

Gases



Chapter Pacing Guide

Please note that this pace is based on completing selected sections of the text in 90 classes, approximately 90 minutes each. Refer to the Course Planning Guide on page xvii of this booklet for a complete list of time allotments assigned to each section. Less time can be allocated for each chapter if you plan to teach all 26 chapters.

Period	Content
1	14.1 The Gas Laws
1	14.2 The Combined Gas Law and Avogadro's Principle
0.5	14.3 The Ideal Gas Law
1.5	14.4 Gas Stoichiometry
0.5	Review and Assessment

The Gas Laws *pages 419–427*

Key: SE = Student Edition,
TWE = Teacher Wraparound Edition,
TCR = Teacher Classroom Resources

National Science Content Standards: UCP.2, UCP.3; A.1; B.2, B.4, B.6; E.2; G.1, G.3

Georgia QCC: 1, 1.2, 2, 2.1, 3.1, 15.3, 15.5, 15.6

Objectives

- State Boyle’s law, Charles’s law, and Gay-Lussac’s law.
- Apply the three gas laws to problems involving the pressure, temperature, and volume of a gas.

Lesson Resources

- _____ Section Focus Transparency 51 and Master
- _____ Math Skills Transparency 19 and Master
- _____ Teaching Transparencies 42–43 and Masters
- _____ Study Guide for Content Mastery, p. 79 TCR

Multimedia Resources

- _____ Chemistry Interactive CD-ROM, Section 14.1 Demonstration, Video, and Animation
- _____ MindJogger Videoquizzes, Ch. 14
- _____ Guided Reading Audio Program, Section 14.1
- _____ Cosmic Chemistry Videodisc, Disc 1, Side 2
- _____ Using the Internet in the Science Classroom, TCR
- _____ Chemistry Web site: ga.science.glencoe.com

Optional Resources

- _____ Challenge Problems, p. 14 TCR
- _____ CBL Laboratory Manual, pp. 13–20 TCR
- _____ Laboratory Manual, pp. 105–108 TCR
- _____ Small-Scale Laboratory Manual, pp. 37–40 TCR
- _____ Solving Problems: A Chemistry Handbook, Section 14.1 TCR
- _____ Spanish Resources 14.1 TCR

Lesson Plan

Activity	Resources	Suggested Time
Classroom Management <ul style="list-style-type: none"> • Display the Section Focus Transparency and have students answer the questions. • Distribute the corrected Chapter 13 tests. 	Section Focus Transparency 51 and Master	10 minutes
Core Lesson <ul style="list-style-type: none"> • Introduce Chapter 14 with the Discovery Lab. • Teach the main concepts of Section 14.1. 	SE, p. 419 TWE, pp. 419–427	55–60 minutes
In-Class Check <ul style="list-style-type: none"> • Reinforce Section 14.1 concepts using the Performance Assessment activity. • Complete the Check for Understanding and Reteach strategies. 	TWE, p. 420 TWE, p. 427	15–20 minutes
Homework <ul style="list-style-type: none"> • Have students complete Section 14.1 Assessment. • Assign the Knowledge Assessment problem. • Assign relevant questions from Chapter 14 Assessment. 	SE, p. 427 TWE, p. 427 SE, pp. 448–451	5 minutes

[total = 90 minutes]

The Combined Gas Law and Avogadro's Principle

pages 428–433

Key: SE = Student Edition,
TWE = Teacher Wraparound Edition,
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National Science Content Standards: UCP.2, UCP.3; B.2, B.4, B.6
Georgia QCC: 15.3, 15.4, 15.6

Objectives

- **State** the relationship among temperature, volume, and pressure as the combined gas law.
- **Apply** the combined gas law to problems involving the pressure, temperature, and volume of a gas.
- **Relate** numbers of particles and volumes by using Avogadro's principle.

