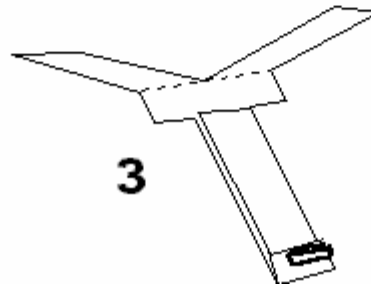
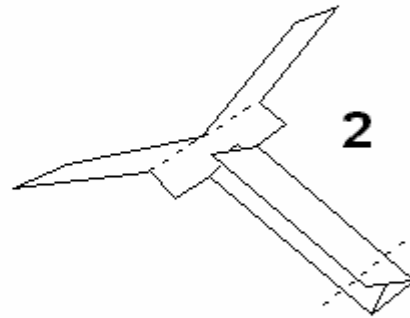
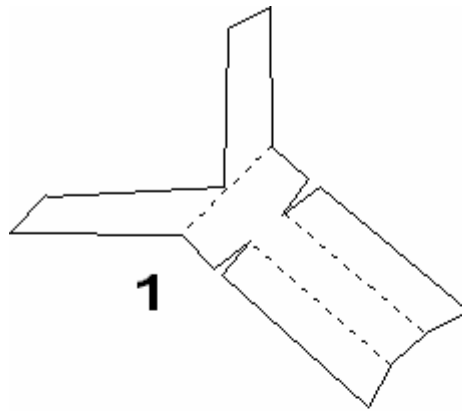
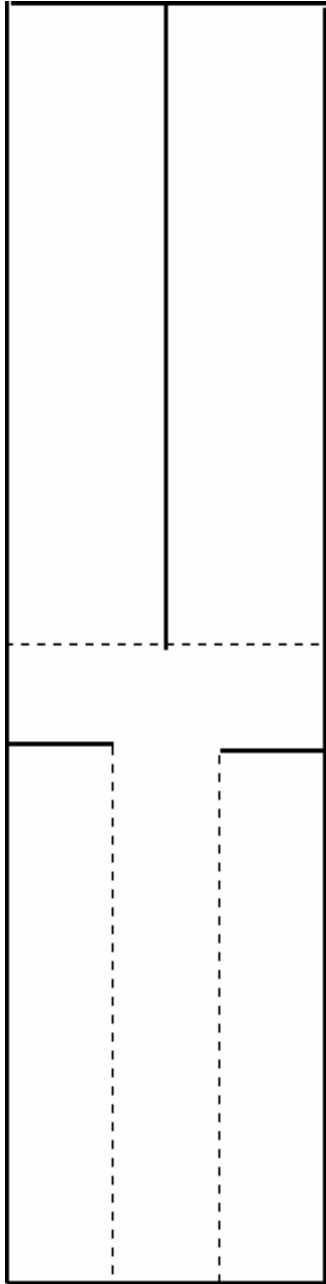




Culminating Performance Task(s) Rotocopter

Make cuts along the solid lines and fold along the dashed lines as shown below.

When complete add a paper clip to the flap at the bottom.



Student Handout



Culminating Performance Task(s) Student Handout

Your task is to prepare a full laboratory report on the effects of your modification to the basic rotocopter design.

You are a research scientist for the Canadian Space Agency trying to slow down the fall of a model delivery vehicle. You have been asked to investigate one aspect of the rotocopter design and report your findings to other scientists working on the project.

Your challenge will involve performing several trials on the existing rotocoper design by measuring the average time it takes to fall a distance of your choice. Then perform a second set of time trials with one modification to the basic design. Your findings should be reported as a laboratory report with the following sections

Check List	Sections	Comments
<input type="checkbox"/>	Question	Provide a clear question. For example, How will changing affect the average time to take to fall meters?
<input type="checkbox"/>	Hypothesis	Provide a prediction on how your change will affect the average fall time and provide a reason why.
<input type="checkbox"/>	Materials	Provide a list of all materials. Be sure to include sizes and amounts in your list
<input type="checkbox"/>	Procedure	Provide a series of numbered steps that explain how you did your trials and what measurements you made.
<input type="checkbox"/>	Observations	Place all your data of your design. You will need to collect data from at least 3 trials before and after your modification. The table should be labeled with headings, units and a border.
<input type="checkbox"/>	Analysis	Make a fully labeled bar graph showing the average times before and after your modification
<input type="checkbox"/>	Conclusion	Answer your question with evidence from your observation chart.

