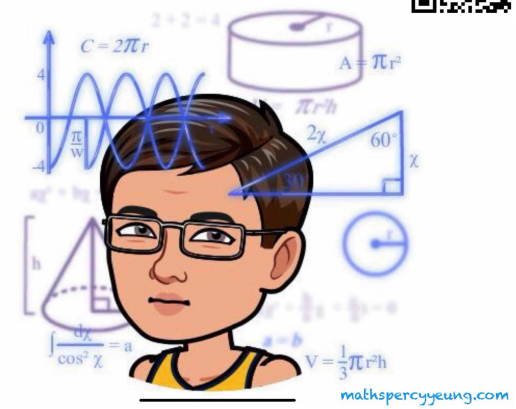


MID YEAR EXAMINATION

2024 – 2025

QUESTION-ANSWER BOOK

Subject: **Secondary 2 Mathematics**

Paper: **II**

Time Allowed: **1 hour**

Total Marks: **100**

No. of pages: 11

Page	Marks	
2		
3		
4		
5		
6		
7		
8		
9		
Total		

INSTRUCTIONS

(1) Write your name, class and examination number in the spaces provided.

(2) This paper consists of THREE Sections, A(1), A(2) and B.

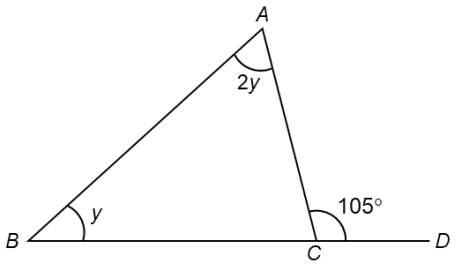
(3) Attempt ALL questions in Sections A(1), A(2) and B.
Write your answers in the spaces provided in this Question-Answer Book. Do not write in the margins.

(4) Unless otherwise specified, all working must be clearly shown.

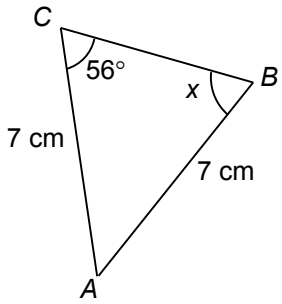
(5) Unless otherwise specified, numerical answers should be exact or correct to 3 significant figures.

Section A1 (40 marks)

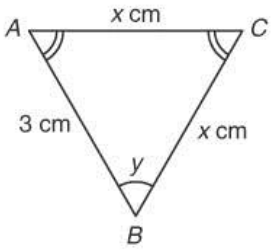
1. In the figure, *BCD* is a straight line. Find *y*. (3 marks)



2. Find *x* in the figure. (3 marks)

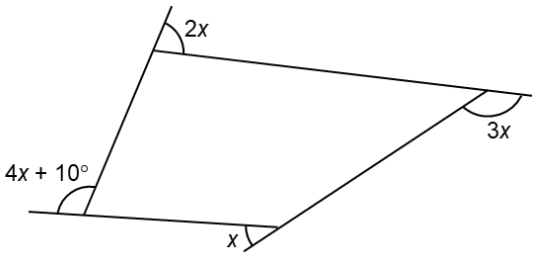


3. Find the unknowns in the figure. (5 marks)

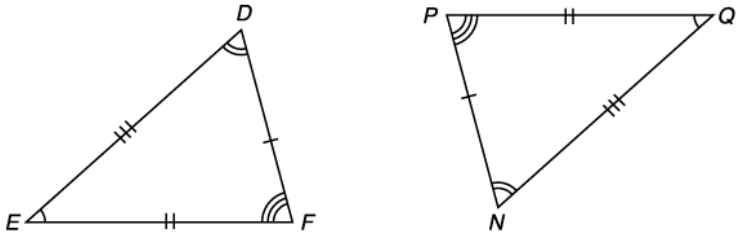


4. Find the size of an interior angle of a regular 24-sided polygon. (3 marks)

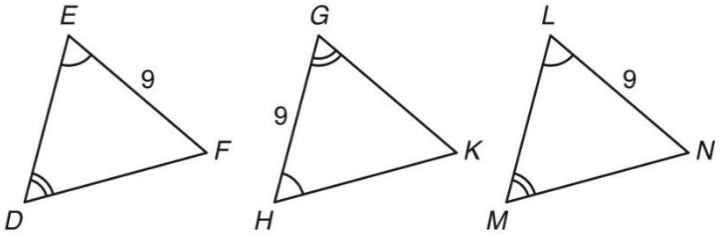
5. In the figure, the sides of the polygon are produced. Find x. (3 marks)



