مادة الرياضيات (السنة الأولى من التعليم المتوسط)

المضلعات

:

- .
- .
- .
- :

:
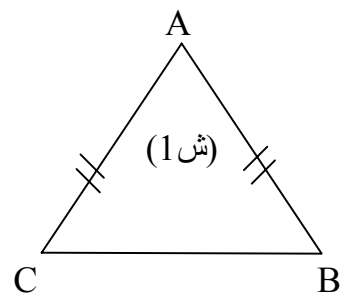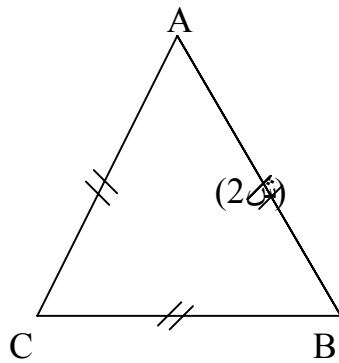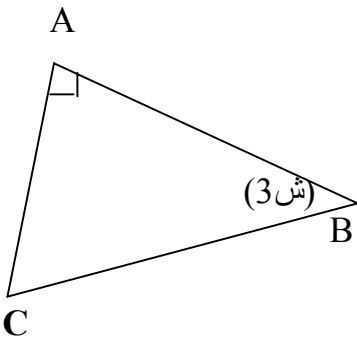
:

:

: .1 :

: .2 :

: .3 :

A

⌐

(ش3)

B

C

A

(ش2)

C B

A

(ش1)

C B

( )

ABC   -1   (4)   .
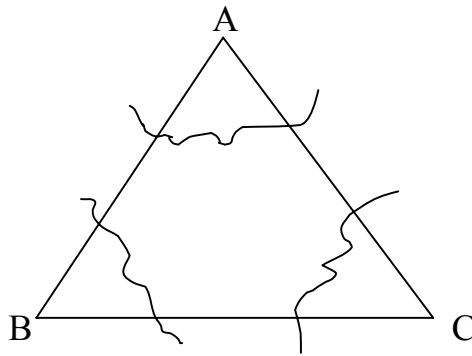
.(5   )

(5   )

-2   ABC:

BC=40mm ; AB=50mm ; AC=50mm(6   )

(6   )

2

(   )

3- : ABC
(7) BC=50mm

A

50

B   C

(7)

4-

(8) $\widehat{A}$ =90°; AB=40mm ; AC=60mm

B

A   40   C

(ش8)

<mark>خواص المثلث المتساوي الساقين</mark>

-      ABC   ;AB =AC=60mm   BC=50mm

[AB]   [AC] (.)   [Ay

$\widehat{BAC}$.

(   )

1)   [YB ; [YC]   : B̂ ; Ĉ و الذي يستلزم تطابق

AyB̂ ; AyĈ $\widehat{AyB} = \widehat{AyC}$.

2)   [Ay

[BC]   ABC.

:

ABC :   AB=AC.

1-   .

2-   : B ÂC   [BC].

(ش9)

1-   .

.

.

2- [BC] 6cm. CBx=60º ; BCy=30 º

[Bx ; [Cy   A   BAC.

ABC.

3- [AB] AB=5cm

ABx=BAy=70º .   [Bx ; [By   C.

[AB]; [AC]   ABC

1-   :

:

.

11 12   [BC]   [Ay]

.

A

y   B

(ش11)

(   )   5

:

.

A

C ⊥ B

y ش12

:

.(13)

A

C // M // B

(ش13)

: (15،14).

A

y   d'   C   B

(ش15)

A

C

d   B

(ش14)

(16).

A

C   M   B

(ش16)

(   )   7

(:

- (xy) A. B,C (xy)
.(17)

ش17

-1 .

.

-2 ABC

-3

-4 [Ad]

(ABC : [AB] [AC] A'B'C'
ABC A'B' = AB A'C '= AC
ABC : (18)

(ش18)

( ) 8

'A   A   AB =AC   AB

.A'B'=

A'B'=AC   A'C'=AC   AC = AB   A'C'=AB

A'   A   [A'C']   [AB]

[A'B']   [AC]   :

$\widehat{C}=\widehat{ب'}$ ، $\widehat{ب}=\widehat{C'}$

$\widehat{B}=\widehat{C'}$ ، $\widehat{C}=\widehat{C'}$: $.\widehat{B}=\widehat{C}:$

:   .

