TED İSTANBUL KOLEJİ VAKFI
ÖZEL LİSESİ

2020–2021 ACADEMIC YEAR

GRADE 9 PHYSICS PROJECT

NAME OF THE PROJECT: FRICTION FORCE

NAME, SURNAME OF THE STUDENT :

CLASS :

Grade	Content	Acquisition	Duration	Assessment
9	Applying Scientific method to a daily life observation; "Friction Force."	Develop skills for making scientific inquiries.	Academic year	Research & Experiment Rubric

Dear student;

In this Project, you are expected to apply scientific method to a daily life observation. You should design an experiment and show variables that affect friction force with using dynamometer.

You should follow the following steps;

A. Research
B. Experimentation
C. Experiment report

A. Research:

Determine the subtitles; in this case, they could be "Does type of surface can affect friction force?", etc.

Determine the relevant parameters: What could be the relevant parameters; shape of object, surface area, type of surface etc.

B. Experimentation:

After determining relevant parameters, form a testable hypothesis for one of the parameters such as "Friction force can be affected by the weight of the object." (Do not use this hypothesis, this is only an example.)

Determine the independent, dependent and the controlled variables. For the above hypothesis, controlled variables can be mass of object or type of surface. You should choose it according to your own hypothesis.

Design a method to test your hypothesis, determine the apparatus to be used, draw the details of the mechanism.

Collect data, form a data table accordingly.

Evaluate the validity of the hypothesis based on your data.

Suggest improvements to further inquiry.

C. Experiment Report:

Title: * a brief, concise, yet descriptive title.

Statement of the Problem:

***** What question(s) are you trying to answer?

* Include any preliminary observations or background information about the subject.

Hypothesis:

* Write a possible solution for the problem.

* Make sure this possible solution is a complete sentence.

* Make sure the statement is testable, an if-then statement is recommended to illustrate what criteria will support your hypothesis (and what data would no support the hypothesis).

Materials:

* Make a list of all items used in the lab. Alternatively, materials can be included as part of the procedure.

Procedure:

* Write a paragraph (complete sentences) which explains what you did in the lab as a short summary.

* Add details (step-by-step) of your procedure in such a way that anyone else could repeat the experiment.

Results (Data):

* This section should include any data tables, observations, or additional notes you make during the lab.

* You may attach a separate sheet(s) if necessary.

* All tables, graphs and charts should be labeled appropriately.

Conclusions:

* Accept or reject your hypothesis.

* EXPLAIN why you accepted or rejected your hypothesis using data from the lab.

* Include a summary of the data - averages, highest, lowest..etc to help the reader understand your results. Try not to copy your data here, you should summarize and reference KEY information.

* List one thing you learned and describe how it applies to a real-life situation.

* Discuss possible errors that could have occurred in the collection of the data (experimental errors)

You should present your teacher the following at the end of your entire work;

1) Research paper containing a cover paper, research of the subtitles, introduction, body, conclusion, quotation, footnote, references.
2) Experiment report.

FIRST CHECK: (Planning)

Do your research and determine relevant parameters.

SECOND CHECK: (Draft)

Do your experiment, write down a draft report.

SUGGESTIONS:

Get as many ingredients as you can. Be careful about keeping all other variables constant when testing the dependent variable.

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	ACADEMIC YEAR 2020- 2021							
	SCIENCE DEPARTMENT							
	RESEARCH & EXPERIMENT RUBRIC							
	NAME, SURNAME:							
	NAME OF THE PROJECT:							
	CRITERIA	EXCELLENT (5 POINTS)	GOOD (3-4 POINTS)	FAIR (2-3 POINTS)	POOR (1-2 POINTS)	NOT EXIST AT ALL 0	POINTS EARNED	TOTAL
Content of the research paper (25 points)	Determination of the subtitles.							
	Research of the subtitles.							
	Accuracy of the content.							
	Relevancy of the content to grade level.							
	Originality.(Turnitin)							
Neatness of the research paper (30 points)	Cover paper.							
	Content, design of the title and foreword.							
	Page design. (Fonts, style)							
	Plan, introduction, body, conclusion.							
	Quotation, footnote, references.							
	Grammar, Labeling, Spelling.					.		
Quality of the experimentation (45 points)	Relevancy of the experiment to grade level.							
	Formulate a testable hypothesis and explain it using scientific reasoning.							
	Design and carry out scientific investigations that include dependent and independent and controlled variables.							
	Design and carry out a method to be followed.							
	Draw the details of the mechanisms.							
	Outcome of the investgations- data collection, graphs and tables.							
	Reliability of the data.							
	Evaluate the validity of the hypothesis based on the data.							
	Suggest improvements to the method or further inquiry.							
TIMING		FIRST DRAFT:		SECOND CHECK (IF NOT; - 5 POINTS) SECOND DRAFT:		SUBMISSION (IF LATE FOR 2 DAYS; - 10 POINTS) SUBMISSION:		
		DATE:		DATE:		DATE:		

