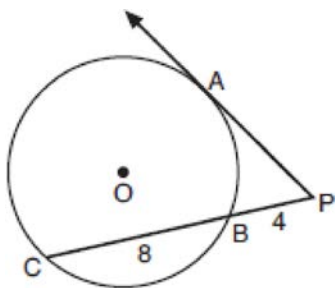


**G.G.53: Segments Intercepted by Circle 7: Investigate and apply theorems regarding segments intersected by a circle: along a tangent and a secant from the same external point**

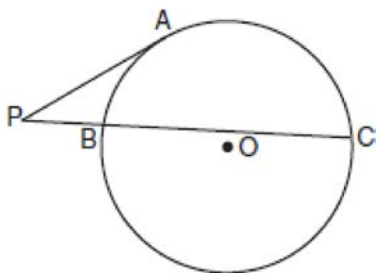
- 1 In the accompanying diagram,  $\overrightarrow{PA}$  is tangent to circle  $O$  at  $A$ ,  $\overline{PBC}$  is a secant,  $PB = 4$ , and  $BC = 8$ .



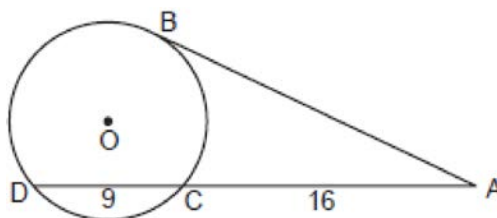
What is the length of  $\overline{PA}$ ?

- 1)  $4\sqrt{6}$
- 2)  $4\sqrt{2}$
- 3)  $4\sqrt{3}$
- 4) 4

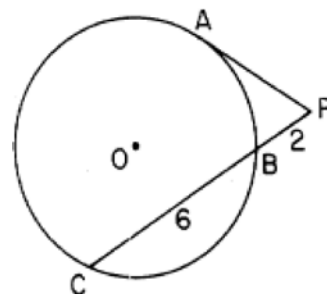
- 2 In the accompanying diagram,  $\overrightarrow{PA}$  is tangent to circle  $O$  at  $A$ , secant  $\overline{PBC}$  is drawn,  $PB = 4$ , and  $BC = 12$ . Find  $PA$ .



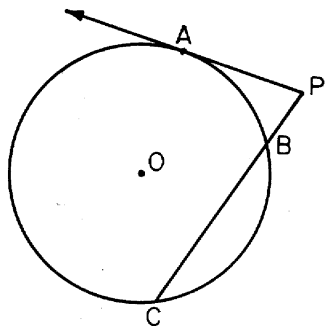
- 3 In the accompanying diagram,  $\overline{AB}$  is tangent to circle  $O$  at  $B$ . If  $AC = 16$  and  $CD = 9$ , what is the length of  $\overline{AB}$ ?



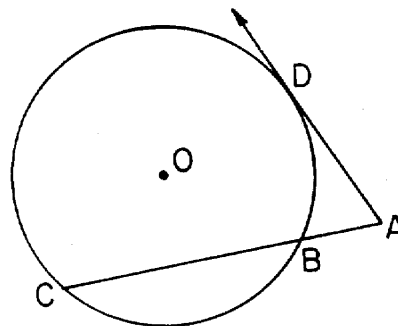
- 4 In the accompanying diagram of circle  $O$ ,  $\overrightarrow{PA}$  is a tangent and  $\overline{PBC}$  is a secant. If  $PB = 2$  and  $BC = 6$ , find  $PA$ .



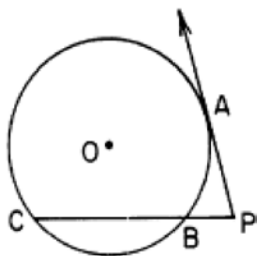
- 5 In the accompanying figure,  $\overrightarrow{PA}$  is tangent to circle  $O$  at  $A$ , and  $\overline{PBC}$  is a secant. If  $PC = 16$  and  $BC = 12$ , find  $PA$ .



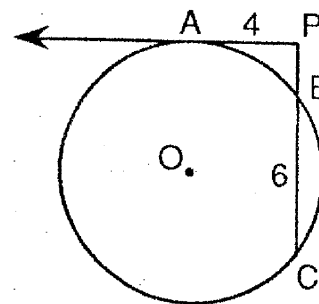
- 8 In the accompanying diagram,  $\overrightarrow{AD}$  is tangent to circle  $O$  at  $D$  and  $\overline{ABC}$  is a secant. If  $AD = 4$  and  $AC = 8$ , find  $AB$ .



