

Classroom	10
Unit Name	Quadrilaterals
Learning Area	Area Calculation
Gains	
Science	Explains the effect of friction force on kinetic energy with examples.
Mathematics	<p>Calculates the area of a circle. Solves problems related to the field. <i>a) Compound of a triangle, rectangle, parallelogram, trapezoid or rhombus areas of shapes</i> problems that require finding a solution included. <i>b) Including activities to associate the perimeter length and area of a rectangle is given. The perimeter lengths of different rectangles with the same area and the areas of different rectangles with the same perimeter length are examined.</i></p>
Technology and Engineering	<ul style="list-style-type: none"> ✓ Designs hovercraft ✓ Makes hovercraft drawing ✓ TT. 7. B. 1. 2. a problem, need or a dream that can be realized in daily life as a "design problem". ✓ TT. 7. B. 1. 7. Explains the stages necessary to create the design. Draft for design makes drawings.
Social Studies	
21st century skills	<p>Critical thinking and problem solving Creativity Technology literacy Imagination</p>
Introduction	<p>Enter the classroom with the Hovercraft model we have. What is this model? How does it work? Did it happen? Predictions are taken with questions such as.</p>

<p>Discovering</p>	<p>The model brought to the classroom is examined by the students and questions are asked through the model. asked?</p> <ol style="list-style-type: none"> 1. What's in the balloon? 2. Your observations about the movement of the model when the air starts to escape from the balloon What are they? 3. What can you say about the movement of the model? 4. What are your ideas about the working system? <p>BALLOON HOVERCRAFT</p> 
<p>Description</p>	<p>Friction Force and Energy</p> <p>Friction force It is the resistance of surfaces in contact with each other against movement. Friction force is always opposite to the direction of motion. It slows down the motion of objects. Friction force does not move objects. Friction surfaces become hot. It can also occur in light and sound.</p> <p>What friction depends on</p> <ol style="list-style-type: none"> 1. The type of the friction surface (friction on the rough surface) 2. Weight of the object (as weight increases, friction increases) Examples of friction: A swing is a stops after a while. A ball dropped from above bounces and stops after a while. If we do not pedal the bicycle, it stops after a while. It is the friction force that provides these. <p>Benefits of friction force</p> <ol style="list-style-type: none"> 1. It allows us to move easily. 2. When the brakes are applied, we stop by friction. 3. It allows us to climb trees. 4. Our things still. 5. It allows us to write. 6. It allows the wheel to grip the road. <p>Damages of friction force</p> <ol style="list-style-type: none"> 1. It causes loss of energy. 2. Friction wears surfaces. Clothes and objects wear out due to friction. 3. Overheating cause a fire.

C- Effect of Friction Force on Kinetic Energy

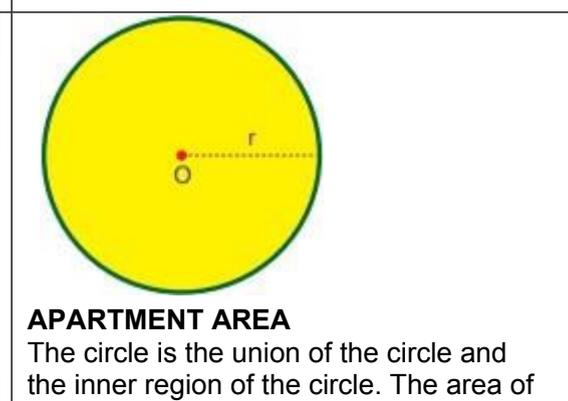
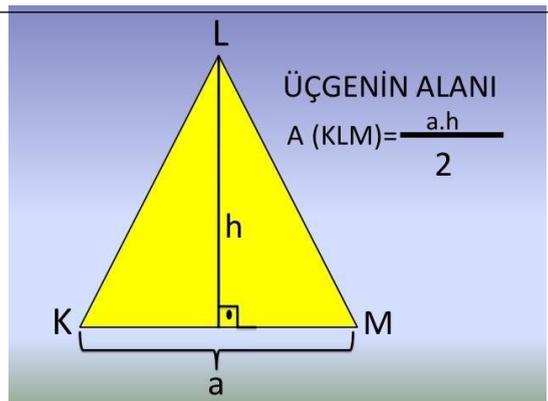
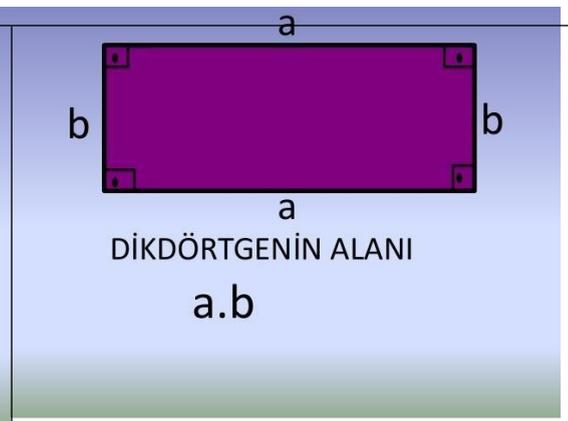
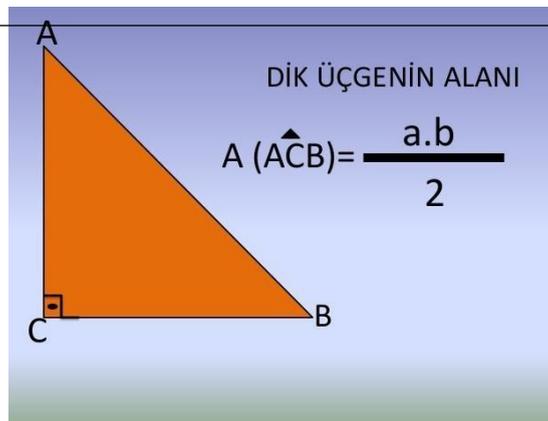
Moving objects kinetic energy. Since the friction force makes the movement of moving objects difficult, it a decrease in kinetic energy. Friction force causes kinetic energy to turn into heat energy.

