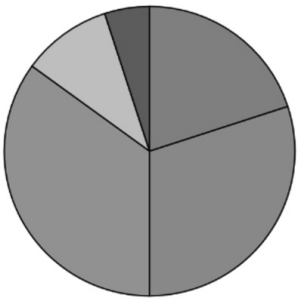
USING CIRCLE GRAPHS

The student is expected to solve problems using data represented in bar graphs, dot plots, and circle graphs including part-to-whole and part-to-part comparisons and equivalents.

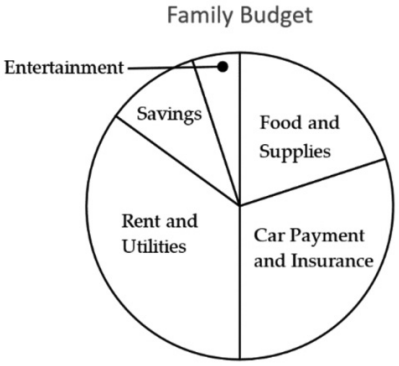
TELL ME MORE...

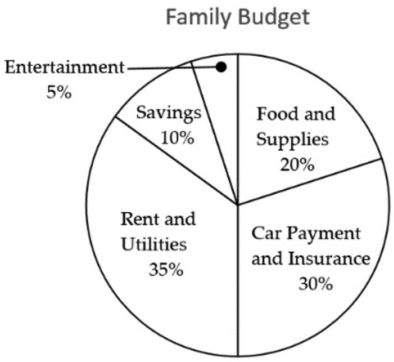
Data sets are all around you. You see data in news stories, advertisements, science experiments, and many other situations. Sometimes the data can be confusing when you look at just raw numbers. Therefore, you can use graphs to display data in an easy to understand manner. A **circle graph** is a one of these graphs that represents data as parts of a circle. The entire circle represents all of the data while each section represents different categories of data.



In this circle graph, the data set is divided into 5 different categories, each represented by one sector of the circle. Without numbers or titles, you really don't know that much about the data that is represented here. Without labels, you can only compare the relative size of the different sectors.

If you apply titles to the graph and identify the sections, you have more useful information. The circle graph to the right gives you information about how a family budgets their money. You know that the family spends the largest portion of its money paying Rent and Utilities and the least portion on Entertainment.





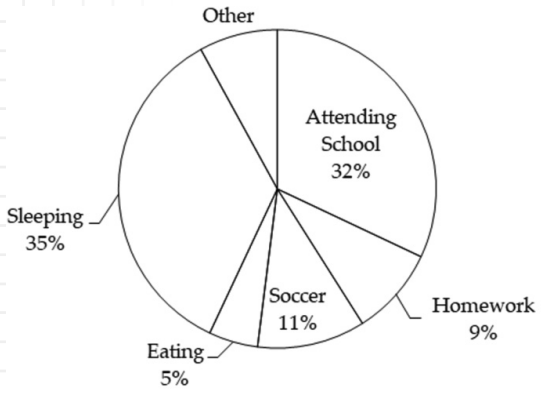
Most of the time, a circle graph will show the categories as a percentage while the whole circle represents 100%. At left, you know that the family budgets 35% of its money on Rent and Utilities while budgeting only 5% on Entertainment.

Once you know how much money the family has in its budget, you can determine how much money the family actually spends in each category. You can use what you know about percents to find the percent of a whole. You can also compare among the categories by using a part-to-part relationship.

EXAMPLES

EXAMPLE 1: The circle graph shows how Connor spends a typical 24-hour weekday.

Connor's Day



How much time does Connor spend doing other activities?

STEP 1 Determine the percentage of time Connor spends doing other activities.

- Add up the known percentages and subtract from the whole, 100%.
- (35% + 5% + 11% + 9% + 32%) = 92%
- 100% – 92% = 8%

Connor spends 8% of his weekday doing other activities.

STEP 2 Calculate 8% of 24.

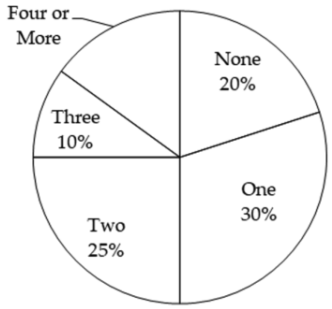
- $\frac{8}{100} = \frac{x}{24}$
- $\frac{8 \times \frac{24}{100}}{100 \times \frac{24}{100}} = \frac{x}{24}$
- $8 \times \frac{24}{100} = x$, so $x = \frac{8 \times 24}{100} = \frac{192}{100} = 1.92$

Connor spends 1.92 hours doing other activities.

YOU TRY IT!

Tyra surveyed the 20 students in her class asking how many pets they have. The circle graph shows the results of the survey.

