Data 1—Rockets

Key knowledge

STEM stands for Science Technology Engineering Maths.

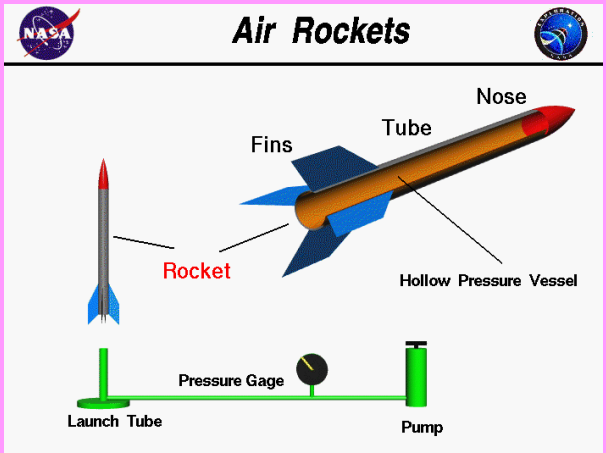
The main parts of the rocket are the nose, tube and fins.

The upward force (Thrust) must be greater than the downward force (Weight) and the drag in order to take off.

The compressed air in the launcher has stored energy. This is called potential energy.

The energy transfer in the rocket launch is potential energy to kinetic energy. Some energy will be transferred to the surroundings as thermal energy.

Rockets are streamlined to reduce drag. This will reduce the energy required to create the force needed for lift-off.



Key Skills

Reduce waste—use as little material as possible—draw on the corner of the card.

Line up a set square on the edge of the card to draw a line parallel to the edge.

Measure twice—cut once.

Distances are measured using a tape measure and standard units are metres (m).

cm and mm are used for convenience and accuracy when measuring and drawing the body of the rocket.

Masking tape is more expensive than Sellotape. It is repositionable—this means that you can peel it off and try again.

Angles are measured using protractors and the units are degrees. The interval used is 10°.

Results will be recorded in a table with the units at the top only. The independent variable (launch angle) goes in the left hand column. The dependent variable (distance travelled) goes in the second column.

Describe the pattern in the data:

As the angle increases, the distance travelled…… until… and then it….

The furthest it travelled was…. This was when….

I also noticed (height of rocket changes)

The best angle to fire the rocket is…..

Key vocabulary

Variable—Anything that can change or be changed in an investigation

Independent Variable—the variable that you change in an investigation

Dependent Variable—the variable that changes because you changed something. You measure it in an investigation.

Control Variable—A variable that you keep the same

Force—a push or a pull that can cause a change in speed, direction or shape of an object

Weight—downward force of an object due to gravity

Thrust—a force which makes an object move

Drag—Force caused by an object moving through a fluid

Streamlining—Contouring of an object to reduce the effects of drag

Trajectory—Path which an object follows when it is thrown into the air and travels a curved path due to gravity.

Energy—the ability to do work

Potential Energy—stored energy

Kinetic Energy—Energy of motion

PPE—Personal Protective Equipment