One-Degree Angles

Apply the skill to decisions and designs

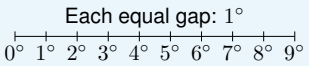
Name _____ **Date** _____ **Score** _____ / 6

QUICK REVIEW

One degree, written $1°$, is one of 360 equal small turns around a point. An angle of $7°$ contains 7 one-degree turns. Count gaps, not tick marks: ticks 0 through 7 make 7 gaps, not 8.

Worked example

An angle covers 9 one-degree turns. Find its measure and the count of gaps.



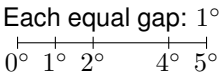
1. Each small turn measures $1°$.
2. $9 \times 1° = 9°$.
3. The marks 0 through 9 enclose 9 gaps.
Answer: 9 degrees.

Practice Problems

Show your thinking.

1. A motor must turn $23°$. Plan A uses three $5°$ steps and eight $1°$ steps. Plan B uses four $5°$ steps and four $1°$ steps. Which is exact? Fix the other by changing only its count of $1°$ steps.

2. The printer left out one degree tick. Mark and label it so each gap represents one degree. Explain where it goes.



3. A pointer turns $17°$ clockwise, then 6 one-degree steps back. If it takes 4 more steps back, does it reach the start? How many more steps would it still need?

4. A maker prints one-degree ticks for a $4°$ turn and a $6°$ turn, including all endpoints. There is room for only 11 marks. Should the turns use separate strips or share one mark at their join?

5. A robot needs a $20°$ turn. Give two separate plans: one using only $1°$ steps and one using only $5°$ steps. How many steps does each plan need?

6. Explain why a $60°$ angle contains 60 one-degree turns even when its rays are drawn very short.

Answer Key

1. A is exact. For B, use three $1°$ steps instead of four.
2. Add the $3°$ tick halfway from $2°$ to $4°$.
3. No. It would still need 7 one-degree steps back.
4. Join the strips and share the boundary mark.
5. 20 one-degree steps or 4 five-degree steps.
6. One-degree turns measure the opening, not ray length.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. A turns $3 \times 5 + 8 \times 1 = 23°$.

2. B turns $4 \times 5 + 4 \times 1 = 24°$, which is $1°$ too far.

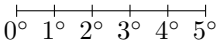
3. Remove one $1°$ step. Now B turns $20 + 3 = 23°$.

Problem 2

1. The jump from $2°$ to $4°$ covers $4 - 2 = 2$ degrees. It needs two equal gaps.

2. One degree after $2°$ is $3°$, the missing midpoint.

Each equal gap: $1°$



Problem 3

1. After the first return, it is $17 - 6 = 11°$ from the start.

2. After four more return steps, $11 - 4 = 7°$ remains, so it still needs 7 steps.

Problem 4

1. Separate strips need $4 + 1 = 5$ and $6 + 1 = 7$ marks, or 12 together.

2. The shared boundary is counted once, leaving $12 - 1 = 11$ marks. The joined strip still has $4 + 6 = 10$ one-degree gaps.

Problem 5

1. Using $1°$: $20 \div 1 = 20$ steps.

2. Using $5°$: $20 \div 5 = 4$ steps.

3. $20 \times 1 = 4 \times 5 = 20°$ verifies both plans.

Problem 6

1. $60°$ means $60 \times 1°$.

2. Shortening the drawn rays leaves their directions unchanged.

3. The opening still contains 60 one-degree units.

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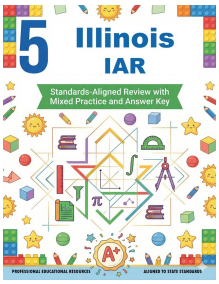

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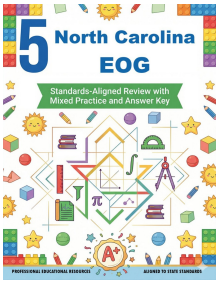

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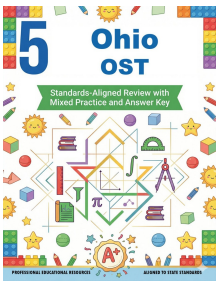

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