Properties of the Friction Force

1. It is opposite to the direction of motion of objects.
2. It complicates and stops the movement of objects
3. The force of friction cannot move an object at rest.
4. The friction force a decrease in kinetic energy.
5. Causes heating on friction surfaces.
6. Things wear out because of the force of friction.
7. The friction force depends on the type of frictional surface and the weight of the object.
8. It does not depend on the size of the rubbing surface.

INTEGRATION

AREA OF THE



Deepening



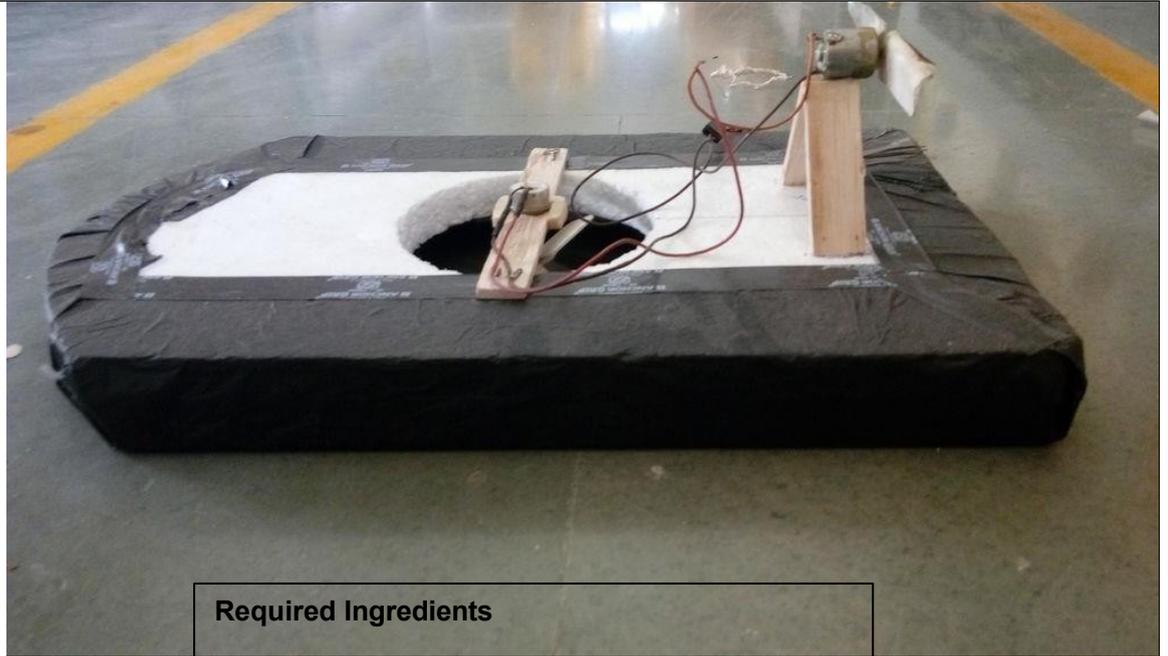
INTEGRATION

Students are organized into heterogeneous groups.

Problem Statement: Ahmet notices that his father changes the tires of his car at regular intervals. He asks his father the reason for this situation. **His father says,** "In daily use, vehicles generally use rubber tires made of rubber. These tires wear out due to friction and are replaced at certain intervals." Based on this incident, if you were to design a HOVERCRAFT that would minimize the friction effect, what kind of vehicle would you design?

Examples from HOVERCRAFT applications are shown.

1. HOVERCRAFT research
2. Collection of information about HOVERCRAFT
3. Drawing according to the collected data
4. Designing the HOVERCRAFT drawing
5. Trial and review of HOVERCRAFT
6. Reorganization



Required Ingredients

- Styrofoam foam
- Garbage bag
- Scissors
- Utility knife
- Tape
- Hot silicone
- Ruler
- Jib
- Pencil
- Two 3v-6v DC motors
- 2 propellers
- Cable
- Battery compartment
- 4 1.5 volt batteries
- 5 tongue sticks
- ruler

PRODUCT CARD

1. Type of polygon used?.....
2. The base surface area of the polygon used.....
3. Area of the motor placed in the circle.....
4. Blade span of propellers.....

STAGES OF CONSTRUCTION

- 1) The type of multiplex that will form the hovercraft body is decided.
- 2) Cutting operations are carried out by making appropriate drawings.
- 3) A circle-shaped cut is made in the center of the cut precipice.
- 4) Area calculations required in the product properties of polyhedron and circle is done here.
- 5) The garbage bag is cut according to the size of the polygon decided.
- 6) Another hole is made in the bag, parallel to the hole previously made in the center of the polygon.
- 7) The bag is attached to the Hovercraft body with tape.
- 8) It is mounted in the center of the polygon with the motor in horizontal position and the propeller attached to the end.
- 9) Motor and propeller mounted on the tail (move forward)
- 10) Connection is provided with cables.