Lesson Resources

- _____ Section Focus Transparency 52 and Master
- _____ Math Skills Transparency 20 and Master
- _____ Study Guide for Content Mastery, pp. 80–81 TCR

Optional Resources

- _____ Solving Problems: A Chemistry Handbook, Section 14.2 TCR
- _____ Spanish Resources 14.2 TCR

Multimedia Resources

- _____ Chemistry Interactive CD-ROM, Section 14.2 Demonstration and Experiment
- _____ MindJogger Videoquizzes, Ch. 14
- _____ Guided Reading Audio Program, Section 14.2
- _____ Using the Internet in the Science Classroom, TCR
- _____ Chemistry Web site: ga.science.glencoe.com

Lesson Plan

Activity	Resources	Suggested Time
Classroom Management <ul style="list-style-type: none"> • Display the Section Focus Transparency and have students answer the questions. • Have students check homework answers. 	Section Focus Transparency 52 and Master TWE, pp. 427, 448–451	10 minutes
Discussion <ul style="list-style-type: none"> • Answer any questions about homework. 	TWE, pp. 427, 448–451	5 minutes
Core Lesson <ul style="list-style-type: none"> • Introduce Section 14.2 with the Applying Chemistry feature. • Teach the main concepts of Section 14.2. 	TWE, p. 428 TWE, pp. 428–433	45–50 minutes
In-Class Check <ul style="list-style-type: none"> • Reinforce Section 14.2 concepts using the Quick Demo. • Have students complete the Skill Assessment. • Complete the Check for Understanding and Reteach strategies. 	TWE, p. 429 TWE, p. 430 TWE, p. 432	20–25 minutes
Homework <ul style="list-style-type: none"> • Have students complete Section 14.2 Assessment. • Assign relevant questions from Chapter 14 Assessment. 	SE, p. 433 SE, pp. 448–451	5 minutes

[total = 90 minutes]

The Ideal Gas Law pages 434–439

Key: SE = Student Edition,
TWE = Teacher Wraparound Edition,
TCR = Teacher Classroom Resources

National Science Content Standards: UCP.2, UCP.3; A.1; B.2, B.4, B.6; G.2

Georgia QCC: 1, 1.2, 3.1, 8.3, 8.4, 15.3, 15.5, 15.6

Objectives

- **Relate** the amount of gas present to its pressure, temperature, and volume by using the ideal gas law.
- **Compare** the properties of real and ideal gases.

Lesson Resources

- _____ Section Focus Transparency 53 and Master
- _____ Math Skills Transparency 21 and Master
- _____ *ChemLab and MiniLab Worksheets*, pp. 53–56
TCR
- _____ *Study Guide for Content Mastery*, pp. 82–83 TCR

_____ **Guided Reading Audio Program**, Section 14.3

_____ *Using the Internet in the Science Classroom*, TCR

_____ Chemistry Web site: ga.science.glencoe.com

Optional Resources

- _____ *Solving Problems: A Chemistry Handbook*,
Section 14.3 TCR
- _____ *Spanish Resources* 14.3 TCR

Multimedia Resources

- _____ **Chemistry Interactive CD-ROM**, Section 14.3
Exploration
- _____ **MindJogger Videoquizzes**, Ch. 14

Lesson Plan

Activity	Resources	Suggested Time
Classroom Management <ul style="list-style-type: none"> • Display the Section Focus Transparency and have students answer the questions. • Have students check homework answers. 	Section Focus Transparency 53 and Master TWE, pp. 433, 448–451	5 minutes
Discussion <ul style="list-style-type: none"> • Answer any questions about homework. 	TWE, pp. 433, 448–451	0–5 minutes
Core Lesson <ul style="list-style-type: none"> • Teach the main concepts of Section 14.3. • Have students read the ChemLab and begin preparations. (Note: this lab will take one period to complete. Time adjustments may be necessary in subsequent lessons.) 	TWE, pp. 434–439 SE, pp. 444–445	25–30 minutes
In-Class Check <ul style="list-style-type: none"> • Complete the Reteach strategy. 	TWE, p. 439	5 minutes
Homework <ul style="list-style-type: none"> • Have students complete Section 14.3 Assessment. • Have students complete the Portfolio Assessment. • Assign relevant questions from Chapter 14 Assessment. 	SE, p. 439 TWE, p. 439 SE, pp. 448–451	5 minutes

[total = 45 minutes]

Gas Stoichiometry

 pages 440–443**Key:** SE = Student Edition,
TWE = Teacher Wraparound Edition,
TCR = Teacher Classroom Resources**National Science Content Standards:** UCP.2, UCP.3; A.1; B.2, B.3, B.4, B.6; E.1, E.2; F.6**Georgia QCC:** 1, 1.2, 2, 2.1, 3.1, 8, 9.1, 15.3, 15.4, 15.5, 15.6

Objectives

- **Determine** volume ratios for gaseous reactants and products by using coefficients from a chemical equation.
- **Calculate** amounts of gaseous reactants and products in a chemical reaction using the gas laws.

Lesson Resources

- _____ Section Focus Transparency 54 and Master
- _____ Teaching Transparency 44 and Master
- _____ *Study Guide for Content Mastery*, p. 84 TCR

Multimedia Resources

- _____ MindJogger Videoquizzes, Ch. 14
- _____ Guided Reading Audio Program, Section 14.4
- _____ Cosmic Chemistry Videodisc, Disc 2, Side 3
- _____ *Using the Internet in the Science Classroom*, TCR
- _____ Chemistry Web site: ga.science.glencoe.com

Optional Resources

- _____ *Laboratory Manual*, pp. 109–112 TCR
- _____ *Solving Problems: A Chemistry Handbook*, Section 14.4 TCR
- _____ *Spanish Resources* 14.4 TCR
- _____ *Supplemental Problems*, pp. 19–20 TCR

Lesson Plan

Activity	Resources	Suggested Time
Classroom Management <ul style="list-style-type: none"> • Display the Section Focus Transparency and have students answer the questions. • Have students check homework answers. 	Section Focus Transparency 54 and Master TWE, pp. 439, 448–451	5 minutes
Discussion <ul style="list-style-type: none"> • Answer any questions about homework. 	TWE, pp. 439, 448–451	5 minutes
Core Lesson <ul style="list-style-type: none"> • Introduce Section 14.4 with the Quick Demo. • Teach the main concepts of Section 14.4. • Have students carry out the Performance Assessment. 	TWE, p. 440 TWE, pp. 440–443 TWE, p. 441	70 minutes
In-Class Check <ul style="list-style-type: none"> • Reinforce Section 14.4 concepts using the Knowledge Assessment. • Complete the Check for Understanding and Reteach strategies. • Answer questions on Chapter 14 in preparation for the test. 	TWE, p. 443 TWE, pp. 442–443 TWE, pp. 418–451	45 minutes
Homework <ul style="list-style-type: none"> • Have students complete Section 14.4 Assessment. • Assign relevant questions from Chapter 14 Assessment. • Assign supplemental problems to prepare students for the test. 	SE, p. 443 SE, pp. 448–451 <i>Supplemental Problems</i> , pp. 19–20 TCR	10 minutes

[total = 135 minutes]

Gases

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Assessment Resources

- _____ *Chapter Assessment*, Ch. 14 TCR
- _____ *Performance Assessment in the Science Classroom*, TCR
- _____ *Alternate Assessment in the Science Classroom*, TCR
- _____ *Reviewing Chemistry: Mastering the Georgia QCC*, TCR

Multimedia Resources

- _____ **MindJogger Videoquizzes**, Ch. 14
- _____ **TestCheck Software**, Ch. 14
- _____ **Chemistry Interactive CD-ROM**, Ch. 14 quiz
- _____ **Vocabulary PuzzleMaker Software**, Ch. 14

Activity	Resources	Suggested Time
Classroom Management <ul style="list-style-type: none"> • Have students check homework answers. 	<i>TWE</i> , pp. 443, 448–451 <i>Supplemental Problems</i> , pp. 19–20 TCR	5 minutes
Reviewing the Chapter <ul style="list-style-type: none"> • Answer any questions about homework. • Answer any final questions about Chapter 14. 	<i>Supplemental Problems</i> , pp. 19–20 TCR <i>TWE</i> , pp. 418–451	5 minutes
Assessment <ul style="list-style-type: none"> • Distribute the test and allow students to work quietly. 	<i>Chapter Assessment</i> , pp. 79–84 TCR	30–35 minutes
Closing <ul style="list-style-type: none"> • As students complete the test, have them read the Chapter 15 Opener. • If students have time, let them explore the Chemistry Online for Chapter 15. 	SE, p. 452 ga.science.glencoe.com	0–5 minutes

[total = 45 minutes]