What Makes a Good Science Fair Project?

Here's some advice from a science teacher....

SCIENCE PROJECTS
Maybe you already know what you want to do or maybe you're clueless. Whatever you decide, here are steps you should consider when doing your project.

BE FRESH!
Teachers always look for original ideas. Original projects are those that take the textbooks one step further by exploring new ground and innovative techniques. Your project could be original in the scientific concept or maybe you've come up with a new way to solve an old problem or a new and better way to interpret the data. Whatever your project, make sure it is done well. Just having a great and new idea is only half of the solution.

PASSING THE "HUH?" TEST!
It may be a super idea for a project but it won't impress the teachers. If you don't have a well-defined goal or objective of what you're doing. Just what scientific concept are you trying to prove or disprove with your project? A direct, often simple objective won't leave the teachers scratching their heads, trying to figure out what exactly you were trying to prove. You've got to pass the "HUH?" test.

UNDERSTAND IT - IT'S YOUR PROJECT, NOT YOUR FOLKS!
Your project must show that YOU understand and know how to use scientific theory, terms, techniques and methodologies properly. Teachers look for students who know about the scientific principles and practices they used in their project. They want to see if you can interpret what you learned. It’s important for teachers to know that you have a depth of understanding of the basic science behind the project topic, that you comprehend the finer level of detail and that you're aware of any influence or effects the project has on related subject topics. If you don't know what a term or theory means... find out or don't use it in your presentation.

Keep your project at a level YOU can understand. Teachers aren't expecting you to have access to university research laboratories or be a Ph.D. candidate for the topic area you've chosen. What is important is that the technical level of sophistication and complexity of your project reflect YOUR level of understanding - not someone else's. It's OK to receive help outside your school as long as you clearly say what is was and who helped you. IF YOU DON'T UNDERSTAND IT, DON'T DO IT because you won't be able to explain it! Chances are if it doesn't make sense to you, it won't make sense to the teacher. One more thing... know how all your equipment works, what it does and why it was used in your project. If you can't explain it to a teacher, then you probably don't understand the science of what’s going on.

PROVE YOUR POINT!
Teachers look for complete projects. That is, projects that are thorough in addressing the original question and thorough in answering other questions that come up during the experimentation process. As a scientist, it is your responsibility to provide all evidence to support whatever claims you are making. It isn't up to the teacher or other scientists to prove your claim. Without data or results that support your claims, it's not a completed work.

PUT SOME TIME (and FUN) IN!
How much time and energy have you put into your project? Was it a one-hour wonder or did you actually put in some effort and time? Did you fly by the seat of your pants or did you spend time reading and learning the subject? Either way, it will show. Pick a topic you like. Science is found everywhere. There must be something you enjoy that can be used as part of a science project. Think outside the box and have some fun with your project!

A teacher considers time and effort as two important factors in a successful project. Teachers can usually tell that the amount of effort that goes into your project reflects your motivation. Because if you're not motivated, you won't enjoy the experience and that shows!
CLEAR AS GLASS!
If nobody understands what you were doing with your project, why bother with all that work? Be crystal-clear in both your written and verbal communication skills. Your ideas should be clearly presented and easy to understand. Teachers look for well-written abstracts with easy to follow visual aids and clear and concise answers. Remember, the more you understand about the scientific principles, the easier it is for you to explain it in terms everyone understands.

WRAP-UP
To sum this up, remember high marks go to:
- Clever experimental apparatus (if applicable)
- Correctly interpreting data
- Discovering knowledge not readily available to you
- Combining good research and experimentation
- Repeating steps to verify experimental results
- Predicting and/or reducing experimental results with analytical techniques
- Experiments that have a real world application
- Your ability to clearly portray and explain your project and its results
- Genuine scientific breakthroughs

QUESTIONS
Teachers will ask lots of questions about your project. Dazzle them with your brilliance and be prepared to answer questions like these:
- How did you come up with the idea for this project?
- What did you learn from your background search?
- How long did it take you to build the apparatus? (if applicable)
- How did you build the apparatus? How does it work? (if applicable)
- How much time (or many days) did it take to run the experiments (grow the plants or collect each data point)?
- How many times did you run the experiment with a different set of parameters?
- Did you try something else that didn't work?
- Can you explain to me how your project relates to (some scientific principle)?
- Do you think there is an application in industry for this knowledge (technique)?
- Were there any books that helped you do your analysis?
- When did you start this project? Or how much of the work did you do this year?
- What is the next experiment to do if you want to continue this study?