(**ABC**   **AC=AB**) $\widehat{C}\xlongequal{}>\widehat{B}$

:

ABC   : $\widehat{B}$ $\widehat{C}$ A'B'C'

$\widehat{B'}=\widehat{B}$ $\widehat{C'}=\widehat{C}$

ABC   (19)

[B'C']   [BC]   : $\widehat{C'}$ $\widehat{B'}$ B $\widehat{C}$

A'   A   [B'C']   : $\widehat{B}=\widehat{C}$

$\widehat{C'}=\widehat{C}$ $:\widehat{B}=\widehat{C'}$ [C'A'   [BA

$\widehat{C}=\widehat{B}$ $\widehat{B'}=\widehat{B}$ $:\widehat{B'}=\widehat{C}.$

[A'B'   [CA .

[B'A'   [C'A'   A'   CA :

[BA [A   A'C ' = AB :

AC = A'B '

AC=A'C'   .   AB=AC

ABC   .

(ش19)

:

.

(AB =AC)   < $=$ ($\widehat{B}$ $=\widehat{C}$ ABC)

:

:   :   **ABC**

$\widehat{B} = \widehat{C}$ AB=AC

$\widehat{B} = \widehat{C}$ ABC

AB=AC :

.

(   )   10

.

( ) : :

. ( ) :

:

$$(\hat{B} = \hat{C}) \; < \; = (AB = AC)$$

:

$$(AC = AB) \; \rightleftharpoons \; (\hat{B} = \hat{C})$$

:

$$(\qquad) \; \hat{B} = \hat{C} \quad AB = AC$$

$$\hat{B} = \hat{C} \; \rightleftharpoons \; (AB = AC)$$

.

.

( ) 11

دراسة منصف زاوية الرأس في المثلث المتساوي الساقين:
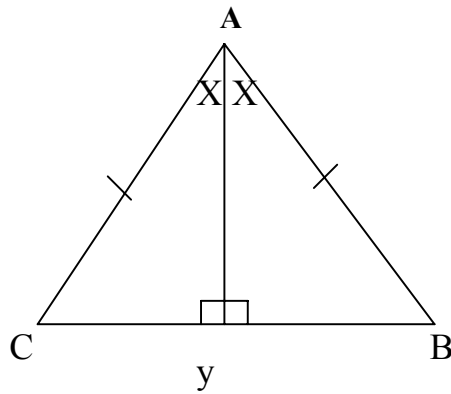
ABC‏   AC‏   AB.

[Ay‏   A.

: ABy   ACy (20)   :

A

X X

C   B

y

(ش20)

[Ay]   [AB]   [AC]   .   BAy ̂   CAy ̂

[Ay]   ABC   .

:

(   )

By = Cy ، AyĈ = AyB̂

[Ay   [BC]   [Ay]   ABC.

AyB̂   AyĈ

(   )   12

.AyC :   [**Ay**]   [BC]   [**Ay**]   .ABC

(Ay)   .[BC]

:

:   .

:

1-   [**Ay**   [BC]

B   C   (Ay)   A   .]

[AB   [AC]   .(Ay)   (Ay)

.

2-   **AyB**   **AyC**   (Ay)

.

.

:

.

–   .

$$\left. \begin{array}{l} [Ay \perp [\ B\,C] \\ \mathbf{By} \ = \ \mathbf{Cy} \end{array} \right\} \implies \mathbf{AB= AC}$$

(ش21)   y

(21)   ACy   ABy

⌐ Av ⌐

$$\widehat{AyC} = \widehat{AyB}$$

$$Cy = By$$

[BC]   y

.

<mark>:</mark>

(   )

: AB = AC   ABC   .

<mark>:</mark>

.

–   .
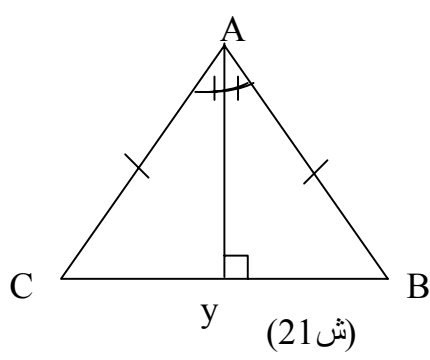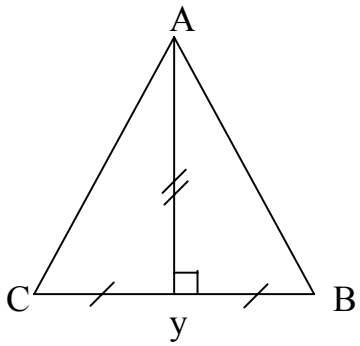
$$\left.\begin{array}{c}\widehat{BAy} = \widehat{CAy}\\[Ay \perp [BC]\end{array}\right\} \quad AB = AC$$

:

(22)   ACy   ABy

[Ay]   :

(ش22)

(   )

