2000 National Survey of Science and Mathematics Education

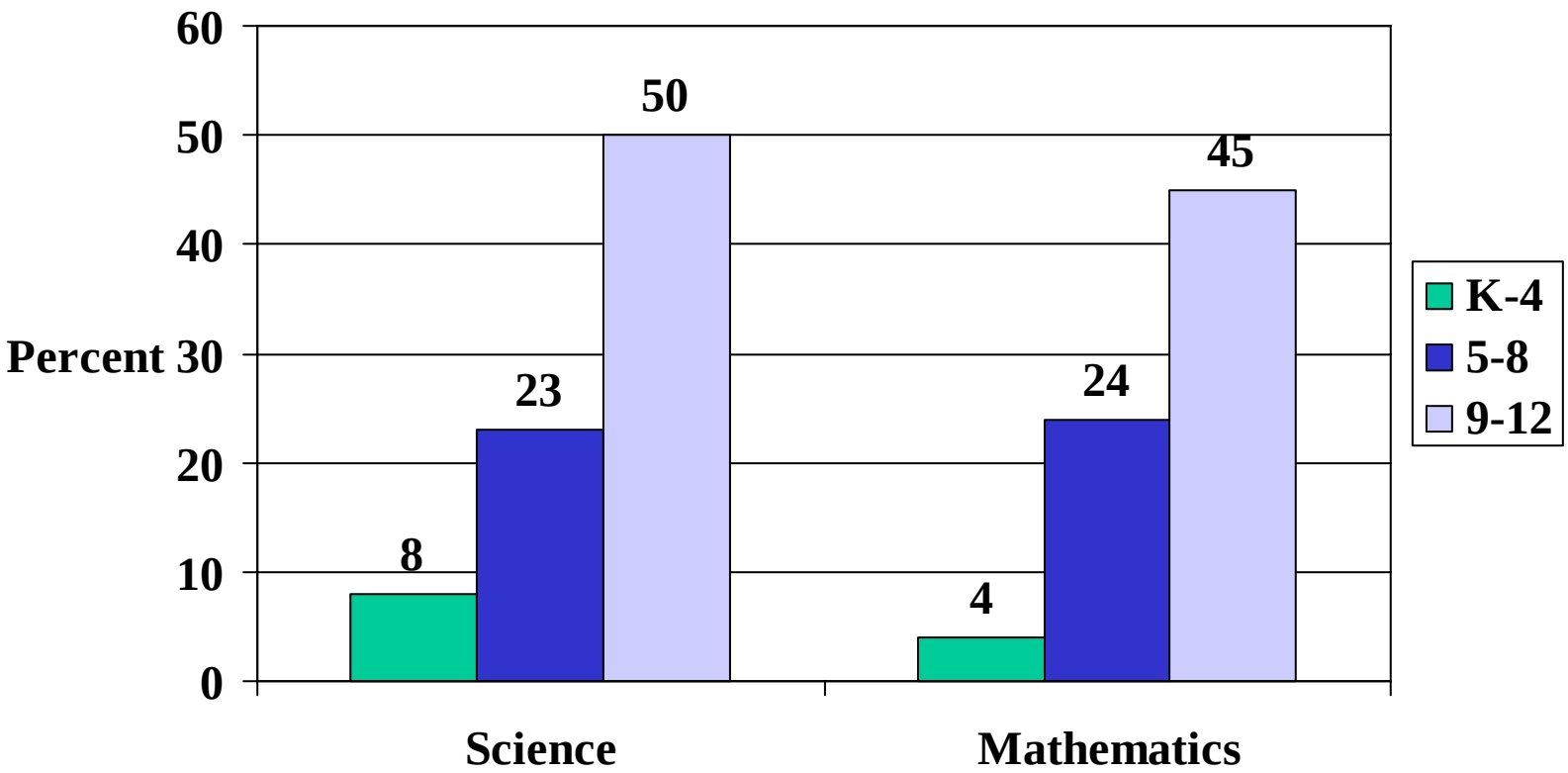
Horizon Research, Inc.

Study Background

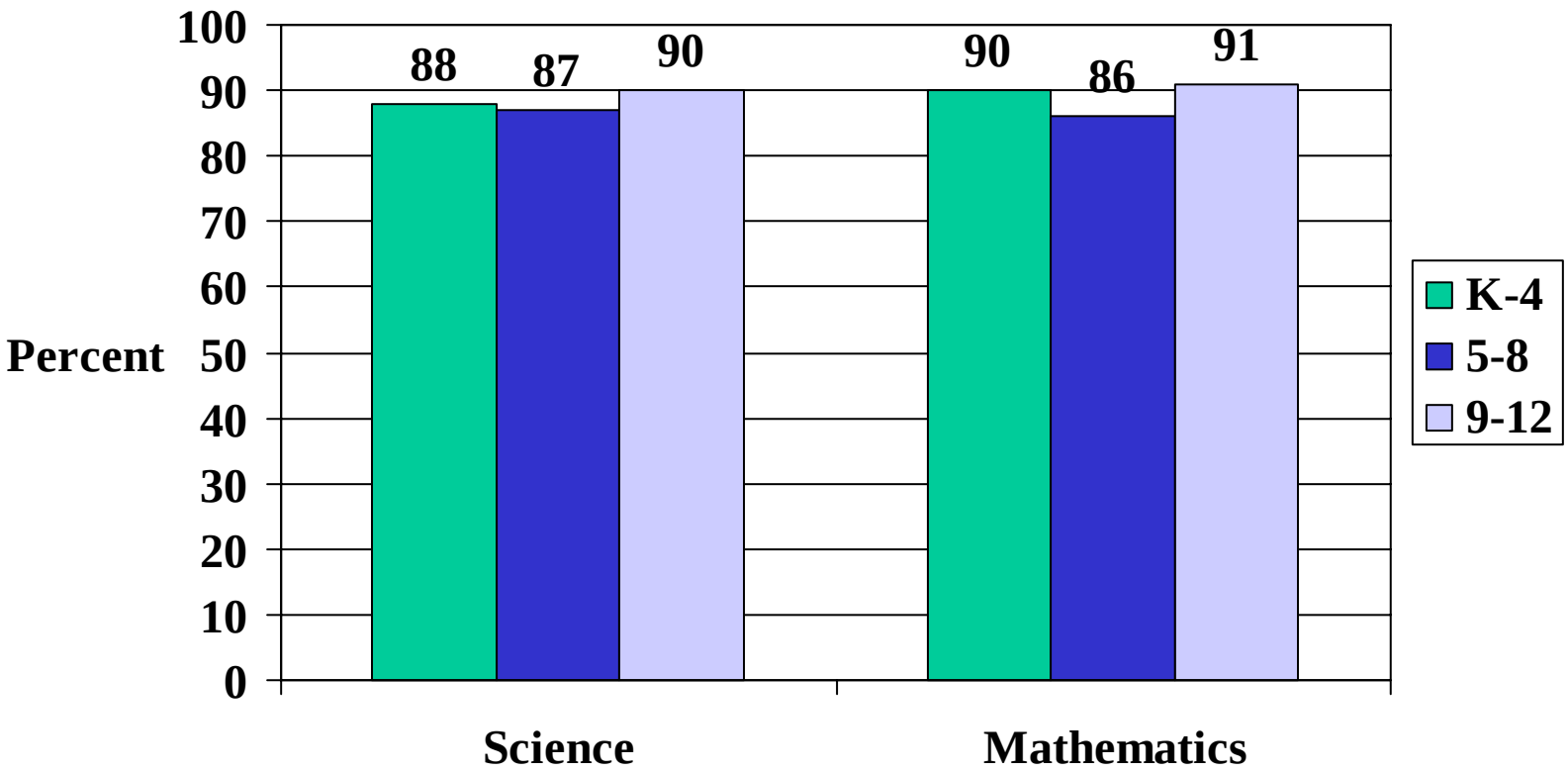
- Fourth in series funded by NSF, dating to 1977.
- Includes responses from almost 6,000 teachers in over 1,200 schools.
- Topics included:
  - Science and mathematics course offerings and enrollments
  - Availability of facilities and equipment
  - Instructional techniques
  - Teacher background
  - Needs for professional development
- Surveyed all Presidential Awardees.

Question 1: What percent of high school science teachers are male?

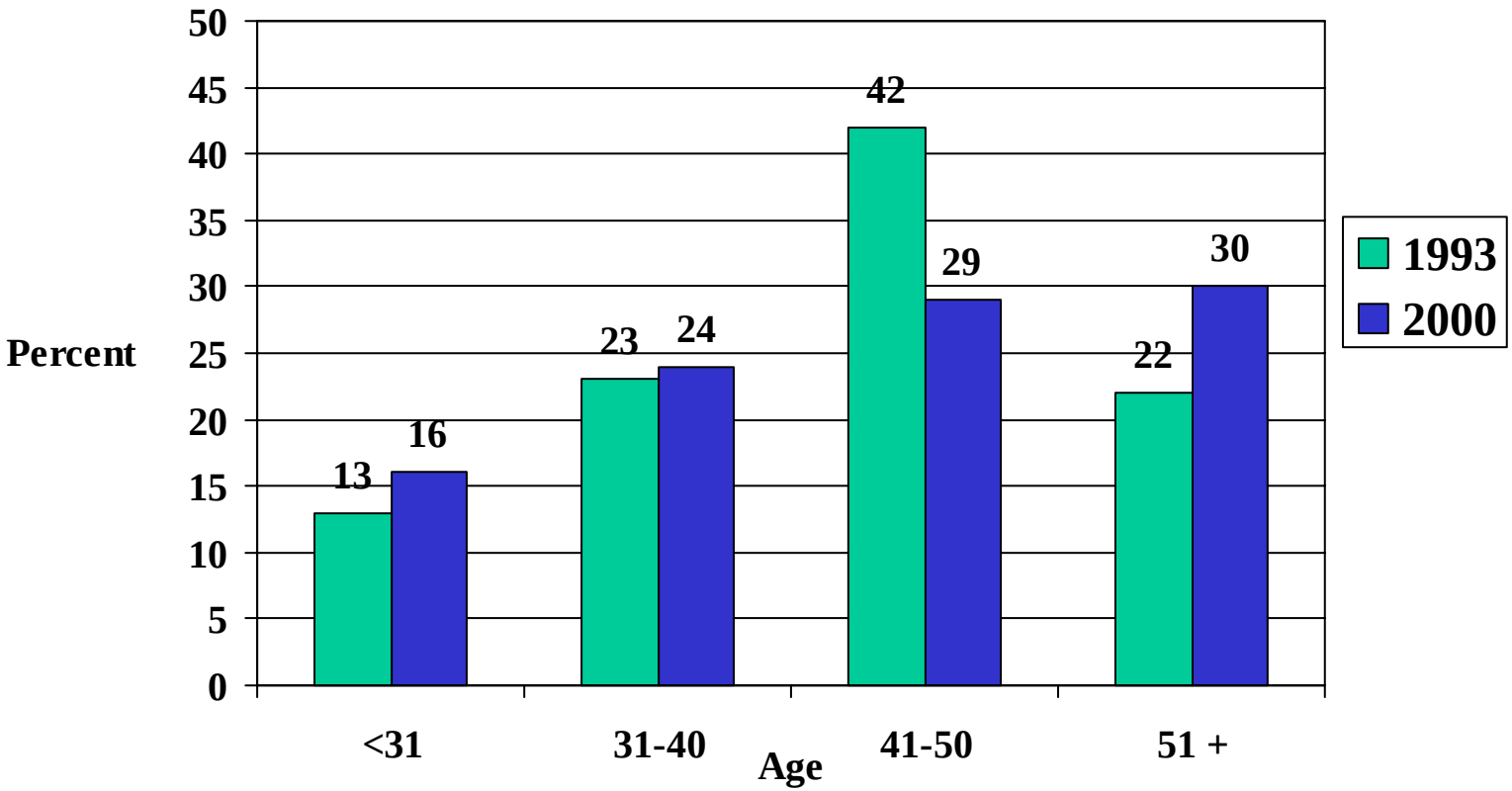
Percent of Male Science and Mathematics Teachers



Percent of White Science and Mathematics Teachers

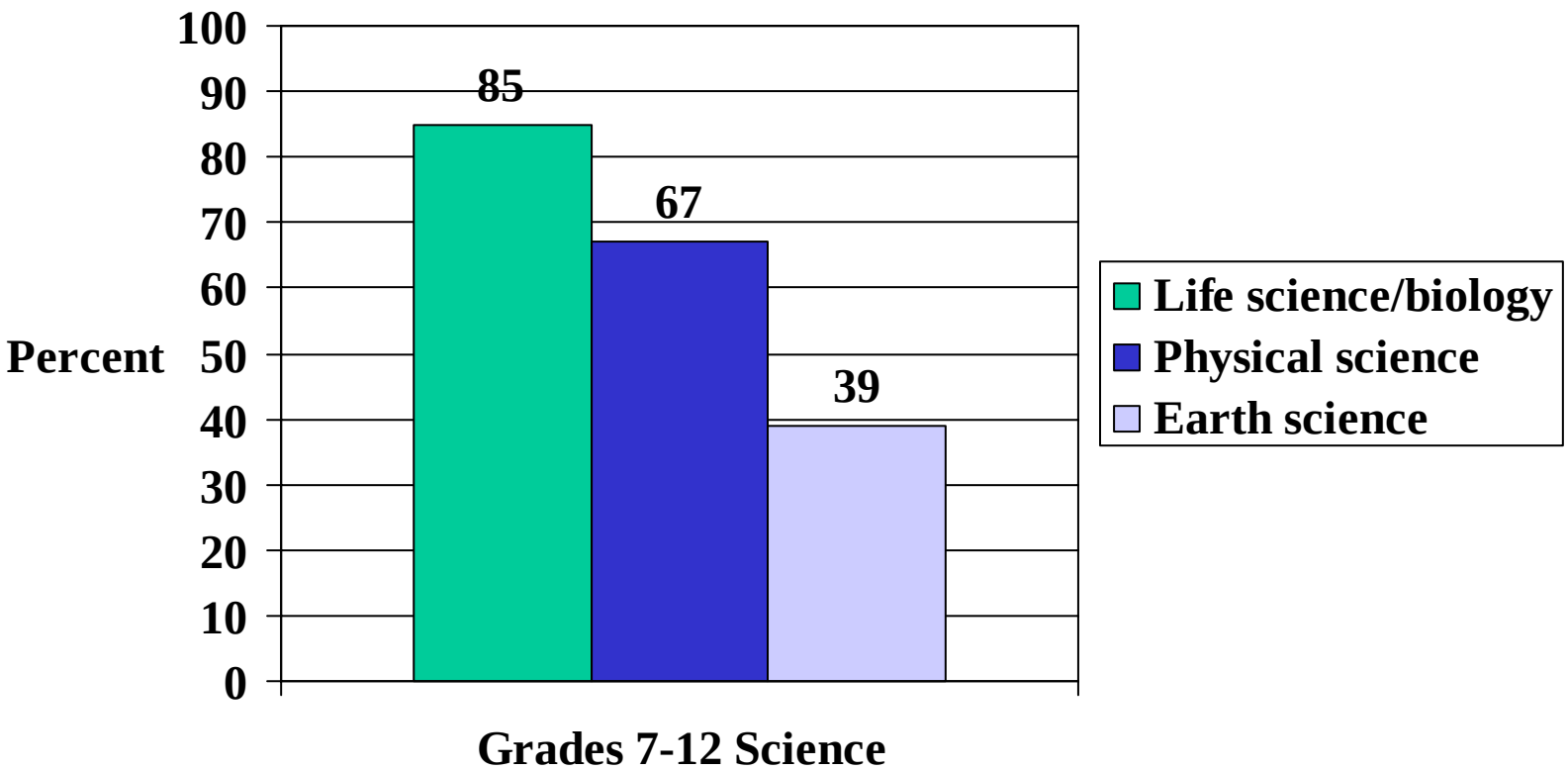


Age Distribution of High School Mathematics Teachers

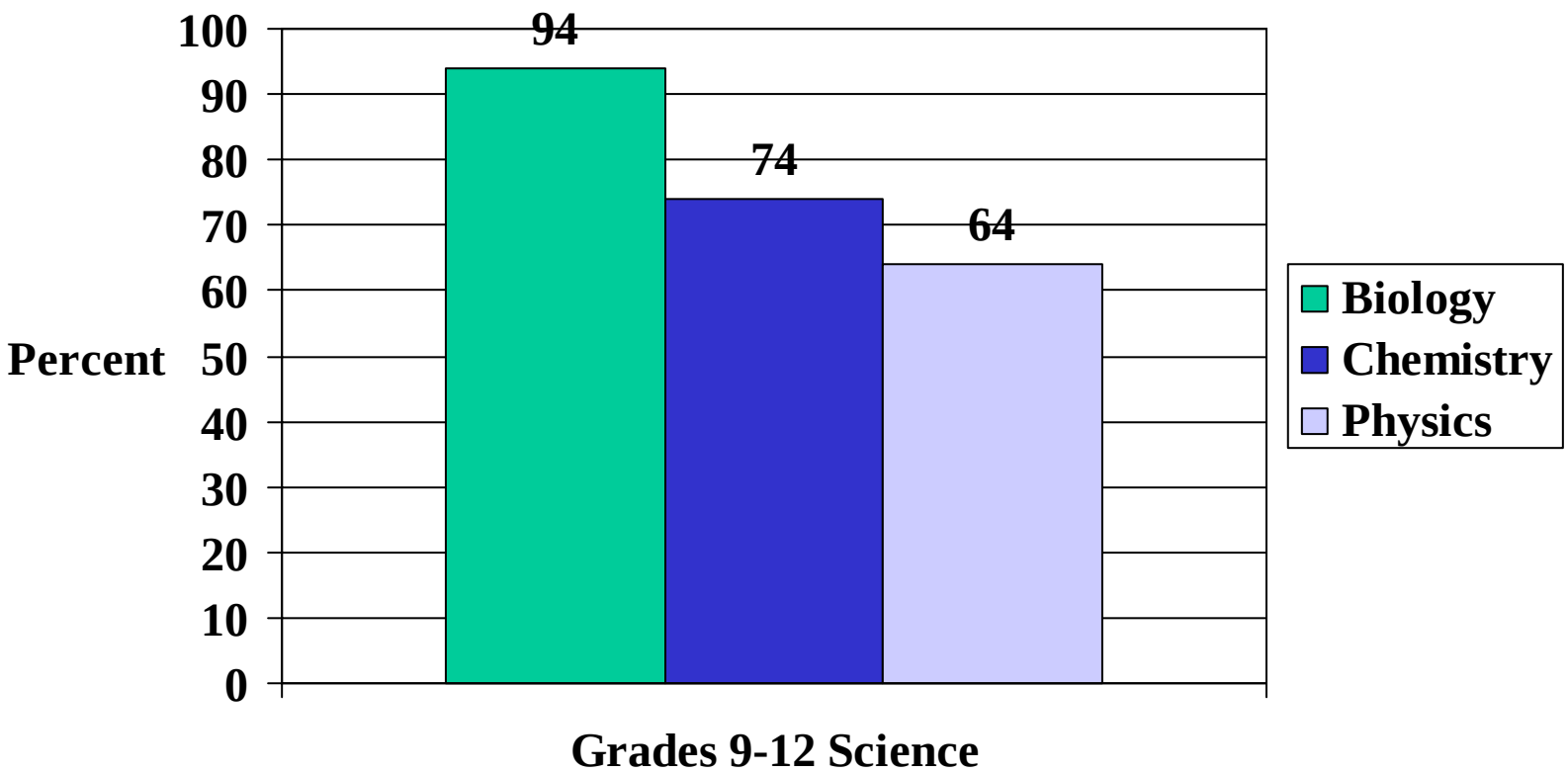


Question 2: What percent of high school physics classes are taught by teachers with six or more college courses in physics?

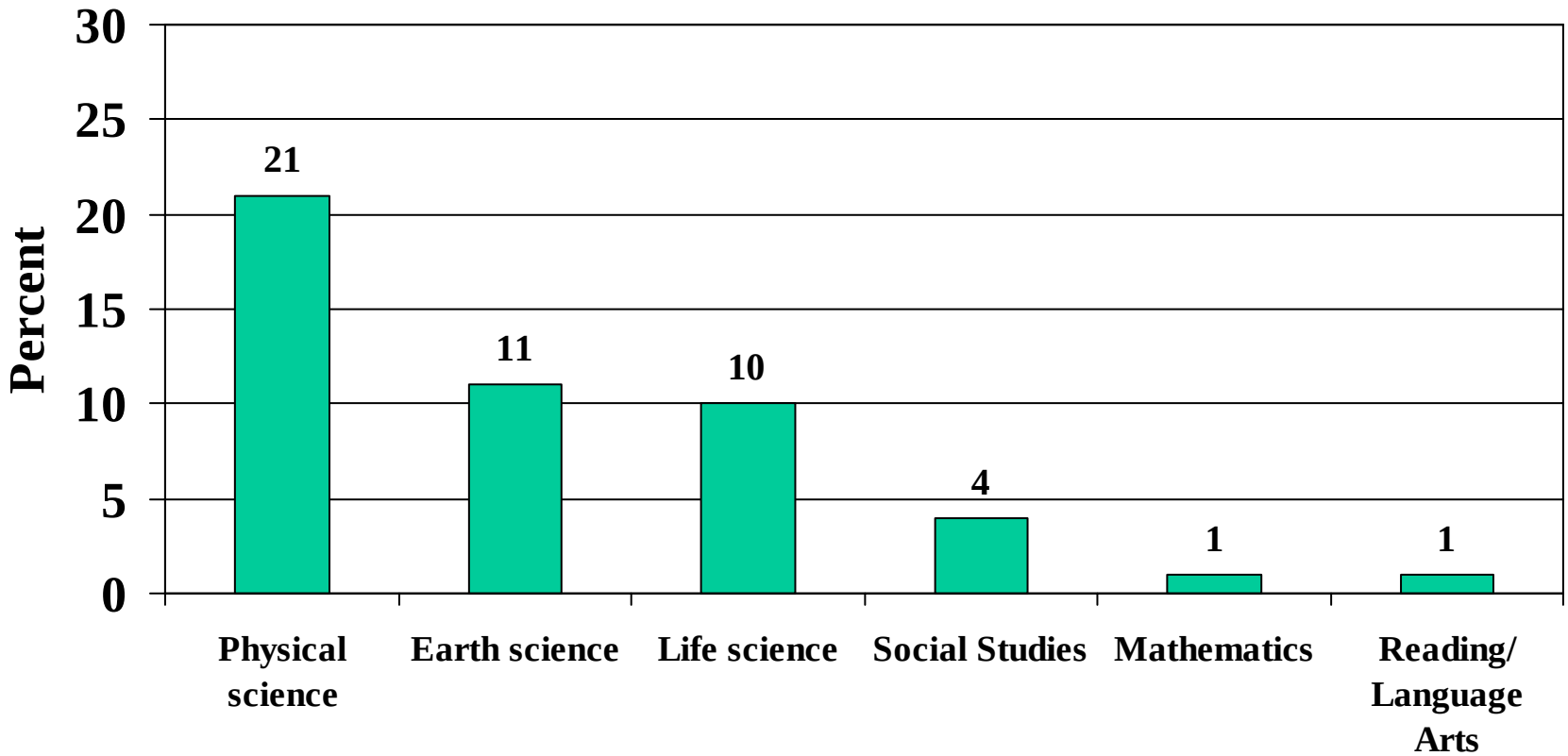
Percent of Grade 7-12 Science Classes Taught by Teachers with Six or More Courses in Field



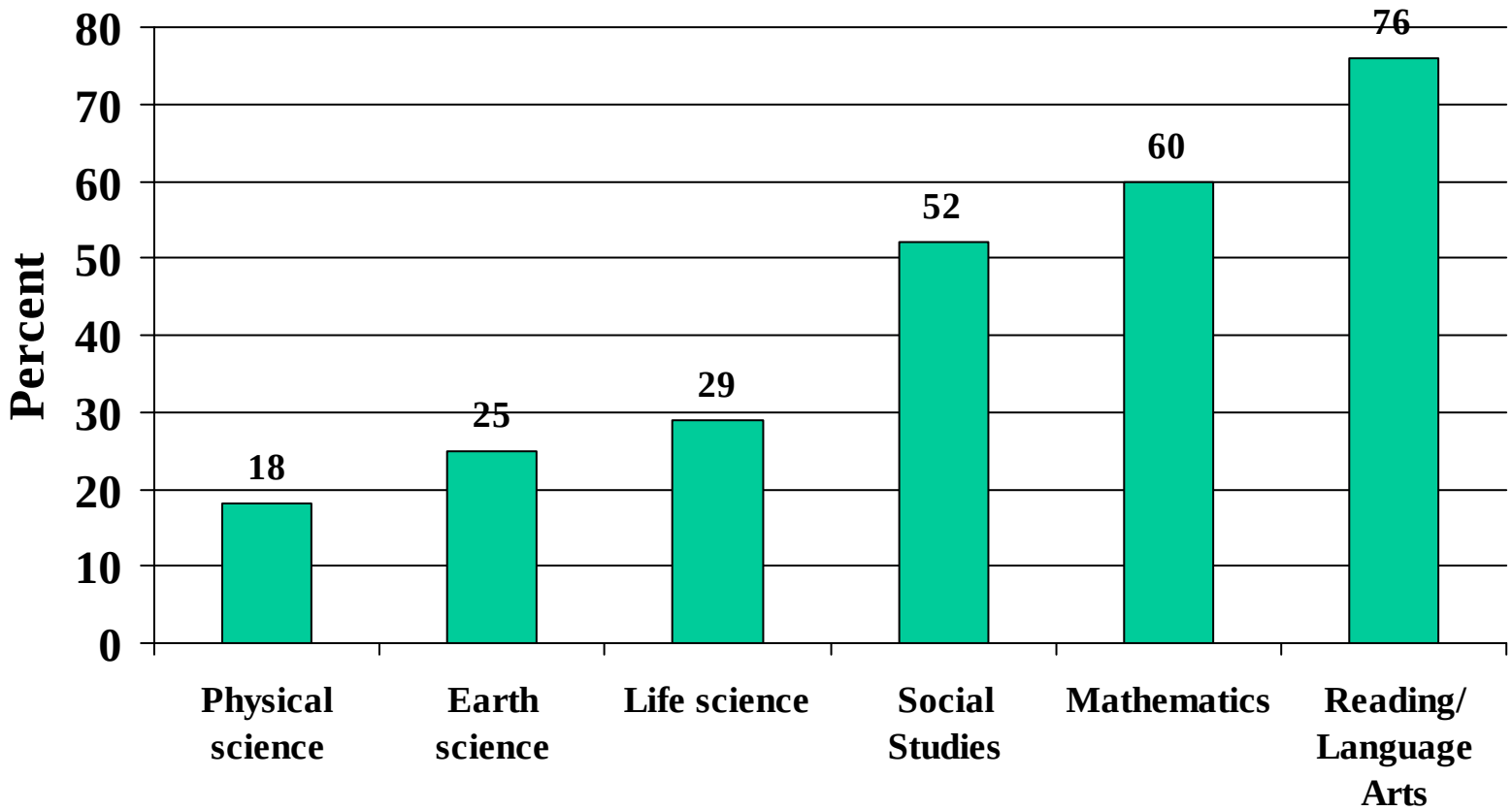
Percent of Grade 9-12 Classes Taught by Teachers with Six or More Courses in Field



Elementary Teachers Considering Themselves "not well qualified" to Teach the Subject

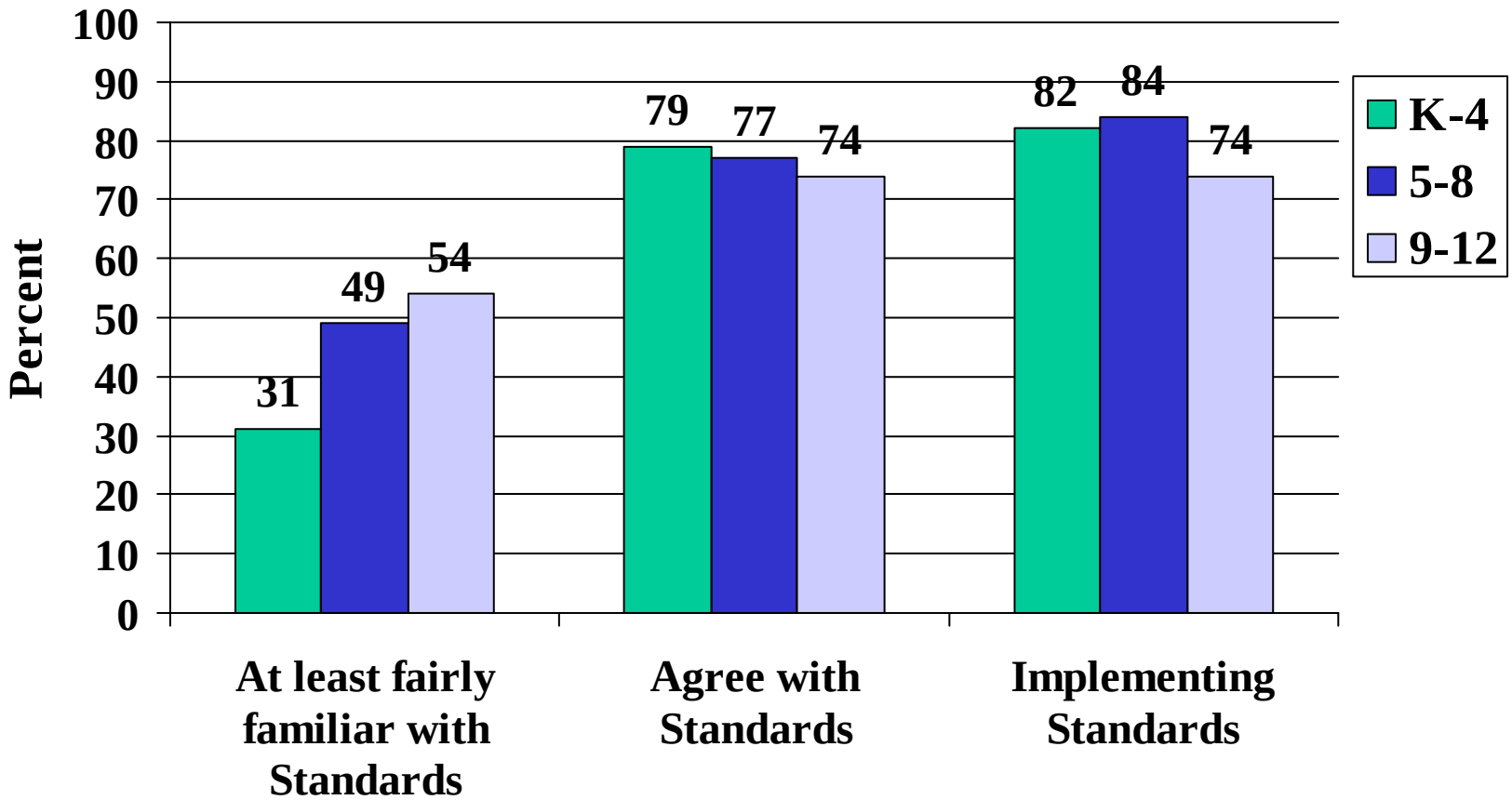


Elementary Teachers Considering Themselves "very well qualified" to Teach the Subject

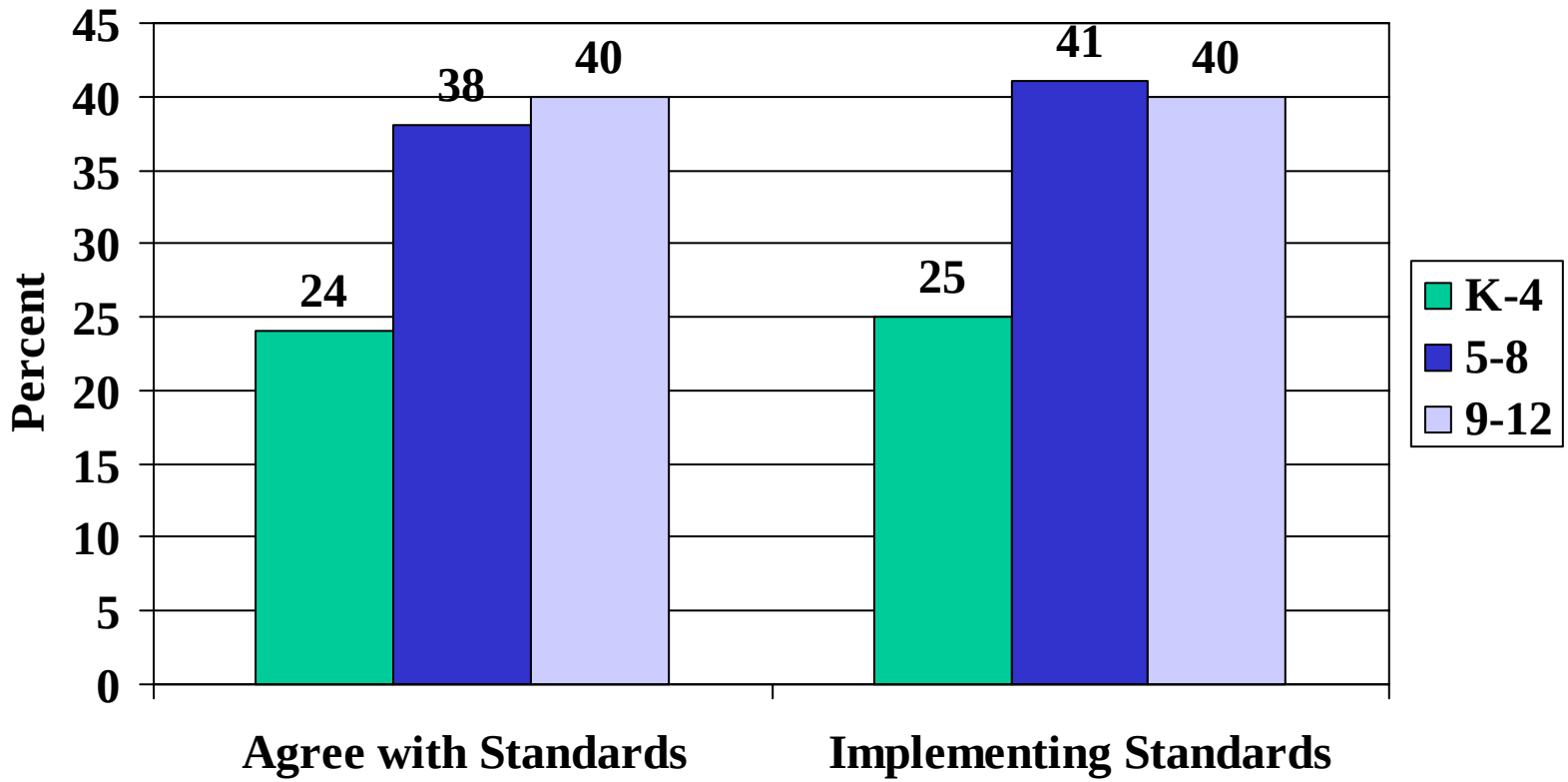


Question 3: What percent of K-4 mathematics teachers indicate they are “implementing” the NCTM standards?

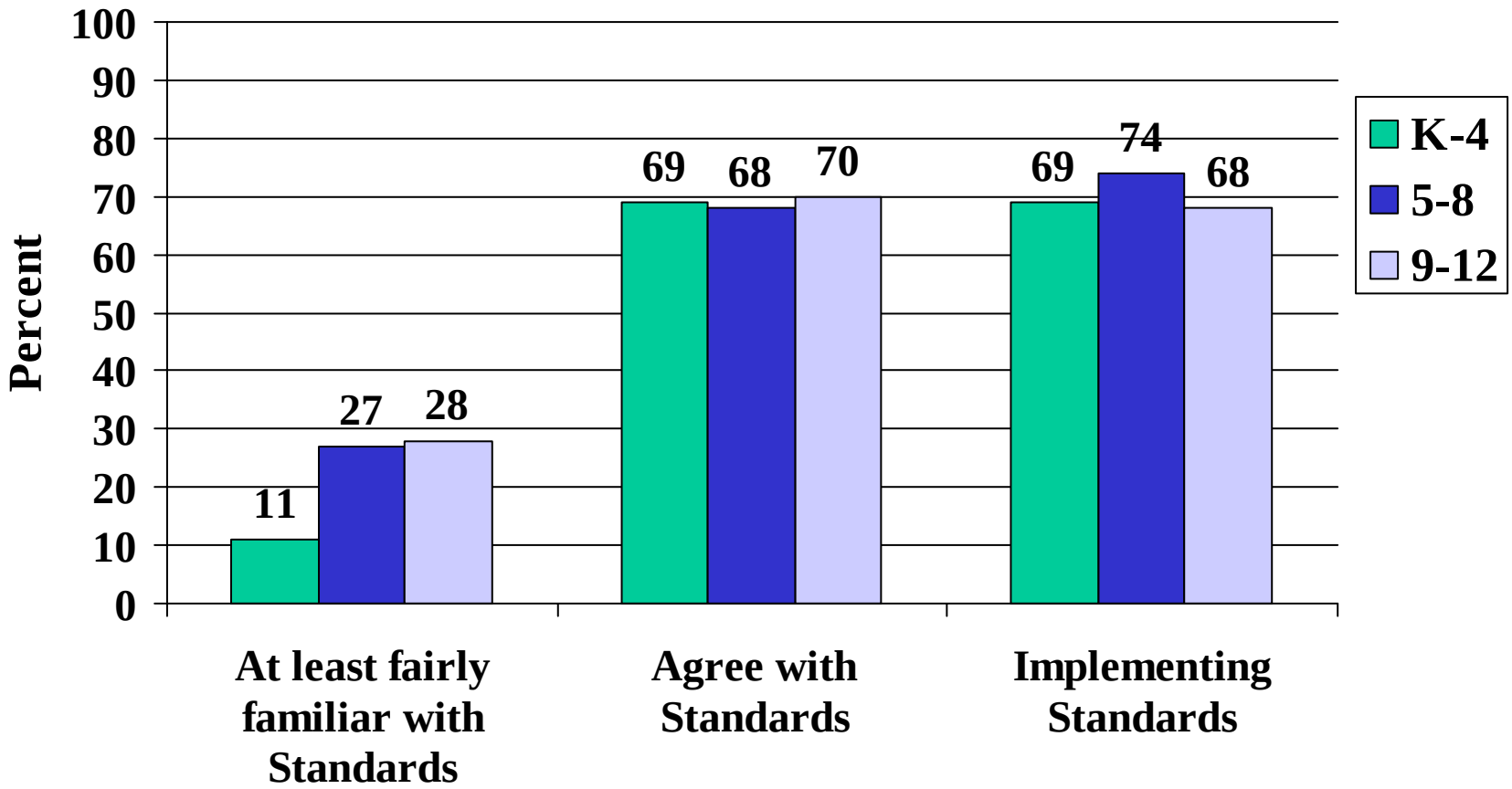
Teacher Opinions Related to NCTM Standards



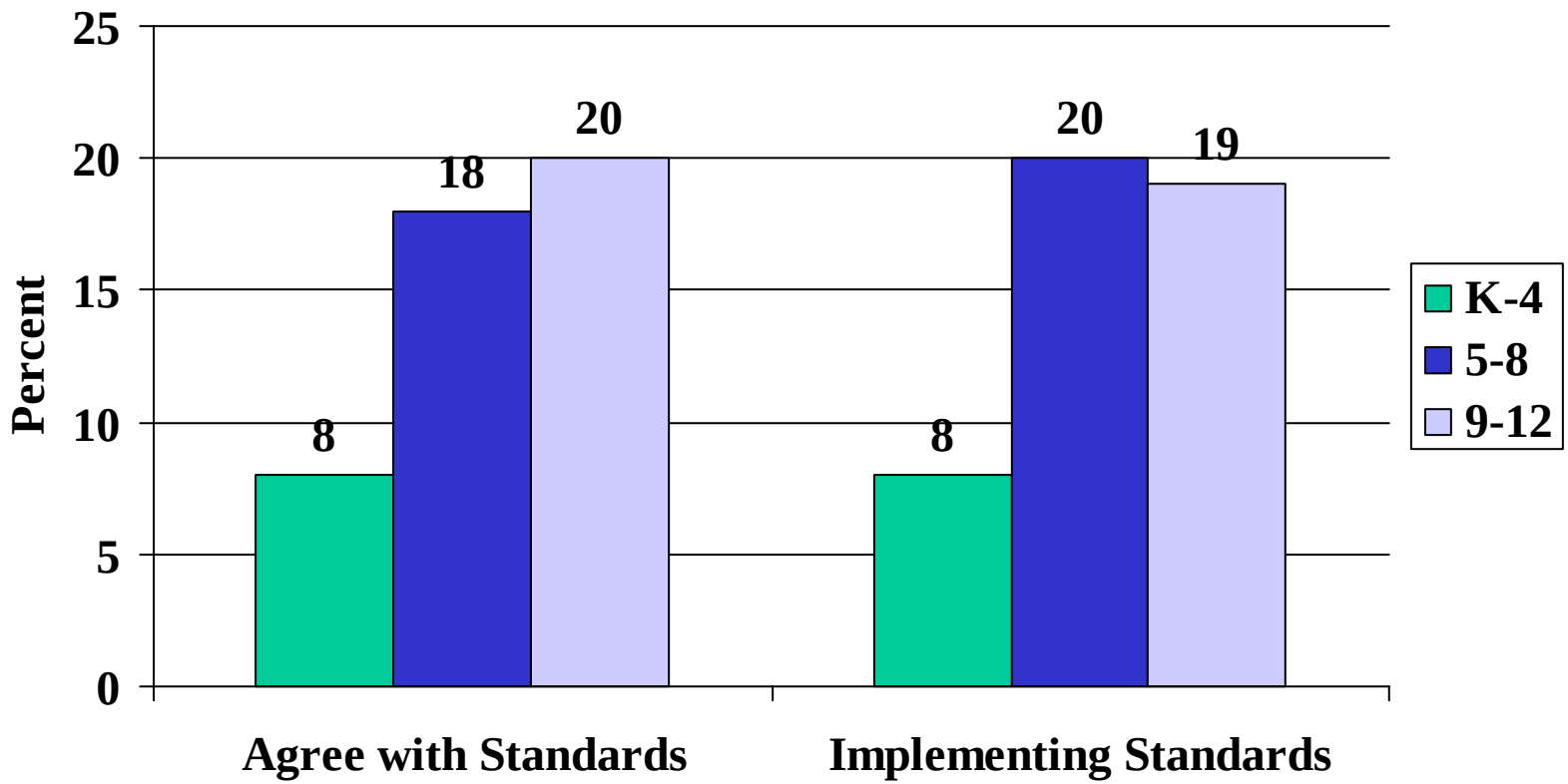
Percent of All Teachers Agreeing with and Implementing NCTM Standards



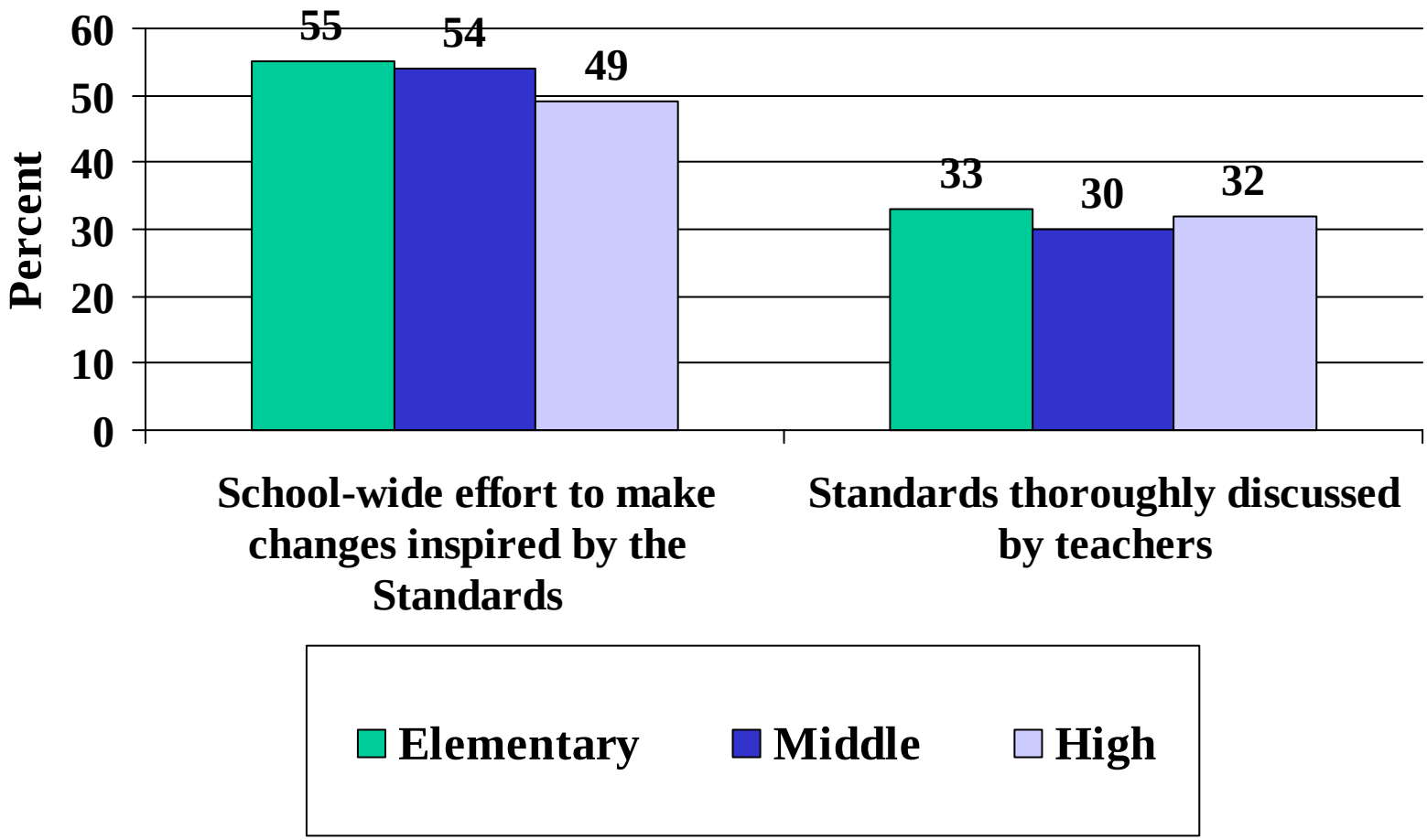
Teacher Opinions Related to NRC Standards



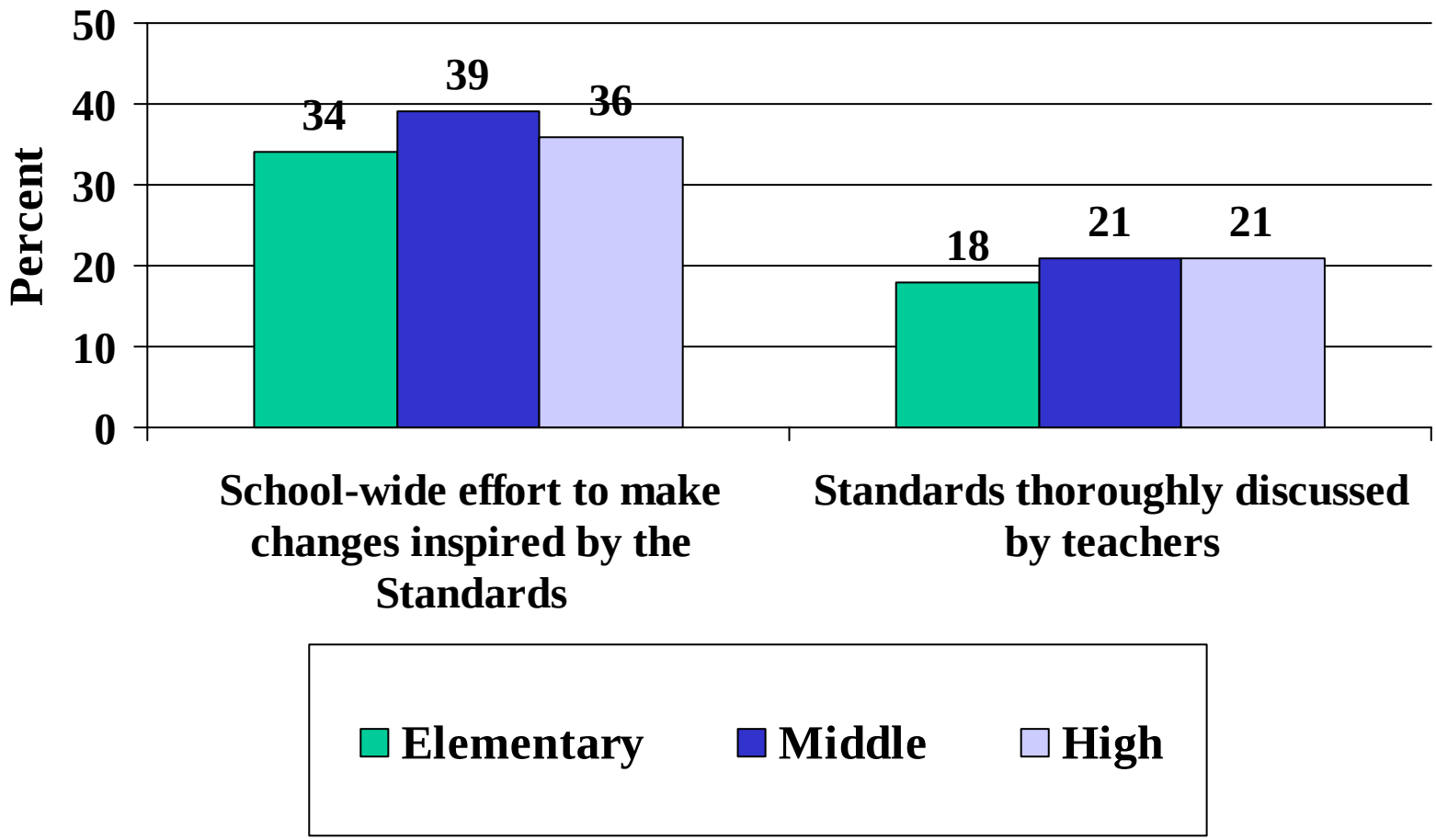
Percent of All Teachers Agreeing with and Implementing NRC Standards



School Attention to NCTM Standards



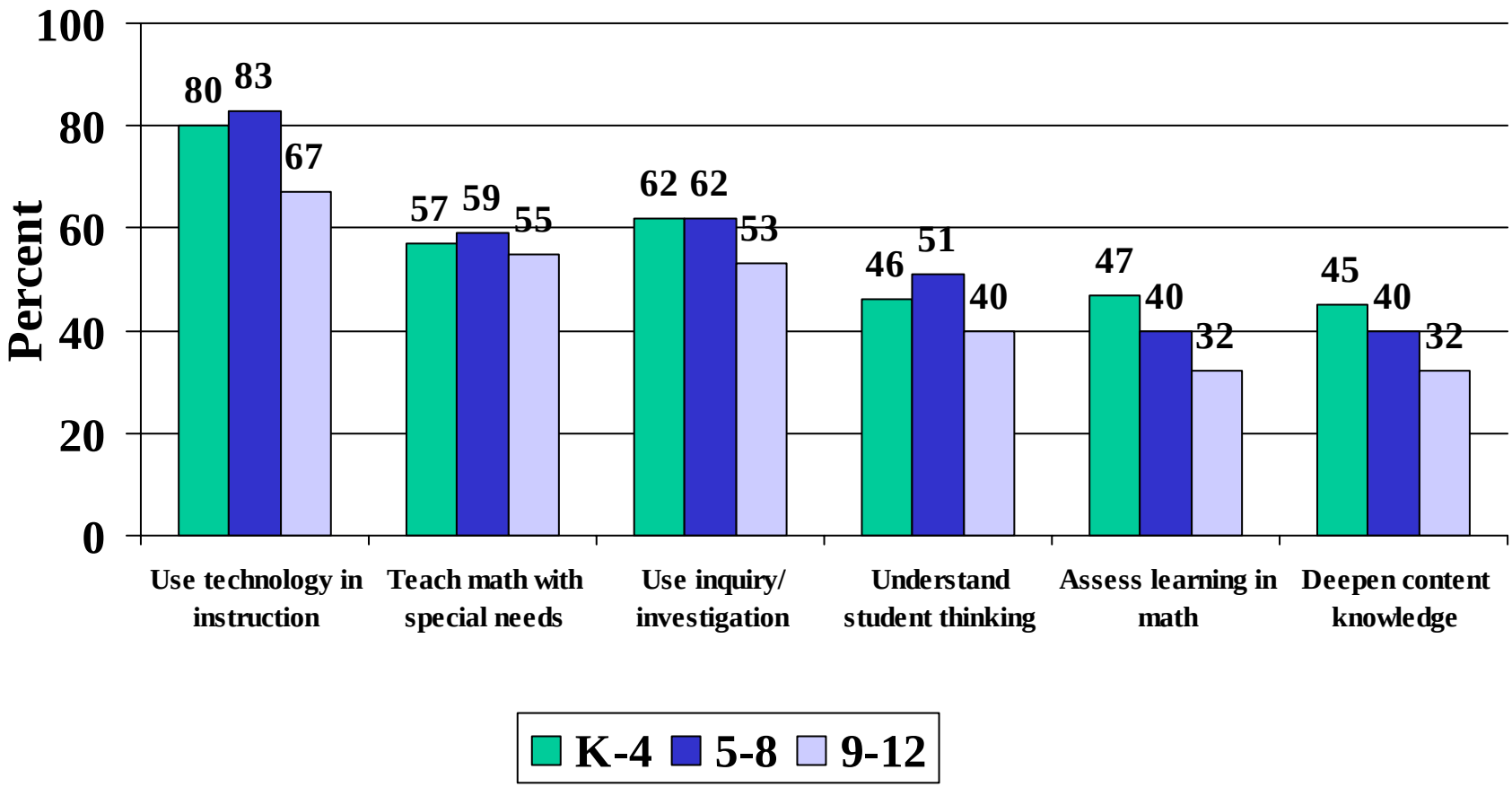
School Attention to NRC Standards



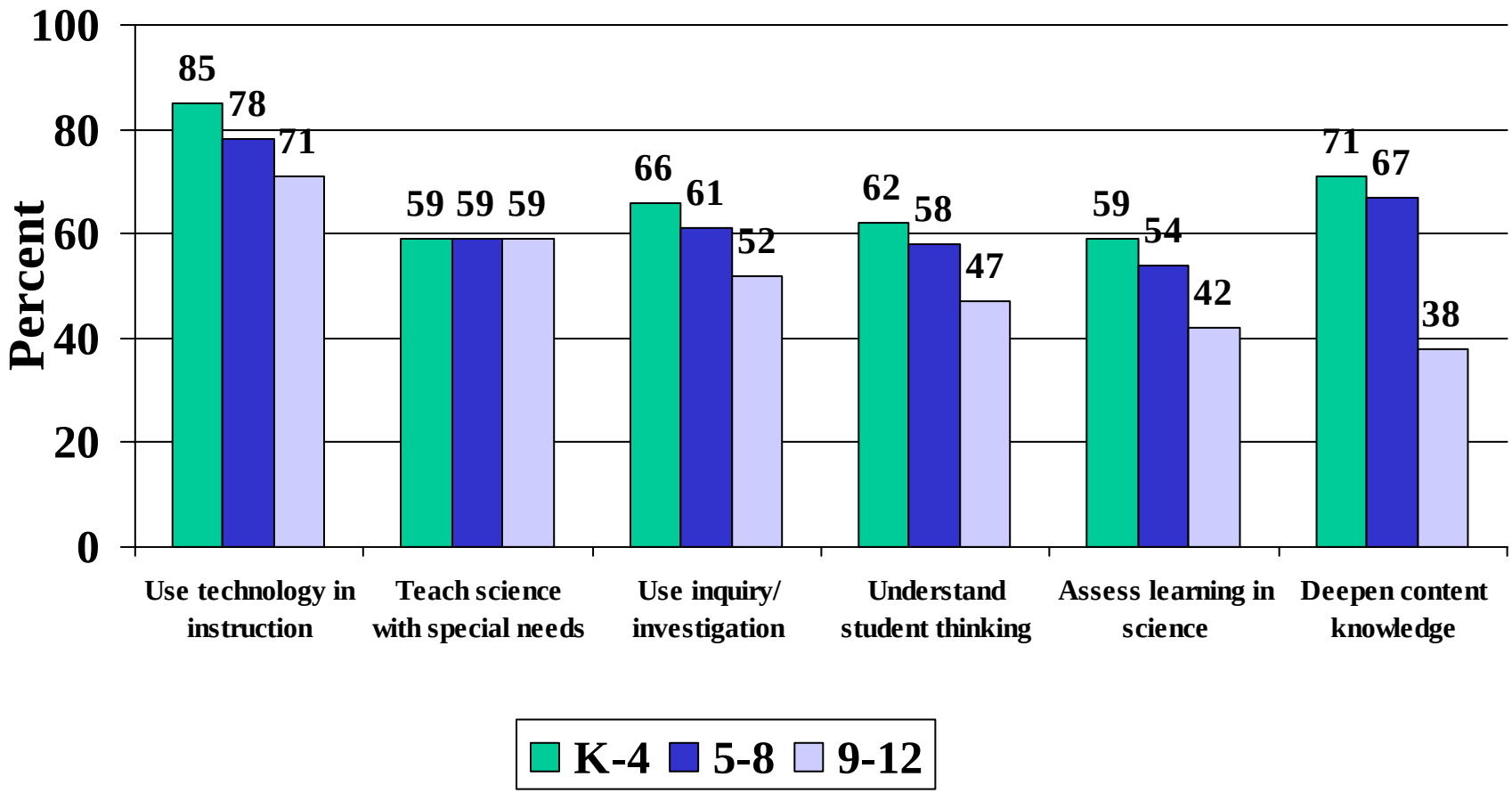
Question 4: What percent of middle grades mathematics teachers perceive a moderate or substantial need for professional development in:

- Deepening their own content knowledge
- Learning how to use technology
- Understanding student thinking

Mathematics Teachers' Perception of Need for Professional Development Three Years Ago

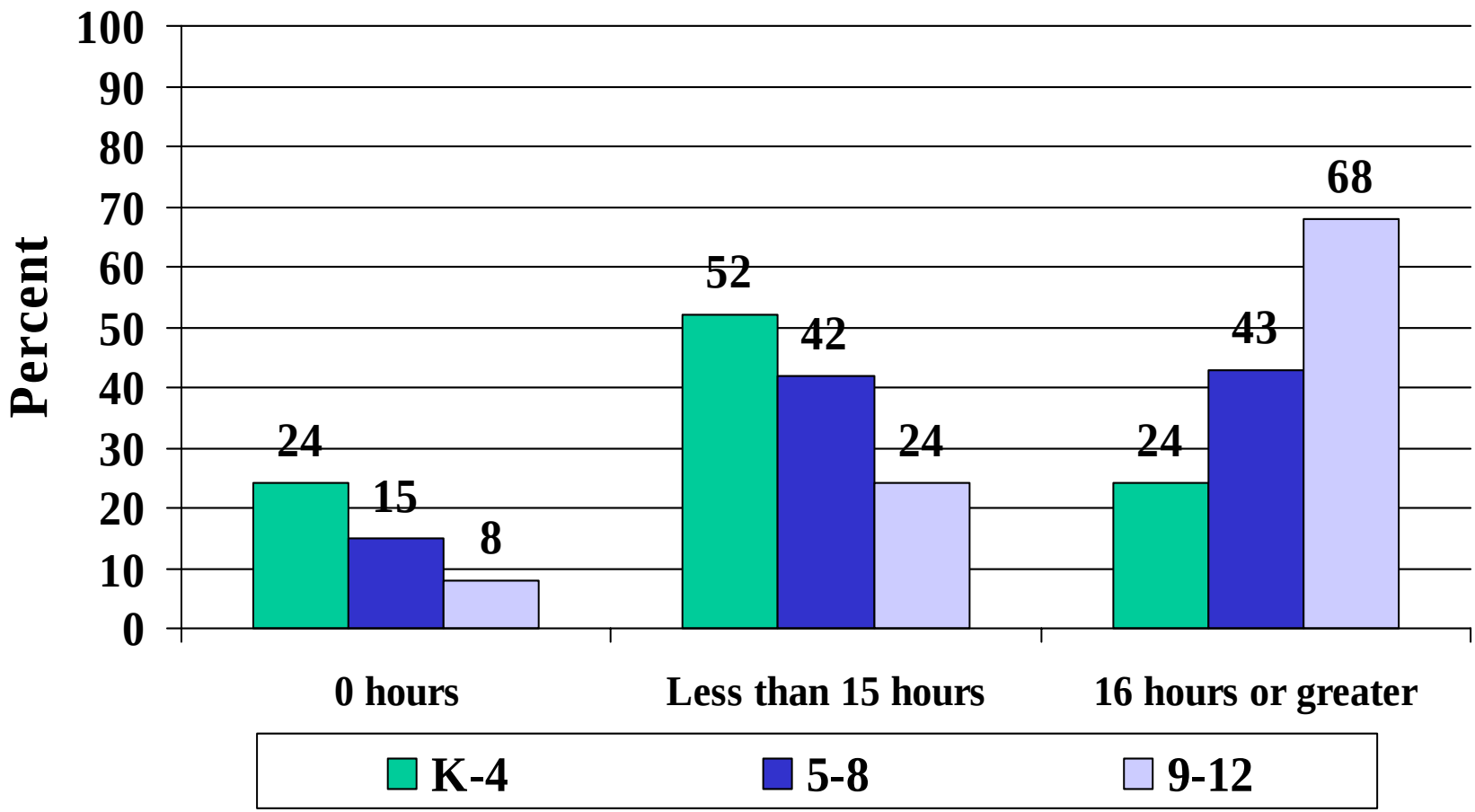


Science Teachers' Perception of Need for Professional Development Three Years Ago

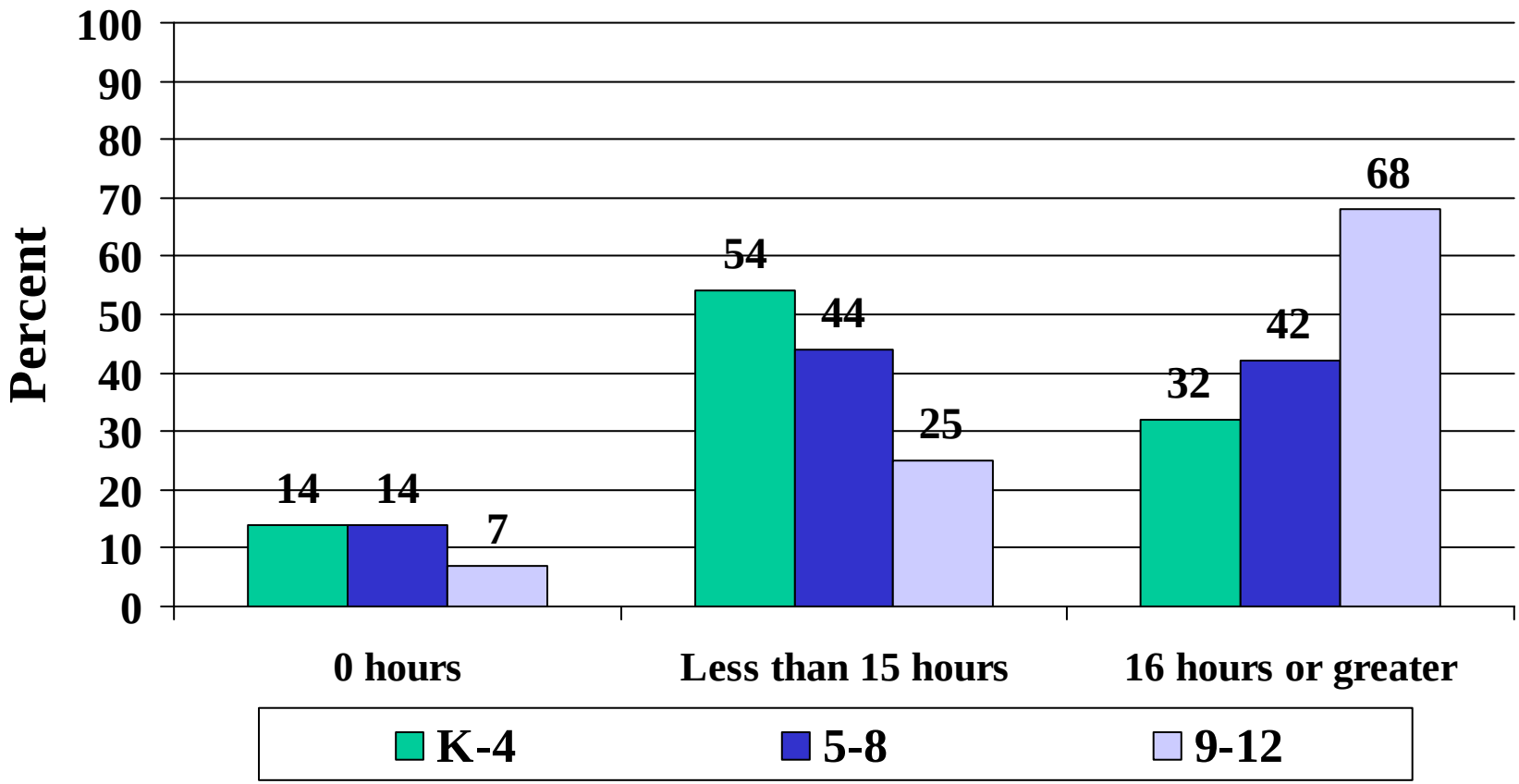


Question 5: What percent of elementary science and mathematics teachers had no inservice education in science/mathematics in last 3 years?

Science Teachers' Participation in Professional Development in Last 3 Years

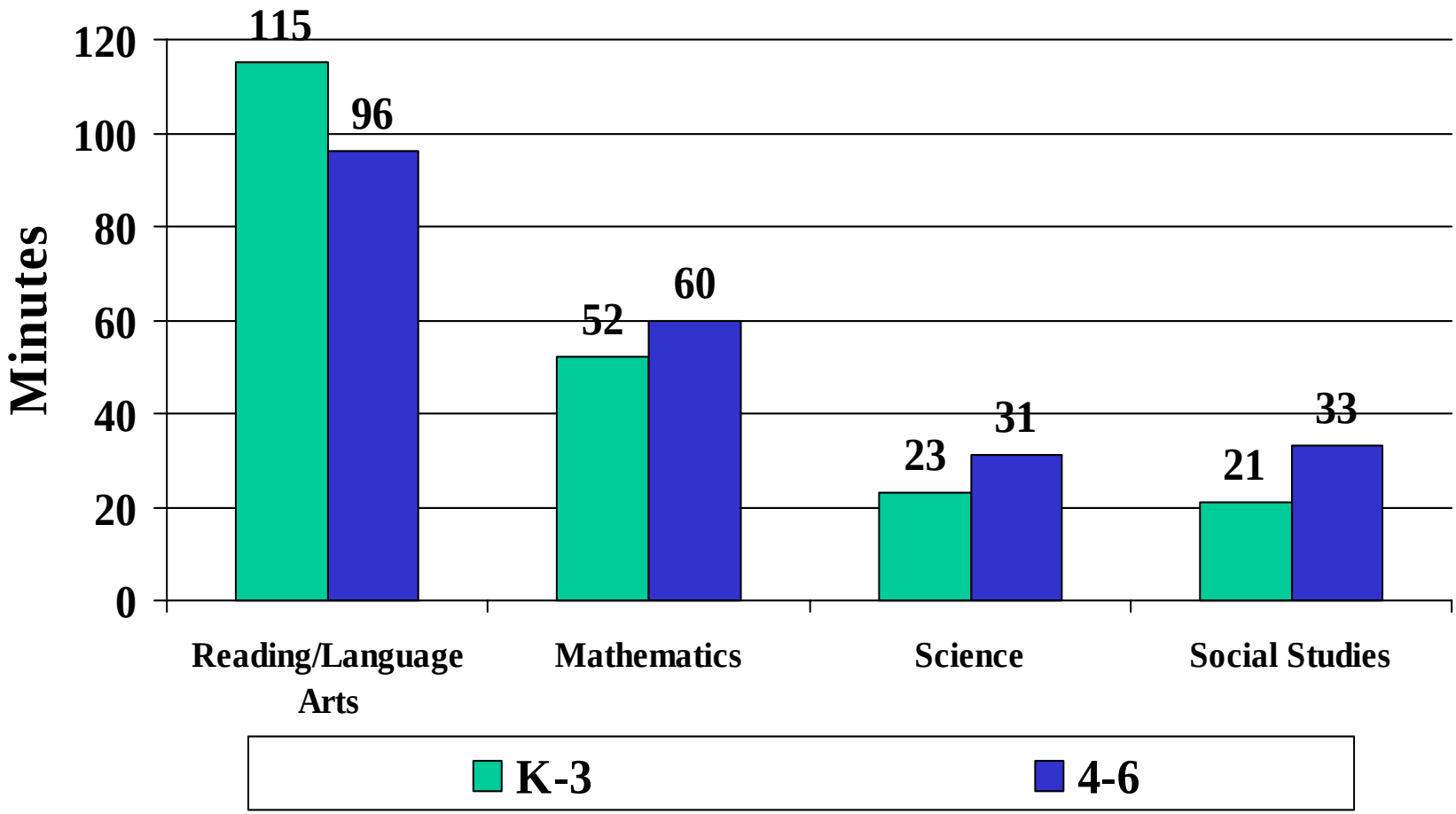


Mathematics Teachers' Participation in Professional Development

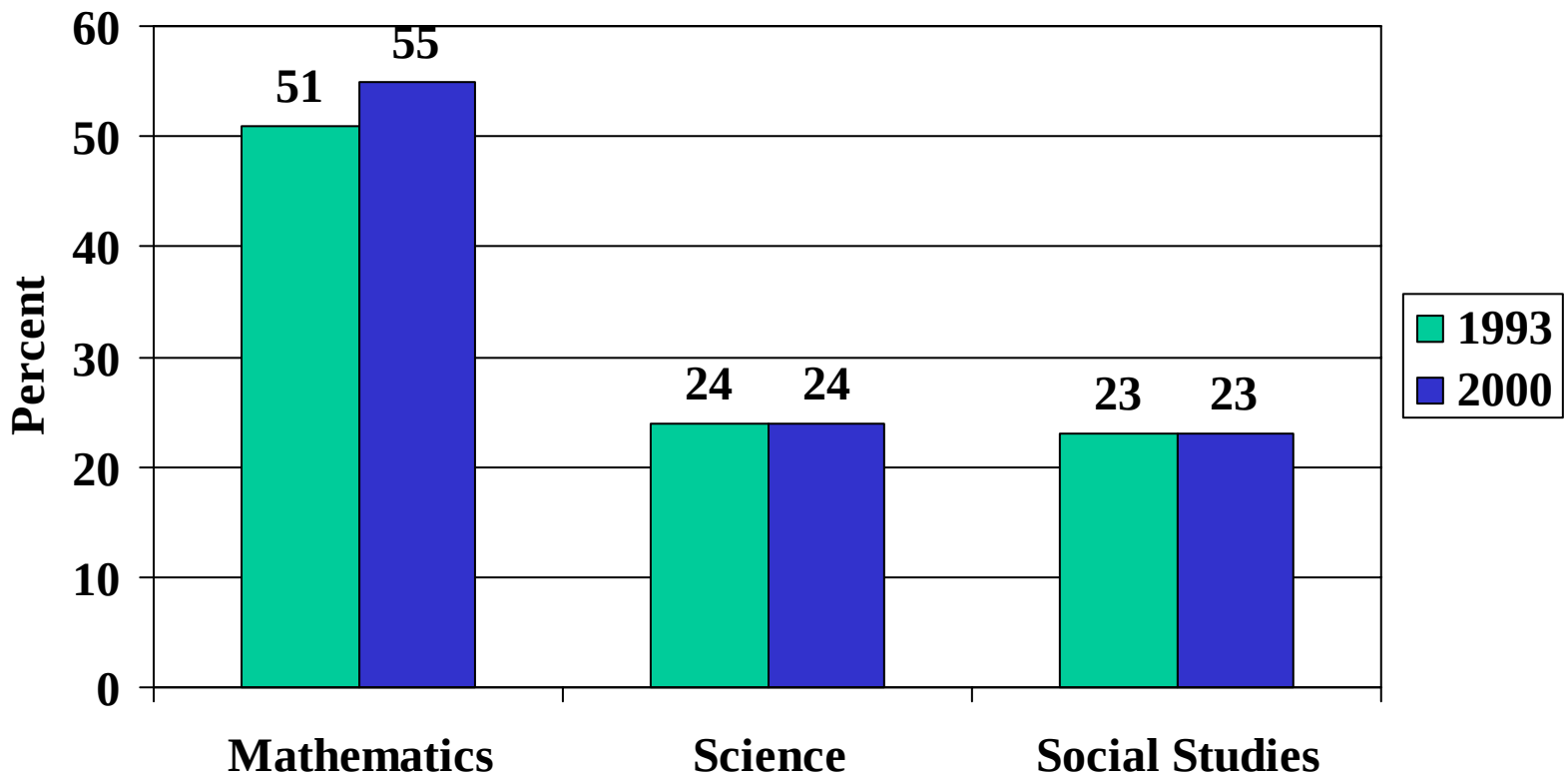


Question 6: On average, how many minutes per day are spent on science instruction in elementary classes?

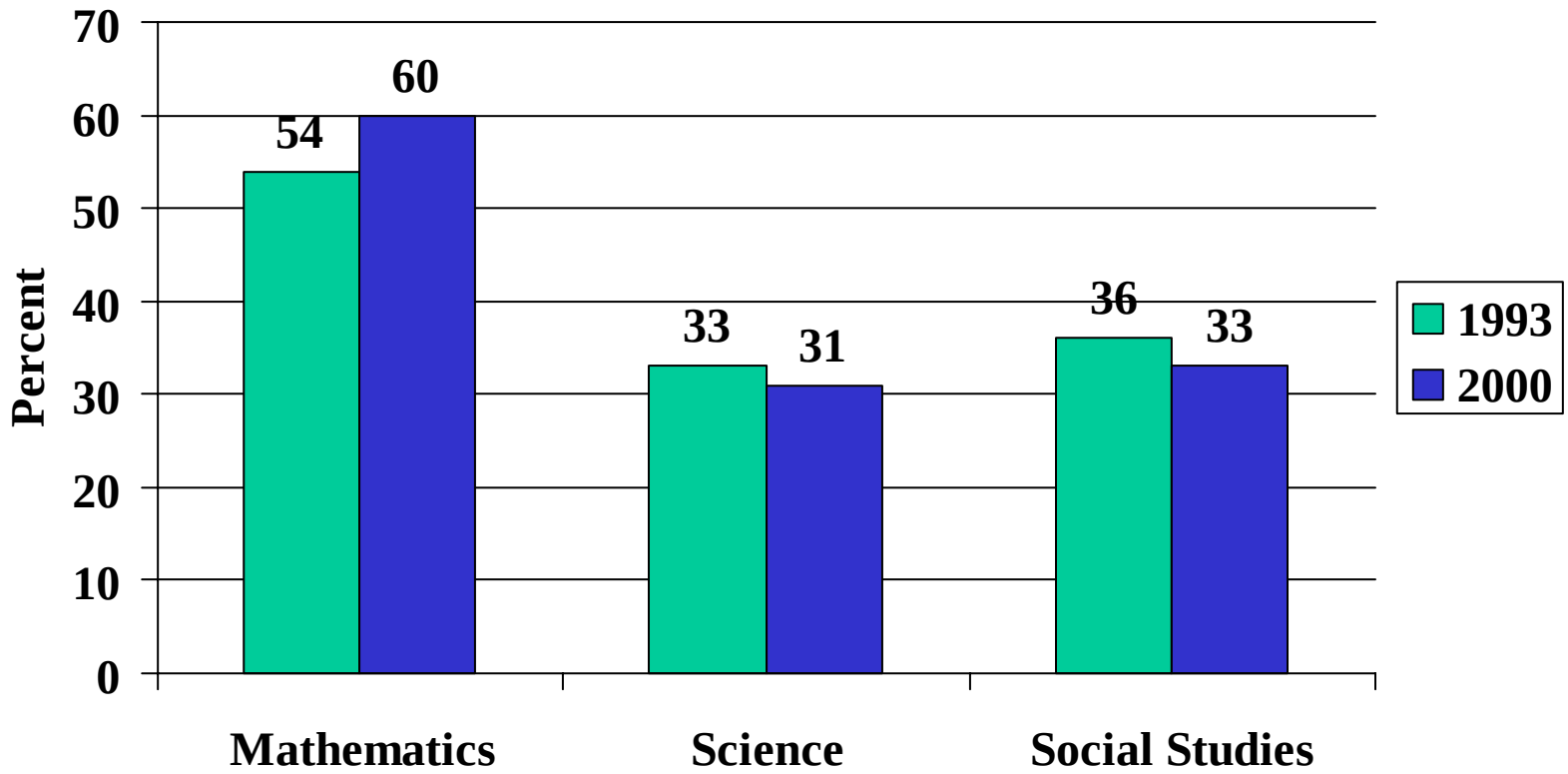
Average Number of Minutes Per Day Spent Teaching Each Subject in Self-Contained Classes



Average Number of Minutes Per Day Spent Teaching Each Subject in Self-Contained Grades 1-3 Classes

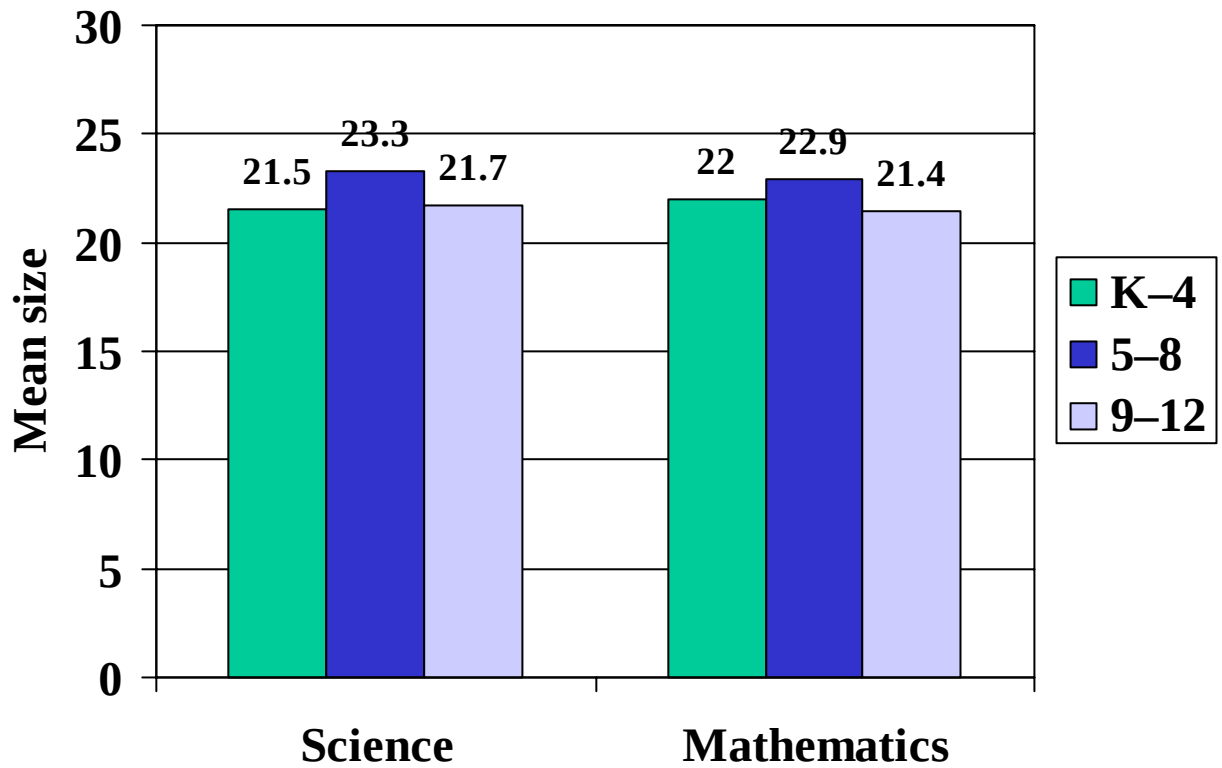


Average Number of Minutes Per Day Spent Teaching Each Subject in Self-Contained Grades 4-6 Classes

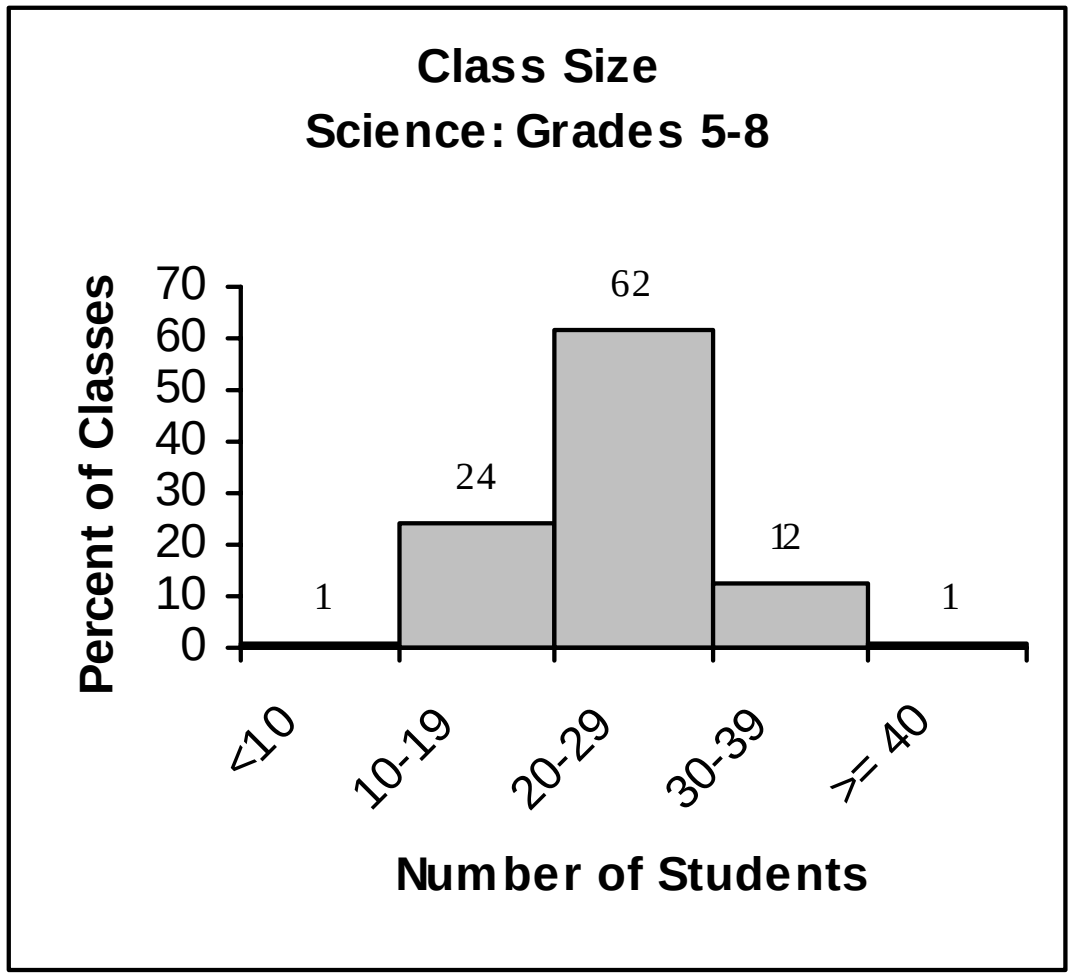


Question 7: What is the average class size in middle grades science and mathematics classes? What percent of classes have more than 29 students?

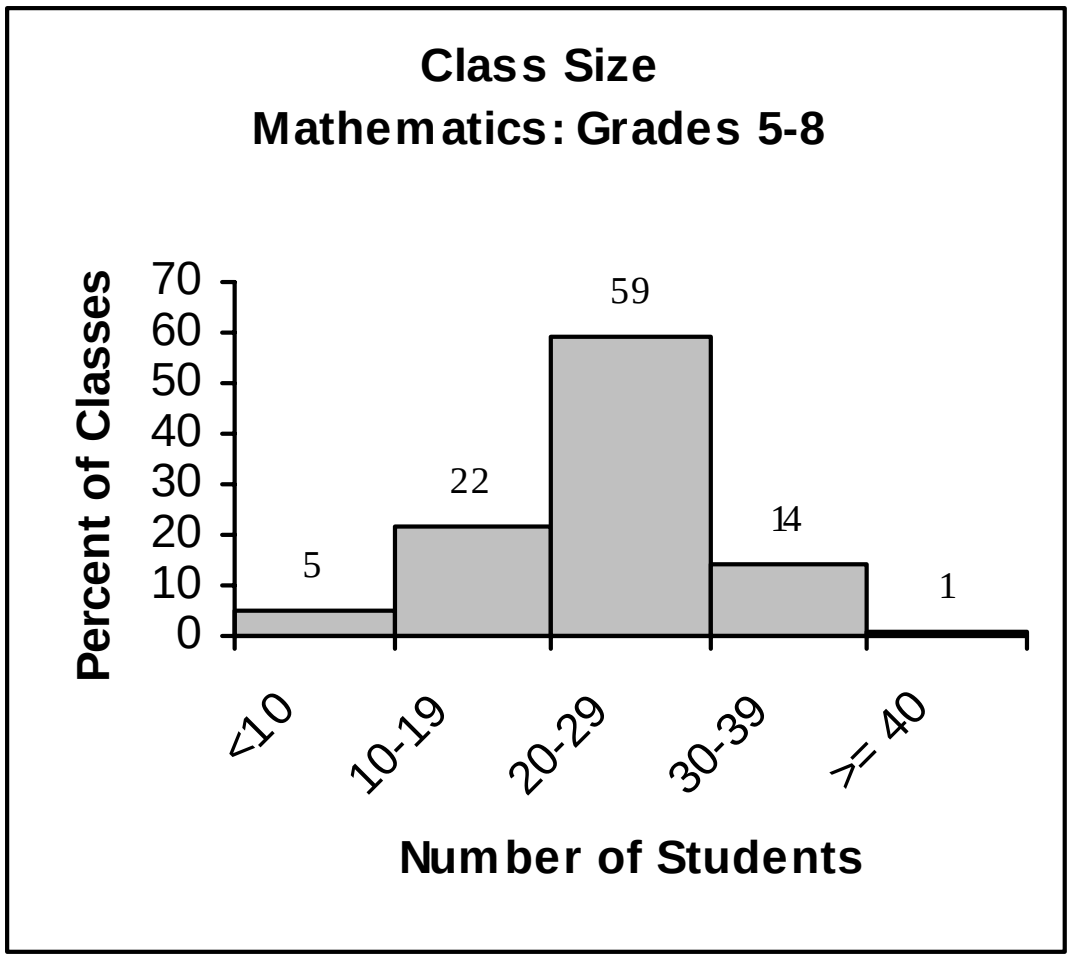
Average Class Sizes



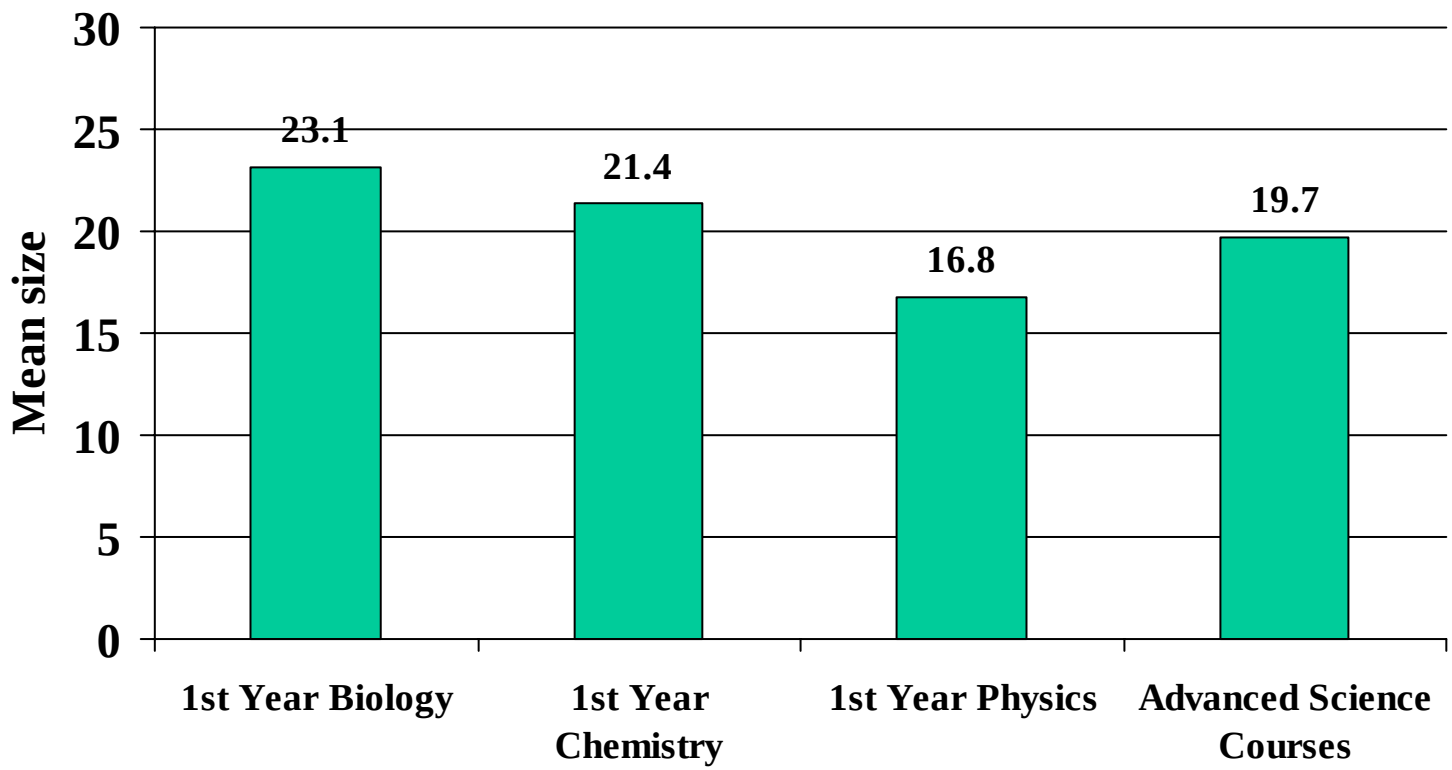
Distribution of Middle Grades Science Classes



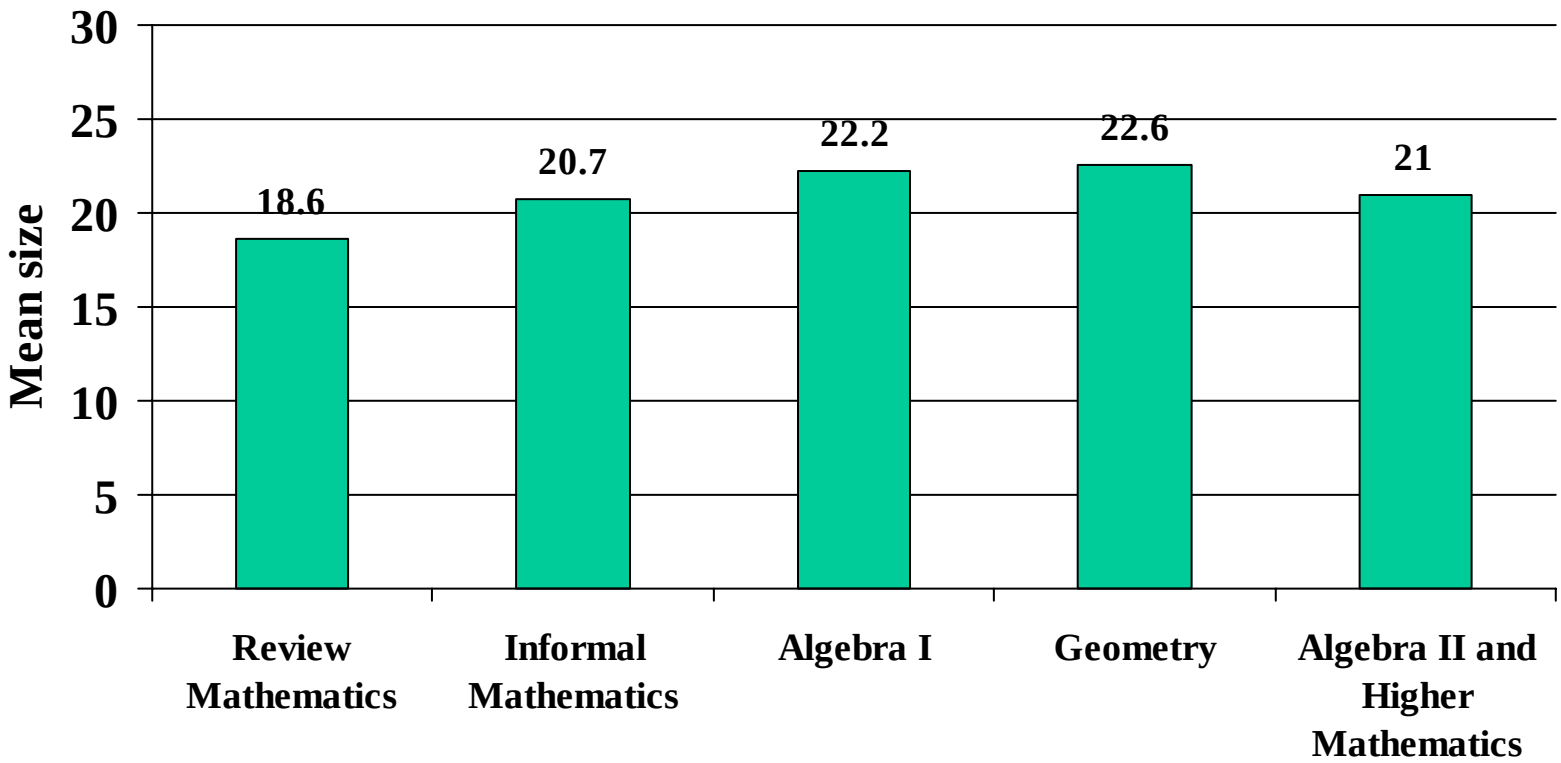
Distribution of Middle Grades Mathematics Classes



Mean Class Sizes

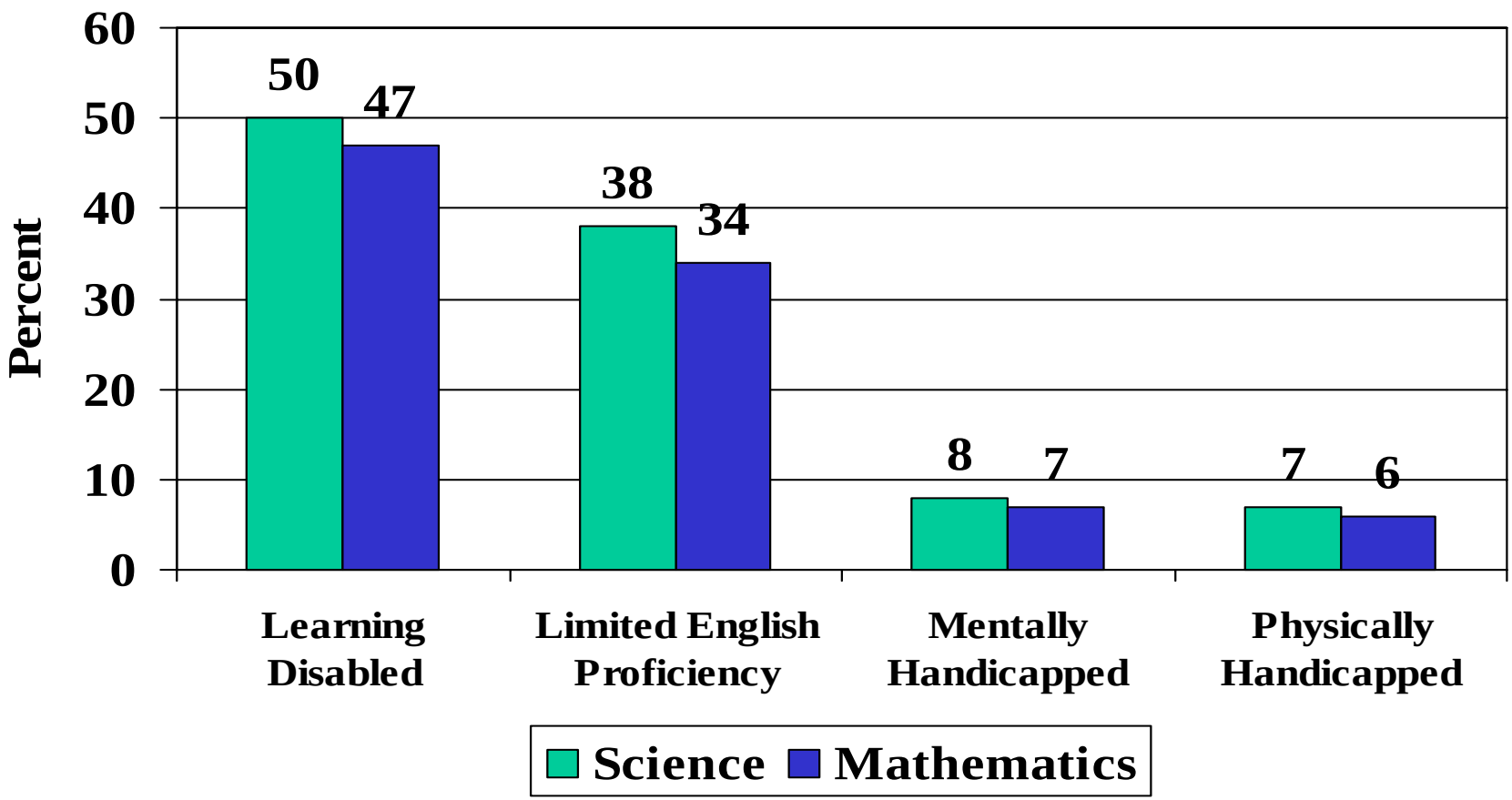


Mean Class Sizes

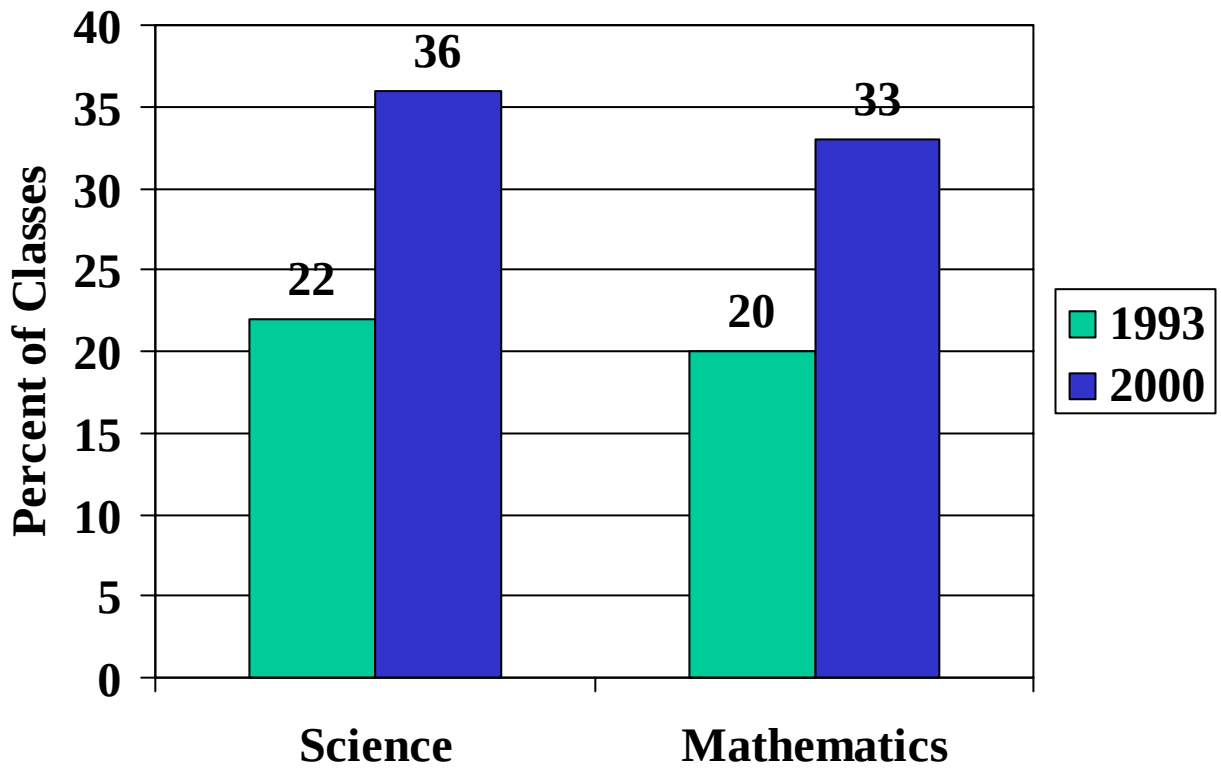


Question 8: What percent of K-4 science and mathematics classes include students of limited English proficiency (LEP)?

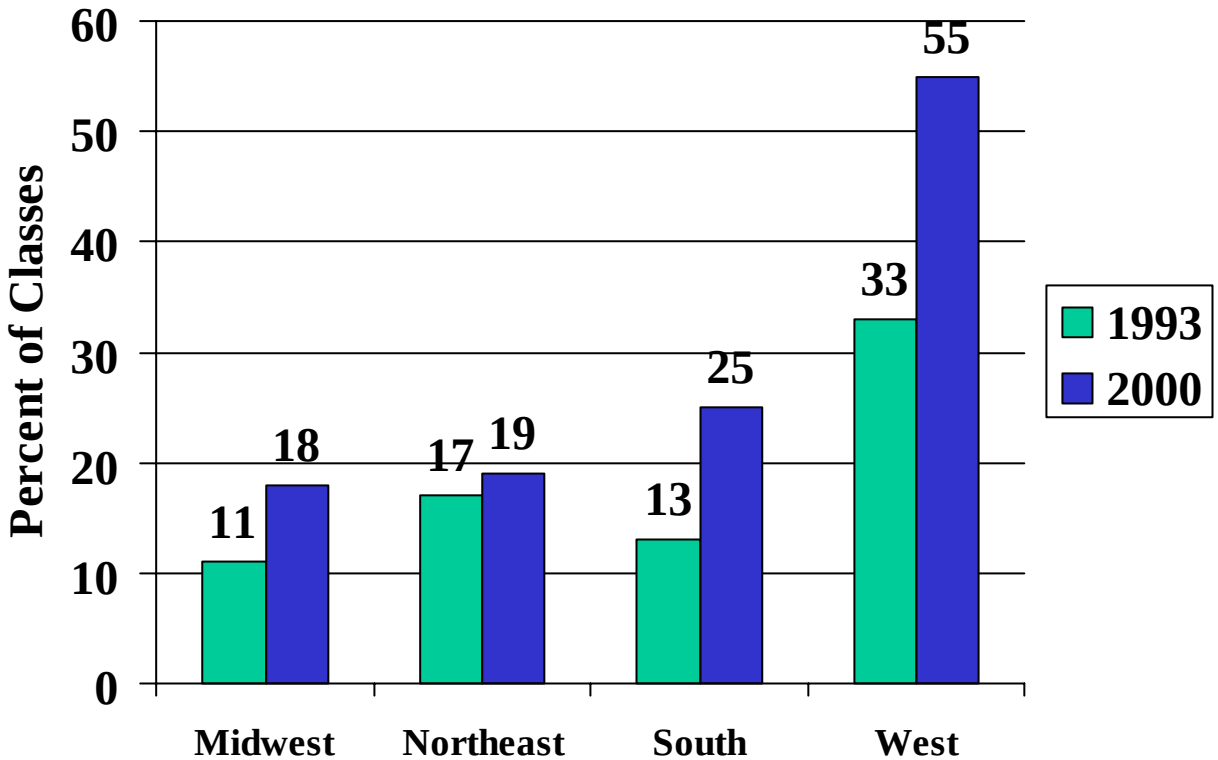
Percent of Classes With at Least One Special Needs Student (K-4)



Grades 1-4 Science and Mathematics Classes with One or More LEP Students

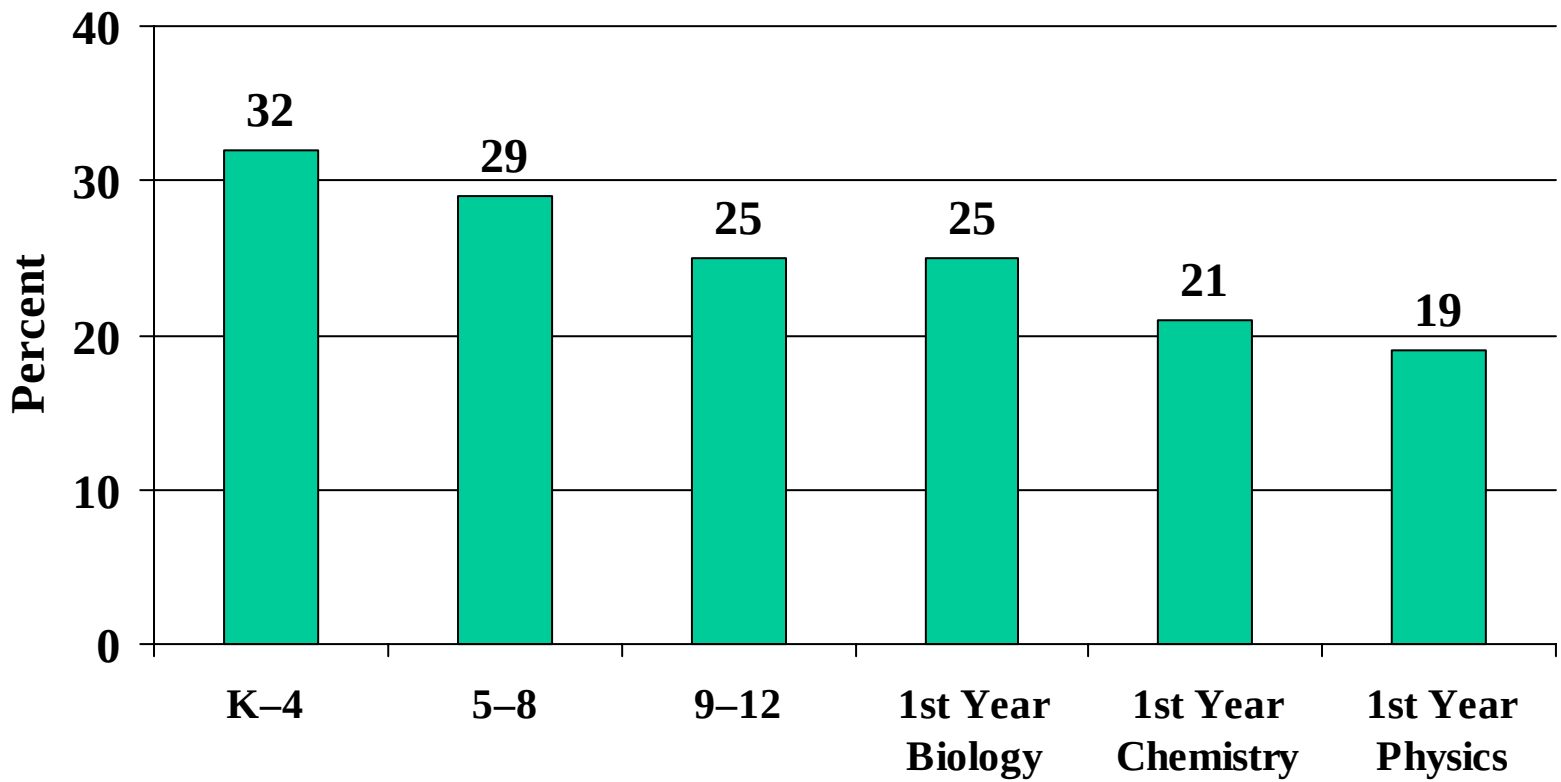


Science Classes with One or More LEP Students by Region

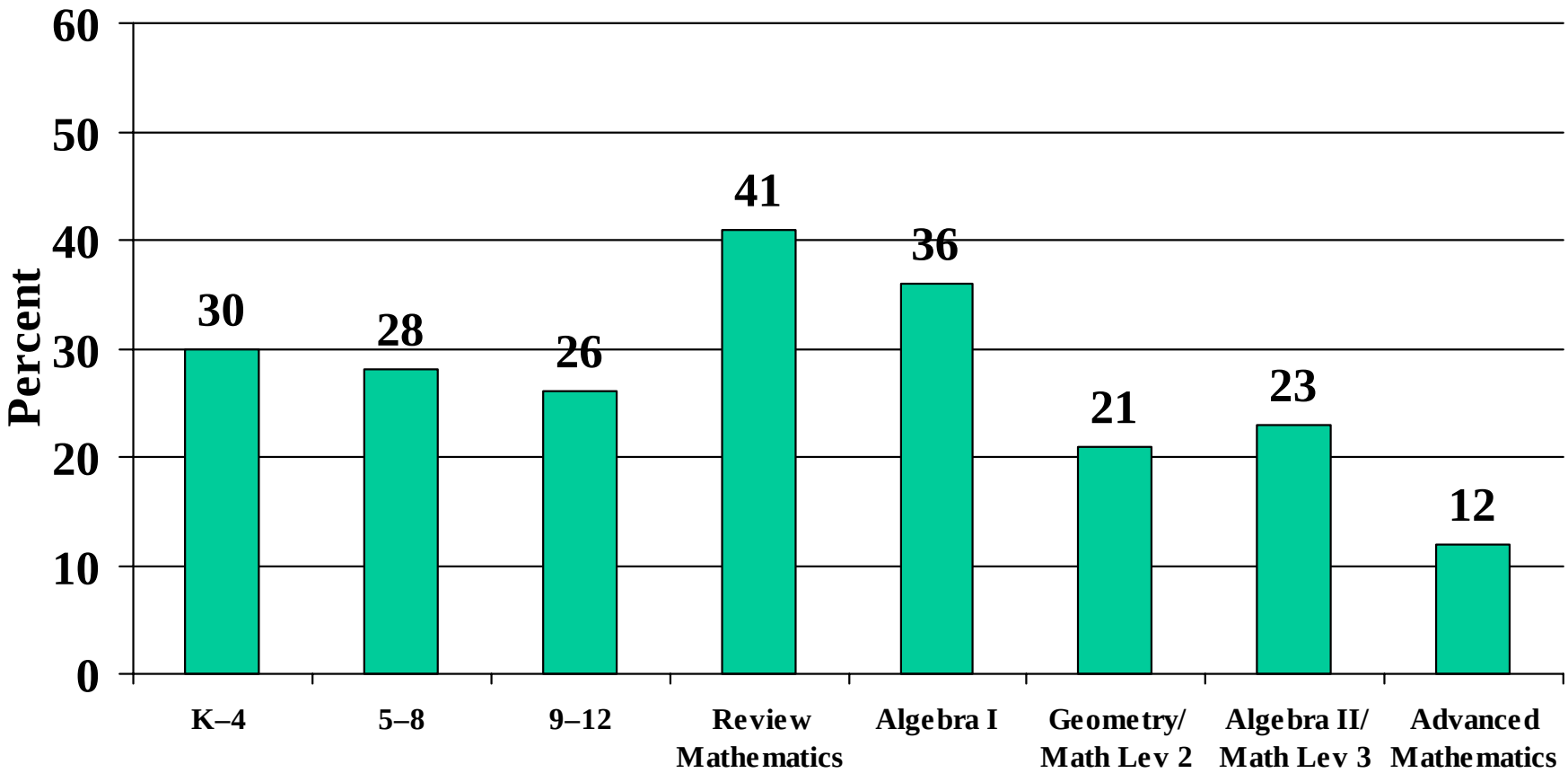


Question 9: What percent of first-year chemistry enrollment is non-Asian minority?

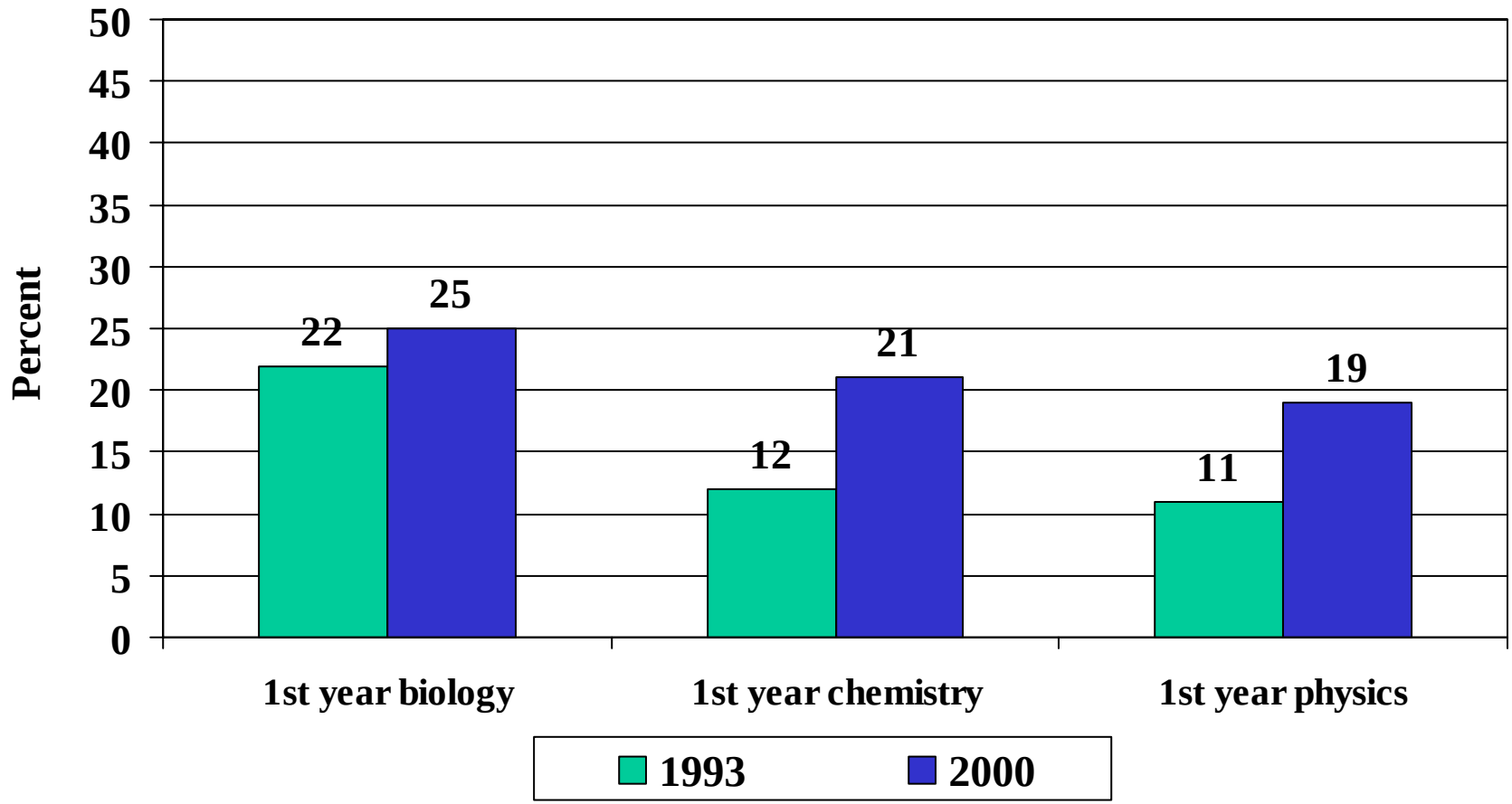
Percent of Non-Asian Minority Students in Science Classes



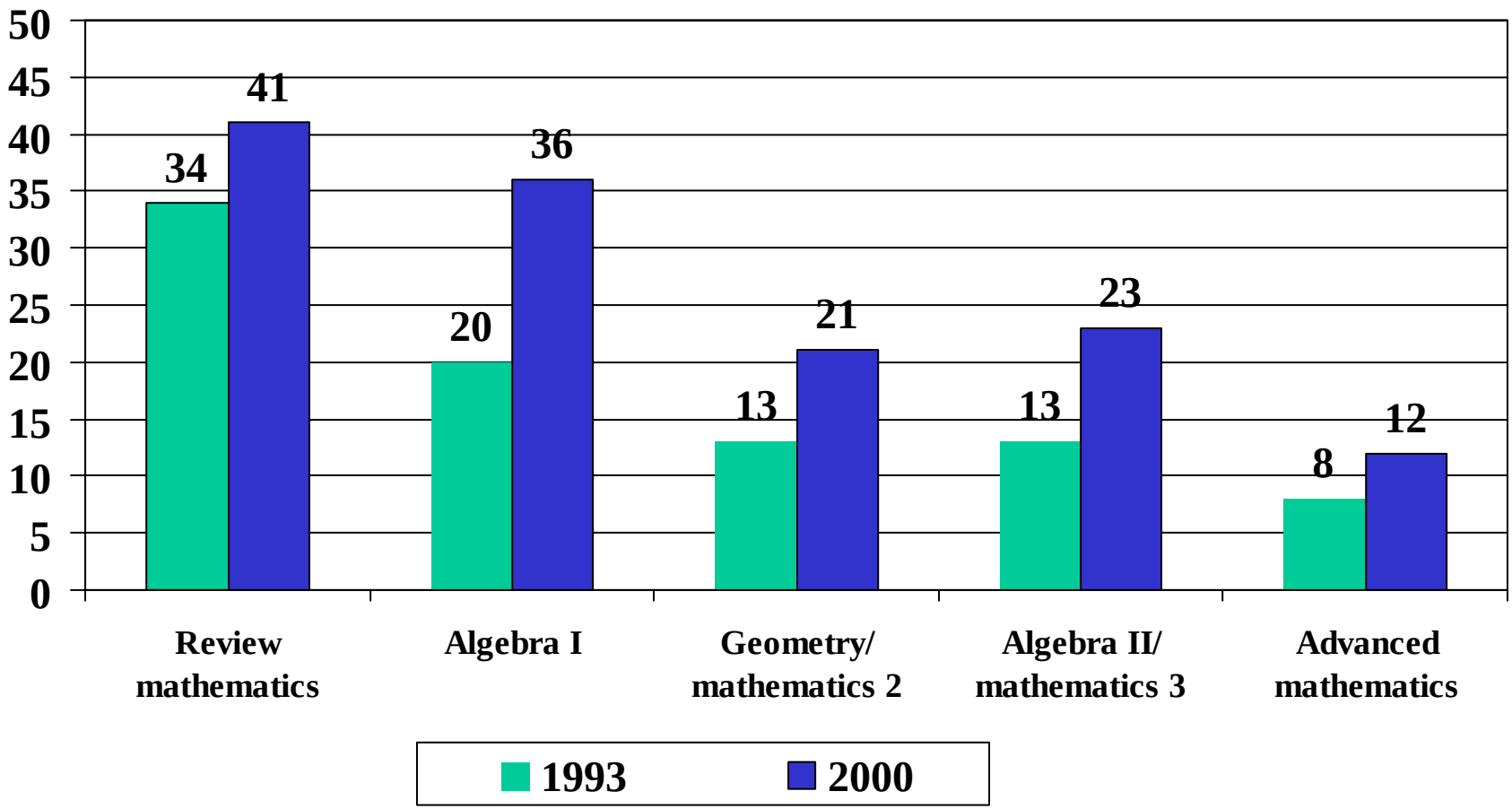
Percent of Non-Asian Minority Students in Mathematics Classes



Non-Asian Minorities in Science Classes



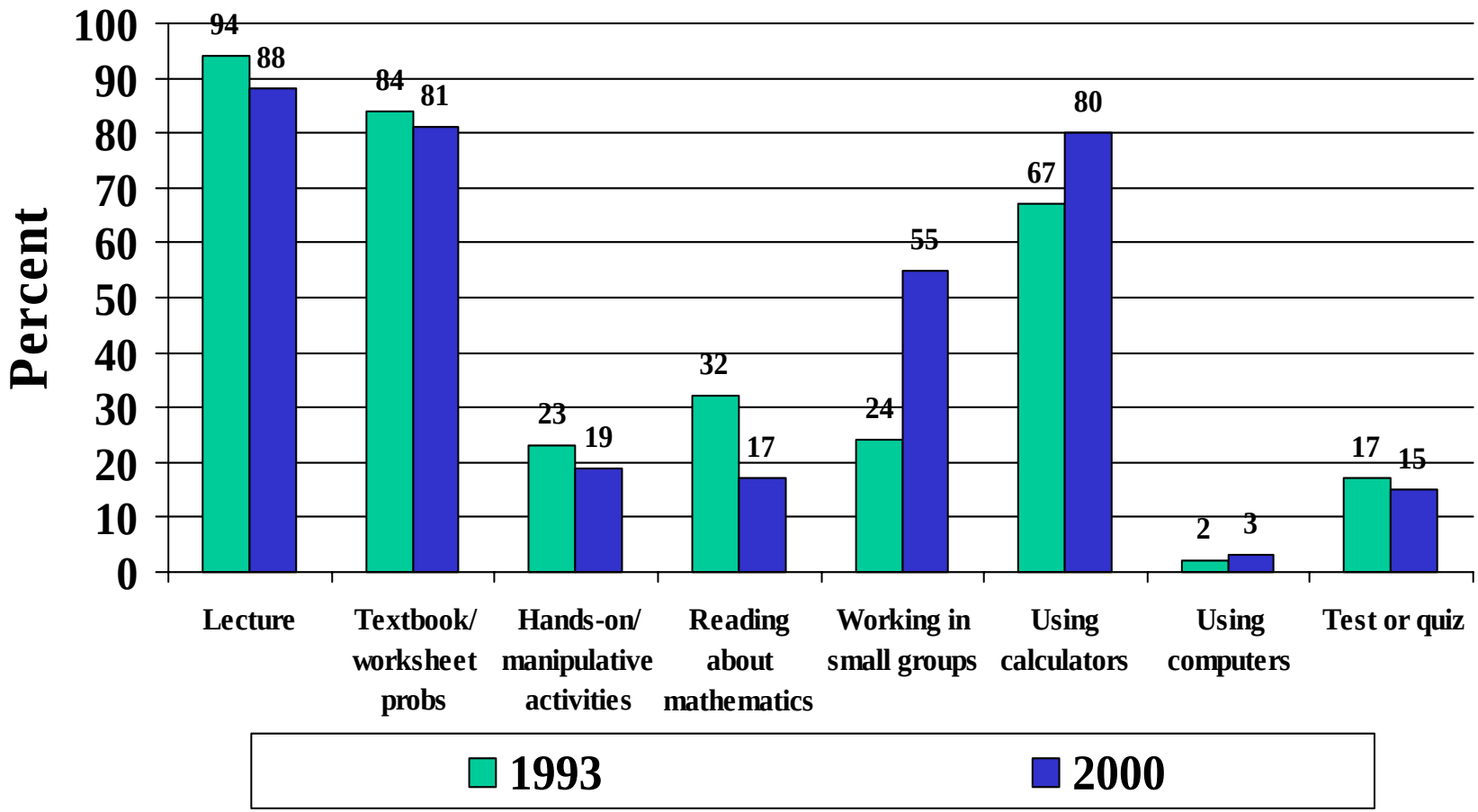
Non-Asian Minorities in Mathematics Classes



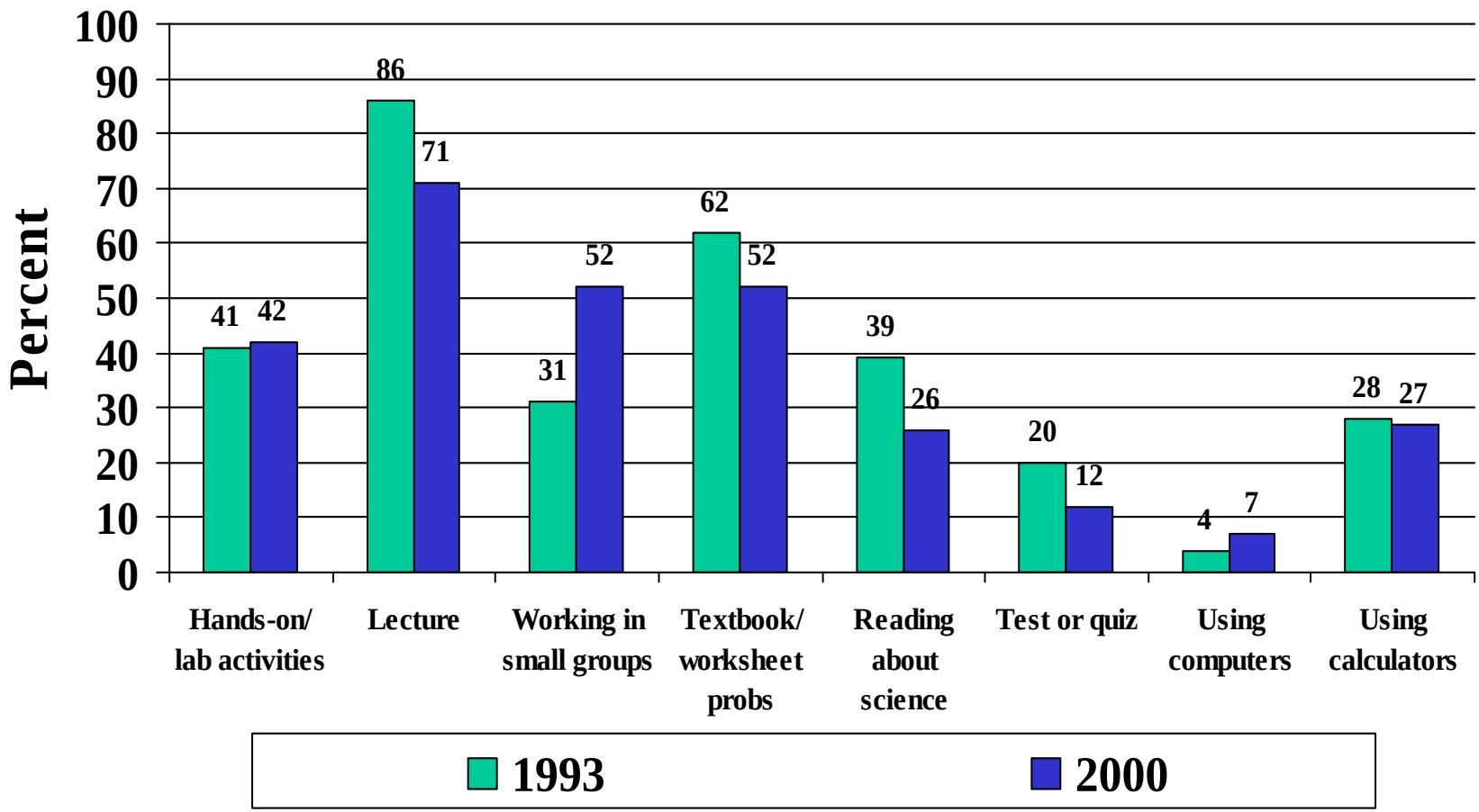
Question 10: If you walked into 10 randomly selected high school mathematics lessons, how many would include students:

- Completing textbook/ worksheet problems?
- Using computers?

9-12 Mathematics Classes Participating in Various Activities in Most Recent Lesson



9-12 Science Classes Participating in Various Activities in Most Recent Lesson

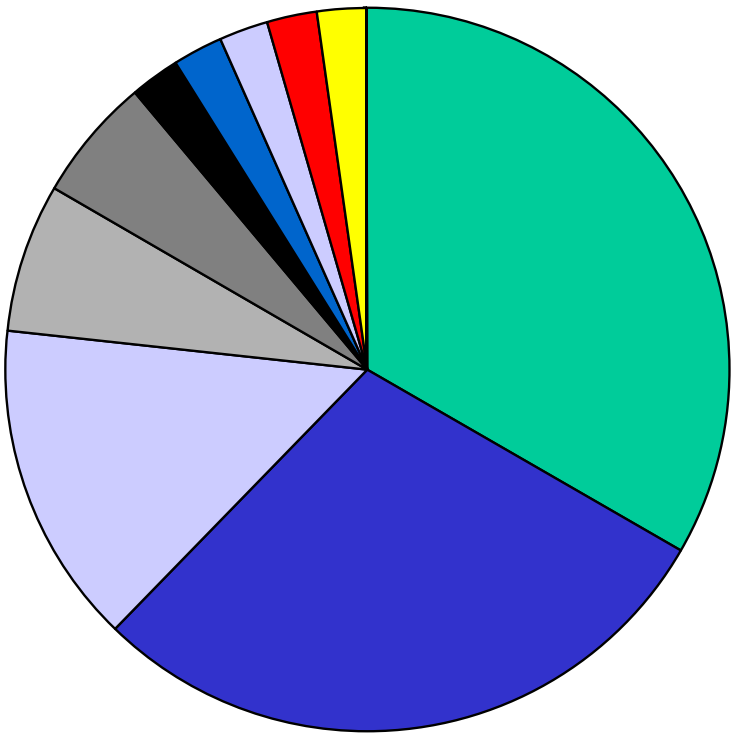


Question 11: What percent of middle grades science classes are using textbooks/programs developed after the NSES were published?

Publication Year of Textbooks

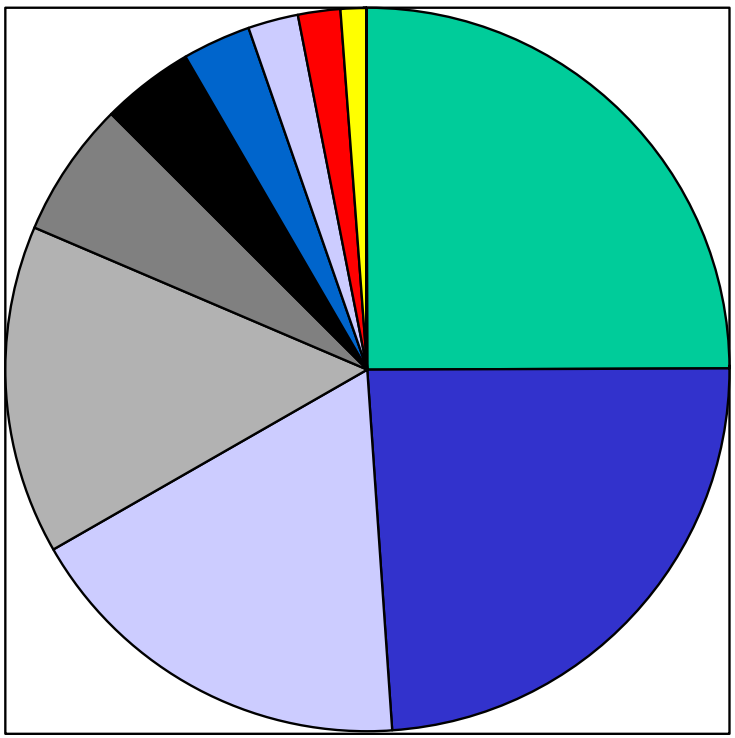
	Percent of Classes		
	Grades K-4	**Grades 5-8**	**Grades 9-12**
Science			
1986 or earlier	5	4	3
1987–1991	28	21	15
1992–1996	50	47	49
1997 or later	16	27	33
Mathematics			
1986 or earlier	3	2	4
1987–1991	11	12	14
1992–1996	34	32	34
1997 or later	51	54	49

Publishers' Market Share: Grades K-4 Science



- Addison-Wesley Longman, Inc./ Scott Foresman
- Silver, Burdett, & Ginn
- McGraw-Hill/Merrill Co
- Scholastic, Inc.
- Harcourt, Brace, & Jovanovich
- Holt, Rinehart, Winston
- Houghton Mifflin/McDougall Littell/D.C. Heath
- Encyclopaedia Britannica
- A-Beka
- National Science Resource Center
- Kendall Hunt Publishing
- Prentice Hall
- Globe Fearon, Inc/Cambridge
- CORD Communications

Publishers' Market Shares: Grades 5-8 Science



- Prentice Hall
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- Silver, Burdett, & Ginn
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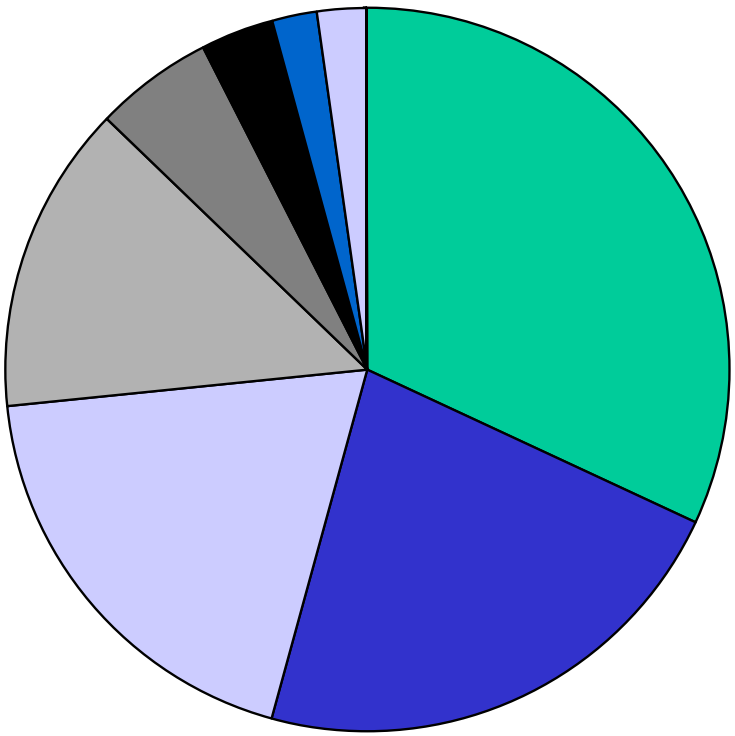
Publishers' Market Shares: Grades 9-12 Science



