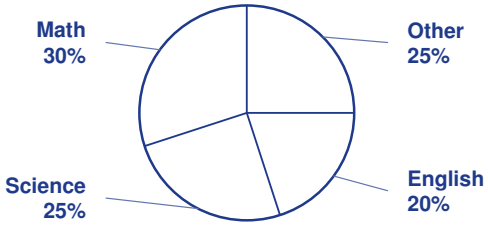
Circle Graphs (Pie Charts)

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!



Favorite Subjects

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

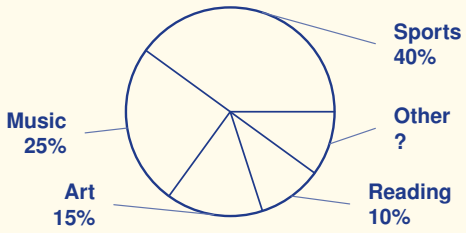
- All the percentages in a circle graph must add to **100%** (and all central angles to $360°$). Use this to find a missing piece.
- To convert percent $\rightarrow$ degrees, multiply by 3.6 (since $360 \div 100 = 3.6$).
- Circle graphs work best when there are **few categories** (3–7). Too many small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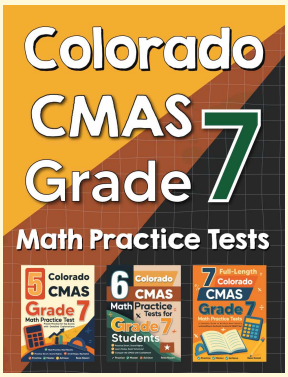

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