

Name .....

( )

Secondary 1 .....



**ANGLICAN HIGH SCHOOL**  
**Mid Year Examination**  
**Secondary One**  
**MATHEMATICS (SYLLABUS D)**  
**Part 1**

Wednesday

9 May 2007

1 hour

Candidates answer on the question paper.

**INSTRUCTIONS TO CANDIDATES**

Answer **all** questions.

Write your answers in the spaces provided on the question paper.

If working is needed for any question it must be shown and written in **pen** below that question.

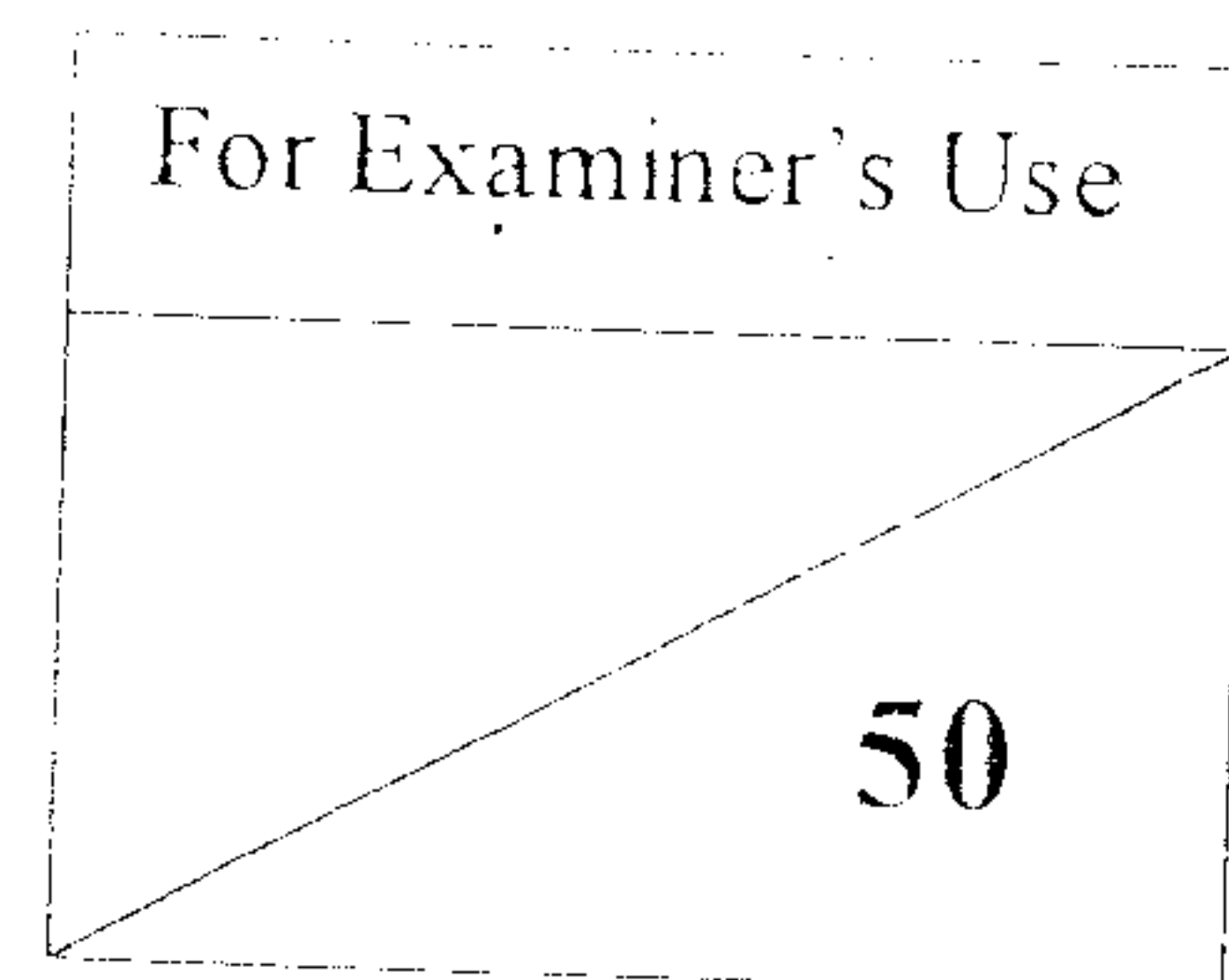
Omission of essential working will result in loss of marks.

