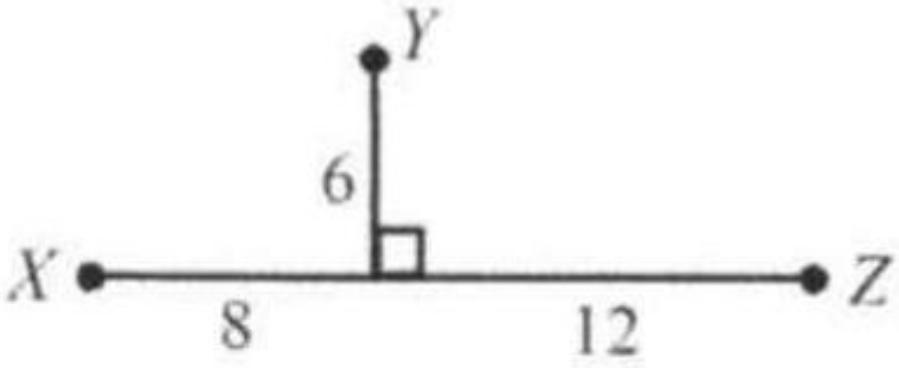
Example 10

(1997 National Team) How many units are in the length of the radius of the circle which passes through points X, Y and Z ? Express your answer as a decimal rounded to the nearest tenth.



Solution: 11.2 (units)

Draw the circumcircle of triangle AYZ.

Draw two diameters of the circle. Label all the line segments as shown in the figure.

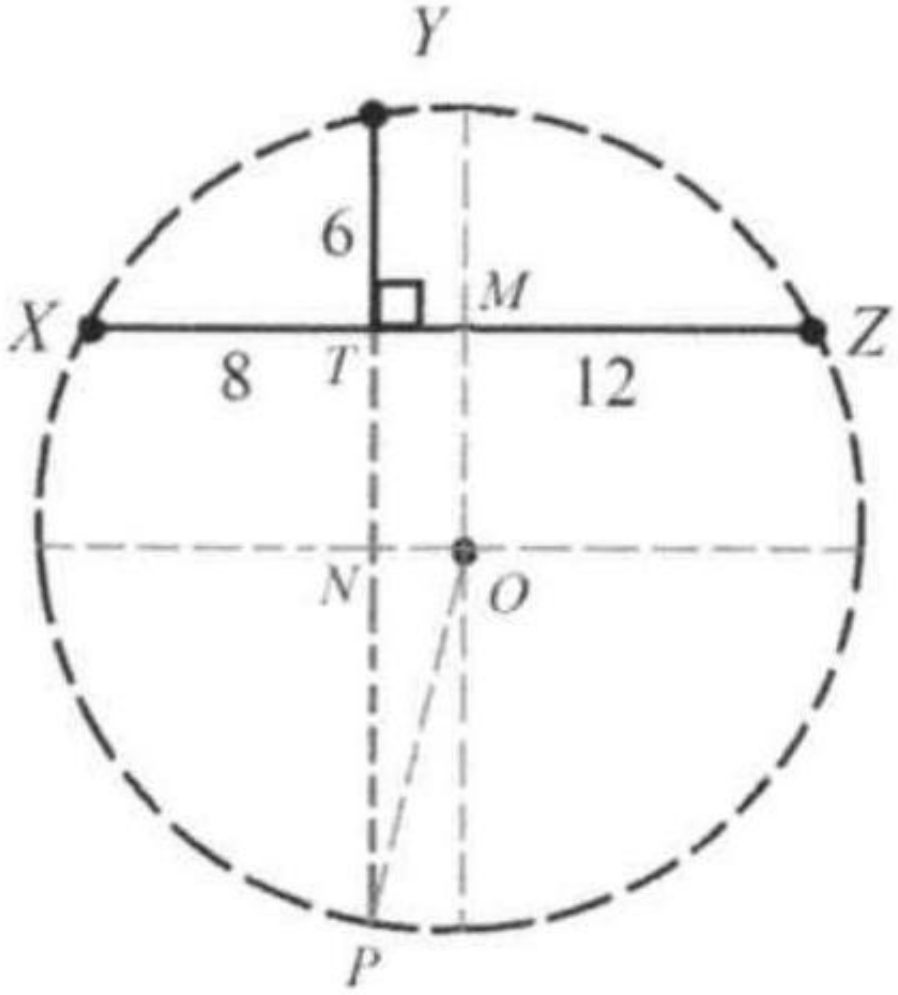
We see that $TM = NO = 2$

$XT \times TZ = YT \times TP \Rightarrow 8 \times 12 = 6 \times TP \Rightarrow TP = 16.$

Then $YP = 22$ and $NP = 11$.

Applying Pythagorean Theorem to triangle NPO:

$OP^2 = NO^2 + NP^2 = 2^2 + 11^1 = 125$



$OP = \sqrt{125} = 5\sqrt{5} \approx 11.2$