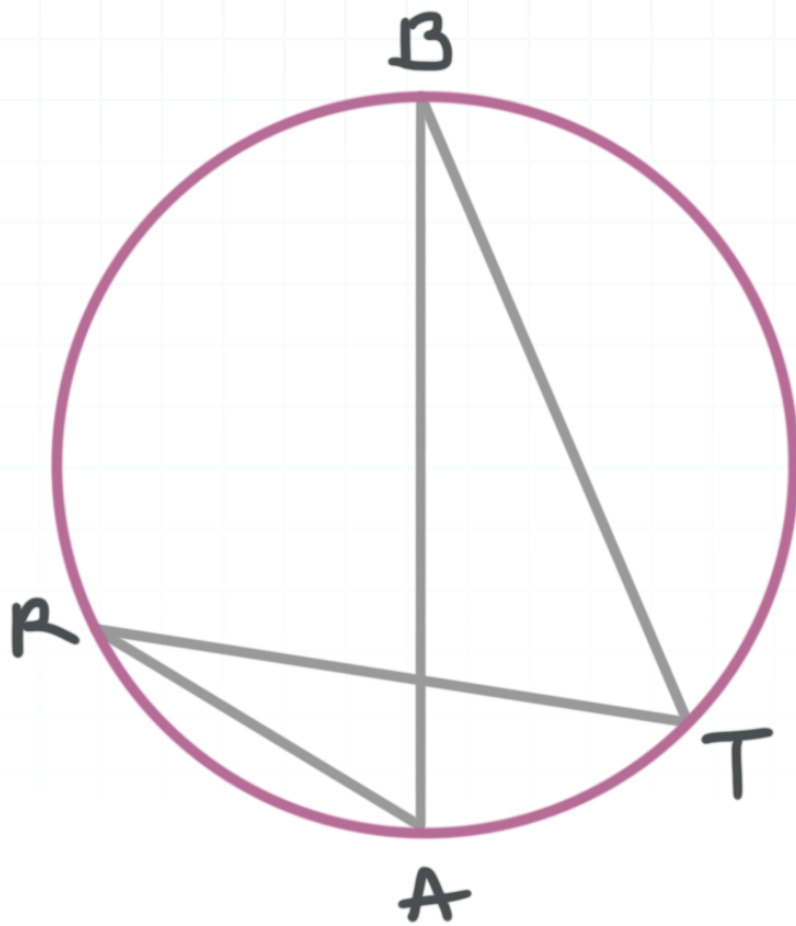


Topic: Inscribed angles of circles

Question: In the circle, the measure of \widehat{AT} is 36° . Find the sum of the angle measures, $m\angle ABT + m\angle ART$.



Answer choices:

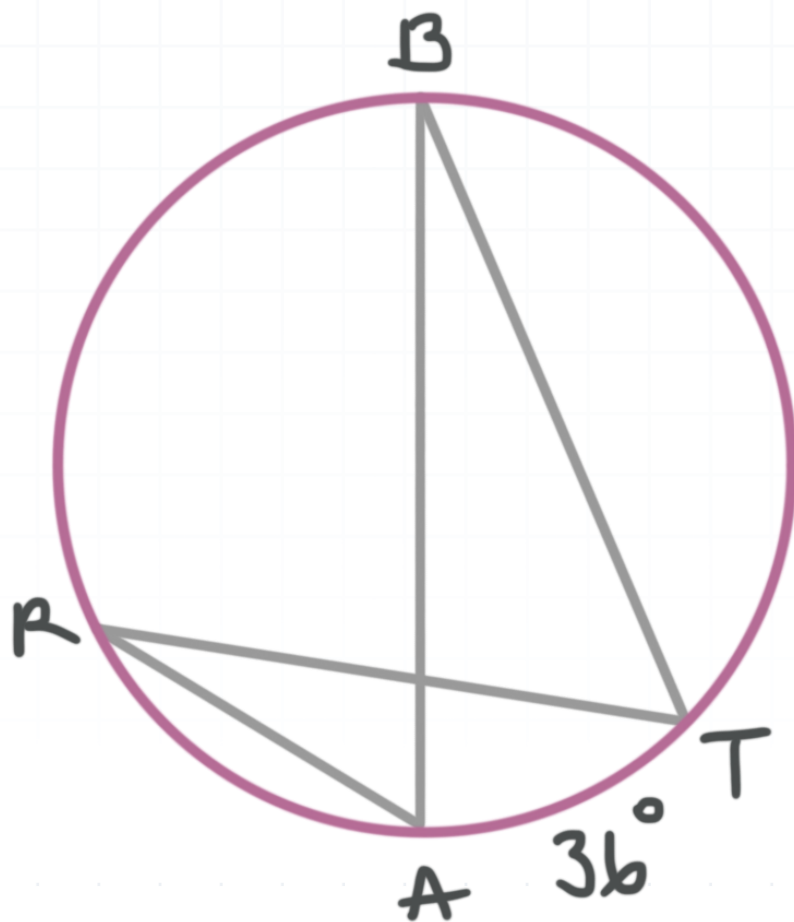
- A 0°
- B 36°
- C 48°
- D 72°



Solution: B

The angle $\angle ABT$ is an inscribed angle, so its measure is half that of its intercepted arc, \widehat{AT} .