Your final laboratory report will be evaluated using the same rubric that was used on your previous laboratory reports. You may have access to these as you put together your report.

Culminating Performance Task ~ Rotocopter Report

Criteria	Level 4 (80-100%)	Level 3 (70-79%)	Level 2 (60-69%)	Level 1 (50-59%)	R
Question and Hypothesis	<ul style="list-style-type: none"> • Questions is precise • Hypothesis provides both prediction and appropriate explanation 	<ul style="list-style-type: none"> • Question is precise • Hypothesis provides prediction with limited explanation 	<ul style="list-style-type: none"> • Question is precise • Hypothesis provides prediction with no explanation 	<ul style="list-style-type: none"> • Question lacks focus • Hypothesis provides prediction 	<ul style="list-style-type: none"> • Question is present • Hypothesis is not present
Planning	<ul style="list-style-type: none"> • Student actions and written report show evidence of appropriate control of variables between trials 	<ul style="list-style-type: none"> • Student actions show evidence of appropriate control of variables between trials 	<ul style="list-style-type: none"> • Student actions and written report show evidence of control of some variables between trials 	<ul style="list-style-type: none"> • Student actions and written report show limited evidence of control of variables between trials 	<ul style="list-style-type: none"> • Little effort to control variables between trials
Data Collection (Observation)	<ul style="list-style-type: none"> • Data tables have units, headings and have efficiently organized data from trials 	<ul style="list-style-type: none"> • Data tables have efficiently organized data from trials 	<ul style="list-style-type: none"> • Data table contain all data from trials 	<ul style="list-style-type: none"> • Data from trials has been recorded 	<ul style="list-style-type: none"> • Little or no data appears to have been recorded
Analysis	<ul style="list-style-type: none"> • Student correctly determines average flight time • Student presents average flight time in fully labeled bar graph 	<ul style="list-style-type: none"> • Student correctly determines average flight time • Student presents average flight time in bar graph 	<ul style="list-style-type: none"> • Student determines average flight time with some errors • Student presents average flight time in bar graph 	<ul style="list-style-type: none"> • Student determines average flight time with some errors • Student presents average flight time in bar graph 	<ul style="list-style-type: none"> • Student determines average flight time with some errors • And fails to present data in graph
Conclusion	<ul style="list-style-type: none"> • Student accurately identifies affect and states conclusion with reference to experimental data 	<ul style="list-style-type: none"> • Student accurately identifies affect and states conclusion concisely 	<ul style="list-style-type: none"> • Student identifies affect and states conclusion 	<ul style="list-style-type: none"> • Student identifies and states an inaccurate trend 	<ul style="list-style-type: none"> • Student fails to identify any trend



Culminating Performance Task(s)

You are working for a company that designs educational but fun board games. You have been put in charge of designing a “quiz” type game that may be used for exam review for the Grade Nine course. This game must have a variety of questions from each of the four strands: Matter, Reproduction, Electricity and Space. Question types from may include matching definitions; matching images and short answer quiz cards.

You will brainstorm details of their game by looking at popular board games. The final product should include the following:

- A board for the game
- 32-40 question and answer cards
- Markers for each of the players
- A device to determine how far a player must move
- Anything else needed for the particular game

Planning

- Look carefully at some popular games to see what elements of a game you like.
- Decide what the object of your game will be and what the setup will be

Check List	Sections	Comments
<input type="checkbox"/>	Object of the game.	Decide how the game is won.
<input type="checkbox"/>	Equipment	What is necessary to play the game. (Game board, die, cards, etc.)
<input type="checkbox"/>	Setup	How do you set up the board before play?
<input type="checkbox"/>		How do you decide who takes the first turn?
<input type="checkbox"/>	Materials	Make a list of the materials you will need to bring to class for the next few days so you can make the best use of your class time.
<input type="checkbox"/>		Some items you must bring include:
<input type="checkbox"/>		plenty of paper
<input type="checkbox"/>		pencils, pens and a ruler,
<input type="checkbox"/>		cards for your questions and answers,
<input type="checkbox"/>	cardboard for the game board,	
<input type="checkbox"/>	books etc.	

