Inventing

Name _____

An inventor is someone who creates a new product or process. Inventions can make our life easier, improve our health, or increase our recreation and fun. Throughout history inventors have made huge contributions to society through their innovations.

Do all of the following requirements (1-3)

_____1. A patent allows inventors the right to exclude others from making, selling or using their inventions. Do the following to learn more about patents.

_____a. Explain the three types of patents (utility, design, and plant) and their differences.

_____b. Look up and list what each of the following US patents is:

- US 1,598,054
- US 4,688,287
- US 4,753,377
- US 1,498,111
- US 5,425,497
- US 821,393
- US 6,923,606

_____c. Select one of those patents as an example. Identify and describe each part of the patent: Patent number, Title, Inventors, Assignee, Abstract, Drawings, Description, and Claims.

_____d. Find items around your house that have a patent number. Make a list of at least five items along with its patent number, title, inventors, and assignee (owner of the patent rights).

_____e. Describe how to file a patent including who can file one and how much it costs.

_____f. Explain the difference between the phrases "first to invent" and "first to file".

_____2. Create your own invention and document each step in the process in an invention notebook. Sign and date each invention notebook entry.

_____a. Explain the importance of keeping a detailed log in the invention notebook and how this information helps if you need to improve your design or start over.

_____b. Conduct a survey to find out what problems need solutions. Ask what kind of invention, tool, game, device or idea would be helpful at home, work or during recreation time. Report survey results in the invention notebook.

_____c. Make a list of the problems that need to be solved in the invention notebook.

_____d. Either individually or with others in your Troop, select one problem that provides the best options for inventive solutions. Record your idea and how you got it in the invention notebook.

_____e. Brainstorm possible solutions by thinking of the many, varied, and unusual ways of solving the problem. Capture brainstorming ideas in the invention notebook.

_____f. Record in the invention notebook any problems you encountered and how you solved them. Add sketches and drawings to clarify your thoughts.

_____g. Choose a solution and make a detailed sketch or 3-D model of it. For the 3-D model, list all materials, costs, and sources.

_____h. Give your invention a name.

_____3. Develop a marketing plan for your invention, including a slogan or jingle; newspaper, magazine, or web site advertisement; and a radio promo or TV commercial to market your invention.

_____a. Show the advertisement to your Troop, Unit or family.

_____b. Perform your radio promo or TV commercial for your Troop, Unit or family.

Do three of the following optional requirements from any topic (4-12)

_____4. Choose a household item and create an improved product design.

_____a. Brainstorm ideas to make this invention more useful or fun.

_____b. Describe which parts of the original invention would you keep and which would you change.

_____c. Draw a picture of your improved product and give it a new name. Describe your invention for your Troop, Unit or family.

_____5. Many inventions today are the result of a team working on the same problem. Experience this process with your Troop. Work with a small group to come up with one of the following: A balloon-powered boat, a veggie (or water balloon) catapult, or a new musical instrument. Use the following design process as your guide:

_____a. - Brainstorming: brainstorm ideas with your teammates

- Decide on an invention: decide which of the three inventions you are going to tackle
- Rough Design: come up with a rough sketch of what you plan on creating. Make sure to think about whether or not it is possible to build, and if you have access to the necessary materials.
- Design finalization: After seeking feedback from your parents or Leaders, finalize your design and sketch.
- Invention Creation: build your design. Once you have finished, be sure to test it to make sure it works. Make any necessary changes or alterations.
- Invention Presentation: Present your invention to your Unit or Troop.

_____b. After seeing other groups' ideas, identify and describe any improvements you would make on your design.

_____6. Inventions are not perfect! New products are typically created under certain constraints such as time, cost, efficiency and appearance. For the invention in the above requirement, Report the following:

_____a. Effectiveness of your product

_____b. Design challenges and constraints encountered during the design process

_____c. Changes in design and materials would you make if you could do it again

_____7. Participate in an Invention Fair or contest, entering your own invention. Describe your experience and what you learned with your Unit.

_____8. Choose an inventor and prepare a presentation about him and his invention(s). Create a model, or detailed diagram, of the invention as part of your presentation. Give the presentation to your Troop, Unit, or family. Include in the presentation:

_____a. he problem to be solved

_____b. Design constraints

_____c. Design challenges

_____9. Plan and implement a Young Inventor's Day or Invention Fair with your Troop and invite parents. Display your invention and tell the story of how you got the idea and how your invention works.

_____10. Many inventions result from the testing of current products. Run your own evaluation study. For example, you could ask which brand of paper towel is the strongest or the most absorbent. Select several brands of a product and make predictions about two or three of its characteristics. Conduct experiments to test your predictions and share your results with your Unit or family. List improvements you would make to the product you tested.

_____11. Invite a local inventor to speak to your Troop. Ask the inventor to tell the details of:

_____a. His invention(s)

_____b. Any patents received or pending

_____c. The types of careers involving inventing new products and obtaining patents

_____12. A prototype is an initial or early version of a product, process or system that is used to test or prove a concept before the final versions are produced. Rapid prototypes are made using different technologies to produce a form, fit functional representation of the final product. Explain the basic technologies of the following types of rapid prototypes:

_____a. Stereolithography (SLA)

_____b. Fused Deposition Modeling (FDM)

_____c. Selective Laser Sintering (SLS)

_____d. Multi-Jet Modeling (MJM)

Trail Badge Mentor Signature

Date