many of the problems encountered in academic and professional work are novel. No ready 'off-the-peg solution' is available. The task is to find or create a solution.

There are three kinds of Problem Solving question in the test, each assessing a key aspect of insight into unfamiliar problems. The questions require them to select relevant information from a larger pool of data, find a procedure to solve an unfamiliar problem, and identify a similar pattern in data presented in the form of a diagram, table or geometric shape.

Although most questions fall into one category, some questions fit into one or more of the categories.

### *Critical Thinking – reasoning using everyday written language*

The skill of Critical Thinking is essential for many areas of professional work, where we are often required to consider an argument put forward to promote or defend a particular point of view. Whatever the subject of study or role in the workplace, it is necessary to understand the arguments presented by others and to be able to assess whether they establish their claims.

Arguments can be complex in structure and lengthy. But whatever their length and complexity, there are certain skills involved in understanding and evaluating arguments. These include: drawing and summarising conclusions, identifying assumptions and reasoning errors, and assessing the impact of additional evidence.

## Overview of the test

Both Problem Solving and Critical Thinking are assessed by multiple-choice questions. In each case a stimulus is presented, followed by the stem (question) and five options. One of the options is the correct answer (key) and the remaining four options (distractors) are wrong.

In the case of the Critical Thinking questions, the stimulus is a passage of text. In Problem Solving, the stimulus may include a diagram, a table of information (a railway timetable for example), or a graph. The options may also be graphs or diagrams.

The standard test consists of 50 multiple-choice questions to be taken in the time allowed of 90 minutes. Marks are not deducted for incorrect answers, so candidates are asked to attempt all questions. The questions vary in difficulty, with some being widely accessible, while others are designed to challenge the very best candidates.

The standard test contains 25 Problem Solving questions and 25 Critical Thinking questions. Tests are delivered in computer-based format, via the Questionmark platform.

The questions are presented roughly in order of difficulty, with the different types of Problem Solving and Critical Thinking questions interspersed throughout the test, so that candidates who do not finish in the time allowed will have been exposed to a fair balance of the different styles of question.

Calculators and dictionaries are **NOT** permitted.

## The mathematical knowledge and skills needed

QM Thinking Skills does not require a lot of preparation or additional study. It is a test of skills that students already possess, not their prior curriculum knowledge. Applicants are only required to know basic mathematical knowledge and skills they will have typically learnt at school. These include the following:

## Number concepts

- simple fractions
- place value (for example, knowing that the "5" in "7654" indicates "50")
- ideas about percentages (for example, the idea that 1% could be thought of as "1 in every 100", and that if 20% of a group of adults are men, 80% must be women)

## Numerical operations

- the four rules of number (addition, subtraction, multiplication, division)
- percentage operations (for example, if something was sold at £10, and is now advertised at "20% off", how much would the customer pay?)
- calculations in everyday contexts (complex calculations with fractions and decimals are not required)

## Quantities

- time and the calendar
- money
- measures as shown below:

Length	Weight	Area	Volume (capacity)
Kilometre (km)	Kilogram (kg)	Centimetre square (cm <sup>2</sup> )	Cubic centimetre
Metre (m)	Gram (g)	Metre square (m <sup>2</sup> )	Litre (l)
Centimetre (cm)			Gallon
Millimetre (mm)			

Knowledge of the following relationships is also required:

$1 \text{ km} = 1000 \text{ m}$

$1 \text{ m} = 100 \text{ cm}$

$1 \text{ cm} = 10 \text{ mm}$

$1 \text{ kg} = 1000 \text{ g}$

Also required is knowledge of the terms for measurements which are used informally in daily life (e.g. feet, miles), but numerical relationships for these measures (e.g. 12 inches = 1 foot) are not required.

## *Space and spatial reasoning*

- area (including the calculation of the area of a rectangle)
- perimeter (including calculation)
- volume (including the calculation of the volume of a box)
- reflections (in mirrors) and rotations of simple shapes
- two-dimensional (2D) representations of three-dimensional (3D) shapes (for example, being able to interpret a "bird's eye view" of a house).

## *Generalization*

Recognition that some operations are generalisable, for example, that converting 24 to 3 and 40 to 5 both involve division by 8 (formal algebra is not required).

## *Tables and graphs*

- extracting information from graphs
- extracting information from tables



## About Questionmark

Questionmark provides a secure enterprise-grade assessment platform and professional services to leading organizations around the world, delivered with care and unequalled expertise. Its full-service online assessment tool and professional services help customers to improve their performance and meet their compliance requirements. Questionmark enables organizations to unlock their potential by delivering assessments which are valid, reliable, fair and defensible.

Questionmark offers secure powerful integration with other LMS, LRS and proctoring services making it easy to bring everything together in one place. Questionmark's cloud-based assessment management platform offers rapid deployment, scalability for high-volume test delivery, 24/7 support, and the peace-of-mind of secure, audited U.S., Australian and European-based data centers.

## About Cambridge Assessment

Cambridge Assessment Admissions Testing offers a range of tests to support selection and recruitment for higher education, professional organizations and governments around the world.

- Underpinned by robust and rigorous research, our assessments include:
- assessments in thinking skills
- admissions tests for medicine and healthcare
- behavioural styles assessment
- subject-specific admissions tests

They are part of a not-for-profit department of the University of Cambridge.

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