14

$$\widehat{BAy} = \widehat{CAy} \qquad [Ay \qquad \widehat{A}$$

$$\widehat{AyC} = \widehat{AyB} \qquad .$$

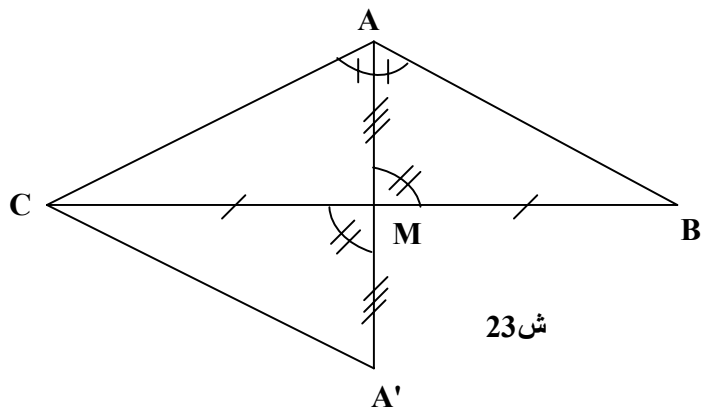AB = AC :   . ABC

.

.

-                                      .

$$\left.\begin{array}{l} \widehat{MAB} = \widehat{MAC} \\[2mm] MB = MC \end{array}\right\} \implies AB = AC$$

[AM   [MA']   [MA]   C   M.

ABM A'CM :   (23)

ش23

(   )   15

$MA =$. $\overset{\frown}{BMA} = \overset{\frown}{CMA'}$ **[BC]** M $MB = MC$:

MA' .

.

( ) :<mark>　　</mark>

$AB = A'C$ $\overset{\frown}{MAB} = \overset{\frown}{MA'C}$

$\overset{\frown}{MA'C} = \overset{\frown}{MAC}$ $\overset{\frown}{MAB} = \overset{\frown}{MA'C}$ $\overset{\frown}{A}$ [A M : $\overset{\frown}{MAC}$ =$\overset{\frown}{MAB}$:

$AC = A'C$: ACA'

$AB = A'C$:

. ABC $AB = AC$:

:

: :<mark>　　</mark>

(

:

.- –

(

.

1- [BC]   5cm

: ABC   A'BC

: A'B̂C = AB̂C= 50° .

BĈA'= BĈA = 60°

2-   : A'BC   ABC

.

:

:

.

(24).   ABC   A'B'C' .

A'   A
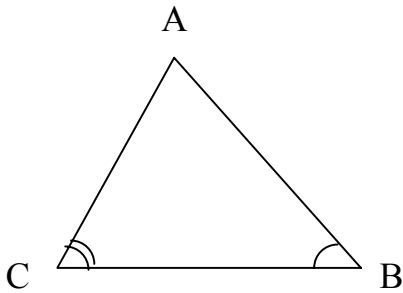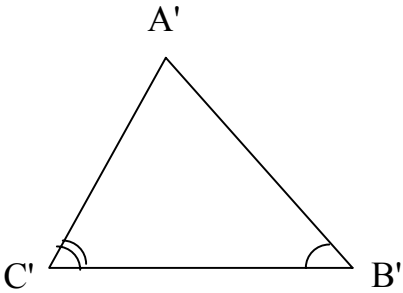
C' ╱╲____╱ B'   C ╱╲____╱ B

(24)

$$\left. \begin{array}{l} \mathbf{BC = B'C'} \\ \widehat{\mathbf{C}} = \widehat{\mathbf{C'}} \\ \widehat{\mathbf{B}} = \widehat{\mathbf{B'}} \end{array} \right\} \implies ABC = C'A'B'$$

(   )   17

:

1- [AB] 5cm

: ABC A'B'C'

$\widehat{ABC} = \widehat{A'B'C'} = 60º$

BC = BC'=4Cm

: ABC A'B'C'

.

:

(25).

25 : ABC A'B'C' .

A'   A

C'   B'   شكل25   C   B

$$\left. \begin{array}{r} BC = B'C' \\ \widehat{B} = \widehat{B'} \\ BA = A'B' \end{array} \right\} == \quad > (A'B'C' \quad = ABC \quad)$$

(   )   18

A'B'C'   ABC   :

:   .

:

:

1-   : [BC]   [CA]   [AB]

6cm   5 cm   4cm   .

:   [BC] .

A   A'   [BC] .

2-   :   ABC   A'BC   .

.

