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تتبعه علم : يحسم الطالب ورقة أسئلة باللغة العربية مع الورقة المترجمة (الأسئلة في صفتين)

answer the following questions:

First Question: Choose the correct answer from those between brackets:

1) From a point outside a circle, we can draw tangents to the circle.

(One , Two , Infinite number , Three)

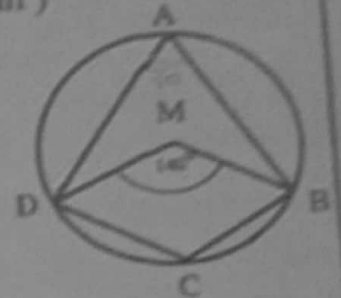
2) The measure of the central angle equals the measure of the inscribed angle, subtended to the same arc. (Twice , three times , Four times , half)

3) In the opposite figure , If $m(\angle BMD) = 140^\circ$ then $m(\angle C) = \dots\dots\dots$

(70° , 110° , 140° , 90°)

4) The measure of a quarter of a circle =

($\frac{1}{2}\pi r$, 90° , 180° , 45°)



5) A circle of radius length 5 cm, If the straight Line L is 3 cm apart of its center, Then L is...

(Tangent, outside the circle, intersects the circle at two points, axis of symmetry to the circle)

6) Two circles M & N, touching each other externally, The length of the two radii 3 cm, 8 cm, Then $MN = \dots\dots\dots$ cm (3 , 5 , 8 , 11)

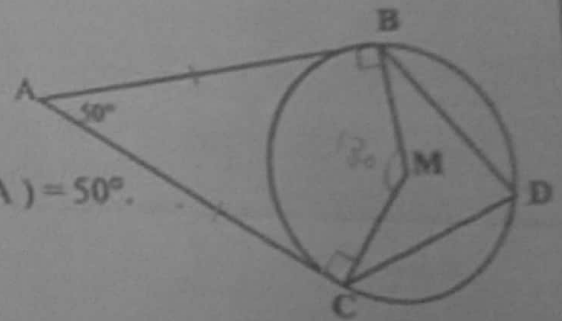
Second Question:

a) In the opposite figure:

\overline{AB} , \overline{AC} are two tangents to the circle M at B , C , $m(\angle A) = 50^\circ$.

* Prove that the figure $ABMC$ is a cyclic quad.

* Find $m(\angle D)$.

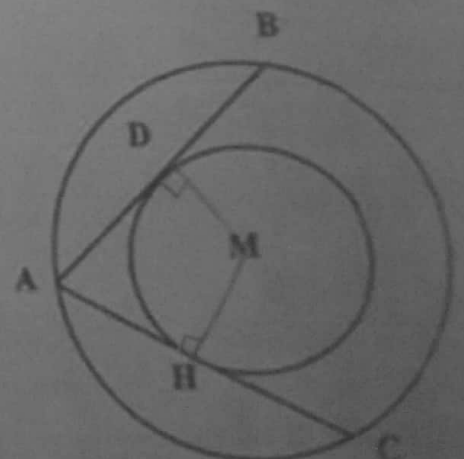


b) In the opposite figure:

Two concentric circles, \overline{AB} , \overline{AC} are two chords in

the greater circle, touching the smaller circle at D , H .

Prove that : $AB = AC$.

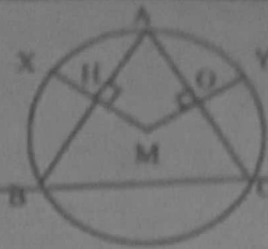


(بقية الأسئلة في الصفحة الثانية)

Third Question:

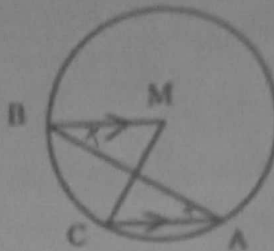
A) In the opposite figure:

$$\overline{MX} \perp \overline{AB}, \overline{MY} \perp \overline{AC}, AB = AC,$$

