Grade 9 Math In-Class PRACTICE Assignment
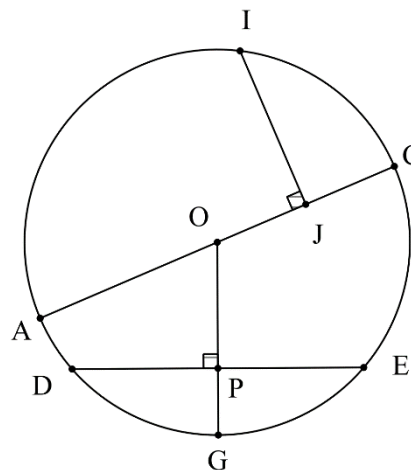
Unit 8 – Circle Geometry

Name: _____

1.	2.	3.	4.	5.
6.	7.	8.	9.	10.

1. For the circle with centre O, which line segment is a perpendicular bisector?

   A. $\overline{AC}$

   B. $\overline{ED}$

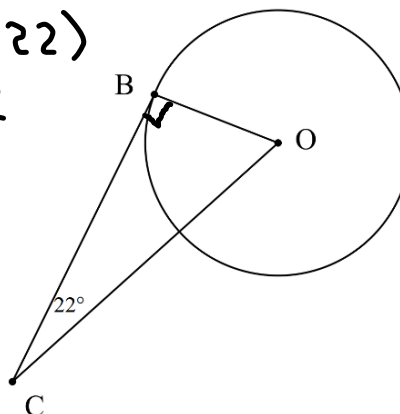   C. $\overline{GO}$

   D. $\overline{IJ}$

2. In the diagram above, which is a central angle?

   A. ∠AOG

   B. ∠IJC

   C. ∠DPO

   D. ∠OJI

3. $\overline{BC}$ is a tangent to the circle with centre O. What is the measure of ∠BOC?

   A. 22°

   B. 68°

   C. 78°

   D. 90°

   $180-(90+22)$

   $=180-112$

   $=68°$

4. What is the measure of ∠ACB?

   A.   12°
   B.   39°
   C.   78°
   D.   156°

   $∠ACB = 78 ÷ 2$
   $= 39°$
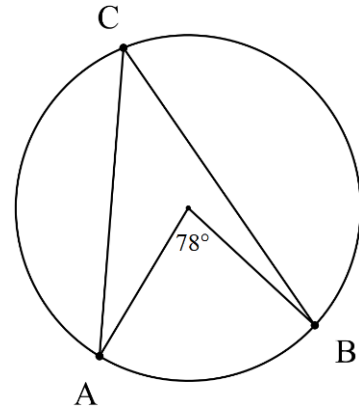
5. What is the value of x?
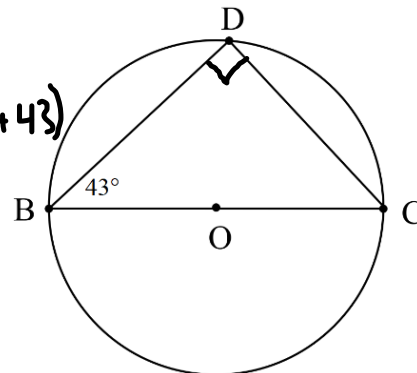
   A.   28°
   B.   31°
   C.   62°
   D.   124°
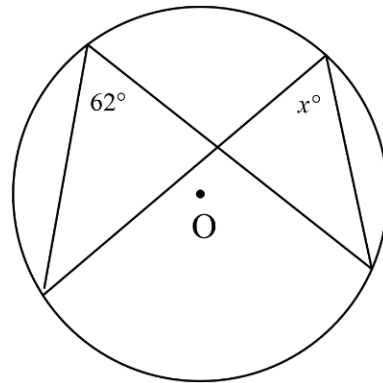
6. What is the value of ∠BCD?

   A.   43°
   B.   47°
   C.   57°
   D.   90°

   $∠BCD = 180 - (90 + 43)$
   $= 180 - 133$
   $= 47°$

7. $\overline{PQ}$ is tangent to the circle with center O. What is the length of the radius of the circle?
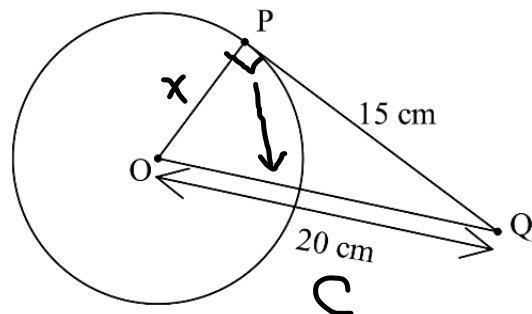
   A.   5 cm
   B.   10.5 cm
   C.   13.2 cm
   D.   25 cm

