

BUILDING A MODEL SOLAR CAR

TEAM MEMBERS:

There are many factors to consider when you build a model solar car. Major considerations include:

- chassis (how to build the frame of the car)
- wheels and bearings (how to make the wheels turn)
- power source (how the solar panel and motor work most efficiently)
- transmission (how to transfer power from the motor to the wheels)
- body shell (how the shell affects car performance)

Before your team actually starts construction of your solar vehicle, you must show an understanding of construction principles and have a detailed design plan.

As you work through the Solar Sprint computer program, take notes and answer the following questions:

CHASSIS:

1. What is the major purpose of the chassis?
2. What major trade-off must you make when designing the chassis?
3. What happens if your chassis is strong but not rigid?
4. What happens when your chassis is rigid but not strong?
5. What are some good choices for the shape of your chassis? (Consider all three views - side, top and from the end)
6. What are some choices for bracing the chassis?
7. What are some choices for materials to use for your chassis?

8. Given what you have learned about the chassis, what are the best ideas your team has right now for chassis design? Draw or describe.

WHEEL AND BEARING DESIGN

1. What is friction good for in a car? When would too much friction be bad?

2. Weight distribution does matter! How does it matter?

3. What might you add to increase wheel traction?

4. What are two important things to think about when choosing and / or designing your wheels?

5. What are some wheel design tips given in the lesson?

6. What are some suggested materials for the wheels?

7. What are some choices for axles?

8. Why is wheel alignment so important and how can you check it?

7. Given what you have learned about wheels and bearings, what are the best ideas your team has right now for wheel design? Draw or describe on the back of this sheet.

POWER SOURCE

1. What are two suggestions to increase current to the motor?
2. If soldering, what is important and how is it done?
3. If using crimpers, what is important and how is it done?
4. Given what you've learned about the power source, what are the best ideas your team has for attaching and positioning your solar panel on your chassis? What other ideas do you have now for the power source design? Draw and describe.

TRANSMISSION

1. What is the purpose of the transmission?

2. What is torque?

3. There are four kinds of transmission described in the lesson. For each, do the following:

- a) describe how it works (use a drawing) and
- b) what materials you would use to make it

A. Direct drive

B. Friction drive

C. Belt

D. Gear

5. Given what your team has learned about transmissions, what are the best ideas your team has right now for transmission design? Draw and describe on back.

SHELL DESIGN

1. What is the most important thing to consider when designing the shell?

2. What are some possible materials that could be used for the shell?

3. Given what your team has learned about shell design, what are your best ideas right now? Draw and describe.