



SCIENCE FAIR

Invention

Kindergarteners to Fifth Graders

Everything we use, work with or wear is engineered. Someone had to think of a design for each object to solve a particular problem. Anyone can be an engineer! An engineer is someone who uses knowledge of science and math and their own creativity to design objects to solve problems or improve upon existing objects.

Engineering Design Process

1. ASK

Ask a question about an everyday problem that you would like to solve. Inventions can be almost anything created to solve a problem or meet a need. Examples include pencils, cups, cell phones or processes to move heavy objects. (See the final page of this packet for ways to help you brainstorm ideas.)

2. IMAGINE

Use your knowledge of math and science to imagine a solution to the problem that you have chosen. Look online (with parents' permission), read books, and interview potential invention users. Brainstorm possible solutions and choose the best possible solution.

3. PLAN

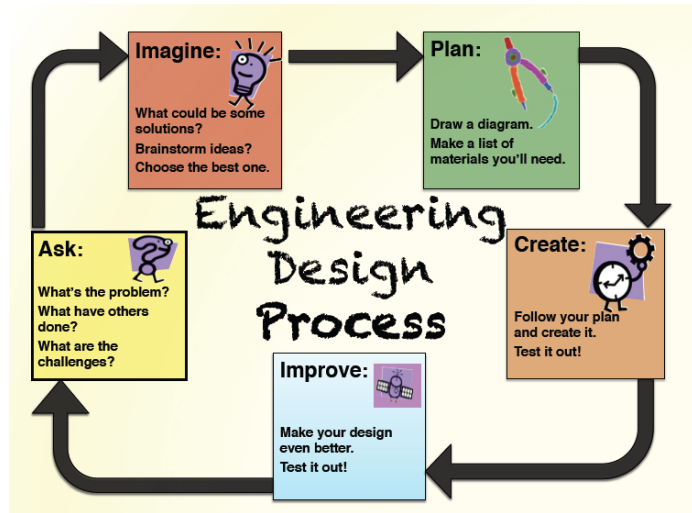
Make a plan and explain it. Draw a diagram and label the parts of your diagram.

4. CREATE

Make a list of materials you would like to use in your invention. Collect the materials you will need for your invention. It is best to borrow, make, or use inexpensive materials. Build your invention according to your plan. Keep a list of the difficulties you run into and how you address them.

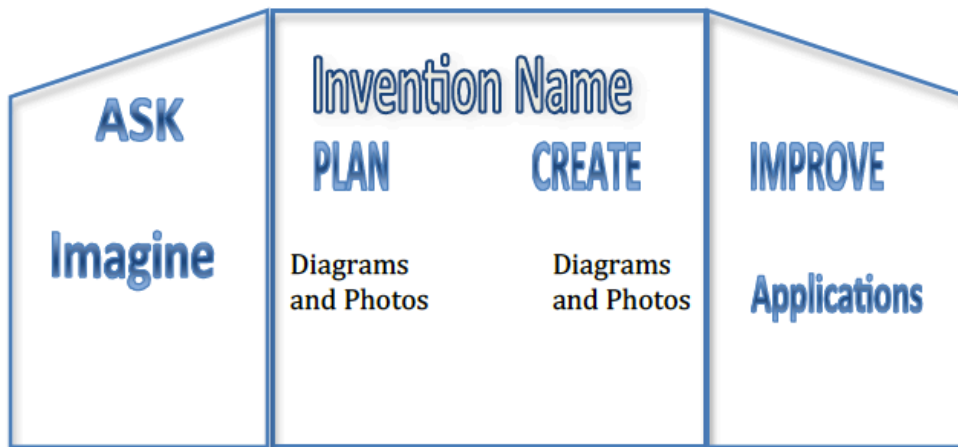
5. IMPROVE

See if it works. Keep track of when and how you tested it. Evaluate the results. Find any problems that need improvement. Improve your design to make it better!



DISPLAY -

Create a tri-fold display board to share the information used in the creation of your invention through the Engineering Design Process. Please make sure to have the following information on your display board:



You may decide where to place these elements on your board. This example is to give you an idea of what a display board for an invention project might look like.

Applications

Tell your reason for developing this particular invention.

Tell how your invention will help you and others lead better lives.

Below are some additional items to consider when making a display board:

- To make your work stand out, "shadowing", both headings (i.e. ASK) and information should be considered.



- Only three colors, other than white, should appear on the board. More than three colors makes the board too busy and takes away from the information that you are trying to get across to the audience.

For even more fun (but optional), you may want to consider including:

- A commercial jingle for your invention
- A marketing slogan or campaign slogan
- An example of what an advertisement for your invention might look like
- Information on how you plan to market your invention

Finally, you will want to bring your invention with you and put it with your display board. This way you can demonstrate to visitors how your invention works. GOOD LUCK INVENTORS!

ASK: Invention Ideas

Are you having difficulty thinking of an idea for an invention? Use one of the categories below to help you brainstorm. Ask yourself what a good invention would be. Is there a problem to solve or a question to answer?

1. Learn From Animals

Choose an animal. Carefully study its behavior by observing it firsthand or by reading about it or watching videos. See if the animal gives you an idea for an invention.

2. Be a People Watcher

Watch yourself for a day or longer. List each action you do, such as get out of bed, brush teeth, put on clothes, pack lunch, eat breakfast, practice a musical instrument, do homework, and so on. For each item, note any problems you have. Try to think of some way to make the task go easier, quicker, or better.

3. Imitate Nature

Create an invention based on banana peels, eggshells, flowers, twigs, or other natural things. You might create something that looks like the original or that works like it.

4. Collect Complaints

Ask people you know such as relatives, friends, and neighbors to share their complaints with you. Try to think of a way to solve one or more of the complaints

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with an invention.

5. Invent Add-On Gadgets

Dream up an add-on gadget by putting two or more separate things together to create a new invention. An example of this is the peanut butter and jelly sandwich.