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ACADEMIC YEAR 2020- 2021

SCIENCE DEPARTMENT

RESEARCH & MODEL RUBRIC

NAME, SURNAME:

NAME OF THE PROJECT:

	CRITERIA	EXCELLENT (5 POINTS)	GOOD (3-4 POINTS)	FAIR (2-3 POINTS)	POOR (1-2 POINTS)	NOT EXIST AT ALL 0	POINTS EARNED	TOTAL
Content of the research paper (25 points)	Determination of the subtitles.							
	Research of the subtitles.							
	Accuracy of the content.							
	Relevancy of the content to grade level.							
	Originality.(Turnitin)							
Neatness of the research paper (30 points)	Cover paper.							
	Content, design of the title and foreword.							
	Page design. (Fonts, style)							
	Plan, introduction, body, conclusion.							
	Quotation, footnote, references.							
	Grammar, Labeling, Spelling.					.		
Quality of the Model (45 points)	Relevancy of the model to grade level.							
	Explanation of the working principle of the model by the student.							
	Selecting appropriate materials and equipments.Originality of the materials and usage of recyled material.							
	Make comments on the method.							
	Creativity.							
	Effectiveness of model or its applications in solving problems.							
	Effort.(Number of trials, difficulty in process.)							
	Draft drawings of the model.							
	Relevancy of the model to the aim.							

TIMING	FIRST DRAFT:	SECOND CHECK (IF NOT; - 5 POINTS) SECOND DRAFT:	SUBMISSION (IF LATE FOR 2 DAYS; - 10 POINTS) SUBMISSION:
	DATE:	DATE:	DATE:

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ACADEMIC YEAR 2020- 2021

SCIENCE DEPARTMENT

RESEARCH & POSTER/ BROCHURE RUBRIC

NAME, SURNAME:

NAME OF THE PROJECT:

	CRITERIA	EXCELLENT (5 POINTS)	GOOD (3-4 POINTS)	FAIR (2-3 POINTS)	POOR (1-2 POINTS)	NOT EXIST AT ALL 0	POINTS EARNED	TOTAL
Content of the research paper (25 points)	Determination of the subtitles.							
	Research of the subtitles.							
	Accuracy of the content.							
	Relevancy of the content to grade level.							
	Originality.(Turnitin)							
Neatness of the research paper (30 points)	Cover paper.							
	Content, design of the title and foreword.							
	Page design. (Fonts, style)							
	Plan, introduction, body, conclusion.							
	Quotation, footnote, references.							
	Grammar, Labeling, Spelling.					.		
Quality of the brochure/poster (45 points)	Project Title.							
	Plan, introduction, body, conclusion.							
	Usage of at least 3 visual material.(picture, graph or table.)							
	Attractiveness / Professionalism							
	Creativity of poster or brochure design.							
	Recall scientific knowledge and use scientific understanding to construct specific explanations.							
	Effort(Size of the poster or number of pages in brochure.)							
	Conclusion paragraph. Critically analyze and evaluate information supported by scientific understanding.							
	Discuss and evaluate the moral, ethical,economic, political, cultural, environmental and social implications of the use of science in solving specific issues.							

TIMING	FIRST DRAFT:	SECOND CHECK (IF NOT; - 5 POINTS) SECOND DRAFT:	SUBMISSION (IF LATE FOR 2 DAYS; - 10 POINTS) SUBMISSION:
	DATE:	DATE:	DATE: