

Science DesCartes: Concepts and Processes: Scientific Process: Scientific Investigation

Skills: Hypothesize, Predict, Design Experiments

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| Students: | DesCartes Skills: (Highlight the skills related to your chosen standard/concept) |
| | RIT 231-240: <ul style="list-style-type: none"> Formulates hypotheses within the context of a scientific investigation Identifies the dependent variable in a given experimental setup |
| | RIT 221-230: <ul style="list-style-type: none"> Distinguishes between testable and nontestable hypotheses for a given experimental setup Describes results that would necessitate the revision of the hypothesis being tested Understands that the more precise a procedure is, the more likely it is that it will be replicable Determines which variable (independent or manipulated) is being tested in control setup, when this variable has been purposefully omitted from the setup Determines which variable (independent or manipulated) is being tested in a given experimental setup Determines the independent variable by examining data presented as a line graph Determines the control group in a given experimental set-up Controls variables so that only the variable being tested changes over time |
| | RIT 211-220: <ul style="list-style-type: none"> Differentiates among testable and non-testable questions Recognizes that testable questions are most useful in scientific investigations, as they can be answered by investigating Determines the hypothesis being tested, given a particular experimental setup or problem/question Formulates testable hypotheses based on data presented in a table Evaluates whether or not hypotheses are supported by data Understands that predictions are more accurate when based on trends seen in data Makes predictions within the context of a scientific investigation Classifies statements as hypotheses Determines which information should be collected in an experiment to answer a specific question Evaluates to determine which procedure will best answer a specific question or solve a specific problem Evaluates which procedure will best test a given hypothesis Evaluates and improves the quality of an experimental design Classifies the objects or persons undergoing a specific portion of an experiment as the control group Explains the importance of controlling variables in an experiment Determines which variable should be controlled in an experimental design, when given the problem or question being |

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| | studied <ul style="list-style-type: none"> Determines which variables are being controlled in a given experimental set-up |
| | RIT 201-210: <ul style="list-style-type: none"> Asks questions that define the problem to be investigated, and which will allow relevant data or information to be collected Describes characteristics of a good hypothesis Determines the hypothesis being tested, given a particular experimental setup or problem/question Formulates hypotheses for a given experimental set-up Classifies statements as predictions Distinguishes between testable and non-testable hypotheses (outside of an experimental context) Distinguishes among examples of hypotheses and observations Evaluates to determine which procedure will best answer a specific question or solve a specific problem Infers the problem being investigated in an experiment, given the setup and/or results of the experiment Evaluates and improves the quality of an experimental design Determines which variable (independent or manipulated) will be changed in the course of an investigation Determines which variable should be controlled in an experimental design, hen given the problem or question being studied Determines which variables in a particular experiment must stay the same for results to be considered valid Determines whether experiments are fair or valid, based on their design |
| | RIT 191-200: <ul style="list-style-type: none"> Asks questions that define the problem to be investigated, and which will allow relevant data or information to be collected Selects the appropriate research source to answer a specific question (e.g., personal interview, reference book, direct observation, experimental observation) Differentiates among testable and non-testable questions (terms not used) Forms hypotheses that are based on observations and data Determines which procedure will answer a specific question Understands that the type of investigation a scientist does depends on the question he or she is answering Determines which variables in a particular experiment must stay the same for results to be considered valid |

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| | RIT 181-190: <ul style="list-style-type: none">Asks questions that define the problem to be investigated, and which will allow relevant data or information to be collected |
| | RIT Below 181: <ul style="list-style-type: none">Asks questions that define the problem to be investigated, and which will allow relevant data or information to be collectedForms hypotheses that are based on real-life experience |

Lesson Title:

Standard/Concept for All:

Introduction: (Get Attention; Connect to Prior Knowledge)

For Students Ready for a Challenge:

Lesson/Activity:

Resources:

Means of Assessment:

For Most Students:

Lesson/Activity:

Resources:

Means of Assessment:

For Students Needing Extra Support:

Lesson/Activity:

Resources:

Means of Assessment:

Closure/Summary for All:

