

**SCIENTIFIC THOUGHT**

**ORIGINAL CREATIVITY**

PART A: SCIENTIFIC THOUGHT - 45%			PART B: ORIGINAL CREATIVITY - 25%							
EXPERIMENT	INNOVATION	STUDY	RANK 1 (low)		RANK 2 (fair)		RANK 3 (good)		RANK 4 (excellent)	
An investigation undertaken to test a scientific hypothesis using experiments. Experimental variables, if identified, are controlled to some extent.	The development and evolution of innovative devices, models, techniques, or approaches in technology, engineering or computers (hardware or software)	A collection and analysis of data to reveal evidence of a fact or a situation of scientific interest. It could include a study of “cause and effect” relationships or theoretical investigations of scientific data.	Little imagination shown. Project design is simple with minimal student input. A textbook or magazine type project.		Some creativity shown in a project of fair to good design. Standard approach using common resources / equipment. Topic is current or a common one.		Imaginative project. Good use of available resources. Well thought-out and above the ordinary approach. Creativity in design and use of materials.		A highly original project or a novel approach. Shows resourcefulness. Creativity in design, use of equipment and / or construction of project.	
<b>Level 1 (low)</b> Duplicating a known experiment to confirm the hypothesis. The hypothesis is totally predictable.	<b>Level 1 (low)</b> Building models or devices to duplicate existing technology.	<b>Level 1 (low)</b> Study of existing printed material related to the basic issue.	Thought 5 to 15 _____ + _____ = _____	Creativity 5 to 10 _____ + _____ = _____	Thought 5 to 15 _____ + _____ = _____	Creativity 10 to 15 _____ + _____ = _____	Thought 5 to 15 _____ + _____ = _____	Creativity 15 to 20 _____ + _____ = _____	Thought 5 to 15 _____ + _____ = _____	Creativity 20 to 25 _____ + _____ = _____
<b>Level 2 (fair)</b> Extend a known experiment through modification of procedures, data gathering and applications.	<b>Level 2 (fair)</b> Make improvements to, or demonstrate new applications for existing technological equipment or systems and justify them.	<b>Level 2 (fair)</b> Study of material collected through compilation of existing data and through personal observations. The project attempts to address a specific issue.	Thought 15 to 25 _____ + _____ = _____	Creativity 5 to 10 _____ + _____ = _____	Thought 15 to 25 _____ + _____ = _____	Creativity 10 to 15 _____ + _____ = _____	Thought 15 to 25 _____ + _____ = _____	Creativity 15 to 20 _____ + _____ = _____	Thought 15 to 25 _____ + _____ = _____	Creativity 20 to 25 _____ + _____ = _____
<b>Level 3 (good)</b> Devise & carry out an original experiment with controls. Variables identified. Some significant variables are controlled. Analysis such as graphs/simple statistics	<b>Level 3 (good)</b> Design and build innovative technology or provide adaptations to existing technology that will have human benefit and/or economic applications.	<b>Level 3 (good)</b> Study based on observations and literary research illustrating various options for dealing with a relevant issue. Appropriate analysis (arithmetic, statistical or graphical) of some significant variables.	Thought 25 to 35 _____ + _____ = _____	Creativity 5 to 10 _____ + _____ = _____	Thought 25 to 35 _____ + _____ = _____	Creativity 10 to 15 _____ + _____ = _____	Thought 25 to 35 _____ + _____ = _____	Creativity 15 to 20 _____ + _____ = _____	Thought 25 to 35 _____ + _____ = _____	Creativity 20 to 25 _____ + _____ = _____
<b>Level 4 (excellent)</b> Devise & carry out original experimental research which attempts to control or investigate most significant variables. Data analysis includes statistical analysis.	<b>Level 4 (excellent)</b> Integrate several technologies, inventions or designs, and construct an innovative technological system that will have human or commercial benefit.	<b>Level 4 (excellent)</b> Study correlating information from a variety of significant sources which may illustrate cause and effect, or original solutions to current problems through synthesis. Significant variables are identified with in-depth statistical analysis of data.	Thought 35 to 45 _____ + _____ = _____	Creativity 5 to 10 _____ + _____ = _____	Thought 35 to 45 _____ + _____ = _____	Creativity 10 to 15 _____ + _____ = _____	Thought 35 to 45 _____ + _____ = _____	Creativity 15 to 20 _____ + _____ = _____	Thought 35 to 45 _____ + _____ = _____	Creativity 20 to 25 _____ + _____ = _____