Angle Measure with Reference to a Circle

Spot mistakes, reason, and work backward

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

QUICK REVIEW

One full turn is $360°$. A sector is a slice of a circle. Divide 360 by the number of equal sectors to find the degrees in one sector. Multiply by the number of sectors crossed. Clockwise follows the hands of a clock; counterclockwise goes the other way.

Worked example

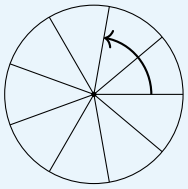
The arrow crosses 2 of 9 equal sectors. Give the angle in degrees and as a fraction of a full turn.

1. A full turn is $360°$, so each sector measures $360 \div 9 = 40°$.

2. Multiply by the number of sectors crossed: $2 \times 40 = 80°$.

3. The turn covers 2 out of 9 equal sectors, or $\frac{2}{9}$ of a full turn.

Answer: $80°$; $\frac{2}{9}$ of a full turn.

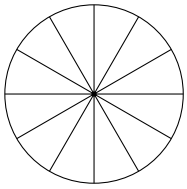


9 equal sectors

Practice Problems

Show your thinking.

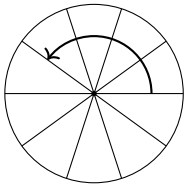
1. A circle has 12 equal sectors. A student labels one sector $12°$. What angle measure belongs on that sector? Explain.



12 equal sectors

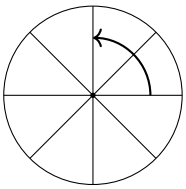
2. What fraction of a full turn is $120°$? Give the fraction in simplest form.

3. A turn covers four tenths of a full circle. Give its angle in degrees and its fraction of a full turn in simplest form.



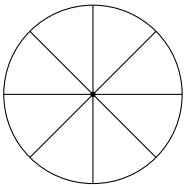
10 equal sectors

4. One turn covers 2 of 8 equal sectors. Another covers 1 of 4 equal sectors. Are the angles equal? Give both measures.



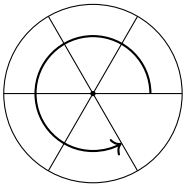
8 equal sectors

5. A $225°$ turn uses equal $45°$ sectors. How many sectors does it cover?



8 equal sectors

6. A rotating sign moves through five sixths of a full turn. How many degrees does it turn?



6 equal sectors

Answer Key

1. $30°$ per sector.
2. $\frac{1}{3}$ of a full turn.
3. $144°$; $\frac{2}{5}$ of a full turn.
4. Yes; both angles are $90°$.
5. 5 sectors.
6. $300°$.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. The 12 counts equal sectors, not degrees.
2. $360 \div 12 = 30°$ per sector.
3. $12 \times 30 = 360°$ checks the label.

Problem 2

1. A full turn is $360°$.
2. Three $120°$ turns make $3 \times 120 = 360°$.
3. One of those 3 equal turns is $\frac{1}{3}$ of the full turn.

Problem 3

1. A full turn is $360°$, so each sector measures $360 \div 10 = 36°$.
2. Multiply by the number of sectors crossed: $4 \times 36 = 144°$.
3. The turn covers 4 out of 10 equal sectors, or $\frac{4}{10} = \frac{2}{5}$ of a full turn.

Problem 4

1. Each eighth-turn is $360 \div 8 = 45°$.
2. The first turn is $2 \times 45 = 90°$.
3. The second turn is $360 \div 4 = 90°$, so the angles are equal.

Problem 5

1. Each sector adds $45°$ to the total turn.
2. Divide the total by the angle in each sector: $225 \div 45 = 5$.
3. $5 \times 45 = 225°$ checks the count.

Problem 6

1. A full turn is $360°$, so each sector measures $360 \div 6 = 60°$.
2. Multiply by the number of sectors crossed: $5 \times 60 = 300°$.

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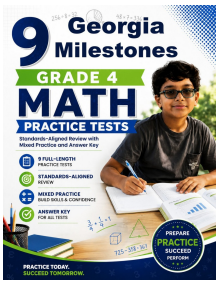

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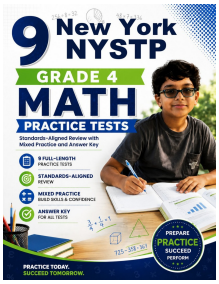

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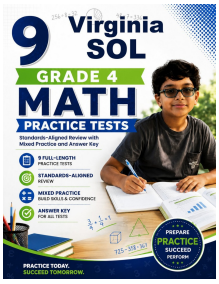

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