Name _____ Class _____ Date _____

Skills Worksheet

REAL WORLD APPLICATIONS

Cross-Disciplinary

Designing Race Cars

Read the following paragraphs, and complete the exercises below.

How is a car race won? Part of the answer is in the skill of the race driver and the skill and efficiency of the car's pit crew. The design of the race car is also an important factor.

OVERCOMING FRICTION

Friction is a backward force that opposes forward motion. Friction is caused when two surfaces rub against each other. Any medium—solid, liquid, or gas—produces friction on an object that moves through the medium. For example, a race car moving through air is affected by friction. This friction pushes the car backward.

Friction varies directly with the roughness of one or both surfaces. Thus, the smoothness of the surface is one factor that determines the amount of friction and thereby affects the outcome of a race. All things being equal, a race car that produces the least amount of friction with air will win a race.

STREAMLINING

Shape is another factor that affects friction. What do sharks, airplanes, and race cars have in common? They all have streamlined shapes—somewhat pointed in front with gently curved surfaces that lead to their back ends. Streamlining reduces the resistance of a medium to the forward movement of an object—a shark through water, or an airplane or race car through air.

EXERCISES

1. What are two factors that affect the amount of friction between a race car and the air it moves through?

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2. All things being equal, which will move more easily: a newly polished car or a car that has never been polished? Explain your answer.

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3. All things being equal, which will move faster: a race car shaped like a box or a race car shaped like a rocket? Explain your answer.

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