6. The figure shows a pair of congruent triangles. Name them using the symbol '≅'. (1 mark)

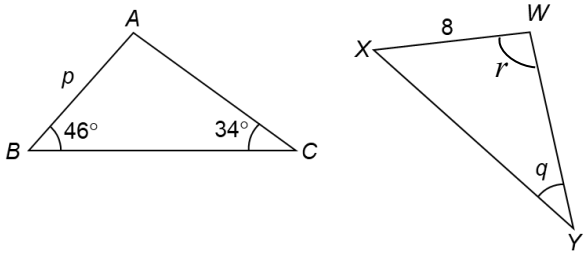


7. Determine which two triangles must be congruent and complete the following table. (2 marks)

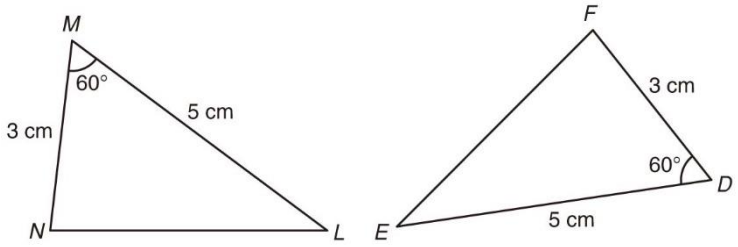


Congruent triangles	reason

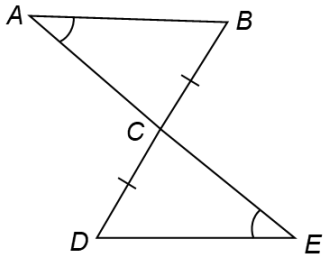
8. In the figure, $\triangle ABC \cong \triangle WXY$. Find p, q and r. (8 marks)



9. Refer to the figure. Prove that $\triangle MNL \cong \triangle DFE$. (4 marks)



10. In the figure, ACE and BCD are straight lines. $BC = DC$ and $\angle BAC = \angle DEC$. Prove that $\triangle ABC \cong \triangle EDC$. (4 marks)



11. The table below shows the heights (in cm) of 30 students in S2A. (4 marks)

Height (cm)	141 – 145	146 – 150	151 – 155	156 – 160	161 – 165
Frequency	2	8	15	4	1

For the class interval with the lowest frequency, find its

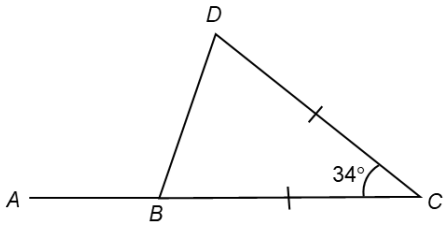
(a) upper class limit,

(b) lower class boundary,

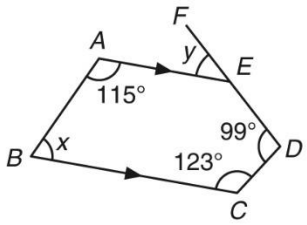
(c) class width.

Section A2 (30 marks)

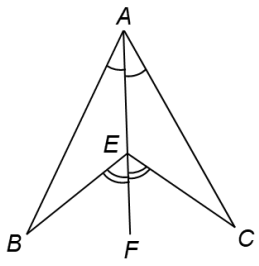
1. In the figure, ABC is a straight line and $BC = CD$. Find $\angle ABD$. (5 marks)



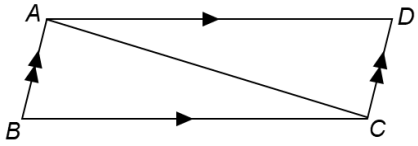
2. In the figure, DEF is a straight line. Find x and y. (5 marks)



3. In the figure, AEF is a straight line. $\angle BAE = \angle CAE$ and $\angle BEF = \angle CEF$. Prove that $\triangle ABE \cong \triangle ACE$. (6 marks)



4. In the figure, AD // BC and BA // CD. Prove that $\triangle ABC \cong \triangle CDA$. (4 marks)



5. The histogram below shows the distribution of the time (in h) spent on shopping by a group of customers in a day. (2 marks)

(a) How many customers are there in the group?