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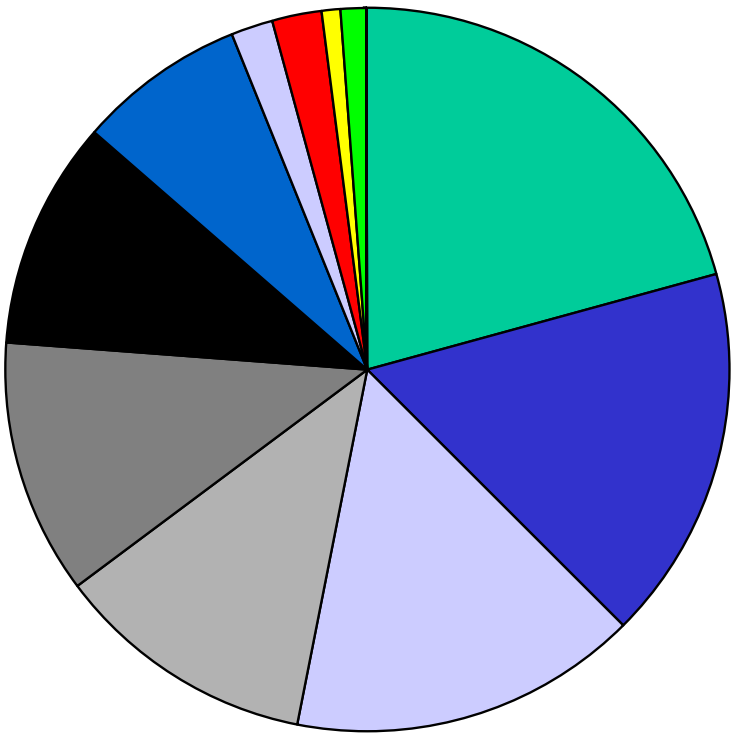
Publishers' Market Shares: Grades K-4 Mathematics



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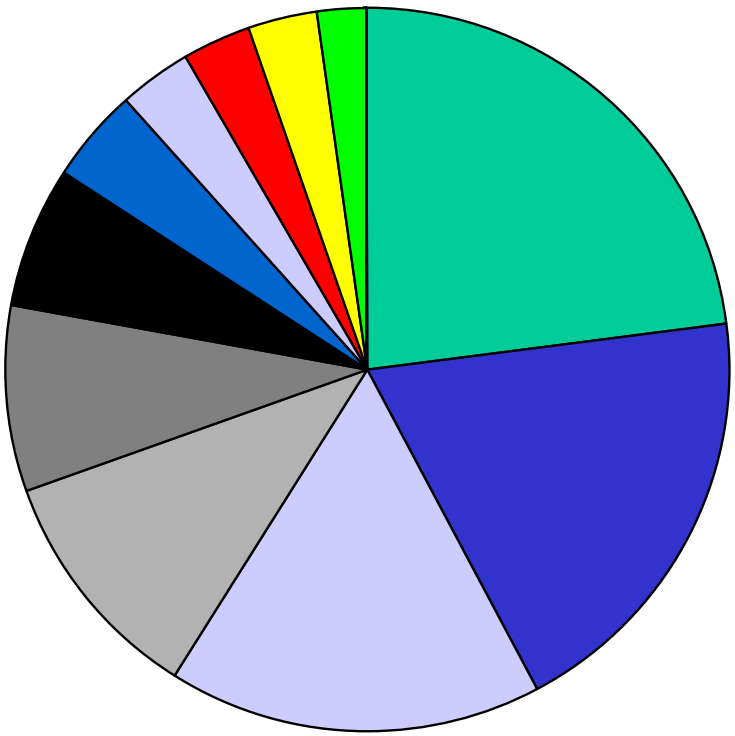
- Everyday Learning Corporation
- Dale Seymour Publications
- Open Court
- A-Beka
- Creative Publications
- Holt, Rinehart, Winston
- Prentice Hall
- Aamsco
- Key Curriculum Press
- South-Western Educational Publishing

Publishers' Market Shares: Grades 5-8 Mathematics



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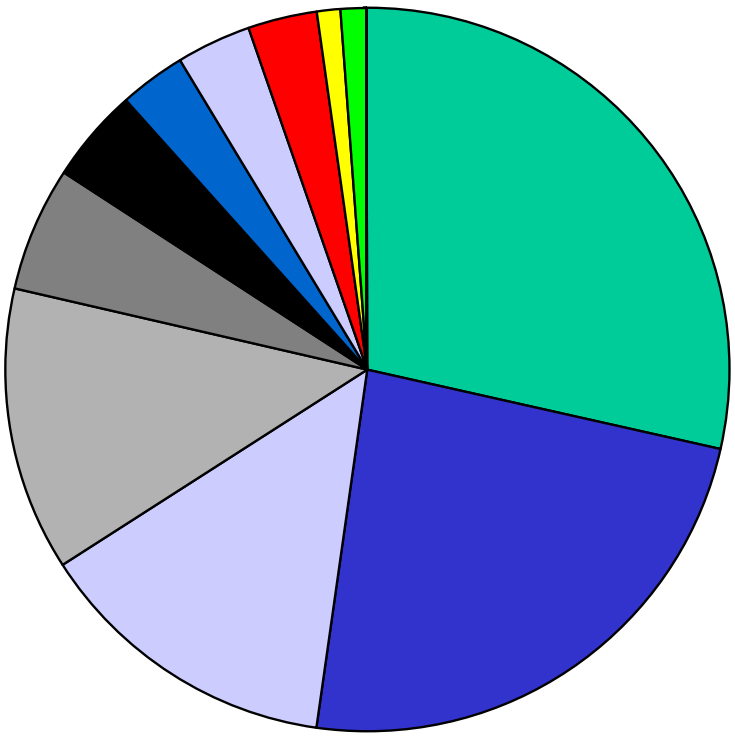
Publishers' Market Shares: Grades 9-12 Mathematics



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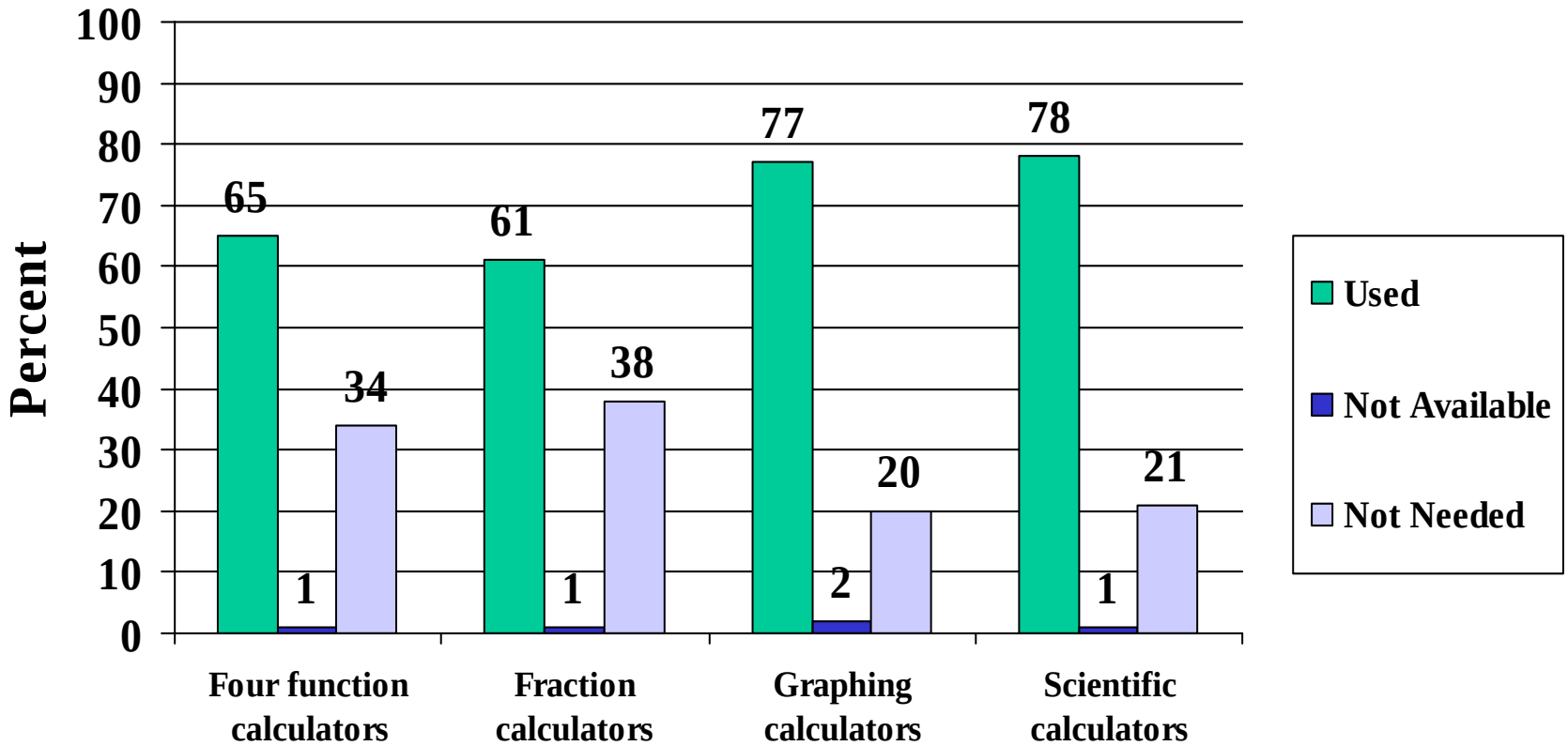
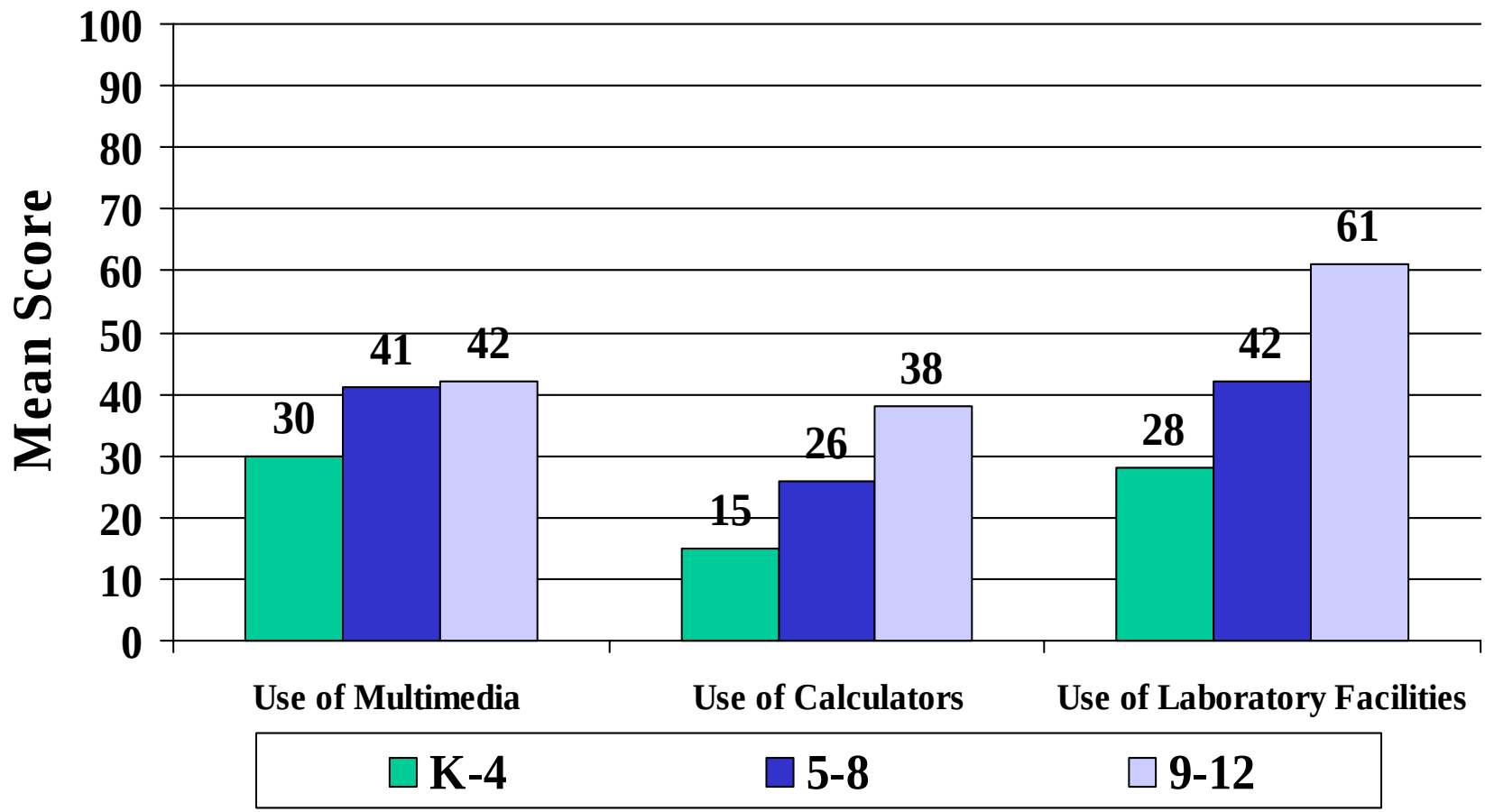
- Dale Seymour Publications
- A-Beka
- Creative Publications
- Open Court

Question 12: What percent of high school mathematics classes ever use graphing calculators?

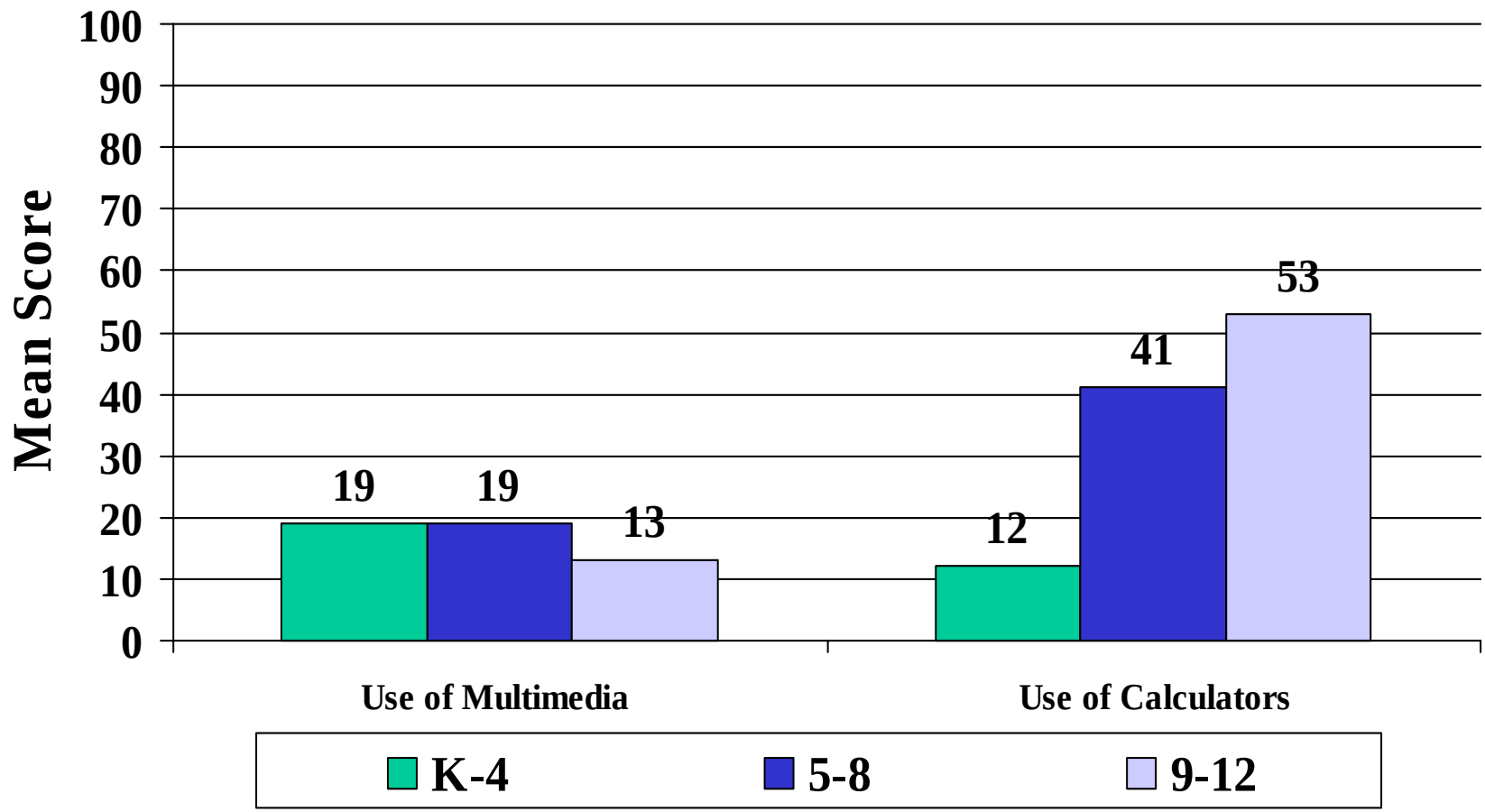
Use, Availability, and Need for Calculators in Grades 9-12 Mathematics Classes



Use-of-Equipment Composites
Science



Use-of-Equipment Composites
Mathematics



Question 13: What is the median per-pupil amount spent on consumable supplies for:

- Elementary science?
- High school science?
- Elementary mathematics?
- High school mathematics?

Median Amount Schools Spent Per Pupil on Science and Mathematics Equipment, Consumable Supplies, and Software

	Equipment	Consumable Supplies	Software
Science			
Elementary Schools	$ 1.10	$ 0.79	$ 0.00
Middle Schools	$ 1.10	$ 1.33	$ 0.00
High Schools	$ 2.05	$ 3.12	$ 0.19
Mathematics			
Elementary Schools	$ 0.99	$ 1.58	$ 0.66
Middle Schools	$ 1.16	$ 0.94	$ 0.14
High Schools	$ 1.32	$ 0.61	$ 0.18

Median Amount Schools Spent Per Year on Science and Mathematics Equipment, Consumable Supplies, and Software

	Equipment	Consumable Supplies	Software
Science			
Elementary Schools	$ 250	$ 250	$ 0
Middle Schools	$ 400	$ 400	$ 0
High Schools	$ 1,000	$ 1,500	$ 100
Mathematics			
Elementary Schools	$ 300	$ 500	$ 150
Middle Schools	$ 300	$ 300	$ 50
High Schools	$ 575	$ 300	$ 100

Amount of Own Money Science and Mathematics Teachers Spent on Supplies Per Class

	Median Amount	
	Science	**Mathematics**
Grades K–4	$ 30	$ 40
Grades 5–8	$ 50	$ 50
Grades 9–12	$ 55	$ 50

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- Trend report
- Subject-matter specific reports; e.g., the status of chemistry education
- All reports available at:

  www.horizon-research.com