



1 minute



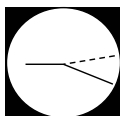
2 minutes



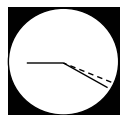
7 minutes



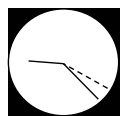
4 minutes



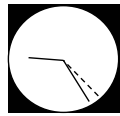
5 minutes



1 minute



2 minutes



1½ minutes



1½ minutes



1 minute

Science Organization: Students enter classroom

The teacher instructs students to have a seat and not to touch the (video) equipment.

Independent Seatwork: Students write in their notebooks

The students take out their science books and write the date, along with the heading, "Energy Transfers and Energy Transformations." This is the topic for today's lesson.

Whole-Class Seatwork: Class talks about energy transfer

The teacher introduces the concept of energy transfer by talking about two examples. The first example is when a person steps out of the shower onto the bathroom tiles. There is energy in the person's foot that is transferred to the tiles. This energy is in the form of heat. The teacher then brings up another example of swinging a golf club. The students identify the energy in the swinging golf club as being kinetic energy, which is transferred into kinetic energy in the moving golf ball. The class concludes that energy transfer is "When energy moves from one object to another but does not change form." The teacher writes this definition on the dry erase board.

Whole-Class Practical Work: Teacher demonstrates different examples of energy transformation

After having identified the fact that the energy does not change form in energy transfers, the teacher leads the class in a discussion about energy transformations. She does this by conducting two demonstrations as illustrating examples. In the first example, she lights a match and asks students about the different forms of energy. The class identifies the initial form of energy as being chemical energy, which is changed into heat, light, and a little bit of kinetic energy after the match is lit. In the second example, the teacher uses a battery in a circuit. The class identifies the initial form of energy in the battery as being chemical energy. The chemical energy is then transformed into electrical energy, then heat and light energy. The class concludes that energy transformation is "When energy changes from one form to another." This is written on the dry erase board.

Whole-Class Seatwork: Class discusses energy transformation

The teacher goes over the circuit example, asking students what form of energy is present in each stage. She then instructs them to draw energy chains "to show the energy transformations from the battery being connected to a light bulb." The teacher draws the correct version on the dry erase board for students to see and compare. She summarizes that this information is the theory that informs their activity today.

Whole-Class Seatwork: Class goes over instructions for today's activity

The teacher introduces today's activity, "So that brings us to our activity today." Students are to walk around nine different work stations and identify whether the respective set-up is an illustration of energy transfer or energy transformation. They are to record their answers on a worksheet.

Science Organization: Students prepare for their practical activities

The teacher passes out the worksheets to students. They put on lab aprons in preparation for their work.

Whole-Class Practical Work: Class goes over instructions for today's activities

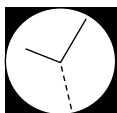
The teacher tells students they need to fill out the worksheet as they go to each station. Each station has a brief description of what they need to do. Each station also has the necessary equipment; the teacher tells the class to return all equipment at each station to how they found it. She demonstrates what they're supposed to do at one particular station with the steel wool.

Science Organization: Teacher assigns students into groups of three

The teacher groups students by calling their names. There are nine student groups.

Whole-Class Seatwork: Class goes over specific instructions for the different stations

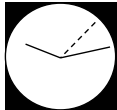
The teacher instructs students to keep the door of the classroom closed, on how to get hot water, and to wear goggles if they are provided at a station.



39 minutes



3 $\frac{1}{2}$ minutes



5 minutes

Independent Practical Work: Students work in groups of two or three on activities

Students work in numerical order, starting with the station of their group number. The stations consist of the following: (1) spoon in a cup of hot water, (2) baking soda & water, (3) burning magnesium, (4) steel wool, (5) solar cells, (6) nichrome wire & copper wire, (7) ping pong ball, (8) induction coil, and (9) reel spinner.

Science Organization: Students put away materials

The teacher says, "There's a work station at each of your benches." She instructs them to clean up their benches and put things away.

Whole-Class Seatwork: Class discusses results from practical activities

The class goes over the results of their practical activities. The teacher asks students which stations were examples of energy transfer and which stations were examples of energy transformation. Students are expected to finish their worksheet for homework.