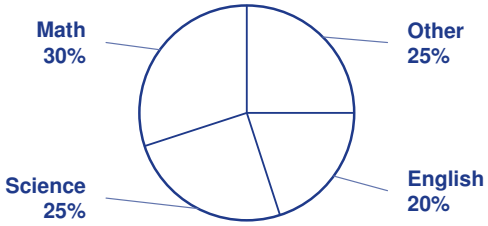
# Circle Graphs (Pie Charts)

| Name: _____ | Date: _____ | Score: _____ / 18 |
|---|---|---|

A **circle graph** (also called a **pie chart**) shows how a whole is divided into parts—each "slice" represents one category's share of the total. Because the full circle equals $100\%$ (or $360°$), you can convert between percents and degrees to draw or read any slice. Circle graphs make it easy to compare parts to the whole *and* to each other at a glance, which is why they pop up in newspapers, reports, and presentations everywhere. In this topic you will practice reading circle graphs, calculating missing percents or amounts, and building your own from raw data!

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## Key Concepts & Quick Review

**Key ideas:**

- The whole circle $= 100\%$ (or $360°$).
- Each sector's **central angle** $=$ percent $\times\ 360°$.
- To find a **percent from degrees**: $\frac{\text{degrees}}{360} \times 100$.
- To find the **actual amount**: percent $\times$ total.

**Reading a circle graph:** If a sector is labelled $25\%$ and the total is 200, the category count is $0.25 \times 200 = 50$.

## Examples

① A circle graph shows that 30% of $500$ students chose basketball as their favorite sport. How many students is that?

**Think It Through:** The circle graph tells us that $30\%$ of the students picked basketball. To find how many that is out of $500$, convert the percent to a decimal and multiply: $0.30 \times 500 = 150$ students. Almost a third of the school!

**Answer:** $150$ *students*

② A sector in a pie chart has a central angle of $90°$. What percent of the total does it represent?

**Think It Through:** A full circle is $360°$, and the sector takes up $90°$ of that. Divide the sector angle by $360°$ to find the fraction of the circle, then multiply by $100$ to convert to a percent: $\frac{90}{360} \times 100 = 25\%$. So the sector represents one quarter of the data.

**Answer:** *25%*

## Practice Problems

*Use the relationships between percent, degrees, and totals to solve each problem.*

1. A category is $25\%$ of a circle graph. Find the central angle in degrees. _____
2. A category is $40\%$ of a circle graph. Find the central angle in degrees. _____
3. A category is $15\%$ of a circle graph. Find the central angle in degrees. _____
4. A category is $50\%$ of a circle graph. Find the central angle in degrees. _____
5. A category is $10\%$ of a circle graph. Find the central angle in degrees. _____
6. A sector has central angle $72°$. Find the percent of the circle. _____
7. A sector has central angle $126°$. Find the percent of the circle. _____
8. A sector has central angle $45°$. Find the percent of the circle. _____
9. A category represents $20\%$ of $400$ people. Find the number of people. _____
10. A category represents $35\%$ of $600$ people. Find the number of people. _____
11. A sector has central angle $108°$ in a circle graph representing $300$ people. Find the count for that sector. _____
12. A category contains $75$ out of $500$ people. Find the percent. _____
13. A category contains $75$ out of $500$ people. Find the central angle in degrees. _____
14. A category is $5\%$ of a circle graph. Find the central angle in degrees. _____
15. A category represents $60\%$ of $200$ people. Find the number of people. _____

## Study Tips

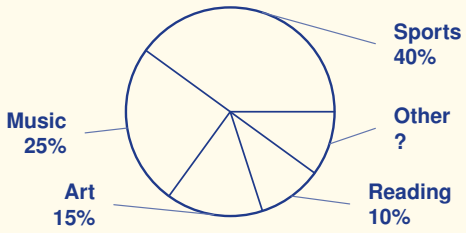
- All the percentages in a circle graph must add to **100%** (and all central angles to $360°$). Use this to find a missing piece.
- To convert percent $\rightarrow$ degrees, multiply by $3.6$ (since $360 \div 100 = 3.6$).
- Circle graphs work best when there are **few categories** (3–7). Too many small slices make the graph hard to read.

## Word Problems

**16.** A school surveyed $400$ students about their favorite subject. The circle graph shows: Math 30%, Science 25%, English 20%, History 15%, Art 10%. How many students chose Math? What central angle represents Science? _____

**17.** In a pie chart of a family's monthly budget ($3,000 total), the housing sector has a central angle of $120°$. How much money goes to housing? _____

**18.** This circle graph shows how $200$ middle schoolers chose their favorite after-school activity. Use the percent labels to find (a) the missing percent (Other), (b) the central angle for the Sports sector, and (c) the actual number of students who chose Music.



# Answer Keys

1) 90
2) 144
3) 54
4) 180
5) 36
6) 20%
7) 35%
8) 12.5%
9) 80
10) 210
11) 90
12) 15%
13) 54
14) 18
15) 120
16) Math: $120$ students; Science angle: $90°$
17) $1,000.
18) (a) Other $10\%$; (b) Sports angle $144°$; (c) $50$ Music students

## Step-by-Step Explanations

*Tutoring notes not found for this topic.*

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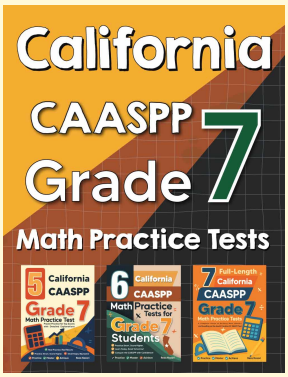


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