

Grade 8 · Angles, Parallel Lines and Triangles · Test Answer Key

Common Core 8.G.A.5 · mathovore.fr

Use this key to score the test out of 20 points. Each solution shows the work and names the angle relationship, and the scoring note says how the points are awarded, including partial credit.

Grade 8 Common Core: 8.G.A.5

Question 1: Third angle (2 points)

- a. $180 - 63 - 49 = 68$: 68° .
- b. $180 - 90 - 28 = 62$: 62° .

Scoring: 1 point for each correct angle.

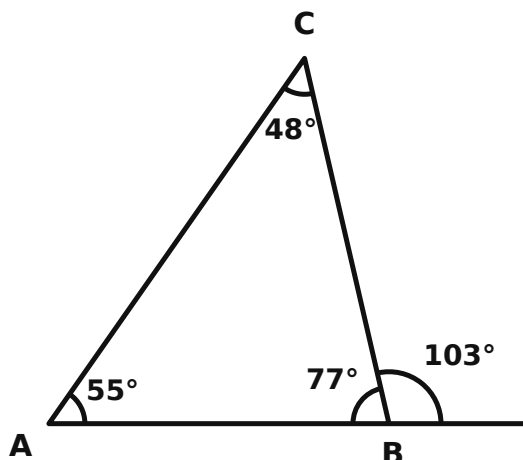
Question 2: Triangle with variables (2 points)

- a. $(x+15)+2x+(3x-15)=6x=180$, so $x=30$.
- b. 45, 60 and 75: 45° , 60° , 75° . Check: $45+60+75=180$.

Scoring: 1 point for $x=30$ with the equation; 1 point for all three angles.

Question 3: Exterior angles (2 points)

- a. $x=55+48=103$: $x=103^\circ$.
- b. $142-89=53$: 53° .

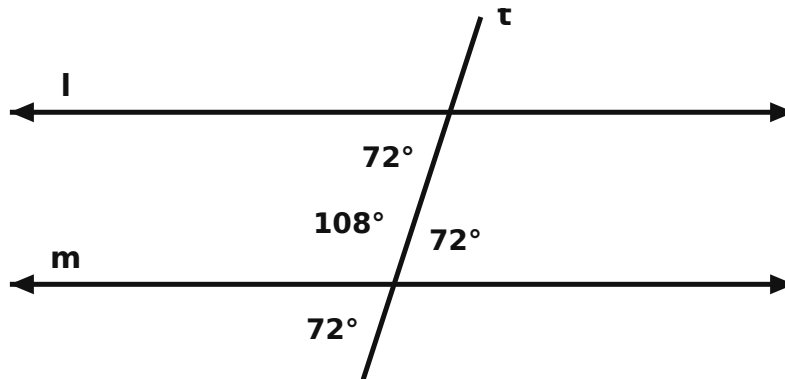


The exterior angle is $55^\circ + 48^\circ = 103^\circ$.

Scoring: 1 point for each part.

Question 4: Parallel lines and a transversal (3 points)

- a. x and 72° are alternate interior angles: $x = 72^\circ$.
- b. y and 72° are corresponding angles: $y = 72^\circ$.
- c. z and 72° are same-side interior angles, so $z = 180 - 72 = 108$: $z = 108^\circ$.



The four marked angles.

Scoring: for each part, 1 point for the correct measure with the correct relationship named.

Question 5: Alternate interior with x (2 points)

- a. Alternate interior angles are equal: $4x - 12 = 2x + 18$, so $2x = 30$ and $x = 15$.
- b. $4(15) - 12 = 48$ and $2(15) + 18 = 48$: 48° **each**.

Scoring: 1 point for the equation and $x = 15$; 1 point for 48° .

Question 6: Roof truss (2 points)

- a. $112 + 2x = 180$, so $2x = 68$ and $x = 34^\circ$.
- b. $y = 180 - 34 = 146$, or $34 + 112 = 146$: $y = 146^\circ$.

Scoring: 1 point for each part.

Question 7: Similar by angles (2 points)

- a. $\triangle ABC$: $180 - 35 - 80 = 65$. $\triangle DEF$: $180 - 80 - 65 = 35$. 65° **and** 35° .
- b. Both triangles have angles 35° , 65° and 80° . **Yes, they are similar** by the AA criterion.

Scoring: 1 point for both third angles; 1 point for yes with the reason.

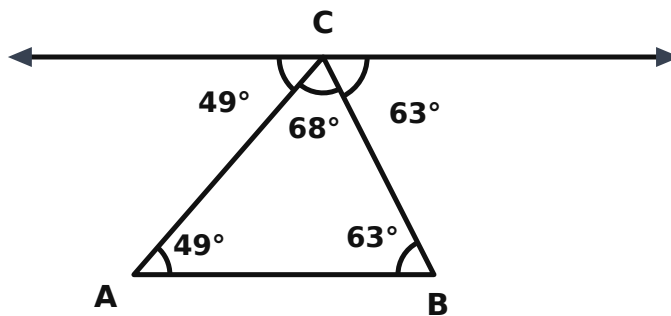
Question 8: Missing side by AA (2 points)

- a. The triangles are similar by AA, and $DE \div AB = 12 \div 8 = \frac{3}{2}$; $k = \frac{3}{2}$.
b. $DF = 10 \cdot \frac{3}{2} = 15$; $DF = 15$.

Scoring: 1 point for each part.

Question 9: Why the angle sum is 180 (3 points)

- a. x and $\angle A$ are alternate interior angles, so $x = 49^\circ$. z and $\angle B$ are alternate interior angles, so $z = 63^\circ$.
b. $\angle C = 180 - 49 - 63 = 68$. Along the line: $49 + 68 + 63 = 180$. $\angle C = 68^\circ$.



The angles along the line: $49^\circ + 68^\circ + 63^\circ = 180^\circ$.

Scoring: part (a) 1 point for each of x and z with the relationship named; part (b) 1 point for $\angle C$ with the sum shown.

Total
20 points