

# Year Eleven Geometry Test 2003 - (SYD. GIRLS H.S.)

**Instructions**

Name \_\_\_\_\_

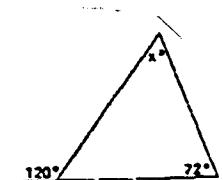
Write answers in the space provided

Show working and give reasons where necessary

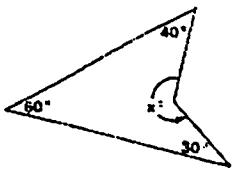
**Question One (14 marks)**

Find the value of the pronumeral in each of the following

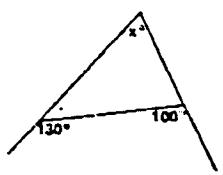
1)



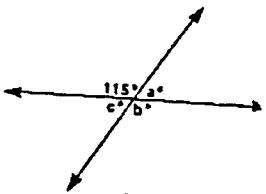
2)



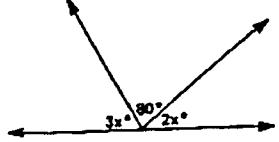
3)



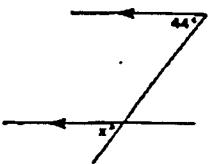
4)



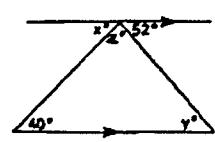
5)



6)



7)



8)



**Question Two (2 marks)**

Give a definition of a parallelogram. (One sentence only)

**Question Three (2 marks)**

Draw a diagram of the following:

'In quadrilateral ABCD, AB is parallel to DC, AD and BC, when produced, meet at E.'



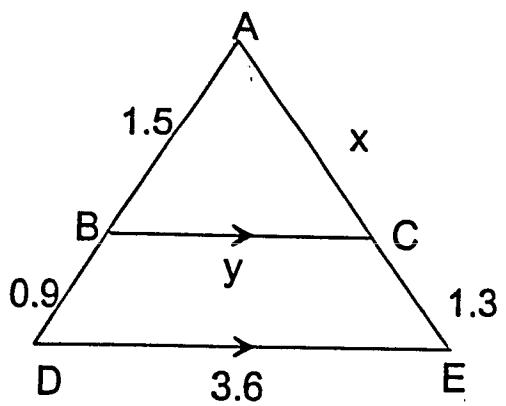
**Question Four (4 marks)**

a) Find the sum of the interior angles of an octagon

b) If the octagon is regular find the size of each interior angle

c) If the octagon is regular find the size of each exterior angle.

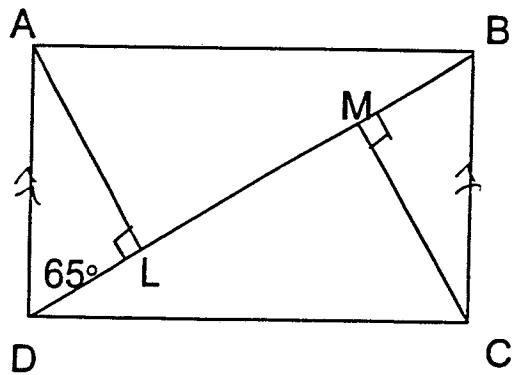
**Question Five (6 marks)**



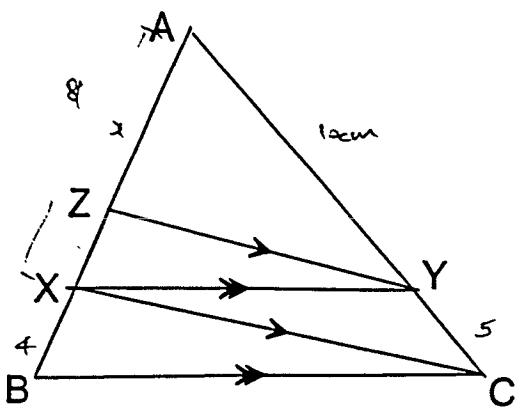
- Prove that triangle ABC is similar to triangle ADE
- Find the value of x and y correct to 2 decimal places

**Question Six (6 marks)**

ABCD is a rectangle. Prove  $AL = MC$



**Question Seven (3 marks)**



In the diagram above  $AY = 10\text{cm}$ ,  $YC = 5\text{cm}$  and  $XB = 4\text{cm}$ , find  $ZX$ .