Pets



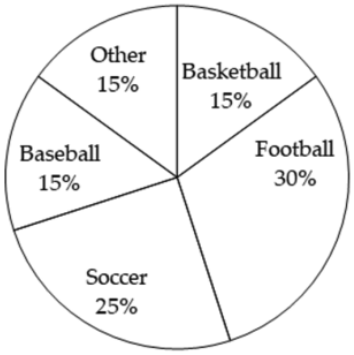
How many students have four or more pets?

EXAMPLE 2: The circle graph shows the results of a survey given to seventh graders about their favorite sport. If 560 students took the survey, how many more students prefer football than soccer?

STEP 1 Determine the difference in the percentages of students who prefer football and soccer.

- 30% – 25% = 5%

5% more students prefer football than soccer.



STEP 2 Determine the number of students who prefer football than soccer.

- Calculate 5% of 560
- $\frac{5}{100} = \frac{1}{20}$

- $\frac{1}{20} = \frac{n}{560}$
- $\frac{1 \times 28}{20 \times 28} = \frac{28}{560}$

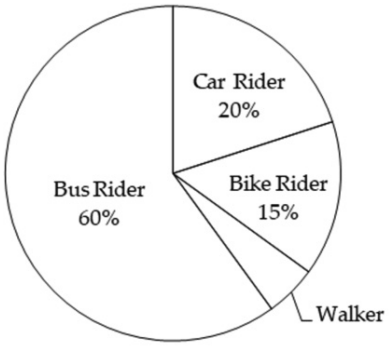
28 more students prefer football than soccer.

PRACTICE

Use the following information for questions 1 – 4.

The circle graph shows the transportation method for the 1,200 students at a middle school.

Transportation



1. How many students ride the bus?

2. How many more students are "Car Riders" than "Bike Riders"?

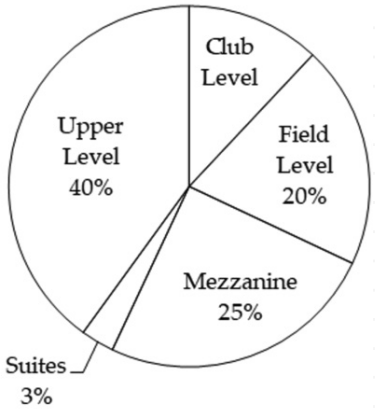
3. How many more students are "Bus Riders" than "Car Riders" and "Bike Riders" combined?

4. How many students walk to school?

Use the following information for questions 5 – 8.

At a professional football stadium there are 72,000 seats. The circle graph shows the percent of seats in different sections of the stadium.

Stadium Seats



5. How many people can sit in the "Upper Level" seats?

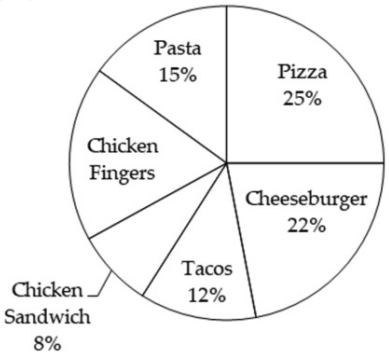
6. How many more people can sit in the "Mezzanine" seats than the "Suites" seats?

7. How many people can sit in the "Club Level" seats?

8. How many more people can sit in the "Field Level" seats than the "Club Level" and "Suites" seats combined?

9. The cafeteria manager took a poll of 150 students to find the most popular lunch. The circle graph below displays the data.

Favorite Lunch



How many students said "Chicken Fingers" was their favorite lunch?

A 18

B 27

C 132

D 123

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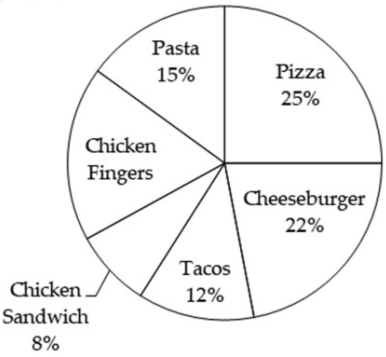
Favorite Lunch



How many more students prefer cheeseburgers over tacos?

F 10

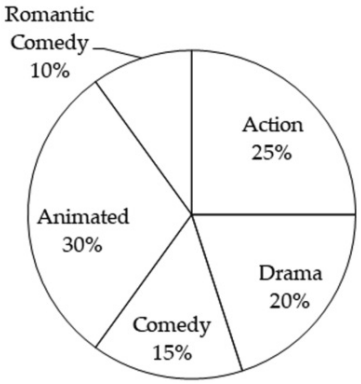
G 34

H 5

J 15

11. The manager of a local movie theater analyzed ticket sales one weekend. The circle graph shows information about the number of tickets sold by the movie genre.

Movie Tickets



If 5,200 tickets were sold, how many tickets were sold for comedy movies? Record your answer and fill in the bubbles. Be sure to use the correct place value.