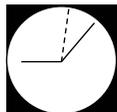




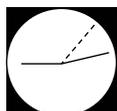
1 minute

Science Organization: Teacher takes attendance

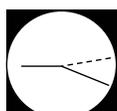
The students stand by their desks and the teacher gives them permission to sit. He takes attendance.

6 $\frac{1}{2}$ minutes**Whole-Class Seatwork: Teacher assesses students**

The teacher announces to the class they will have an "oral quiz." He calls on four students to come up to the chalkboard and tells the rest of the class to work at their seats on the same problems. Students are asked to write the chemical formulas, showing oxidation values, for: (1) calcium chloride, (2) potassium sulfite, (3) ammonium bicarbonate, (4) copper sulfate, and (5) sodium tetraborate. Afterwards, the teacher checks the information on the chalkboard with the help of the rest of the class. A couple of the formulas written by the individual students are incorrect. The teacher announces the four students' grades for this section: three "As" and one "C."

6 $\frac{1}{2}$ minutes**Independent Seatwork: Teacher continues assessment while remainder of students work on textbook assignment**

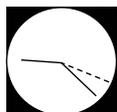
The four students continue with their oral quiz by the teacher, while the rest of the class works on a textbook assignment (i.e., writing the chemical and common names for various compounds listed in two tables). The teacher asks the same four students information about fertilizers and ceramics. Each student is asked a different question by the teacher, including follow-up questions. The "final evaluation" requires the four students to individually write the chemical reaction for $\text{HCl} + \text{NaOH}$ on the chalkboard, including the type of reaction this represents (i.e., neutralization reaction). The teacher announces their grades publicly, then records them in his notebook: two "As" and two "lower As."



4 minutes

Whole-Class Seatwork: Class goes over assignment from textbook

The teacher asks if anyone had problems with filling out the information in the two tables. He goes over students' questions for the first table on page 114, then does the same for the second table on page 118. When finished, the class prepares for today's lesson on salts.



4 minutes

Whole-Class Seatwork: Class talks about salts

Students receive a handout with a table of different salts listed. The teacher facilitates a discussion about the first two salts, potassium chloride and sodium chloride. They identify the names and chemical formulas, in addition to talking about their common uses. For sodium chloride, or rock salt, the teacher has a sample that he holds up to show the class.

1 $\frac{1}{2}$ minutes**Whole-Class Practical Work: Class observes ammonium chloride**

The class then proceeds to the next salt listed on the handout, ammonium chloride. They discuss the chemical formula and relate it to another name, sal ammoniac. The teacher demonstrates a chemical reaction to show the production of sal ammoniac. He pours together ammonia and hydrochloric acid, which produces white vapors (sal ammoniac or ammonium chloride). The class says this is commonly used as a cleaning agent.



11 minutes

Whole-Class Seatwork: Class continues to talk about salts

The class continues their discussion about the other salts on the handout: sodium nitrate, potassium nitrate, silver nitrate, potassium nitrate, silver nitrate, copper sulfate pentahydrate, iron sulfate heptahydrate, calcium sulfate dihydrate, sodium carbonate, sodium hydrogen carbonate, calcium carbonate, potassium permanganate, and calcium phosphate). They discuss the chemical formulas and how these salts are used in everyday life. During their discussion, the teacher shows the class some examples of these various salts (i.e., copper sulfate pentahydrate, sodium carbonate, and calcium carbonate)



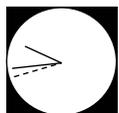
1 minute

Whole-Class Practical Work: Class observes potassium permanganate

The teacher announces he wants to go back to talking about potassium permanganate. He puts purple crystals of potassium permanganate in a Petri dish on the overhead projector, and adds water. The class observes a pink liquid that results. The teacher reminds the class that this has disinfecting qualities (the class had already identified potassium permanganate as an oxidizing and disinfectant agent earlier in the discussion).

6 $\frac{1}{2}$ minutes**Whole-Class Seatwork: Class talks about chemical reactions involving calcium**

The teacher announces the next part of the lesson is about reactions, which he says is a very difficult theme. He puts a transparency on the overhead projector that shows a diagram of different reactions involving calcium. The class goes over three of these reactions. The teacher calls on individual students to the chalkboard to identify the chemical names of the given reagent(s) and product(s), while the rest of the class writes in their notebooks. They complete the reactions with balanced chemical equations.



2 minutes

Whole-Class Practical Work: Class observes calcium oxide reactions

The class continues their discussion about calcium oxide from the diagram. The teacher demonstrates the reaction of calcium oxide with water, asking students to identify the product (=calcium hydroxide). He then asks how they can test for the presence of hydroxide (ions). Students respond that indicators can be used; the teacher uses phenolphthalein and adds a few drops to the solution. This causes the solution to turn purple, which indicates the presence of hydroxide ions. He then focuses the discussion on a neutralization reaction, asking students what he needs to add to the solution in order to make a salt. Students say an acid is needed, so he adds hydrochloric acid, which turns the solution back to clear.



1 minute

Whole-Class Seatwork: Teacher assigns homework

The teacher tells the class to fill out the rest of the information in the diagram. He informs them that the diagram is in their textbook on page 118. The students then get their materials together and prepare to leave.