**Question Eight (2 marks)**

Show that it is not possible for a regular polygon to have interior angles of  $152^\circ$

## SCH 5 Geometry Test

## Question 4

## Question 1

(i)  $120 = x + 72$  (ext  $\angle$  = sum of interior  $\angle$ s)

$x = 48^\circ \checkmark$

(a)  $\angle \text{sum} = (8-2)180$   
 $= 1080^\circ \checkmark$

(ii)  $60 + 40 + 30 + x = 360^\circ$  ( $\angle$  sum of quad)

$x = 230^\circ \checkmark$

(b)  $1080^\circ = \frac{8}{8} 135^\circ$

 $\therefore \text{each int } \angle = 135^\circ \checkmark$ 

(iii)  $50 + 80 + x = 180$  ( $\angle$  sum  $\Delta$ )

$x = 50^\circ \checkmark$

(c)  $\frac{360}{8} = 45^\circ$

(iv)  $b = 115^\circ$  (vert opp  $\angle$ s equal)

$a = c = 360 - (115)2$

$\therefore \text{each ext } \angle = 45^\circ \checkmark$

$\therefore a = c = 65^\circ \checkmark$  use supplementary.

## Question 5

(a) In  $\triangle ABC$ ,  $\triangle ADE$ , $\angle DAE$  is common $\angle ABC = \angle ADE$  (corresponding  $\angle$ s of(v)  $x = 44^\circ$  (corresponding  $\angle$ s of II lines)(vi)  $x = 40^\circ \checkmark$  (alt  $\angle$  of II lines equal)  $\therefore \triangle ABC \sim \triangle ADE$  (equiangular)

$y = 52^\circ \checkmark$  (u)

$z = 180 - 40 - 52$  ( $\angle$  sum  $\Delta$ )

$= 88^\circ \checkmark$

(b)  $\frac{AC}{AE} = \frac{AB}{AD}$

$\frac{x}{x+1.3} = \frac{1.5}{2.4} \quad \text{try again}$

(vii)  $x = 80 + 25 \checkmark$  (alt  $\angle$ s of II lines equal)

$= 105^\circ \checkmark$

$x = 0.81 \times 2 = 2.17 \text{ cm.}$

$\frac{y}{3.6} = \frac{1.5}{2.4}$

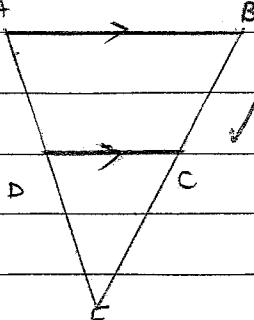
$y = 2.25 \checkmark$

## Question 2.

A parallelogram is a quadrilateral with

2 pairs of opposite sides parallel.

## Question 3.

 $AD \parallel BC, AD = BC$  (definition of rect.)

$\therefore \angle ADB = \angle CBD = 65^\circ$

In  $\triangle AED$ ,  $\triangle CMB$ ,

$\angle CMB = \angle AED$  (given) A

$\angle CBM = \angle ADB$  (as above) A

$AD = BC$  - (as above) S

$\therefore \triangle AED \cong \triangle CMB$  (AA5)

 $\therefore AL = MC$  (matching side of  $\triangle$ s)

Question 7

$$\frac{AX}{XB} = \frac{10}{5} \quad (\text{II lines divide sides in equal ratio})$$

$$\therefore AX = 8$$

$$\frac{AZ}{ZX} = \frac{10}{5} \quad (\text{"})$$

$$\frac{x}{8-x} = \frac{10}{5}$$

$$5x = 80 - 10x \checkmark$$

$$15x = 80$$

$$x = 5\frac{1}{3} \text{ cm}$$

$$\therefore ZX = 2\frac{2}{3} \text{ cm} \checkmark$$

Question 8.

let regular polygon have  $n$  sides

$$\text{Int } \angle: 152 = \frac{(n-2)180}{n}$$

$$152n = 180n - 360$$

$$360 = 28n$$

$$n \approx 12.85 \dots$$

$\therefore$  since  $n$  is not integer no., not possible  
for regular polygon to have interior  $\angle 152^\circ$