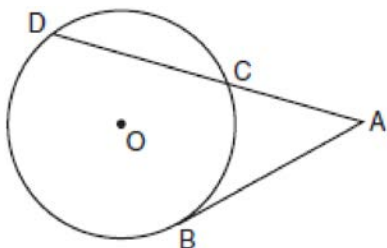
- 6 In the accompanying diagram,  $\overrightarrow{PA}$  is tangent to circle  $O$  at  $A$  and  $\overline{PBC}$  is a secant. If  $CB = 9$  and  $PB = 3$ , find the length of  $PA$ .



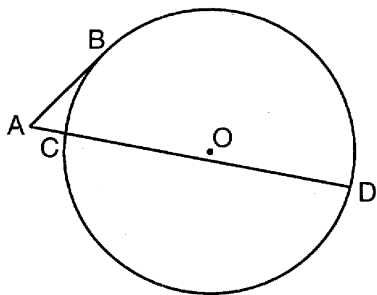
- 9 In the accompanying diagram,  $\overrightarrow{PA}$  is tangent to circle  $O$  and  $\overline{PBC}$  is a secant. If  $PA = 4$  and  $BC = 6$ , find  $PB$ .



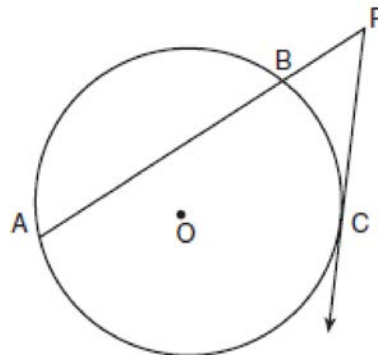
- 7 In the accompanying diagram, tangent  $\overline{AB}$  and secant  $\overline{ACD}$  are drawn to circle  $O$  from point  $A$ ,  $AB = 6$ , and  $AC = 4$ . Find  $AD$ .



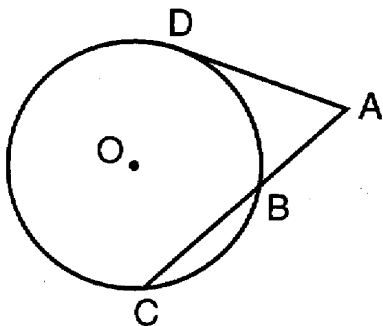
- 10 In the accompanying diagram,  $\overline{AB}$  is tangent to circle  $O$  at  $B$  and  $\overline{ACD}$  is a secant. If  $AB = 9$  and  $AD = 27$ , find  $AC$ .



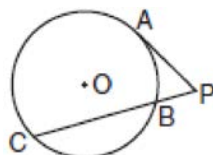
- 13 In the accompanying diagram,  $\overrightarrow{PC}$  is tangent to circle  $O$ ,  $\overline{PBA}$  is a secant,  $PC = 6$ , and  $PB = 3$ . Find  $AB$ .



- 11 In the accompanying diagram,  $\overline{AD}$  is tangent to circle  $O$  at  $D$  and  $\overline{ABC}$  is a secant. If  $AD = 6$  and  $AC = 9$ , find  $AB$ .



- 12 In the accompanying diagram, tangent  $\overline{PA}$  and secant  $\overline{PBC}$  are drawn to circle  $O$  from external point  $P$ . If  $PA = 8$  and  $PB = 4$ , find the length of  $\overline{BC}$ .



**G.G.53: Segments Intercepted by Circle 7: Investigate and apply theorems regarding segments intersected by a circle: along a tangent and a secant from the same external point**  
**Answer Section**

1 ANS: 3

If a tangent and a secant intersect outside a circle, the tangent squared will equal the product of the secant and its

$$x^2 = 4(8 + 4)$$

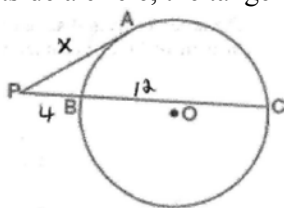
external segment.  $x^2 = 48$

$$x = 4\sqrt{3}$$

REF: 080719b

2 ANS:

8. If a tangent and a secant intersect outside a circle, the tangent squared will equal the product of the secant and



$$x^2 = 4(12 + 4)$$

its external segment.  $x^2 = 64$

$$x = 8$$

REF: 010623b

3 ANS:

20. If a tangent and a secant intersect outside a circle, the tangent squared will equal the product of the secant and

$$x^2 = 16(16 + 9)$$

its external segment.  $x^2 = 400$

$$x = 20$$

REF: 010821b

4 ANS:

4

REF: 068805siii

5 ANS:

8

REF: 068914siii

6 ANS:

6

REF: 089011siii

7 ANS:

9

REF: 010416siii

8 ANS:  
2

REF: 068607siii

9 ANS:  
2

REF: 019408siii

10 ANS:  
3

REF: 019701siii

11 ANS:  
4

REF: 089715siii

12 ANS:  
12

REF: 010314siii

13 ANS:  
9

REF: 060314siii