

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

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

1 Complementary and supplementary

/ 3 pts

- Find the complement of 56° .
- Find the supplement of 56° .
- Are 38° and 62° complementary? Explain.

2 Vertical angles

/ 4 pts

Two lines cross. Two vertical angles measure $(6x - 4)^\circ$ and $(4x + 22)^\circ$.

- Find x .
- Find the measure of these two angles.
- Find the measure of the other two angles.

3 Angles on a line

/ 3 pts

Three adjacent angles on a straight line measure $(x + 5)^\circ$, $(2x)^\circ$ and $(3x - 11)^\circ$. Write an equation, solve it, and give the three angles.

4 Triangle inequality

/ 4 pts

- a. Can 6 cm, 9 cm and 14 cm be the sides of a triangle?
- b. Can 5 cm, 7 cm and 12 cm?
- c. Can 3 cm, 10 cm and 8 cm?
- d. Two sides of a triangle are 8 cm and 13 cm. Give the range of the third side.

5 Unique triangle?

/ 3 pts

Say whether each description gives no triangle, exactly one, or many.

- a. Sides 4 cm, 6 cm and 11 cm.
- b. Angles 20° , 70° and 90° only.
- c. Sides 5 cm and 7 cm with a 50° angle between them.

6 Cross sections

/ 3 pts

A rectangular prism measures 8 cm by 5 cm by 3 cm, and a sphere has radius 6 cm.

- a. What shape is the cross section of the prism cut parallel to the 8×5 face?
- b. Find its area.
- c. A plane cuts the sphere through its center. Find the area of the cross section in terms of π , then to the nearest tenth. Calculator allowed.



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