   $b^2 = c^2 - a^2$
   $b^2 = 20^2 - 15^2$
   $b^2 = 400 - 225$
   $\sqrt{b^2} = \sqrt{175}$
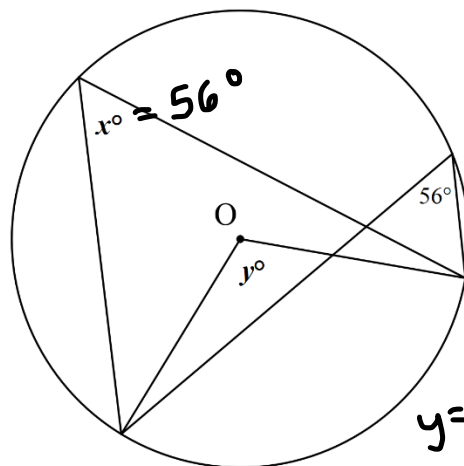 $b = 13.2$

8.   In the circle with centre O shown, what is the measure of x and y?

A. $x = 56°, y = 56°$

B. $x = 56°, y = 112°$

C. $x = 112°, y = 56°$

D. $x = 112°, y = 112°$

$x° = 56°$

$56°$

$y°$

$y = 2 \times 56 = 112°$

9.   What is the measure of $\angle BCO$?

A.   39°

B.   49°

C.   51°

D.   90°

$\angle BCO = 180 - (90 + 51)$
$= 180 - 141$
$= 39°$

$51°$

A   B   C
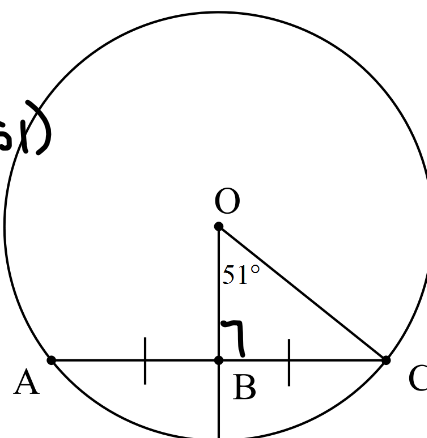
10.   What is the measure of angle x?

A.   32°

B.   42°

C.   54°

D.   64°

$x = (180 - 116) \div 2$
$= 64 \div 2$
$= 32°$

$x°$

$116°$

O
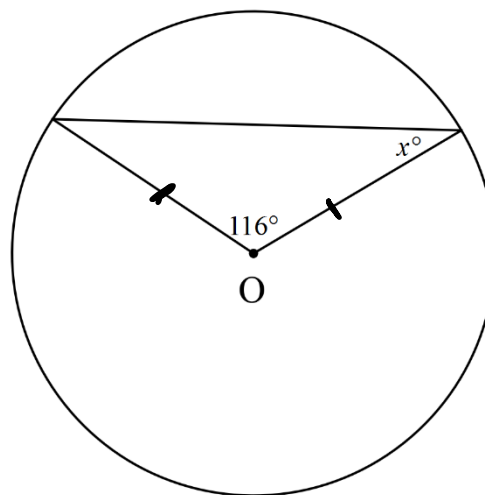
Section 2 – Show workings for all questions!

11. $\overline{AB}$ is tangent to the circle with centre O.

A. Find the measure of ∠OAC. (1 mark)

$\angle OAC = 180 - (90 + 42)$
$= 180 - 132$
$= 48°$

B. Find the measure of ∠BOC. (1 mark)

$\angle BOC = 180 - (90 + 38)$
$= 180 - 128$
$= 52°$

C. Find the length of $\overline{OC}$. (2marks)

$b^2 = c^2 - a^2$
$b^2 = 25^2 - 15^2$
$b^2 = 625 - 225$
$\sqrt{b^2} = \sqrt{400}$ $\boxed{b = 20}$

$\overline{OC} = 20cm$

D. Find the length of $\overline{OB}$. (2marks)

$a^2 + b^2 = c^2$
$20^2 + 25^2 = c^2$
$400 + 625 = c^2$
$\sqrt{1025} = \sqrt{c^2}$ $C = 32.01$

