

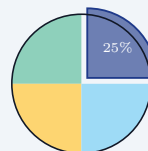
# Pie Graphs

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Score: \_\_\_\_\_ / 18

## Quick Review and Helpful Hints

A pie (circle) graph shows parts of a whole. The whole circle is 100%, which equals 360°. To find the amount for a slice, multiply its percent (as a decimal) by the total. To find a slice's central *angle*, multiply its percent by 360°. All the slices add up to 100%.

▷ **Example:** In a survey of 200 people, 25% chose pizza. How many people chose pizza? **Work:** Change 25% to 0.25 and multiply by the total:  $0.25 \times 200$ .  
 ★ **Answer:** 50 people

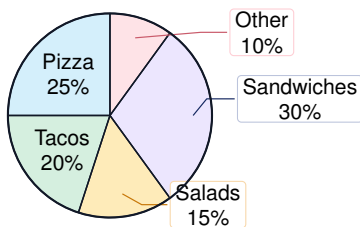


Whole circle = 100% = 360°.

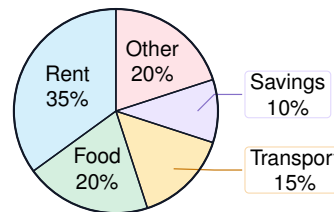
### ◆ Practice Problems

Use each circle graph. Find amounts, percents, ratios, and central angles.

**Lunch choices: 240 students**



**Monthly budget: \$1,800**



- |  |   |
|--|---|
| <p>1. How many total students were surveyed? _____</p> <p>2. How many students chose pizza? _____</p> <p>3. How many students chose tacos? _____</p> <p>4. How many students chose salads? _____</p> <p>5. How many students chose sandwiches? _____</p> <p>6. How many students chose other lunches? _____</p> <p>7. How many students chose pizza or tacos? _____</p> <p>8. What fraction of the students chose salads? _____</p> <p>9. What central angle represents pizza? _____</p> | <p>10. What central angle represents sandwiches? _____</p> <p>11. What percent chose something other than Other? _____</p> <p>12. What is the ratio of tacos to pizza? _____</p> <p>13. How many dollars are budgeted for rent? _____</p> <p>14. How many dollars are budgeted for food? _____</p> <p>15. How many dollars are budgeted for transportation? _____</p> <p>16. How many dollars are budgeted for savings? _____</p> <p>17. How many dollars are budgeted for food and other combined? _____</p> <p>18. What central angle represents savings? _____</p> |
|--|---|



## Answer Keys

- |        |                   |                |
|--------|-------------------|----------------|
| 1. 240 | 7. 108            | 13. \$630      |
| 2. 60  | 8. $\frac{3}{20}$ | 14. \$360      |
| 3. 48  | 9. $90^\circ$     | 15. \$270      |
| 4. 36  | 10. $108^\circ$   | 16. \$180      |
| 5. 72  | 11. 90%           | 17. \$720      |
| 6. 24  | 12. 4 : 5         | 18. $36^\circ$ |

### Step-by-Step Explanations

**1.** For the first chart, the total is given right in the title: "Lunch choices: 240 students." The whole circle represents all 240 students, so no calculation is needed for this one.

**2.** Pizza is 25% of the lunch chart. Change 25% to 0.25 and multiply by the total number of students:  $0.25 \times 240 = 60$ , so 60 students chose pizza.

**3.** Tacos are 20% of the 240 students. Since  $20\% = 0.20$ , multiply  $0.20 \times 240 = 48$ , so 48 students chose tacos.

**4.** Salads are 15% of the group. Use the same percent-of-a-total idea:  $0.15 \times 240 = 36$ , so 36 students chose salads.

**5.** Sandwiches are the largest slice at 30%. Multiply 0.30 by the total,  $0.30 \times 240 = 72$ , so 72 students chose sandwiches.

**6.** The Other slice is 10% of the students. Because 10% means one tenth,  $0.10 \times 240 = 24$ , so 24 students chose other lunches.

**7.** For pizza or tacos, add the two categories because either choice is allowed: pizza is 60 students and tacos is 48 students, so  $60 + 48 = 108$  students.

**8.** The salad slice is 15% of the circle. Write 15% as  $\frac{15}{100}$  and simplify by dividing by 5:  $\frac{15}{100} = \frac{3}{20}$ .

**9.** A whole circle has  $360^\circ$ , and pizza is 25% of the circle. Multiply  $0.25 \times 360^\circ = 90^\circ$ , so the pizza sector is a right angle.

**10.** Sandwiches are 30% of the circle. To find the central angle, multiply the percent as a decimal by  $360^\circ$ :  $0.30 \times 360^\circ = 108^\circ$ .

**11.** The only students not counted are in the Other slice, which is 10%. Since the full chart is 100%, the percent that chose something other than Other is  $100\% - 10\% = 90\%$ .

**12.** Use the percents for the ratio because both categories come from the same total. Tacos to pizza is 20 : 25, and dividing both numbers by 5 gives 4 : 5.

**13.** In the budget chart, rent is 35% of the monthly total of \$1,800. Multiply  $0.35 \times 1800 = 630$ , so \$630 is budgeted for rent.

**14.** Food is 20% of the \$1,800 budget. Calculate  $0.20 \times 1800 = 360$ , so \$360 is budgeted for food.

**15.** Transportation is 15% of the monthly budget. Multiply  $0.15 \times 1800 = 270$ , so the transportation amount is \$270.

**16.** Savings is 10% of the budget, which is one tenth of the total. One tenth of \$1,800 is  $0.10 \times 1800 = 180$ , so \$180 is saved.

**17.** Food and Other are each 20%, so together they are 40% of the budget. Multiply  $0.40 \times 1800 = 720$ , so the combined amount is \$720.

**18.** The savings slice is 10% of the circle. A full circle is  $360^\circ$ , so  $0.10 \times 360^\circ = 36^\circ$  for the savings central angle.



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