شكل 26

(   )

.
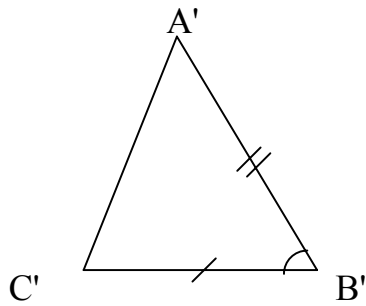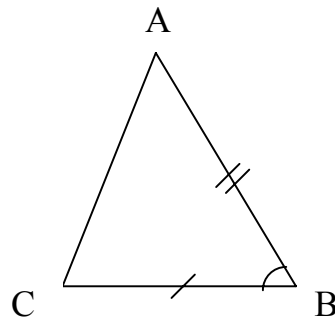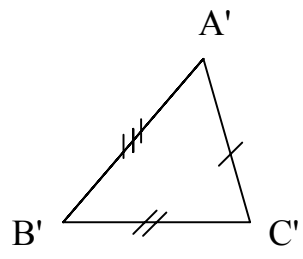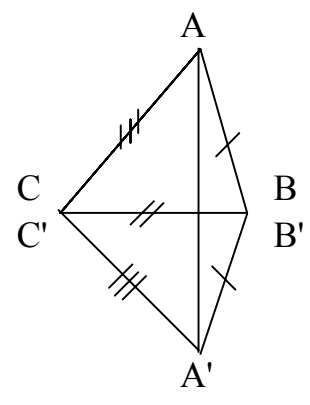
: A'B'C ' ABC

$$AB = AB'$$
$$AC = A'C' \left. \right\} \equiv$$
$$BC = B'C' \quad > (\ A'B'C' \quad = ABC \quad)$$

:(1)

A'B'C' ABC

.

:(2)

: A'M'B' AMB

. AB = A'B' MB = M'B' AM = A'M' :

$$\widehat{M}$$

.

.

.

[AD]   [DH]   ABC   [AD]

. [HB]

[BH] [AC] :   . [BH]   [AC]

BHD   ACD   :

27

A

C   B

D

H

شكل 27

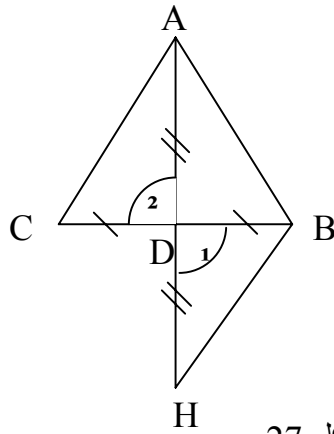DC   [CB]   D   [AD]   .(   ) DH = AD

.DB =

. $\widehat{D1} = \widehat{D2}$. $\widehat{D1}$ $\widehat{D2}$
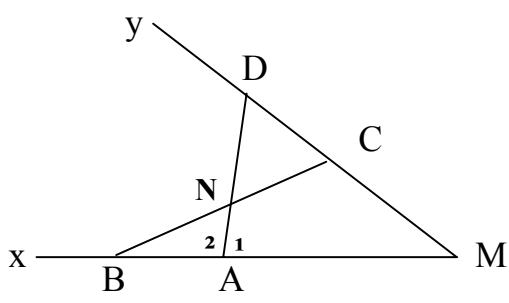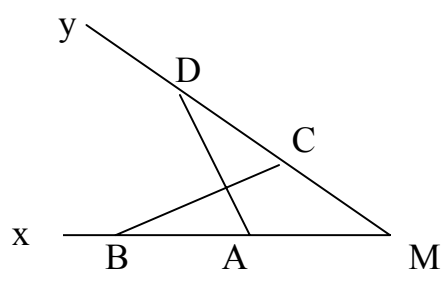
ACB BHD :   .

[BH]   [AC]

$\widehat{xMy}$ [Mx A B [My

C D : MA = MC MB = MD .

1) MAD MCB .

2) N (AD) // (BC) [NC] [

[NA .

3) : [MN $\widehat{xMy}$.

:

1) MAD MCD 27 MA = MC ( ) $\widehat{M}$

MD = MB ( ) .

: .

y
D
C
N
x ──── B **2** **1** A ──── M

ش28

y
D
C
x ── B A ──── M

ش27

:

$\widehat{CB = AD}$ ، $\widehat{C1 = A1}$ ، $\widehat{B1 = D1}$

( )

2) [NA]‏ ‏[NC]‏ 28 NAB و NCD

‏. (‏   ) ‏$\widehat{MBN} = \widehat{CDN}$:   .

:   (   ) MD = MB   و   MC = MA   :

MC - MD = MA - MB   فإن   CD = AB

‏: $\widehat{NAB} = \widehat{NCD}$

:   NA = NC .

3) [MN   ‏$\widehat{xMy}$ ‏$\widehat{NMx}$

‏$\widehat{NMy}$.   NMA و NMC   29.   :

MC = MA (   )

‏$\widehat{A}$ = ‏$\widehat{C}$ (   )

NC = NA (   )

:   ‏$\widehat{NMA}$ = ‏$\widehat{NMC}$.

[MN   ‏$\widehat{xMy}$.

شكل 29