

PHYSICS

THE EGG DROP- USING INQUIRY THINKING & SCIENTIFIC METHOD

NAME _____

INTRODUCTION:

ENGINEERS DEVELOP STRUCTURES AND DEVICES TO HELP IMPROVE OUR WORLD. THEY TEST THEIR IDEAS USING THE SCIENTIFIC METHOD AND THEY USE INQUIRY TYPE THINKING AS THEY COME UP WITH THESE IDEAS. YOU WILL BE ENTERING THE REALM OF THE "PACKAGING" INDUSTRY AS YOU TRY TO PROTECT YOUR "EGG" FROM THE MANY "FORCES" THAT MAY ACT ON IT AS IT ENTERS "FREEFALL". LATER IN THE YEAR WE WILL RERUN THIS ACTIVITY WITH SOMEWHAT DIFFERENT RULES (AFTER WE HAVE STUDIED SUCH THINGS AS FORCES, COMPONENT VECTORS, IMPULSE, MOMENTUM, ETC.) REFER TO THE ARTICLE "DREAM CHASER" ABOUT THE NASA ENGINEER FROM IOWA (ATTACHED) AND (IN THE DISCUSSION STEP OF YOUR SCIENTIFIC METHOD WRITE UP) EXPLAIN 4 WAYS YOUR EGG DROP ACTIVITY COMPARES TO THIS PROJECT FOR NASA. GOOD LUCK IN YOUR DESIGNING AND TESTING! NOTE: REFER ALSO TO YOUR INFO. SHEET EXPLAINING THE "SCIENTIFIC METHOD" (ATTACHED).

MATERIALS AND PROCEDURE:

- A. JUST LIKE IN "PHYSICS OLYMPICS" YOU WILL RECEIVE 5 SHEETS OF 8 1/2 X 11 1/2 INCH TYPING PAPER AND 1 METER OF 3/4 INCH MASKING TAPE. (REMEMBER, BUSINESSES LIKE YOU TO BUILD THE BEST PRODUCT WITH THE LEAST AMOUNT OF MATERIALS AND COST). YOU WILL RECEIVE 1 GRADE A LARGE RAW EGG (THIS IS THE DUDE YOU NEED TO PROTECT).
- B. YOU ARE TO DESIGN A PROTOTYPE ON PAPER LABELING PARTS & WHY EACH PART IS FUNCTIONAL.(REMEMBER BUSINESSES DON'T LIKE "FLUFF"- BECAUSE THAT'S TOO EXPENSIVE).YOU WILL PROGRESSIVELY DROP THE DEVICE AT 1 METER INCREMENTS, CHECKING YOUR EGG EACH TIME TO SEE IF STILL INTACT. THE HIGHEST SUCCESSFUL DROP IS YOU "SCORE".
- C. YOU MUST REACH THE FOLLOWING MINIMUM GOAL BEFORE YOU ARE DONE: SURVIVE AT 3 METERS MINIMUM OR DOING 3 PROTOTYPES (IF YOUR DEVICE FAILS YOU MUST RE-DESIGN, RE-DIAGRAM AND RUN ANOTHER TEST ON THE NEW PROTOTYPE). (MANY, MANY RE-DESIGNS WERE DONE BEFORE THE SPACE SHUTTLE WENT TO SPACE).

GOAL & PROBLEM TO SOLVE:

JUST LIKE DESIGNING A CAR, SPACE SHUTTLE, BOX FOR SHIPPING YOUR COMPUTER, ETC. YOUR JOB IS TO DESIGN YOUR "EGG DEVICE/S" UNTIL YOU REACH THE MINIMUM SUCCESS LEVEL DESCRIBED ABOVE.YOU MUST DETERMINE HOW TO SET UP ALL STEPS OF THE SCIENTIFIC METHOD AND WRITE YOUR RESEARCH PROJECT UP (REFER TO "RAT BRAIN ENZYME & PARKINSON'S DISEASE " JOURNAL ARTICLE THAT IS WRITTEN IN SCIENTIFIC METHOD FORMAT). (EXAMPLE: WHAT IS YOUR VARIABLE, HYPOTHESIS, CONTROL TEST, EXPERIMENTAL TEST, TITLE, DATA DISPLAY, CONCLUSION, ETC.) (HINT: IN THE DISCUSSION SECTION OF YOUR CONCLUSION MAKE SURE(AMONG ANY OTHER QUESTIONS YOU FEEL ARE IMPORTANT TO ASK) THAT YOU EXPLAIN A.) 4 WAYS YOUR PROJECT RESEMBLES THE "DREAM CHASER" PROJECT AND B.) LIST AS MANY OTHER "REAL LIFE" RESEARCH THAT IS SIMILAR TO WHAT YOU ARE DOING WITH THE "EGG DROP". YOUR GOAL THEN: SET UP, DESIGN AND RUN YOUR REASEACH AND WRITE IT UP IN SCIENTIFIC METHOD FORMAT. IT'S UP TO YOU, NOW. GOOD LUCK" (REMEMBER, BUSINESSES FROWN UPON CORPORATE ESPIONAGE SO DON'T STEAL OR GIVE UP YOUR SECRETS TO YOUR COMPETITORS!!!!!!!!!!!!!!)