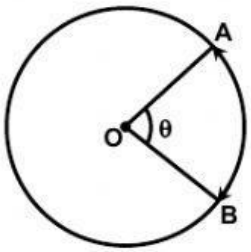
MATEMÁTICA
IV SECUNDARIA
Ficha 12: Circunferencia 3
Ángulos en la circunferencia

ÁNGULOS EN LA CIRCUNFERENCIA

- **ÁNGULO CENTRAL**

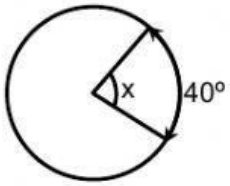
Es el ángulo formado por 2 radios.



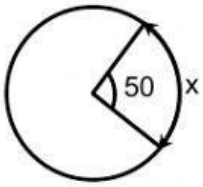
θ : ∡ central

$\theta = \overset{\frown}{AB}$

Ejemplo: Calcula "x"



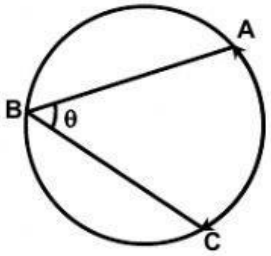
x =



x =

- **ÁNGULO INSCRITO**

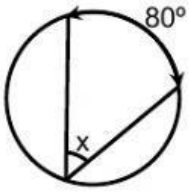
Es el ángulo formado por dos cuerdas cuyo vértice es un punto de la circunferencia.



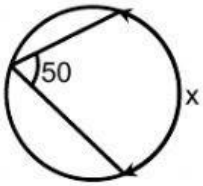
θ : ∡ inscrito

$\theta = \frac{\overset{\frown}{AC}}{2}$

Ejemplos: Calcula "x"



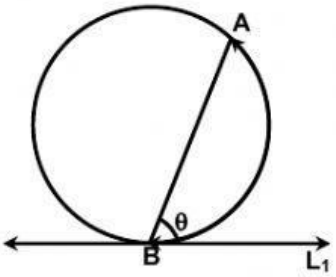
x =



x =

ÁNGULO SEMI INSCRITO

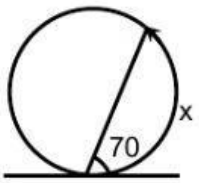
Es el ángulo formado por una cuerda y una recta tangente.



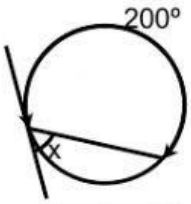
θ : ∡ semi inscrito

$$\theta = \frac{\overset{\frown}{AB}}{2}$$

Ejemplos: Calcula "x"



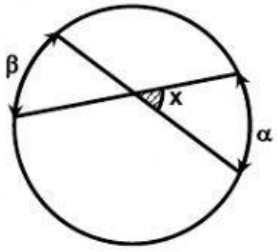
x =



x =

ÁNGULO INTERIOR

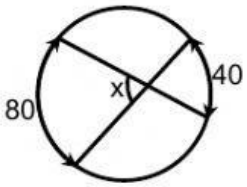
Es el ángulo formado por la intersección de dos cuerdas por la intersección de dos cuerdas en un punto interior de la circunferencia.



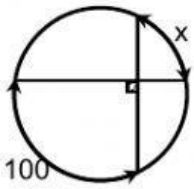
x: ∡ interior

$$x = \frac{\alpha + \beta}{2}$$

Ejemplos: Calcula "x"



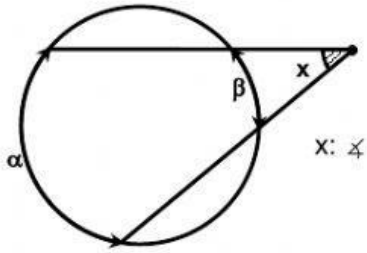
x =



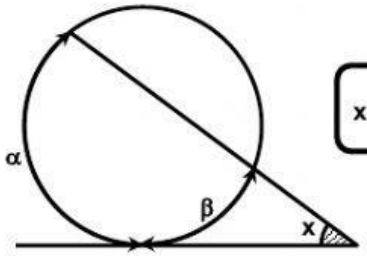
x =

ÁNGULO EXTERIOR

En el ángulo formado por dos rectas secantes, intersectadas fuera de la circunferencia.