Prove that: $XH = YO$ 

B) In the opposite figure:

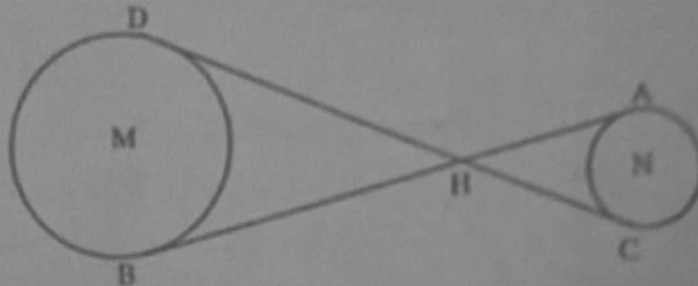
$$\text{If } \overline{MB} \parallel \overline{AC},$$

Prove that: $m(\angle M) = 2m(\angle B)$ Fourth Question:

A) Mention two cases such that the quadrilateral is a cyclic quad.

B) In the opposite figure:

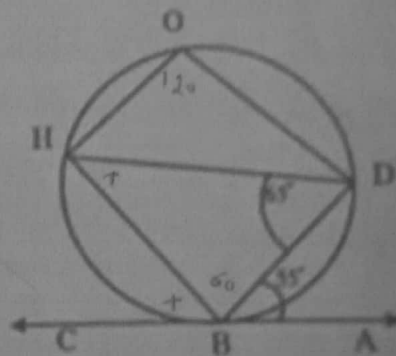
$\overline{AB}, \overline{CD}$ are two tangents to the two circles M, N

Prove that: $AB = CD$ Fifth Question:

A) In the opposite figure:

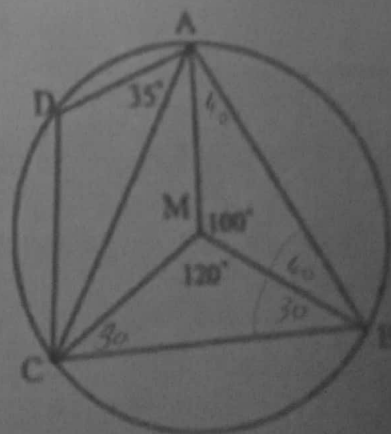
\overleftrightarrow{AC} is a tangent to the circle, $m(\angle ABD) = 55^\circ$,

$$m(\angle BDH) = 65^\circ$$

Find $m(\angle O)$.

B) In the opposite figure:

$$m(\angle AMB) = 100^\circ, m(\angle BMC) = 120^\circ, m(\angle DAC) = 35^\circ,$$

* Find $m(\angle D)$.* Prove that $DA = DC$.

(انتهت الأسئلة)

Geometry 2017

- 2nd term -

Q.1 Choose

(1) Two

(2) Twice

(3) 110°

(4) 90°

(5) intersects the circle at two points

(6) 11 cm

Q.2 (a) Proof

$\therefore \overline{AB}, \overline{AC}$ are two tangents and $\overline{MB}, \overline{MC}$ are two radii.

$\therefore \overline{MB} \perp \overline{AB}, \overline{MC} \perp \overline{AC}$

$\therefore m(\angle ABM) = m(\angle ACM) = 90^\circ$

$\therefore m(\angle ABM) + m(\angle ACM) = 90 + 90 = 180^\circ$
and they're opposite

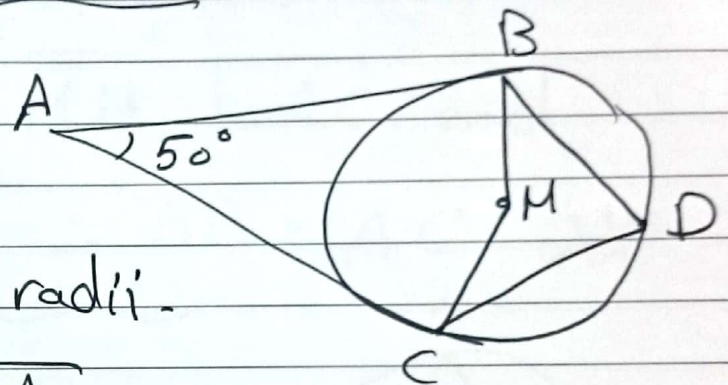
$\therefore ABMC$ is cyclic quad. $\#1$

$\therefore m(\angle M) = 180 - 50 = 130^\circ$

$\therefore m(\angle D) = \frac{1}{2} m(\angle M)$
(inscribed and central)