$\overline{OB} = 32.01cm$
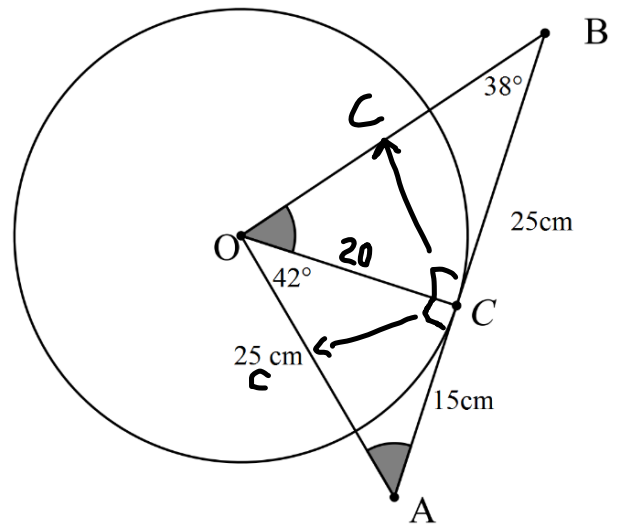
12. What is the measure of ∠BCD? **Explain your answers**. (3 marks)

△ ABO is isosceles So ∠A = ∠B

∠BAD = $(180 - 114) \div 2$
$= 66 \div 2$
$= 33°$

∠BAD = ∠BCD = 33° since they
are both subtended by the same
minor arc BD.
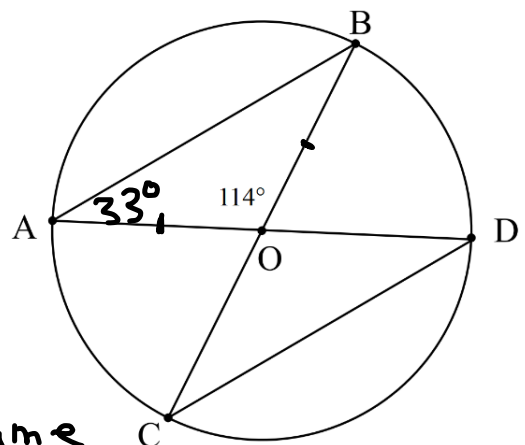
13. Find the length of chord $\overline{PQ}$. Show all steps. (3 marks)
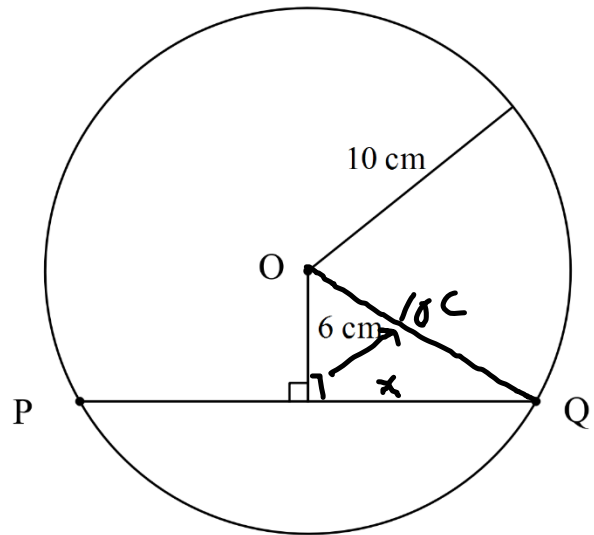
find x:

$b^2 = c^2 - a^2$

$b^2 = 10^2 - 6^2$

$b^2 = 100 - 36$

$\sqrt{b^2} = \sqrt{64}$

$b = 8$

∴ PQ = 2×8 = 16cm

[Circle diagram with center O, radius 10 cm, 6 cm to chord, labels P, Q, 10 c, x]

14. A satellite orbits the Earth and is located at position A. If the radius of the Earth is 6400 km, how far is the satellite from a person located at position B? (Note the diagram is not necessarily drawn to scale).
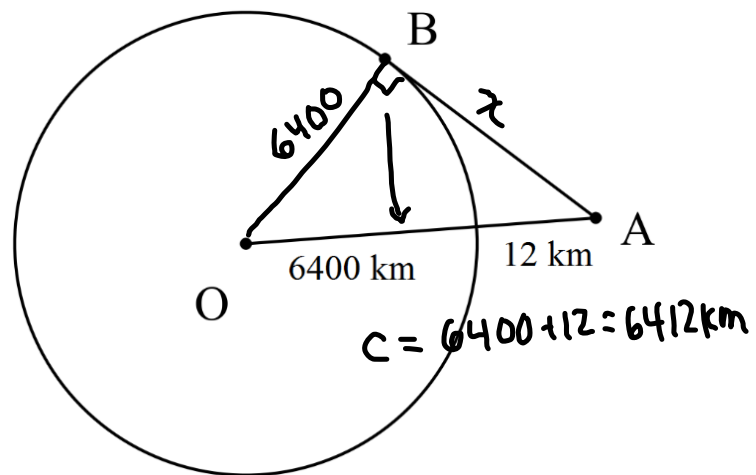
(3 marks)