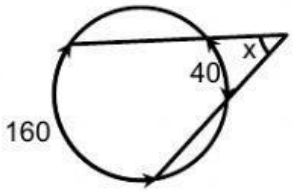


x: ∡ exterior

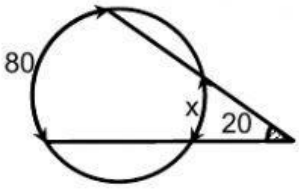


$$x = \frac{\alpha - \beta}{2}$$

Ejemplos: Calcula "x"



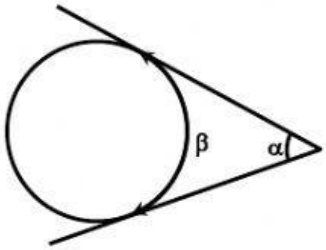
x =



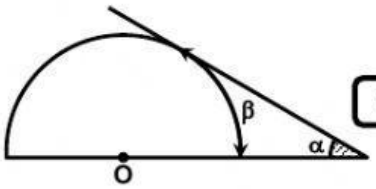
x =

CASOS ESPECIALES

PARA ÁNGULOS EXTERIORES

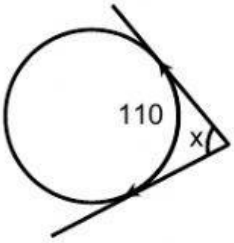


$\alpha + \beta = 180°$

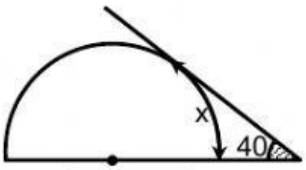


$\alpha + \beta = 90°$

Ejemplos: Calcula "x"

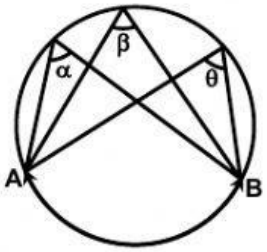


x =



x =

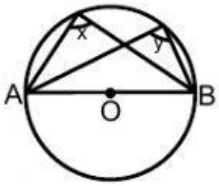
ARCO CAPAZ



$\overset{\frown}{AB}$: arco capaz

$\alpha = \beta = \theta$

Ejemplo: Calcula "x + y"

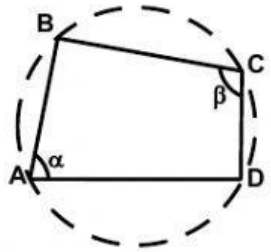


x + y =

CUADRILÁTERO INSCRIPTIBLE

Es cuando una circunferencia pasa por sus cuatro vértices.
Para que sea inscriptible se tiene que cumplir algunas de las siguientes condiciones:

CONDICIÓN 1

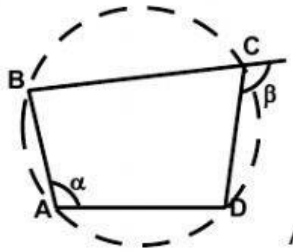


Si:

$\alpha + \beta = 180$

ABCD es inscriptible

CONDICIÓN 2

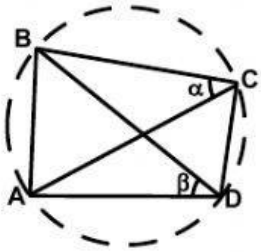


Si:

