Differential Aptitude Test (D.A.T.s)

An aptitude test is an instrument used to determine and measure an individual's ability to acquire, through future training, some specific set of skills. There are several aptitude tests on the market, and the one chosen is called the *Differential Aptitude Test*. This test covers several areas including, Verbal Reasoning, Numerical Ability, Abstract reasoning, Perceptual Speed and Accuracy, Mechanical Reasoning, Space Relations, Spelling, and Language Use. The tests are performed under exam conditions and are strictly timed. All questions have a definite right or wrong answer. Very few candidates usually complete the entire test and the questions usually become progressively more difficult. The test is also age related.

These tests can be used to help an individual

1. Chose among educational and career options based on strengths and weakness
2. Help an individual understand why they do well or poorly in certain subjects.
3. Can suggest new career options not previously considered.
4. Change or raise educational and career aspirations.

They cannot however, pinpoint one *specific* career or one *specific* subject that an individual should pursue.

All test of this nature should be viewed with extreme caution. Under no circumstance should the score be interpreted as final indisputable evidence of an individual's characteristics. The results provide only one small part of the information needed to help an individual make informed and realistic decisions and cannot be judged in isolation from other aspects of a persons character including, job and other experiences, interests, goals, personality, values, family and environmental influences. Other factors that can also influence an individual's scores are; a hearing, visual, or physical disability or a poor command of English, as well as poor health or fatigue or an emotional disturbance on the day. In addition, an individual can lose his place on the answer sheet or may simply not be interested in cooperating with the exercise, or indeed, may simply be in bad humour on the day. Finally, it needs to be remembered that an individual can have an aptitude for a particular area but have no interest in it, and conversely, may have a low aptitude in area a have an extreme interest or liking for it.

Percentile and Stanine

When an individual takes a test the results a produced are raw scores. For example, if a candidate scores 17 in a test it has very little meaning unless it know how this score relates to the total possible score. It is common therefore, to convert scores to percentages as this gives an indication as to how the candidate performed relative to a total possible score. However, percentages can themselves be misleading. For example, if a candidate scores 90% in a test, this might seem to be a very good score, but, if all the other candidates score 95%, this puts a different perceptive on this score of 90%. Therefore two systems are used to convert raw scores to a system that gives meaning to the result in terms of (i) the total possible score, (ii) the score relative to the score obtained by other candidates. These two systems are referred to as, *percentiles* and *stanine*.

A percentile score indicates the percentage of candidates who fall below a particular raw score. A score, which falls at the 65th percentile, means that an individual's score

is better than 65% of the students. A 95th percentile score means that an individuals score is greater then 95% of the students, or, that this student's score is in the top 5% of students.

Stanine scores is a range expressed as a series of single digits numbers between 1 and 9, were 4 to 6 represents an average score. Percentile scores can be used in conjunction with stanine score as outlines below.

	Stanine	Percentile
Very high	9	97 and above
Above average	8	90-96
	7	78-89
Average	6	59-77
	5	41-58
	4	23-40
Below average	3	12-22
	2	5-11
Very low	1	4 and below

Verbal Reasoning

This test measures the ability of a student to see relationships among words. The test consists of analogies.
For example: …….is to bark as cat is to …….

Select one of the following answers.

A maiow ------- kitten
B dog --------miaow
C dog ------scratch
D seal -------- kitten
E tree -------- Scratch

This test assesses the ability to infer the relationship between the first pair of words and apply the relationship to the second pair of words.
Verbal reasoning may be useful in helping to predict success in academic courses as well as in occupations where accurate communication is important. This includes business, law, education, marketing, public relations, the arts, and journalism. It has particular relevance for English, Irish, and other languages, as well as History. In these areas of study a great deal of reading is involved. Those with well-developed verbal reasoning will usually be good at finding the words to explain ideas and will be able to interpret written and spoken instructions. They will also be able to absorb lectures without losing concentration or becoming confused or left behind.
If a percentile in verbal reasoning is below 10, a student may be entitled to learning support from within the school. If the score is below 9 he should apply for a waver in state exams, if below 2, he should apply for resource hours.