(b) What is the class mark of the class interval with the highest frequency?

6. The table below shows the delay times (in ms) of some internet connections. (8 marks)

Delay time (ms)	Frequency
0 – 24	x
25 – 49	10
50 – 74	19
75 – 99	23
100 – 124	$3x + 1$
125 – 149	3

It is given that 27.5% of the internet connections have delay times of 99.5 ms or above.

(a) Find, in term of x, the number of internet connections have delay times of 99.5 ms or above.

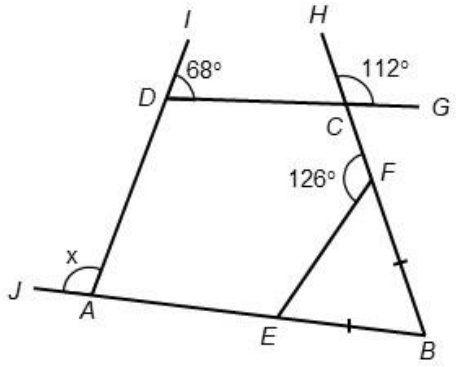
(b) Find the value of x.

(c) How many internet connections have delay times of 74.5 ms or above but less than 124.5 ms?

(d) If internet connections with delay times less than 49.5 ms are regarded as fast, find the percentage of fast internet connections.

Section B (30 marks)

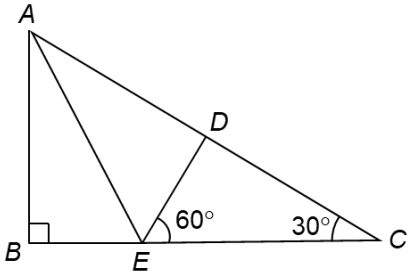
1. In the figure, *DCG*, *HCFB*, *JAEB* and *IDA* are straight lines. It is given that *BE* = *BF*.



(a) Find $\angle DCH$ and $\angle BFE$. (4 marks)

(b) Find *x*. (5 marks)

2. In the figure, D is a point on AC such that $AB = AD$. E is a point on BC.

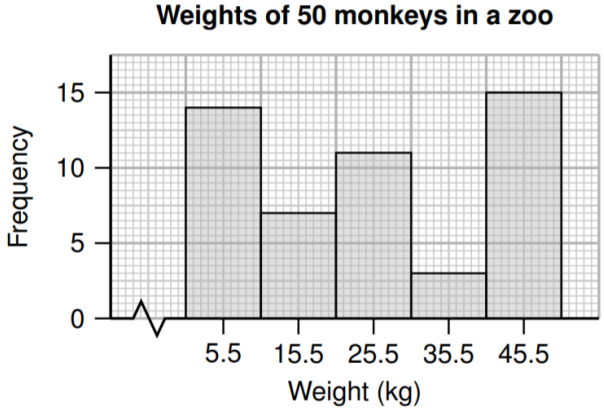


(a) Prove that $\triangle ABE \cong \triangle ADE$. (5 marks)

(b) Are the lengths of AE and CE equal? Explain your answer. (5 marks)

Page Total	

3. The histogram below shows the distribution of the weights (in kg) of 50 monkeys in a zoo.



(a) Complete the following table. (1 mark)

Weight (kg)	1 – 10	11 – 20	21 – 30	31 – 40	41 – 50
Frequency					

(b) How many monkeys weigh 30.5 kg or above? (1 mark)

(c) All the male monkeys in the zoo are heavier than female monkeys. If there are 16 female monkeys in the zoo, which two class intervals should the female monkeys belong to?

