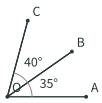
Angles: addition, bisectors, complements and supplements — Teacher answers

Year 7, upper volume • text pp. 91–100 • foundation lessons 46–50

Use the prerequisite checks to choose support, project the worked and guided items, then let learners work on paper. Select supplements or extensions as needed. No learner answers are saved by this presentation.

Worked example 1

OB lies inside ∠AOC. ∠AOB = 35° and ∠BOC = 40°. Find ∠AOC and state why addition is valid.



Angle sketch: use the stated angles and ray order.

Reference answer

75°.

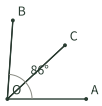
1. The inside ray splits the whole angle into the two stated adjacent parts.
2. ∠AOC = 35° + 40° = 75°.

- Identify the correct angle relation and retain all stated position conditions.
- Show the calculation and give the angle with its unit.

Guided attempt 2

OC is the internal bisector of ∠AOB = 86°. Find ∠AOC and complete the equal-half relation.

1. ∠AOC = ____.
2. 2 × ∠AOC = ____°.
3. ∠AOC = ____°.



Angle sketch: use the stated angles and ray order.

Reference answer

43°.

1. ∠AOC = ∠COB because OC is a bisector.
2. The two equal halves total 86°, so each is 43°.

- Identify the correct angle relation and retain all stated position conditions.
- Show the calculation and give the angle with its unit.

Prerequisite 3

Find the complementary angle of 30°.

Reference answer

60°.

1. Complementary angles total 90°.
2. 90 − 30 = 60°.

- Identify the correct angle relation and retain all stated position conditions.
- Show the calculation and give the angle with its unit.

Prerequisite 4

Using 1° = 60′, convert 2° to angle minutes.

$$2 \times 60$$

Reference answer

120 angle minutes (120′).

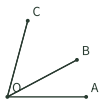
$$120$$

1. Each degree contains 60 angle minutes.
2. 2 × 60 = 120 minutes.

- Apply the relevant sign and order rules to every operation.
- Show an intermediate calculation and obtain the exact stated value.

Independent practice 5

OB is inside ∠AOC, with ∠AOB = 28° and ∠BOC = 47°. Find the whole angle.



Angle sketch: use the stated angles and ray order.

Reference answer

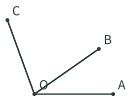
75°.

1. Use adjacent-angle addition.
2. 28° + 47° = 75°.

- Identify the correct angle relation and retain all stated position conditions.
- Show the calculation and give the angle with its unit.

Independent practice 6

OB lies inside ∠AOC. ∠AOC = 110° and ∠AOB = 35°. Find ∠BOC.



Angle sketch: use the stated angles and ray order.

Reference answer

75°.

1. The whole is ∠AOB + ∠BOC.
2. ∠BOC = 110° − 35° = 75°.

- Identify the correct angle relation and retain all stated position conditions.
- Show the calculation and give the angle with its unit.

Independent practice 7

Find the supplementary angle of 118°.

Reference answer

62°.

1. Supplementary angles total 180°.
2. 180 − 118 = 62°.

- Identify the correct angle relation and retain all stated position conditions.
- Show the calculation and give the angle with its unit.

Independent practice 8

An internal ray bisects an angle of 70°. Find either half.

Reference answer

35°.

1. An angle bisector divides the whole into two equal angles.
2. 70 ÷ 2 = 35°.

- Identify the correct angle relation and retain all stated position conditions.
- Show the calculation and give the angle with its unit.

Exit question 9

Find the complementary angle of 42°.

Reference answer

48°.

1. Complementary angles total 90°.
2. 90 − 42 = 48°.

- Identify the correct angle relation and retain all stated position conditions.
- Show the calculation and give the angle with its unit.

Exit question 10

A learner calls angles of 60° and 120° complementary. Correct the relation and justify it.

Reference answer

They are supplementary, because their sum is 180°, not 90°.

1. 60° + 120° = 180°.
2. A 180° sum defines supplementary angles.

- State the applicable definition or condition accurately.
- Support the conclusion with the given numbers, a check or a concrete counterexample.

Further practice 11

Find the complementary angle of 67°.

Reference answer

23°.

1. Complementary angles total 90°.
2. 90 − 67 = 23°.

- Identify the correct angle relation and retain all stated position conditions.
- Show the calculation and give the angle with its unit.

Further practice 12

Find the supplementary angle of 93°.

Reference answer

87°.

1. Supplementary angles total 180°.
2. 180 − 93 = 87°.

- Identify the correct angle relation and retain all stated position conditions.
- Show the calculation and give the angle with its unit.

Further practice 13

Add 30°45′ and 25°30′. Carry angle minutes correctly.

Reference answer

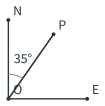
56°15′.

1. Minutes: 45′ + 30′ = 75′ = 1°15′.
2. Degrees: 30° + 25° + 1° = 56°, leaving 15′.

- Identify the correct angle relation and retain all stated position conditions.
- Show the calculation and give the angle with its unit.

Further practice 14

ON points north and OE points east. OP is 35° east of north, measured from north towards east. Find the angle from east towards OP.



Angle sketch: use the stated angles and ray order.

Reference answer

55°.

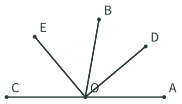
1. North and east form a right angle of 90°. OP lies between these directions.
2. The angle from east towards OP is 90° − 35° = 55°.

- Identify the correct angle relation and retain all stated position conditions.
- Show the calculation and give the angle with its unit.

Extension 15

OA and OC are opposite rays; OB lies between them with ∠AOB = 80° and ∠BOC = 100°. OD and OE are the internal bisectors of those two angles. Find ∠DOE.

$$80/2 + 100/2$$



Angle sketch: use the stated angles and ray order.

Reference answer

90°.

$$90$$

1. ∠DOB = 80°/2 = 40° and ∠BOE = 100°/2 = 50°.
2. B is between D and E, so ∠DOE = 40° + 50° = 90°.

- Apply the relevant sign and order rules to every operation.
- Show an intermediate calculation and obtain the exact stated value.

Extension 16

An angle x has a supplement three times its complement, giving 180 − x = 3(90 − x). Solve and check both related angles.

$$180 - x = 3(90 - x)$$

Reference answer

x = 45°; its complement is 45° and its supplement is 135° = 3 × 45°.

$$x = 45$$

1. Expand: 180 − x = 270 − 3x.
2. Add 3x and subtract 180: 2x = 90, so x = 45.
3. Check the complement is positive and the supplement is three times it.

- Use the original equality and apply each operation to both sides.
- Obtain the solution and check it in the original equation or situation.