

# Circle Graphs

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Score: \_\_\_\_\_ / 24

## Q Quick Review

A **circle graph** (or pie chart) shows how a whole is divided into **parts**. The whole circle is 100%, and it is also  $360^\circ$ . Each **sector** (slice) stands for one part. To find the size of a slice in degrees, multiply its fraction of the whole by  $360^\circ$  — for example,  $\frac{1}{4}$  of the circle is  $\frac{1}{4} \times 360^\circ = 90^\circ$ . To find the actual count a slice represents, multiply its **percent** by the **total**. All the sectors together must add up to 100% and to  $360^\circ$ .

◇ **Example:** In a circle graph, a slice is 25% of the circle. Find its angle in degrees, and the count it represents if the total is 200 people.

⇒ Start with the angle. The whole circle is  $360^\circ$ , and this slice is 25%, so its angle is  $0.25 \times 360^\circ = 90^\circ$ . Now the count: 25% of 200 people is  $0.25 \times 200 = 50$ . So the slice is a  $90^\circ$  sector and stands for 50 people.

**Answer:**  $90^\circ$ ; 50 people

## PRACTICE

Use the circle graph facts to find each value.

- |                                    |       |  |       |
|------------------------------------|-------|--|-------|
| 1. Angle of a 50% slice            | _____ | 12. 50% of 360 people  | _____ |
| 2. Angle of a 25% slice            | _____ | 13. 10% of 360 people  | _____ |
| 3. Angle of a 10% slice            | _____ | 14. 40% of 200 people  | _____ |
| 4. Angle of a 20% slice            | _____ | 15. 15% of 80 people   | _____ |
| 5. Angle of a 75% slice            | _____ | 16. 30% of 60 people   | _____ |
| 6. Angle of a $\frac{1}{4}$ slice  | _____ | 17. A circle graph shows 40% and 35%. What percent is the last slice?            | _____ |
| 7. Angle of a $\frac{1}{2}$ slice  | _____ | 18. Two slices are $90^\circ$ and $120^\circ$ . What is the third slice's angle? | _____ |
| 8. Angle of a $\frac{1}{3}$ slice  | _____ | 19. A $180^\circ$ slice is what fraction of the circle?                          | _____ |
| 9. Angle of a $\frac{1}{6}$ slice  | _____ | 20. A $90^\circ$ slice is what percent of the circle?                            | _____ |
| 10. Angle of a $\frac{1}{5}$ slice | _____ |  |       |
| 11. 25% of 360 people              | _____ |  |       |

## ◆ Word Problems

21. A circle graph of 200 students' favorite subjects shows Math 30%, Science 25%, Reading 25%, and Art 20%. How many students chose Math? \_\_\_\_\_
22. In a circle graph of how Jordan spends 24 hours, sleep is  $\frac{1}{3}$  of the circle. How many hours is that, and what is the angle of the sleep sector? \_\_\_\_\_
23. A circle graph of 80 pets shows Dogs 50%, Cats 25%, and Other the rest. How many pets are in the "Other" category? \_\_\_\_\_
24. A survey circle graph has three slices. Walking is  $90^\circ$ , Biking is  $90^\circ$ , and Bus is the rest. What percent of students take the bus? \_\_\_\_\_



## Answer Keys

- |         |                   |
|---------|-------------------|
| 1. 180° | 13. 36            |
| 2. 90°  | 14. 80            |
| 3. 36°  | 15. 12            |
| 4. 72°  | 16. 18            |
| 5. 270° | 17. 25%           |
| 6. 90°  | 18. 150°          |
| 7. 180° | 19. $\frac{1}{2}$ |
| 8. 120° | 20. 25%           |
| 9. 60°  | 21. 60 students   |
| 10. 72° | 22. 8 hours; 120° |
| 11. 90  | 23. 20 pets       |
| 12. 180 | 24. 50%           |

### Step-by-Step Explanations

- |  |   |
|--|---|
| <p>1. <math>0.50 \times 360^\circ = 180^\circ</math> — exactly half the circle.</p> <p>2. <math>0.25 \times 360^\circ = 90^\circ</math> — a quarter of the circle.</p> <p>3. <math>0.10 \times 360^\circ = 36^\circ</math>.</p> <p>4. <math>0.20 \times 360^\circ = 72^\circ</math>.</p> <p>5. <math>0.75 \times 360^\circ = 270^\circ</math> — three quarters of the circle.</p> <p>6. <math>\frac{1}{4} \times 360^\circ = 90^\circ</math>.</p> <p>7. <math>\frac{1}{2} \times 360^\circ = 180^\circ</math>.</p> <p>8. <math>\frac{1}{3} \times 360^\circ = 120^\circ</math>.</p> <p>9. <math>\frac{1}{6} \times 360^\circ = 60^\circ</math>.</p> <p>10. <math>\frac{1}{5} \times 360^\circ = 72^\circ</math>.</p> <p>11. <math>0.25 \times 360 = 90</math> people.</p> <p>12. <math>0.50 \times 360 = 180</math> people.</p> <p>13. <math>0.10 \times 360 = 36</math> people.</p> | <p>14. <math>0.40 \times 200 = 80</math> people.</p> <p>15. <math>0.15 \times 80 = 12</math> people.</p> <p>16. <math>0.30 \times 60 = 18</math> people.</p> <p>17. All slices add to 100%: <math>100 - 40 - 35 = 25\%</math>.</p> <p>18. All angles add to <math>360^\circ</math>: <math>360 - 90 - 120 = 150^\circ</math>.</p> <p>19. <math>\frac{180}{360} = \frac{1}{2}</math> of the circle.</p> <p>20. <math>\frac{90}{360} = \frac{1}{4} = 25\%</math>.</p> <p>21. Math is 30% of the 200 students. So <math>0.30 \times 200 = 60</math> students chose Math.</p> <p>22. Sleep is <math>\frac{1}{3}</math> of 24 hours: <math>\frac{1}{3} \times 24 = 8</math> hours. Its angle is <math>\frac{1}{3} \times 360^\circ = 120^\circ</math>.</p> <p>23. Dogs and Cats are <math>50\% + 25\% = 75\%</math>, so "Other" is 25%. Then <math>0.25 \times 80 = 20</math> pets.</p> <p>24. Walking and Biking together are <math>90^\circ + 90^\circ = 180^\circ</math>, leaving <math>360^\circ - 180^\circ = 180^\circ</math> for Bus. That is <math>\frac{180}{360} = 50\%</math>.</p> |
|--|---|



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