(2 marks)

4. The following are the volumes (in L) of water drunk by staff in 30 offices in a day.

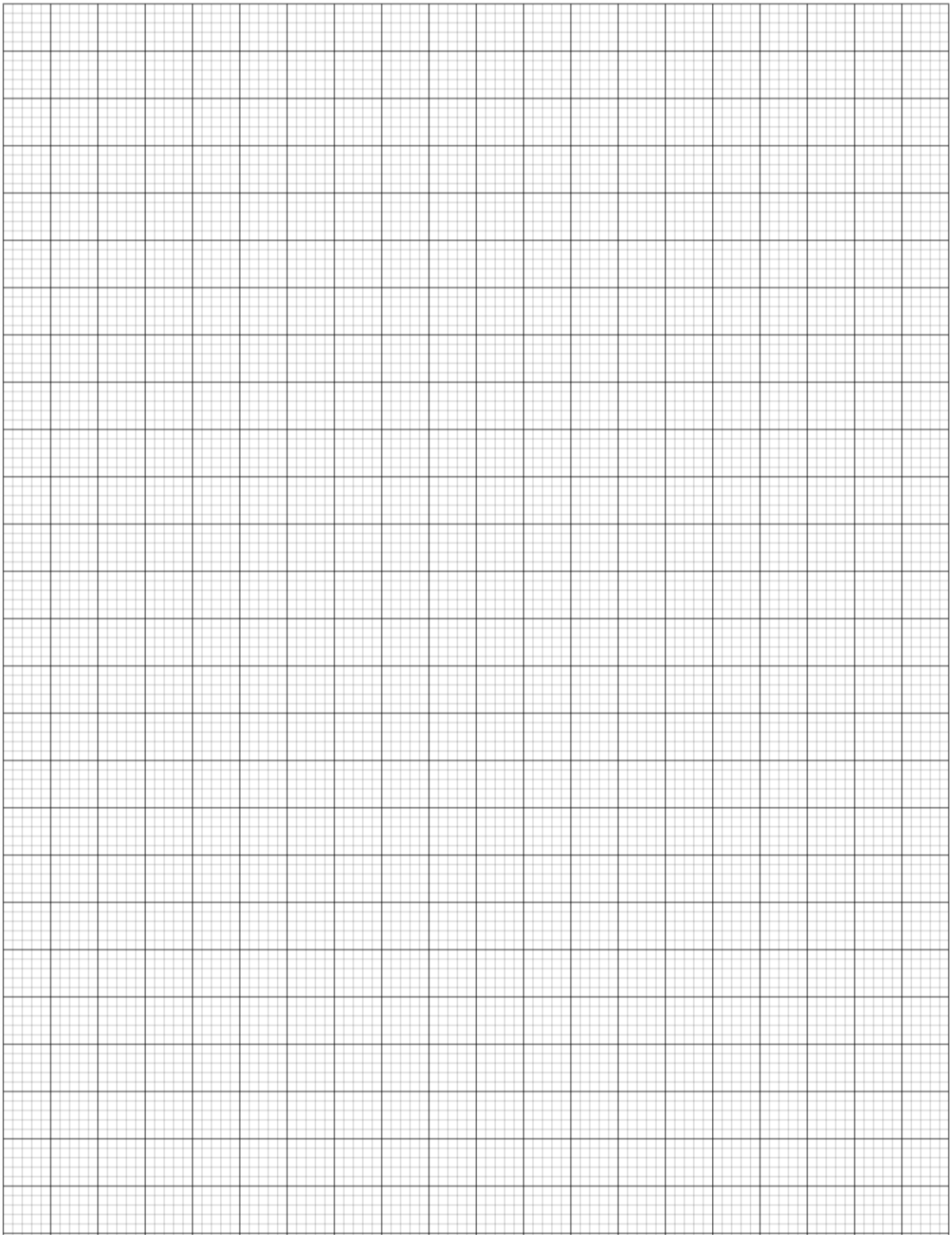
50	56	34	27	44	33	42	57	31	38
33	35	52	43	23	41	32	18	35	29
37	48	36	14	37	39	45	20	30	47

(a) Complete the following frequency distribution table with class intervals, class boundaries, class marks, tallies and frequencies. (4 marks)

Volume (L)	**Class boundaries (L)**	**Class mark (L)**	**Tally**	**Frequency**
10 – 19				
20 – 29				
30 – 39				
40 – 49				
50 – 59				
			Total	30

Page Total	

(b) Draw a frequency polygon to present the data. (3 marks)



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