MODULES

PARENT BRIEFING

Module

Ideas & Innovations

- Use the *Ideas & Innovations* problem-solving model to solve problems.
- Explore the relationships among science, technology, and engineering.
- Investigate the concepts of systems, subsystems, and systems thinking.
- Explore the Universal Systems Model of technology.
- Engineer a vehicle to compete in the Extreme Design Challenge.

Session Focus

1 I & I Problem-Solving Model; Vehicle Chassis

2 Ideation; Vehicle Wheels; Problem Solving

3 Science & Technology; Torque; Vehicle Propulsion

4 Systems; Extreme Design Challenge; Science, Technology, & Engineering

5 Universal Systems Model; Extreme Design Challenge

6 Outputs; Extreme Design Challenge

7 Feedback; Extreme Design Challenge Competition

Dear Parent,

As parents and teachers, we realize it can be hard to get a child to discuss what he or she is learning in school. We hope the information provided on this page will assist you in communicating with your child about what he or she is learning.

Your participation in the learning process is extremely important, as you are your child's best teacher.

For the next few days, your child will be learning basic problem-solving skills as well as how to use these skills to develop new ideas, innovations, and inventions. He or she will be exploring the relationships among science, technology, and engineering as well as how these relationships help us understand the natural world and meet human needs.

Words students will learn in this Module include:

- constraints
- engineering trade-off
- ideation
- innovation
- patent
- subsystem
- system
- tension
- torque
- Universal Systems Model

Questions for Discussion

During the course of this Module, your child will be assessed on key concepts and activities. You might want to discuss these concepts and activities with your child. He or she will be asked to:

- Compare and contrast invention and innovation. *(Inventions and innovations are created to meet human needs or solve human problems. Inventions are formed out of ideas for brand-new concepts. Innovations are often modifications or improvements to existing inventions.)*
- Compare and contrast what scientists and technologists do with new knowledge. *(Scientists and technologists both seek new knowledge. Scientists openly share their findings so that other scientists can confirm or reject the new discovery. Technologists often keep new knowledge secret in an attempt to patent their ideas so that they have exclusive rights to develop and market their products.)*
- Describe the Universal Systems Model. *(There are four steps to the Universal Systems Model. Inputs are the resources necessary to develop a product. Processes are the steps necessary to turn inputs into outputs. Outputs are the results of the system, including the product, leftover resources, and waste. Feedback involves analyzing the outputs to determine if they meet the need or solve the problem.)*

Student: _____

Parent: _____

PITSCO EDUCATION