


Grade 8 Mathematics

Data Analysis, Probability, and Discrete Math:

Lesson 10

Read aloud to the students the material that is printed in **boldface type** inside the boxes. Information in regular type inside the boxes and all information outside the boxes should **not** be read to students. Possible student responses are included in parentheses after the questions.

NOTE: The directions read to students may depend on the available materials. Read only those parts of the lesson that apply to the materials you are using.

Any directions that ask you to do something, such as to turn to a page or to hand out materials to students, will have an arrow symbol () by them.

Purpose of Lesson 10:

- In this lesson, the tutor and the students will
 - ✓ answer questions using percents in tables and graphs.

Equipment/Materials Needed:

- Copies of Student Sheets 119 and 120
- Paper and pencils
- Chalkboard
- Calculators (optional)

Preparations before beginning Lesson 10:

- Run one copy of Student Sheets 119 and 120 for each student.
- Have paper and pencils available.
- Borrow calculators from one of the teachers.

Lesson 10: Data Analysis, Probability, and Discrete Math

Say:

If someone tells you that four of five people prefer a certain toothpaste, you can make a list to see other ways to express this ratio.

Four of five people prefer brand A.
Eight of 10 people prefer brand A.
Sixteen of 20 people prefer brand A.
Forty of 50 people prefer brand A.
Eighty of 100 people prefer brand A.

Think of 80 of 100 people prefer brand A as ...
... 80 people per 100 people prefer brand A, or
... 80 percent of people prefer brand A, or
... 80% of people prefer brand A.

Percent means per hundred. A percent is a type of ratio. It compares a number to 100. Percents make it easier to compare quantities. If you say $\frac{3}{4}$ of the students at School A are taking a foreign language, while $\frac{2}{5}$ of the students at School B are taking a foreign language, it is difficult to compare the two. However, if you use percents, the comparisons are easier to see. $\frac{3}{4}$ is 75%, and $\frac{2}{5}$ is 40%. More students at School A are taking a foreign language. In fact, almost twice as many students are taking a foreign language.

Percents are often used in data analyses. In this lesson, you will answer questions involving percents in tables and graphs.

 Give students Student Sheet 119.


Answers:

- | | | |
|------------|----------------|-----------------|
| 1. 3.9% | 2. 6.75%; 8.5% | 3. 5.5%; 5.25% |
| 4. \$10.44 | 5. \$4.79 | 6. 150 students |
| 7. 50% | 8. 17% | 9. 27% |
| 10. B | | |

 Give students Student Sheet 120.

Answers:

- | | | |
|-------------------|---------------------|------------------|
| 1. C | 2. B | 3. A |
| 4. 4% | 5. England and U.S. | 6. 75 passengers |
| 7. 120 passengers | 8. 261 passengers | 9. 12 passengers |
| 10. B | | |

 Have one student summarize today's lesson. Percents are often used in data analyses.

Student Sheet 119 (Data Analysis: Lesson 10)

City	A	B	C	D	E
Sales Tax Rate	5.5%	3.9%	6.75%	5.25%	8.5%

Use the chart above to answer questions 1 – 5.

1. List the tax rate(s) approximately equivalent to 4%.
2. List the tax rate(s) greater than 6%.
3. List the tax rate(s) between 5% and 6%.
4. If you purchased an item for \$122.87, what would you pay in taxes if the tax rate were 8.5%?
5. If you purchased the same item in Problem 4, what would you pay in taxes if the tax rate were 3.9%?

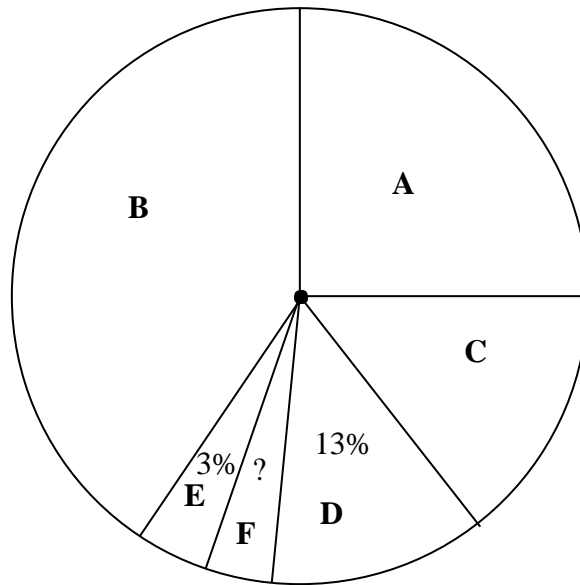
Use the survey results below to answer questions 6 – 10.

Survey

Candidate	Number of votes
Shannon	75
Ammie	25
Midge	40
Jose	10

6. How many students were surveyed?
7. Approximately what percent of the students surveyed preferred Shannon?
8. Approximately what percent of the students surveyed preferred Ammie?
9. Approximately what percent of the students surveyed preferred Midge?
10. If 450 students will actually vote in the election, what is a good prediction of the number of votes that Jose will receive?
A. 10 votes B. 30 votes C. 350 votes D. 440 votes

Student Sheet 120 (Data Analysis: Lesson 10)



On an international flight from Dallas to London, there were 300 passengers. 25% of the passengers were from England, 15% from Spain, 40% from the U.S., 13% from Asia, 3% from Greece, and the rest from France.

Answer the following questions about the passengers.

1. Which section represents Spain?
2. Which section represents the U.S.?
3. Which section represents England?
4. What percent of the passengers were from France?
5. Which two nationalities make up more than 60% of the passengers?
6. How many passengers were from England?
7. How many passengers were from the U.S.?
8. How many passengers were not from Asia?
9. How many passengers were from France?
10. Which expression could be used to find the number of passengers from Spain?

A. 15×300 B. 0.15×300 C. $100 \times \frac{15}{100}$ D. $100 \times \frac{15}{300}$