$\alpha = \beta$

ABCD es inscriptible

CONDICIÓN 3

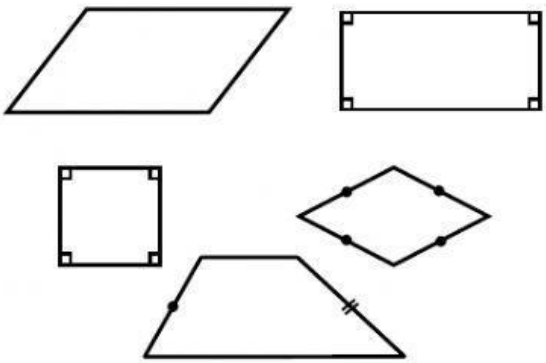


Si:

$\alpha = \beta$

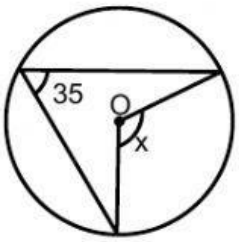
ABCD es inscriptible

Ejemplo: Marca los cuadriláteros inscriptibles



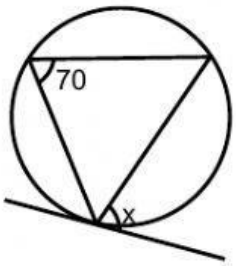
Ejercicios de aplicación

1. Calcula "x"



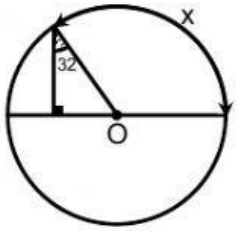
a) 35
b) 70
c) 105
d) 80
e) 50

2. Calcula "x"



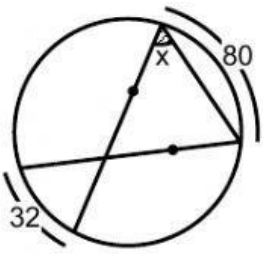
a) 70
b) 35
c) 140
d) 105
e) 35/2

3. Calcula "x"



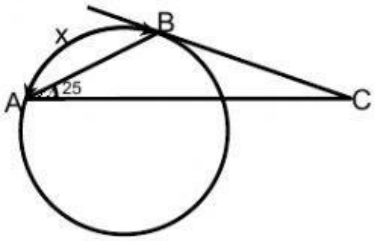
a) 132
b) 122
c) 112
d) 58
e) 29

4. Calcula "x"



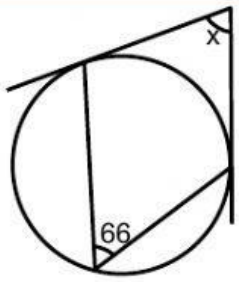
a) 56
b) 62
c) 63
d) 64
e) 58

5. Calcula "x"; AB = BC



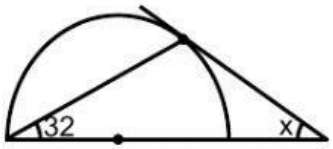
a) 50
b) 25
c) 100
d) 75
e) 60

6. Calcula "x"



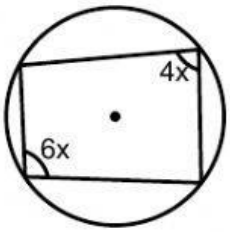
a) 48
b) 58
c) 38
d) 66
e) 114

7. Calcula "x"



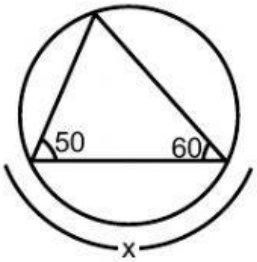
a) 32
b) 26
c) 36
d) 13
e) 16

8. Calcula "x"



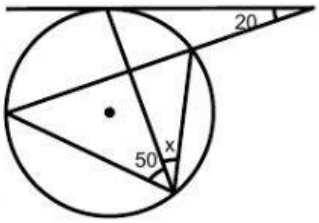
a) 36
b) 18
c) 9
d) 72
e) 24

9. Calcula "x"



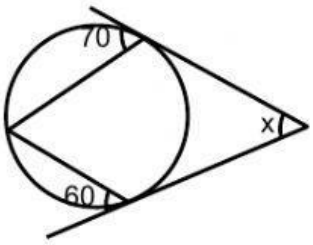
a) 70
b) 35
c) 105
d) 140
e) 110

10. Calcula "x"



a) 30
b) 20
c) 15
d) 25
e) 40

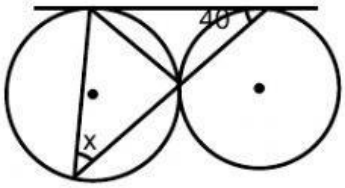
11. Calcula "x"