Numerical Ability

This test measures the ability to perform mathematical reasoning tasks. In order to ensure that reasoning rather than a computational facility is stressed, the computational level of the problem is low.

For example: $16x^2 + 4y^2 + 3x^2 =$

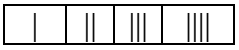
A $19x^2 + 4y^2$
B $19x^4 + 4y^2$
C $23x^2y^2$
D $23x^4y^2$
E None of these

Numerical reasoning is important for success in courses such as mathematics, physics, chemistry, accounting, actuary, economics, engineering, trades such as electrician, and carpentry as well as banking, insurance, computing, and surveying. For general business courses – all of which have some mathematical component – good numerical reasoning can prove valuable. Those with high numerical reasoning will enjoy using numerical/statistical data and use these creatively and accurately. The numerical score alone is not enough to predict ability in honours Maths which also requires a high level of abstract reasoning

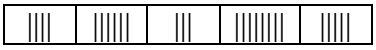
Abstract Reasoning

This test is a non-verbal measure of reasoning ability. It assesses how well individuals can reason geometric shapes or design. Each test item is a geometric series in which the elements change according to a given rule. The student is asked to infer the rule/s that are operating and predict the next step in the series.
For example

Problem Figures



Answer Figure
Select the next figure in the sequence



A **B** **C** **D** **E**

This type of abstract reasoning is a measure of an individual's logical, analytical, and conceptual skills. This skill is important in courses or occupations that require the ability to see relationships among objects in terms of their size, shape, position, and quantities, and where the ability to analyse dynamic changes and project them forward in time. Examples include mathematics, computer programming, architecture, and mechanics, as well as law, medicine and economics. It is also useful in courses such as economics that requires an individual to envisage cause and effect in situations were it is important to predict the future based on past events and trends, for example, market trends in the financial sector. Individuals with good abstract reasoning will usually work out problems for themselves and will often challenge ideas that fail to be convincingly though through or explained.

Perceptual Speed and Accuracy

This test measures the ability to compare and mark written lists quickly and accurately. This test may predict success in certain kinds of routine clerical tasks, such as filing and coding. Good scores are also desirable for certain jobs involving technical and scientific data.

Example: The following list is given to the student. The list is then repeated on the answer sheet. The student is instructed to mark off the underlined combination on a separate answer sheet.

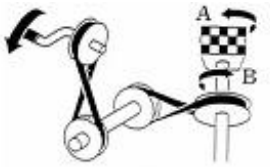
A	AB AC AD Ae AF
B	aA aB Ba BA Bb
C	A7 7A B7 7B AB

This aptitude tests can also be used to predict hand eye coordination and is carried out under strict time conditions. A high score can be useful in areas such as secretarial work, administration, pilot, computing, accounting, and finance related areas.

Mechanical Reasoning

This test measures the ability to understand basic mechanical principles of machinery, tools, and motion. Each item consists of a pictorially presented mechanical situation and a simply worded question. Items require reasoning rather than special knowledge.

Example: When the handle is moved in the direction of the arrow, in which direction will the paddle turn, A or B.

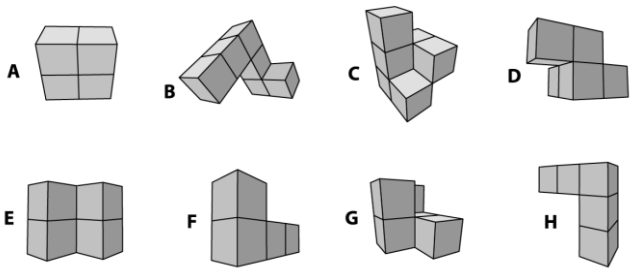


Those who do well in this test find it easy to learn how to repair and operate complex devices. Occupations such as carpenter, mechanic, engineering, electrician, physics, chemistry, and machine operator are among those that require good mechanical reasoning.

Space Relations

This test measures the ability to visualise a three-dimensional object from a two-dimensional pattern and to visualise how this object would look if rotated in space. Each problem shows one pattern, followed by four three-dimensional figures. The student is asked to choose the one figure that can be made from the pattern.

Example: The student is show a 3 D shape and asked to fold it (in his mind) and the select the resulting shape from the options below.



Occupations in which an individual is required to imagine how an object would look if made from a given pattern include, architecture, design courses, carpentry, civil and mechanical engineering, medicine, physiotherapy, and dentistry. Individuals can have a high score in space relations and not be good at art; however, a good art student would normally have a high score in space relations. This aptitude is not a measure of artistic creativity.

Spelling

This test measures how well the student can spell common English words. The words are presented in a format that includes three correctly spelled words and one misspelled word. The misspelled words reflect the most plausible and commonly made errors identified by a major research study.
Example: Which word is *not* spelled correctly?

A cycle
B gurl
C arrow
D wrote

The ability to spell is a basic skill necessary in many academic and vocational pursuits. It is also a helpful skill in courses that requires written reports. A low score can cause difficulties in courses where essay writing is an important component.

Language Use

This test measures the ability to detect errors in grammar, punctuation, and capitalization. The test consists of sentences that divide into four parts. The student must choose whether one part has an error in punctuation, capitalization, or grammar, or whether the sentence is correct as written.

Example:

Jason and Carl / will be mowing / the lawn / this Weekend
A **B** **C** **D**

E No error

Well-developed language skills are needed in most jobs requiring a college degree. Careers in writing and teaching require a high level of ability in this area. Other areas include, secretarial work, law, writers, librarian, and editors.

Educational Aptitude (Verbal Reasoning and Numerical reasoning)

This combines the scores from verbal and numerical reasoning above. The resulting score provides the best general measure of educational aptitude or the ability to learn from books and teachers and to perform well in academic subjects.

Caution

Here are some examples of scores from past students (A to J) and the resulting points scored in their Leaving Certificate. Therefore, there must be something else contributing to exam success and, more importantly, success in a career.

	A	B	C	E	F	G	H	I	J
Verbal reasoning	90	37	92	93	25	10	5	80	56
Numerical Ability	91	94	97	99	17	17	50	78	60
Abstract Reasoning	89	42	96	98	42	66	38	50	94
Speed & Accuracy	90	92	68	80	60	90	55	89	21
Mechanical Reasoning	95	58	99	82	4	54	11	90	65
Space Relations	96	51	95	99	45	89	11	88	96
Spelling	88	99	99	81	60	23	32	87	40
Language Use	90	90	85	76	47	27	23	88	40
Educational Aptitude	90	70	97	99	18	12	20	90	45
Points In The Leaving Cert.	600	580	490	450	405	330	310	250	220
Each year 50,000+ students sit the Leaving Certificate and the average points scored nationally is 310									

Remember aptitude tests do not measure many other qualities that are vital in successful careers such as,

- Determination to succeed
- Enthusiasm and confidence
- Energy to work long hours to achieve objectives
- Determination to identify and find solutions to problems
- Integrity, loyalty, and honesty
- Commercial and entrepreneurial instinct
- Initiative, creativity, and inventiveness
- Ability to persuade and motivate others
- Team spirit
- Leadership
- Ability to help others succeed
- Empathy
- Forward planning
- Refusal to accept defeat
- Sense of humour
- Int*ra*personal skills
- Int*er*personal skill
- Having fun
- Being socially responsibility
- Having the skill to make friends
- Independence
- Impulse control
- Stress tolerance
- Being realistic
- Optimism
- Self-regard
- Flexibility and adaptability
- Being grateful
- Self-actualisation (go look it up!)

Success is not about how smart your are, but how are you smart*!

***** and it is not usually measurable by a test.