$b^2 = c^2 - a^2$

$b^2 = 6412^2 - 6400^2$

$b^2 = 41\ 113744 - 40\ 960000$

$\sqrt{b^2} = \sqrt{153\ 744}$

$b = 392.1$

[Circle diagram with center O, points B and A, labels 6400, x, 6400 km, 12 km]

C = 6400 + 12 = 6412 km

The satellite is 392.1 km from a person located at point B.

15.   Find the measure of ∠OAC.   (3 marks)
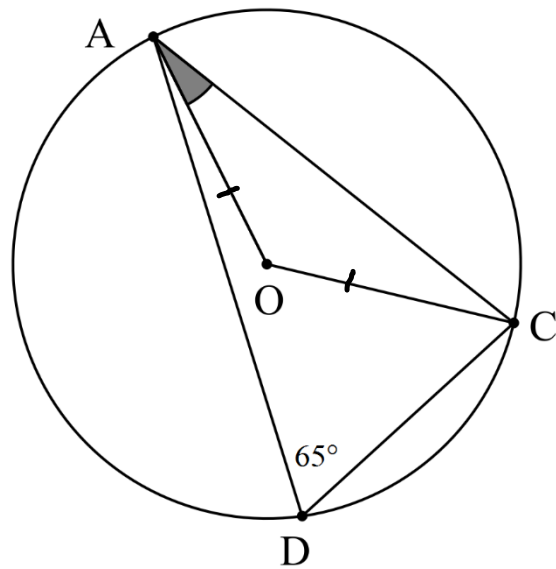
$\angle AOC = 2 \times 65 = 130°$

$\angle OAC = (180 - 130) \div 2$

$= 50 \div 2$

$= 25°$

A

O

C

65°

D

16.   The cross section of a pipe is shown below. If $\overline{QR}$ = 50 cm, $\overline{AB}$ = 32 cm, and O is the centre, how deep is the water, $\overline{PC}$? (Note: $\overline{OC}$ is perpendicular to $\overline{AB}$)

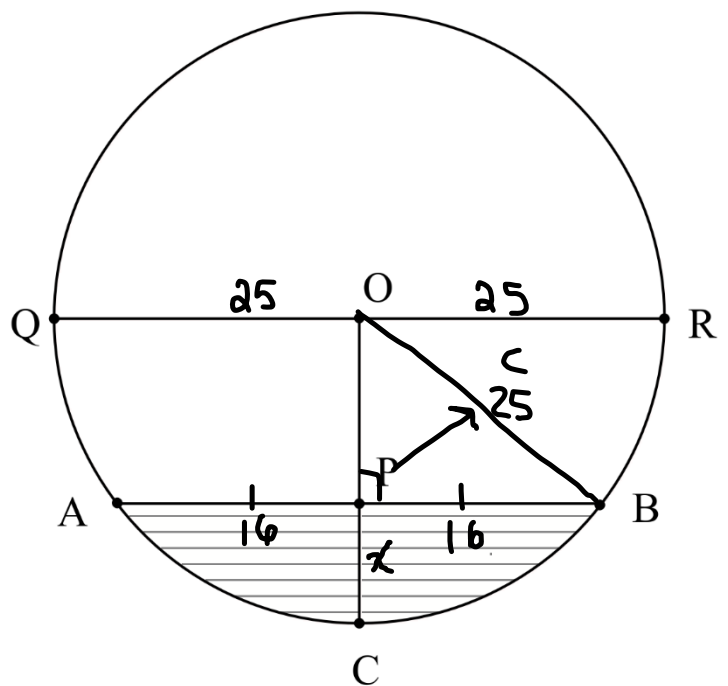   (4 marks)

find OP:

$b^2 = c^2 - a^2$

$b^2 = 25^2 - 16^2$

$b^2 = 625 - 256$

$\sqrt{b^2} = \sqrt{369}$

$b \doteq 19.2$

$\overline{PC} = 25 - 19.2 = 5.8\,cm$

Q   25   O   25   R

25

P

A   16   x   16   B

C