a) 100
b) 80
c) 40
d) 50
e) 60

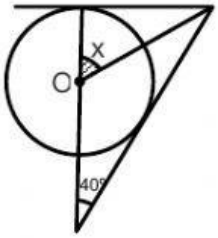
12. Calcula "x"

a) 40
b) 50
c) 20
d) 25
e) 65



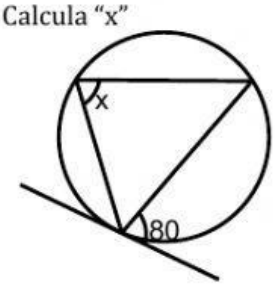
13. Calcula "x"; "O" es centro

a) 65
b) 55
c) 75
d) 45
e) 40



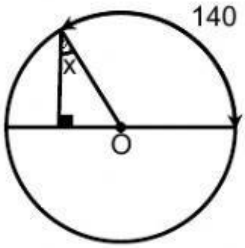
14. Calcula "x"

a) 40
b) 80
c) 120
d) 20
e) 10



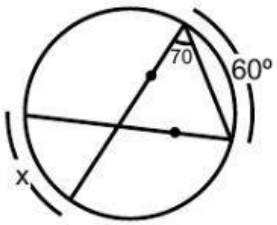
15. Calcula "x"

a) 30
b) 50
c) 40
d) 60
e) 20

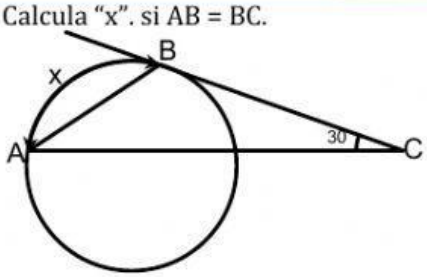


16. Calcula "x"

a) 20
b) 10
c) 15
d) 30
e) 5

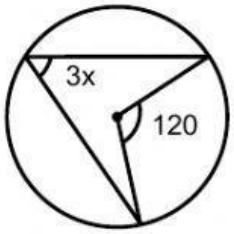


17. Calcula "x". si AB = BC.



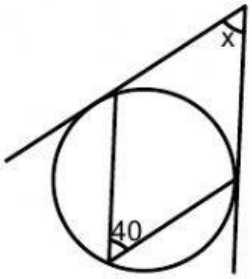
a) 90
b) 60
c) 120
d) 150
e) 30

18. Calcula "x"



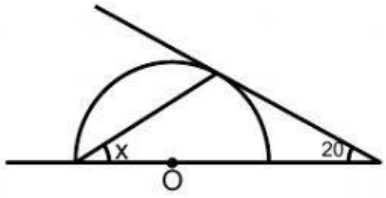
a) 40
b) 60
c) 30
d) 50
e) 20

19. Calcula "x"



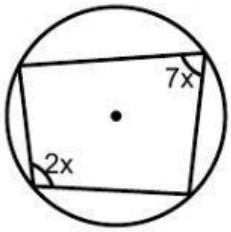
a) 40
b) 80
c) 100
d) 60
e) 120

20. Calcula "x"



a) 35
b) 30
c) 70
d) 50
e) 40

21. Calcula "x"



a) 20
b) 40
c) 10
d) 60
e) 30

22. Calcula "x"

a) 80
b) 40
c) 20
d) 60
e) 10