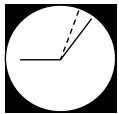
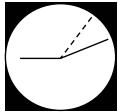
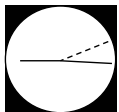




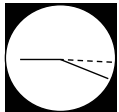
4 minutes

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

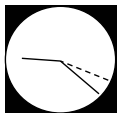
5 minutes



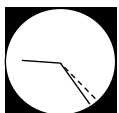
4 minutes



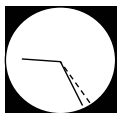
2 minutes

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

1 minute



1 minute



1 minute



2 minutes



1 minute

Science Organization: Students turn in homework assignment

Students are seated in table groups. The teacher instructs them to copy the homework assignment from the board as she goes around the room making sure they have the information written in their individual planners. She also announces that they should have their heart worksheet labeled in color; this is the assignment that is due today. Students turn in their homework into a basket in the back of the room.

Whole-Class Seatwork: Class reviews names of human body systems

The teacher reviews the names of the 11 human body systems with the class: skeletal, muscular, integumentary, cardiovascular, nervous, reproductive, digestive, urinary (excretory), respiratory, lymphatic (immune), and the endocrine. She does this by engaging students in choral speech, mnemonics, and various hand signals. The teacher also uses large flip cards in her review.

Whole-Class Practical Work: Class reviews parts of the human body

The teacher uses large flip cards and physical gestures to review bones, ligaments, cartilage, muscles, and tendons with the class. The class names major bones in the human body as the teacher points to corresponding parts on her body during the discussion. The class also reviews ligaments and cartilage. The teacher points out some body parts that have cartilage, and she demonstrates the motion of different types of joints. Next, the students go over muscles shortening and lengthening as the teacher has them demonstrate by bending and straightening their arms. As the class reviews tendons, the teacher shows some body regions where tendons are visible underneath the skin. The class also goes over types of muscles, and the teacher briefly points out a few skeletal muscles in her body.

Whole-Class Seatwork: Class reviews information about levers

The teacher continues her review of previously learned content by using the large flip cards. The class talks about levers and parts of a lever (i.e., fulcrum, load, effort), and the class of levers (i.e., 1st class, 2nd class, 3rd class).

Whole-Class Practical Work: Teacher shows examples of levers

The teacher shows a spatula, a pair of scissors, and a nut cracker as three examples of levers. She asks the students to decide where the fulcrum, load, and effort are for each example, and then identify the class.

Whole-Class Seatwork: Teacher tells a story

The teacher tells a fictitious story to the class about a trip she took while in college. She holds a diagram that has the abbreviations RA, RV, LA, and LV labeled. She asks students to repeat this story. Students do not understand the relevance of this story. They question why she told the story, and comment "this is quite pointless." Without revealing the relevance of this story, the teacher continues with the day's lesson.

Whole-Class Seatwork: Class reviews information about blood

The class briefly reviews what they learned about blood in the previous day's lesson. They talk about the volume of blood in the human body (~5 L), the volume of white blood cells (~5 mL), and the volume of blood that is typically donated (~1/2 L).

Science Organization: Teacher assigns students into groups

The teacher has students get into groups of four or five and then assigns roles. She announces that the person with the longest hair in the group decides who gets the scrap paper for the activity.

Whole-Class Seatwork: Teacher goes over instructions for activity

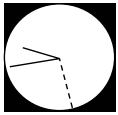
The teacher instructs students to think about the structure and function of the heart. They are to work in their groups for 98.6 seconds, and the person with the scrap paper writes down the group's ideas.

Independent Seatwork: Students work in groups on the activity

Working in groups of four or five, the students discuss and write down what they think about the structure and function of the heart.

Whole-Class Seatwork: Students reflect on their learning

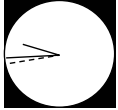
The teacher asks the students why she would assign an activity in which they had to write down their ideas. The students respond, showing they understand that guessing and gathering information are ways of learning.



16 minutes

Whole-Class Seatwork: Class develops new content about blood flow through the heart

The teacher uses multiple representations to engage students in learning about the pathway of blood flow through the heart. She shows an online animated film about the heart, pausing it to highlight important points. She then shows an animated diagram that depicts blood flow into and out of parts of the heart. The class goes over the diagram together and discusses arteries, veins, and oxygenation of blood. Next, the teacher puts a transparency of a diagram of the heart from the textbook on the overhead projector. She traces the pathway of blood flow through the heart with her finger, asking students to do the same in their books. She makes connections during this time to the fictitious story she told earlier. The teacher then goes over a diagram of the heart and lungs. In conclusion, she tells students to turn to their partners to review how blood flows through the four chambers of the heart.



1 minute

Independent Seatwork: Students discuss the pathway of blood flow through the heart

Working in pairs, the students summarize how blood flows through the four chambers of the heart.



1 minute

Whole-Class Seatwork: Class reviews pathway of blood flow through the heart

The teacher asks students questions to review how blood flows through the heart. Students then prepare to leave.