4) O, A and B are fixed points, C is variable on (S)
OC = 3cm = radius (fixed length)
and G is the centroid in the triangle ABC
so $OG = \frac{1}{3} CO$ (property of the centroid) $\frac{1}{2}$

$OG = \frac{1}{3} \times 3$

$\boxed{OG = 1\,cm}$ the variable point G is located at a constant distance OG = 1 cm from the fixed point O
So G varies : on the circle of center O and radius 1 cm
fixed

$\frac{1}{2}$

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