Product - *Components needed when complete*

Check List	Comments
<input type="checkbox"/>	1 attractively designed board labeled with: game's title, and

Student Handout



designer's name.

- START clearly labeled,
- END clearly labeled
- locations for question cards
- straight lines made with a ruler

- Question and Answer Cards: 32-40 clearly and neatly stated (preferably done on computer). At least 8 questions must deal with technology issues studied in the course

- 1 attractively designed instruction booklet (preferably done by computer) - **See checklist below for parts of the instruction booklet.**

- Game equipment
 - tokens for players
 - a device for determining turns of players
 - other material

- Bibliography

Communication - *Your instruction booklet should have the following*

Check List

Comments

- Attractively designed cover with: title of game, game designer's name

- Instructions inside clearly labeled

- Title of game

- Number of players

- Ages of players

- Object of the game

- Equipment

- Setup

- How to play (rules)

- Winning the game

Culminating Performance Task ~ Review Game

Criteria	Level 4 (80-100%)	Level 3 (70-79%)	Level 2 (60-69%)	Level 1 (50-59%)	R
Knowledge					
- Game demonstrates an understanding of the concepts, facts and terms	Demonstrates thorough understanding of concepts, facts and terms.	Demonstrates considerable understanding of concepts, facts and terms.	Demonstrates some understanding of concepts, facts and terms.	Demonstrates limited understanding of concepts, facts and terms.	Demonstrates an understanding of concepts, facts and terms below the required level.
Game demonstrates understanding of relationship between concepts.	Shows thorough and insightful understanding of relationship between concepts.	Shows considerable understanding of relationship between concepts.	Shows some understanding of relationship between concepts.	Shows limited understanding of relationship between concepts.	Demonstrates an understanding of relationship between concepts below the required level.
Thinking and Inquiry					
Creativity - Original design, title and rules	Game has original design, rules and layout	Game has original design, some creative sparks	Game has some creative aspects	Game is unimaginative	Game is missing several important elements
Identifies appropriate resources	Easily identifies appropriate resources	Identifies appropriate resources	Identifies resources, some of which are appropriate	Identifies resources, few of which are appropriate	Does not identify appropriate resources
Gathers relevant information	Gathers information with a high degree of relevance	Gathers information with considerable relevance	Gathers information with moderate relevance	Gathers information with limited relevance	Does not gather relevant information

Communication					
Playability - clear rules and objectives - appropriate for intended audience	Game rules clear, objectives, clear, keeps student interest.	Game rules clear, objectives clear, some student interest.	Game rules are clear, object of game unclear, loses student interest.	Game rules are difficult to follow, loses student interest.	Game rules are below the required level.
Use of scientific terminology	Uses scientific terminology and symbols with high degree of accuracy and effectiveness	Uses scientific terminology and symbols with considerable accuracy and effectiveness.	Uses scientific terminology and symbols with some accuracy and effectiveness.	Uses scientific terminology and symbols with limited accuracy and effectiveness	Use of scientific terminology and symbols is below the required level.
Application					
Quality of Review - questions, interprets and applies concepts -allows students to relate concepts	Questions allow students to link concepts to a variety of situations.	Questions allow students to interpret concepts in different contexts.	Questions allow students to apply basic concepts.	Questions need clarification to apply concepts properly.	Questions are below required level so that concepts cannot be applied properly
Visual Appeal-sparks student interest -pieces and board neatly designed and crafted	Attention to all detail. Stimulating colours and layout of board.	Attention to detail. Board is carefully created	Some attention to detail. Neat design of board	No attention to detail on board or pieces. Does not attract attention	Board does not meet minimum requirements.

Mark per Category			
Knowledge	_____	Thinking and Inquiry	_____
Communication	_____	Application	_____

Most Consistent Mark (Overall Mark)
