

Grade 7 · Angle Relationships · Test Answer Key

Common Core 7.G.B.5 · mathovore.fr

This answer key for the angle relationships test shows a worked solution for every question, together with a scoring guide that explains how the 20 points are awarded. Use the guide to give partial credit for correct equations even when a later step contains an arithmetic slip.

Grade 7 Common Core: 7.G.B.5

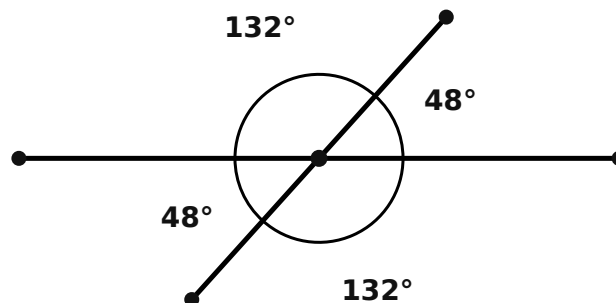
Question 1: Complement and supplement (2 points)

- a. $90 - 64 = 26$: 26°
- b. $180 - 64 = 116$: 116°

Scoring: 1 point per part. Award no point if the two totals (90 and 180) are swapped.

Question 2: Vertical angles (2 points)

- a. Angle α is supplementary to 48° : $180 - 48 = 132$. $\alpha = 132^\circ$
- b. Angle b is vertical to 48° , so $b = 48^\circ$. Angle c is vertical to α , so $c = 132^\circ$.



Solved figure.

Scoring: 1 point for α ; 1 point for both b and c .

Question 3: Equation on a line (2 points)

- a. $5x + 4x = 180$, so $9x = 180$ and $x = 20$.

b. The larger angle is $5(20)=100$: 100° . The other angle is $4(20)=80$, and $100+80=180$.

Scoring: 1 point for the correct equation and x ; 1 point for 100° .

Question 4: Complementary equation (3 points)

a. $(x+14)+(2x-5)=90$, so $3x+9=90$, $3x=81$, and $x=27$.

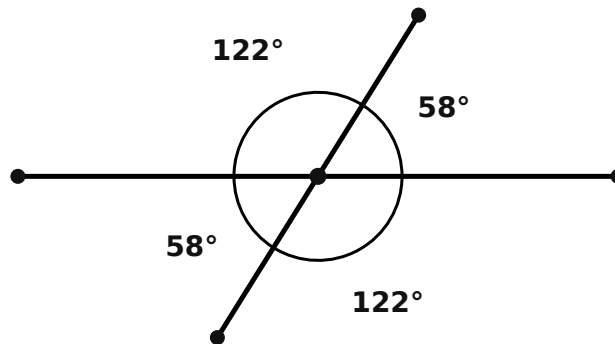
b. $27+14=41$ and $2(27)-5=49$. Check: $41+49=90$. 41° and 49°

Scoring: part (a) 1 point for the equation and 1 point for x ; part (b) 1 point for both angles.

Question 5: Vertical angles equation (3 points)

a. Vertical angles are equal: $4x+14=6x-8$. Then $22=2x$, so $x=11$. Check: $4(11)+14=58$ and $6(11)-8=58$.

b. Angle y is supplementary to 58° : $180-58=122$. $y=122^\circ$



Solved figure.

Scoring: 1 point for the equation, 1 point for x , 1 point for y .

Question 6: Checking a claim (2 points)

a. No. $70+100=170$, and supplementary angles must add up to 180° .

b. $180-70=110$: 110°

Scoring: 1 point for showing the sum is 170 and not 180; 1 point for 110° .

Question 7: Road intersection (3 points)

a. The angles are supplementary: $(2x+20)+(x+10)=180$.

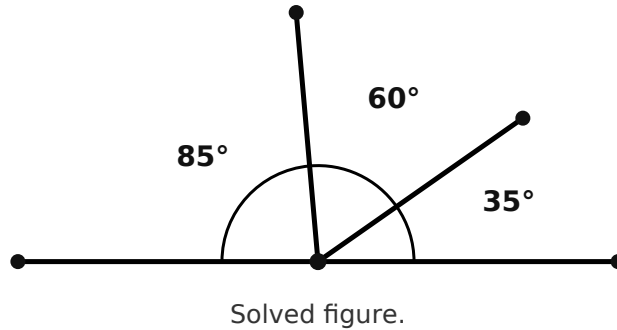
b. $3x+30=180$, so $3x=150$ and $x=50$.

c. $2(50)+20=120$ and $50+10=60$. Check: $120+60=180$. 120° and 60°

Scoring: 1 point per part.

Question 8: Three angles on a line (3 points)

- a. $x + (x + 25) + (2x + 15) = 180$
- b. $4x + 40 = 180$, so $4x = 140$ and $x = 35$.
- c. The angles are 35, 60, and 85; check $35 + 60 + 85 = 180$. The largest is 85° .



Scoring: 1 point per part.

Total
20 points