$\therefore m(\angle D) = \frac{1}{2} \times 130^\circ = 65^\circ$

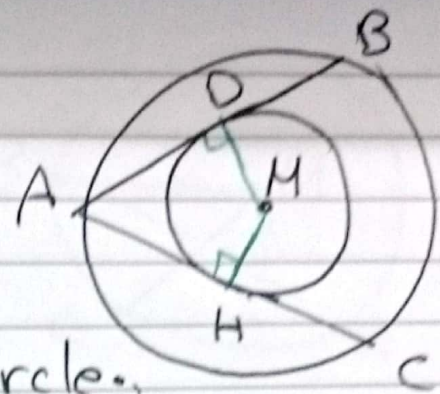
(26)



$\#2$

Q.2] (b) Construction

draw: $\overline{MD} \perp \overline{AB}$
 $\overline{MH} \perp \overline{AC}$



Proof

In the smaller circle:

$$\therefore MD = MH = \text{radius}$$

In the greater circle:

$$\therefore \overline{MD} \perp \overline{AB}, \overline{MH} \perp \overline{AC} \text{ and}$$

$$MH = MD \therefore AB = AC \quad \#$$

Q.3] (a) Proof

$$\therefore \overline{MX} \perp \overline{AB}, \overline{MY} \perp \overline{AC}$$

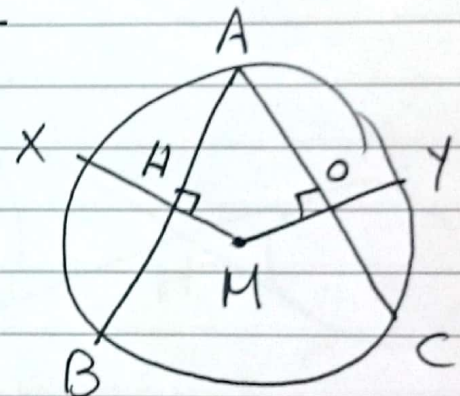
and $AB = AC$

$$\therefore MH = MO \rightarrow (1)$$

$$\therefore MY = MX = \text{radius} \rightarrow (2)$$

by subtracting (1) from (2)

$$\therefore XH = YO \quad \#$$



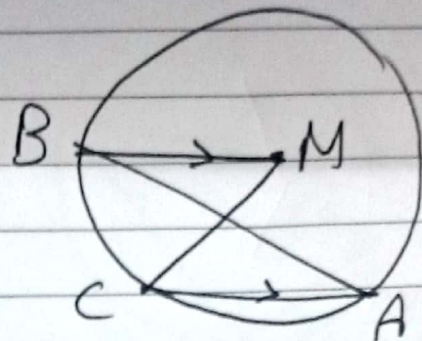
Q.3 (b) proof:

$$\therefore m(\angle M) = m(\widehat{BC})$$

(central)

$$\angle m(\angle A) = \frac{1}{2} m(\widehat{BC})$$

(inscribed)



$$\therefore BM \parallel AC \quad \therefore m(\angle B) = m(\angle A) \text{ (alternate)}$$