$$m\angle ABT = \frac{1}{2}(36^\circ) = 18^\circ$$



$m\angle ART$ is also an inscribed angle with intercepted arc \widehat{AT} , so its measure is also half that of \widehat{AT} , which means that $m\angle ART = 18^\circ$. Therefore,

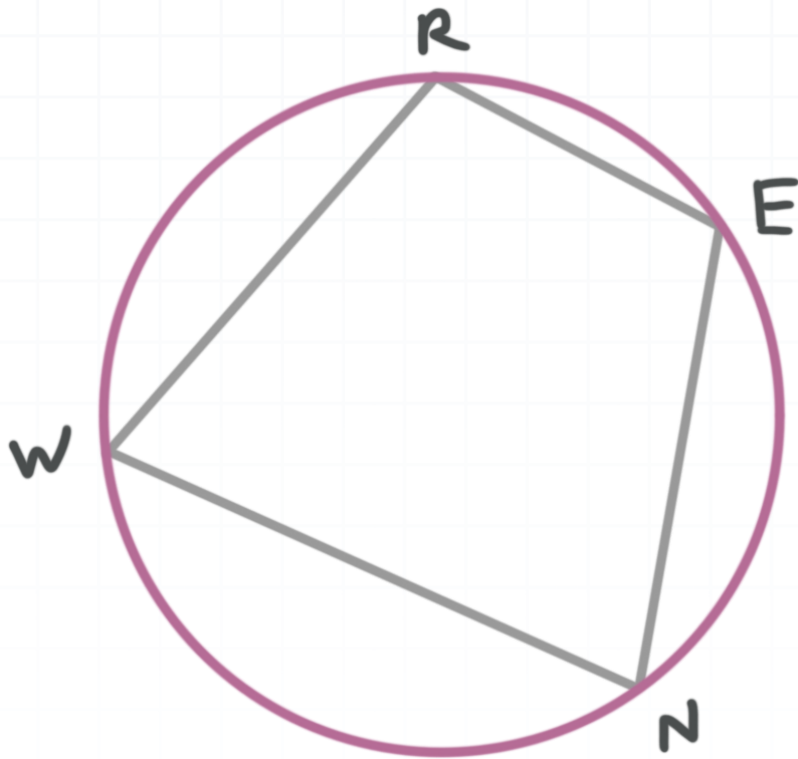
$$m\angle ABT + m\angle ART = 18^\circ + 18^\circ$$

$$m\angle ABT + m\angle ART = 36^\circ$$



Topic: Inscribed angles of circles

Question: In the circle, $m\angle ENW = 50^\circ$, the measure of \widehat{RW} is 70° , and the measure of \widehat{EN} is 110° . What is $m\angle NWR$?

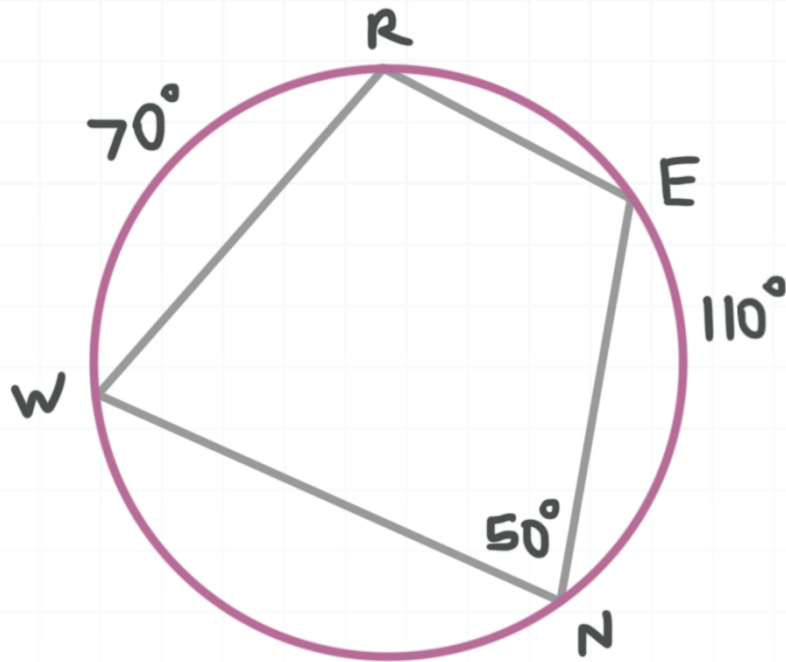
**Answer choices:**

- A 55°
- B 60°
- C 65°
- D 70°



Solution: D

The angle measure $m\angle ENW$ (which is 50°) is half that of \widehat{EW} .



