Transferable skills subject interpretation for the Pearson Edexcel International GCSE in Further Pure Mathematics (9-1)

Transferable skills will help students cope with the different demands of degree study and provide a solid skills base that enables them to adapt and thrive in different environments across educational stages; and ultimately into employment.

A good international education should enable students to start developing transferable skills as early as possible. Developing these transferable skills where they naturally occur as part of the International GCSE curriculum can help build learner confidence and embed the importance of this well-rounded development. This builds the foundations to ensure students are ready for A-level and higher education.

Our approach to enhancing transferable skills in our International GCSEs ensures that it is not only the academic and cognitive skills that are developed, but those broader elements that universities highlight as being essential for success. Skills such as self-directed study, independent research, self-awareness of own strengths and weaknesses and time-management are skills that students cannot learn from a textbook but have to be developed through the teaching and learning experience that can be provided through an international curriculum.

To support the design of our qualifications, the Pearson Research Team selected and evaluated seven global 21st-century skills frameworks. Following on from this process, we identified the National Research Council's (NRC) framework as the most evidence-based and robust skills framework.

In the tables below, we have taken the NRC framework skills and provided an explicit definition of how each skill can be interpreted for this subject. This will enable teachers and learners to understand examples of how they can develop each skill through this International GCSE.

Intrapersonal skills	
Intellectual Openness	
Adaptability	Ability to select and apply knowledge and understanding of mathematical processes (that which is not prompted or provided) to unseen mathematical problems.
Personal and social responsibility	Using mathematical knowledge and skills to solve a problem for which one is accountable.
Continuous Learning	Planning and reflecting on own learning-setting goals and meeting them regularly
Intellectual interest and curiosity	Identifying a problem under own initiative, planning a solution and carrying this out.
Work ethic/conscientiousness	
Initiative	Using mathematical knowledge, independently (without guided learning), to further own understanding.
Self-direction	Planning and carrying out mathematical-based problem-solving under own direction.
Responsibility	Taking responsibility for any errors or omissions in own work and creating a plan to improve.
Perseverance	Actively seeking new ways to continue and improve own learning despite setbacks.

Interpersonal skills	
Teamwork and collaboration	
Communication	Able to communicate a mathematical process or technique (verbally or written) to peers and teachers and answer questions from others.
Collaboration	Carrying out a peer review to provide supportive feedback to another.
Teamwork	Working with other students in a maths-based problem solving exercise.
Co-operation	Sharing own resources and own learning techniques with other students.
Interpersonal skills	Using verbal and non-verbal communication skills in a dialogue about mathematics.
Leadership	
Leadership	Leading others in a group activity to effectively solve a mathematical problem
Responsibility	Taking responsibility for the outcomes of a team exercise even if one is not solely responsible for the output.
Assertive communication	Chairing a debate, allowing representations and directing the conversation to a conclusion.

Cognitive skills	
Cognitive Processes and Strategies	
Critical thinking	Using **many** different pieces of mathematical information (sometimes seemingly unrelated) and synthesising this information to arrive at a solution to a mathematics-based problem.
Problem solving	Translating problems in mathematical or non-mathematical contexts into a process or a series of mathematical processes and solve them.
Analysis	Examining and understanding different elements of a mathematical context or different mathematical processes.
Reasoning	Making abstract deductions and draw conclusions from mathematical information.
Interpretation	Analysing mathematical information and understanding the meaning of that information, for example interpreting straight line conversion graphs.
Decision Making	Selecting a mathematical process from a series of mathematical processes to solve a problem.
Adaptive learning	Adapting a mathematical strategy to solve a context based mathematical problem.
Executive function	Planning how to solve a problem, carrying out the plan and reviewing the outcome.
Creativity	

Productivity	Using mathematical strategies and problem solving skills fluently.
Self-regulation (metacognition, forethought, reflection)	Developing and refining a strategy over time for solving a problem, reflecting on the success or otherwise of the strategy.
Ethics	Producing output with a specific moral purpose for which one is accountable.
Integrity	Taking ownership for own work and willingly responds to questions and challenges.
Positive Core Self Evaluation	
Self-monitoring/self-evaluation/self-reinforcement	Planning and reviewing own work as a matter of habit.

Self-presentation	Presenting a mathematical problem to an audience to seek solutions.

Creativity	Using own learning to apply mathematical processes and link these together to prove and validate mathematical concepts. Uses a different, unexpected mathematical process to arrive at an answer.
Innovation	Using a novel strategy to solve a previously unseen mathematical problem.