$$\therefore m(\angle B) = \frac{1}{2} m(\widehat{BC})$$

$$\therefore m(\angle M) = m(\widehat{BC}) = 2m(\angle B) \quad \#$$

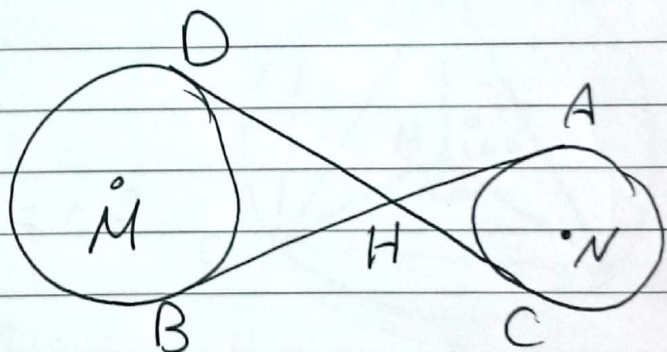
Q.4 (a) solved in 2016

(b) Proof:-

For Circle N:

$\therefore \overline{HA}, \overline{HC}$ are
two tangents
From H

$$\therefore HA = HC \rightarrow (1)$$



For Circle M:

$\therefore \overline{HD}, \overline{HB}$ are two
tangents From H

$$\therefore HD = HB \rightarrow (2)$$

by adding (1) + (2)

$$\therefore AH + HB = CH + HD$$

$$\therefore AB = CD \quad \#$$

(28)

[Q.5] (a) Proof

$\therefore \overrightarrow{BA}$ is a tangent and BD is a chord

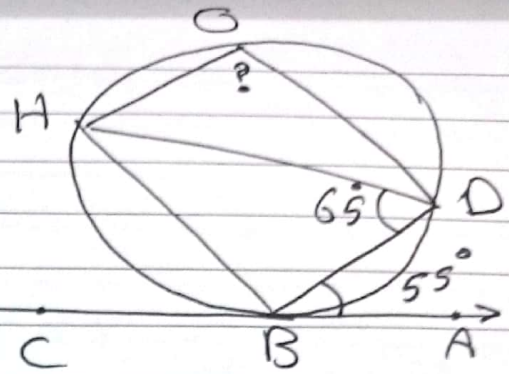
$$\therefore m(\angle ABD) = m(\angle BHD) = 55^\circ$$

In $\triangle BDH$:

$$m(\angle DBH) = 180 - (55 + 65) = 60^\circ$$

$\therefore BDOH$ is a cyclic quad.

$$\therefore m(\angle O) = 180 - 60 = 120^\circ \quad \#$$



[Q.5] (b) Proof

In $\triangle AMB$:

$\therefore MA = MB = \text{radius}$

$$\therefore m(\angle ABM) = \frac{180 - 100}{2} = 40^\circ$$

In $\triangle CMB$

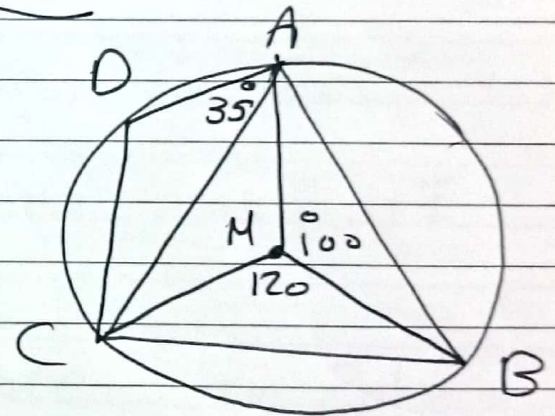
$\therefore MB = MC = \text{radius}$

$$\therefore m(\angle MBC) = \frac{180 - 120}{2} = 30^\circ$$

$$\therefore m(\angle ABC) = 30 + 40 = 70^\circ$$

$\therefore ABCD$ is cyclic quad.

$$\therefore m(\angle D) = 180 - 70 = 110^\circ \quad \#$$



In $\triangle ADC$:

$$\therefore m(\angle ACD) = 180 - (35 + 110) = 35^\circ$$

$$\therefore m(\angle DAC) = m(\angle DCA) = 35^\circ$$

$$\therefore DA = DC \quad \# \quad (29)$$