Circle Graphs

Spot mistakes, reason, and work backward

Name _____ **Date** _____ **Score** _____ / 6

QUICK REVIEW

A circle graph shows parts of a whole. Multiply a share written as a fraction by the total to find a count, or by 360° to find an angle. Check that shares sum to 100% and sector angles sum to 360°.

Worked example

A category contains 14 of 70 items. Find its percent and angle.

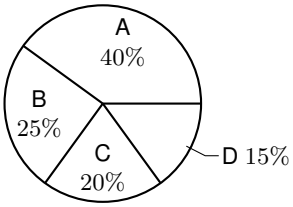
1. Divide the part by the whole: $14/70 = 1/5$.
2. Write that fraction as a percent: $1/5 = 20\%$.
3. Multiply by one full turn: $(1/5)(360) = 72^\circ$.

Answer: 20%; 72°.

Practice Problems

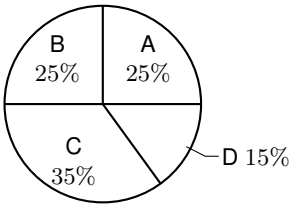
Show your thinking.

1. The graph shows that A is 40% of the survey, and A contains 32 people. Recover the survey total and the number outside A.



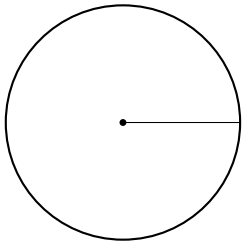
2. Angles for A, C, and D are $72^\circ, 126^\circ, 54^\circ$. A report labels B as 30° because its share is 30%. Find the actual B angle and check its share.

3. A report combines A and B into a single semicircle. Check whether the merged sector is a semicircle and give the angles for the two remaining sectors.

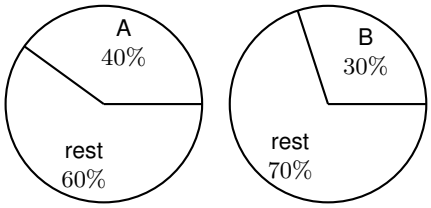


4. Labels A 45%, B 25%, C 20%, and D 15% are meant to cover a whole circle. Only D was copied incorrectly. Find the correct D percentage and angle.

5. For shares 40%, 25%, 20%, and 15% in A, B, C, D order, a draft uses angles $40^\circ, 25^\circ, 20^\circ, 15^\circ$. Explain the flaw and draw a corrected labeled graph with all angles.



6. The first graph represents 50 people and the second represents 100. A report says A contains more people than B because its sector share is larger. Find both counts and check the claim.



Answer Key

1. Total 80 people; 48 outside A.
2. B is $108°$, which is 30% of the whole.
3. Yes, A and B merge to $180°$. C is $126°$ and D is $54°$.
4. D must be 10%, or $36°$.
5. Draft totals only $100°$. Correct angles: A $144°$, B $90°$, C $72°$, D $54°$. See the completed graph below.
6. A has 20 people, B has 30. B has more despite a smaller share.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. The A share is $40/100 = 2/5$ of the unknown total.
2. Divide the A count by that fraction: $32 \div (2/5) = 80$.
3. The other sectors contain $80 - 32 = 48$ people.

Problem 2

1. The other sectors total $72 + 126 + 54 = 252°$.
2. Complete the circle: $360 - 252 = 108°$.
3. $108/360 = 3/10 = 30\%$. The share is right, but 30% is not $30°$.

Problem 3

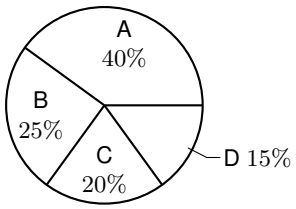
1. The merged share is $25\% + 25\% = 50\%$, or half the circle.
2. Its angle is $(1/2)(360) = 180°$, so it is a semicircle.
3. C gives $(35/100)(360) = 126°$ and D gives $(15/100)(360) = 54°$.

Problem 4

1. The three correct labels total $45\% + 25\% + 20\% = 90\%$.
2. D must complete the whole: $100\% - 90\% = 10\%$, not 15%.
3. Its angle is $(10/100)(360) = 36°$.

Problem 5

1. The draft angles total $40 + 25 + 20 + 15 = 100°$, not $360°$.
2. Multiply each share of the whole by $360°$: A $144°$, B $90°$, C $72°$, D $54°$.
3. Check the full circle: $144 + 90 + 72 + 54 = 360°$.
4. Start at the printed ray and measure counterclockwise. Draw radii at $144, 234, 306$ degrees from the start. Label each sector with its category and percent.



Problem 6

1. The A sector is 40% of 50, so it represents $(40/100)(50) = 20$.
2. The B sector is 30% of 100, so it represents $(30/100)(100) = 30$.
3. A larger percentage of a smaller whole can be a smaller count: $20 < 30$.

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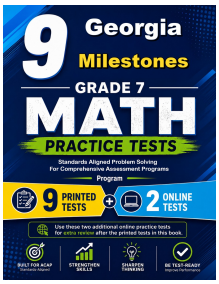

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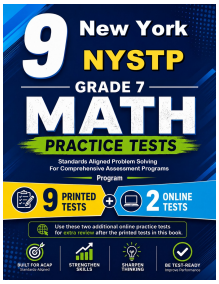

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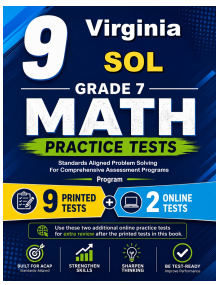

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