

Angles and Geometric Constructions: math test solutions, Grade 7 – download the PDF

Test solutions with the detailed point scale. Add up your points and spot what to review.

Suggested time: 45 minutes. Out of 20 points. Calculator allowed only when the problem says so.

1 Complementary and supplementary

/ 3 pts

- a. $90 - 56 = 34$, so 34° . (1 pt)
- b. $180 - 56 = 124$, so 124° . (1 pt)
- c. $38 + 62 = 100$, not 90 : no. (1 pt)

2 Vertical angles

/ 4 pts

- a. $6x - 4 = 4x + 22$, so $2x = 26$ and $x = 13$. (2 pts)
- b. $6(13) - 4 = 74$, so each measures 74° . (1 pt)
- c. $180 - 74 = 106$, so each measures 106° . (1 pt)

3 Angles on a line

/ 3 pts

$(x + 5) + 2x + (3x - 11) = 180$, so $6x - 6 = 180$. (1 pt)

$6x = 186$, so $x = 31$. (1 pt)

The angles are 36° , 62° and 82° ; check $36 + 62 + 82 = 180$. (1 pt)

4 Triangle inequality

/ 4 pts

- a. $6 + 9 = 15 > 14$: yes. (1 pt)
- b. $5 + 7 = 12$, not greater than 12: no. (1 pt)
- c. $3 + 8 = 11 > 10$: yes. (1 pt)
- d. $\sqrt{13-8}$

5 Unique triangle?

/ 3 pts

- a. $4 + 6 = 10 < 11$: none. (1 pt)
- b. Angles only: many triangles of different sizes. (1 pt)
- c. Two sides and the included angle: exactly one. (1 pt)

6 Cross sections

/ 3 pts

- a. A rectangle, 8 cm by 5 cm. (1 pt)
- b. $8 \times 5 = 40 \text{ cm}^2$. (1 pt)
- c. A circle of radius 6 cm: $\pi \times 6^2 = 36\pi \approx 113.1 \text{ cm}^2$. (1 pt)



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