Solutions

Accept equivalent correct methods and supported interpretations. The marks check reasoning; they are not an official grade.

2.1 A – Volume uses k^3. B is the area factor; C is the length factor. Volume requires the cube.

Correct response linked to the given case.

2.2 A – 180-35-85=60. B is the sum of the known angles, not the missing one; C would make the total 170°, not 180°.

Correct response linked to the given case.

2.3 16 – Area uses 4^2.

Correct response linked to the given case.

2.4 False – They prove similarity, not equal scale.

Correct response linked to the given case.

3.1 $k = \sqrt{A_2/A_1} = \sqrt{216/96} = 3/2$. Volume uses the cube: $V_2 = k^3 V_1 = (3/2)^3(160\,\text{cm}^3) = 540\,\text{cm}^3$. Using area ratio directly would give the wrong volume.

Sound conclusion or proposed method. Relevant supporting steps or textual evidence . Accurate conditions, checks or qualification.

3.2 $b = \sqrt{c^2 - a^2} = \sqrt{(13\,\text{cm})^2 - (5\,\text{cm})^2} = 12\,\text{cm}$. $A = ab/2 = (5\,\text{cm})(12\,\text{cm})/2 = 30\,\text{cm}^2$. $\sin\theta = a/c = (5\,\text{cm})/(13\,\text{cm}) = 5/13$.

Sound conclusion or proposed method. Relevant supporting steps or textual evidence. Accurate conditions, checks or qualification.

3.3 Third angle is $180-42-73 = 65$ degrees. Its adjacent exterior angle is $180-65 = 115$ degrees, also $42+73$. Angles establish shape, not scale; similar triangles can have different side lengths.

Sound conclusion or proposed method. Relevant supporting steps or textual evidence. Accurate conditions, checks or qualification.

3.4 Parallelism gives the matching corresponding angle 68°. The adjacent pair forms a straight angle, so the other is 180°−68°=112°. Equal corresponding angles require the stated parallel lines; the straight-angle sum uses adjacency on one line. A similar-looking sketch without parallelism would not justify the first equality.

Sound conclusion or proposed method. Relevant supporting steps or textual evidence. Accurate conditions, checks or qualification.