So the measure of \widehat{EW} is 100° . Also,

$$m\widehat{EW} = m\widehat{ER} + m\widehat{RW}$$

$$100^\circ = m\widehat{ER} + 70^\circ$$

$$m\widehat{ER} = 30^\circ$$

Now we know that

$$m\widehat{NR} = m\widehat{NE} + m\widehat{ER} = 110^\circ + 30^\circ = 140^\circ$$

Notice that \widehat{NR} is the arc intercepted by inscribed angle $\angle NWR$, so

$$m\angle NWR = \frac{1}{2}m\widehat{NR}$$

$$m\angle NWR = \frac{1}{2}(140^\circ)$$

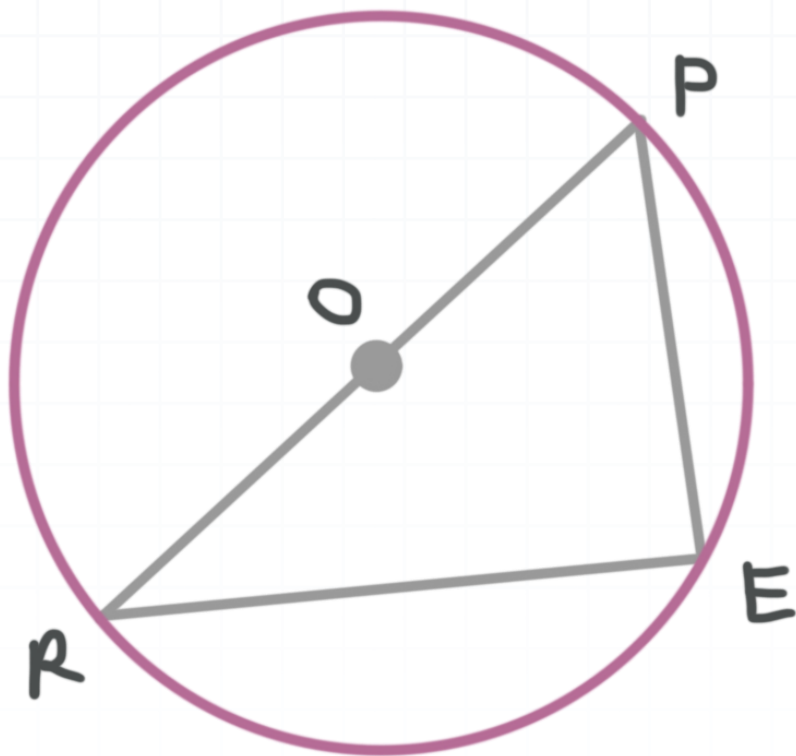


$$m\angle NWR = 70^\circ$$



Topic: Inscribed angles of circles

Question: \overline{RP} is a diameter of the circle (with center at O), $m\angle ERP = (5x + 6)^\circ$, and $m\angle RPE = (6x + 7)^\circ$. What is $m\angle ERP$?

**Answer choices:**

- A 41°
- B 45°
- C 49°
- D 54°



Solution: A

The arc intercepted by inscribed angle $\angle PER$ is a semicircle, so

$$m\angle PER = \frac{1}{2}(180^\circ) = 90^\circ$$

Earlier, when we talked about interior angles of polygons, we learned that the sum of the three interior angles of a triangle is 180° . The interior angles of triangle RPE are $\angle ERP$, $\angle PER$, and $\angle RPE$. Therefore,

$$m\angle ERP + m\angle PER + m\angle RPE = 180^\circ$$

Since $m\angle PER = 90^\circ$,

$$m\angle ERP + 90^\circ + m\angle RPE = 180^\circ$$

$$m\angle ERP + m\angle RPE = 90^\circ$$

Substitute the expressions for the measures of $\angle ERP$ and $\angle RPE$, and solve for x .

$$(5x + 6)^\circ + (6x + 7)^\circ = 90^\circ$$

$$11x^\circ + 13^\circ = 90^\circ$$

$$11x^\circ = 77^\circ$$

$$x^\circ = 7^\circ$$

$$x = 7$$

So



$$m\angle ERP = (5x + 6)^\circ$$

$$m\angle ERP = (5(7) + 6)^\circ$$

$$m\angle ERP = 41^\circ$$