**NEITHER ELECTRONIC CALCULATORS NOR MATHEMATICAL TABLES MAY BE USED IN THIS PAPER.**

**INFORMATION FOR CANDIDATES**

The number of marks is given in brackets [ ] at the end of each question or part question.

The total of the marks for this part is 50.



This question paper consists of 7 pages.

**PART 1**  
**Answer all the questions.**

1. Consider the numbers and use them to fill in the table below.  
 (Each number can only be used once.)

$$0.3, \frac{-1}{3}, \sqrt{3}, 3, \pi, 13, -30, 33, 1.\dot{3}$$

*Answer*

[3]

Two prime numbers	
Two integers	
Two irrational numbers	

2. (a) Calculate the exact value of  $\sqrt[3]{8 \times 10^6} + \sqrt{4}$ .
- (b) The numbers 60 and 126, written as products of their prime factors, are  
 $60 = 2^2 \times 3 \times 5$ ,  $126 = 2 \times 3^2 \times 7$ . Find
- (i) the largest integer which is a factor of both 60 and 126,  
 (ii) the smallest integer which is an exact multiple of both 60 and 126.

*Answer* (a) \_\_\_\_\_ [2]

(b)(i) \_\_\_\_\_ [1]

(ii) \_\_\_\_\_ [1]

3. (a) Evaluate the following.
- (i)  $(-2 - 5)(-10)$
- (ii)  $[-3 \times (-4)] \times 2 + (-2)(-3)$

- (b) Fill in the boxes with the correct operations to make the mathematical sentence true.

$$21 \div 3 \quad \square \quad 7 - 6 \quad \square \quad 4 = 47 \quad [2]$$

Answer (a)(i) \_\_\_\_\_ [1]

(ii) \_\_\_\_\_ [2]

4. Evaluate

(a)  $7.66 + (-0.2)^2 - (-5.1)$

(b)  $2.4 \div \left( 7\frac{1}{5} - \frac{9.6}{1.6} \right)$

Answer (a) \_\_\_\_\_ [2]

(b) \_\_\_\_\_ [3]

5. (a) Express
- (i)  $\frac{2}{3}$  as a decimal, giving your answer correct to two decimal places,
- (ii) 102 200 000 correct to three significant figures.
- (b) Estimate the value of  $10\,900 \times 0.0442$ , giving your answer correct to 1 significant figure.

Answer (a)(i) \_\_\_\_\_ [1]

(ii) \_\_\_\_\_ [1]

(b) \_\_\_\_\_ [2]

6. (a) Given the formula  $p = \frac{c - 3d^2}{(c - 3d)^2}$ , find the value of  $p$  when  $c = 10$  and  $d = 2$ .
- (b) Find the value of  $(2e + f)(e - f + 1)$  when  $e = 5$  and  $f = 3$ .

Answer (a) \_\_\_\_\_ [2]

(b) \_\_\_\_\_ [1]

7. (a) Given that  $x$  is an odd number, find and simplify an expression, in terms of  $x$ , for the sum of the next two even numbers.
- (b) An approximate method to convert a temperature from Celsius ( $^{\circ}C$ ) to Fahrenheit ( $^{\circ}F$ ) is to double the temperature in Celsius and add 30.  
Use this method
- (i) to convert  $25^{\circ}$  Celsius to Fahrenheit,
- (ii) to write down a formula expressing  $F$  in terms of  $C$ .

Answer (a) \_\_\_\_\_ [2]

(b)(i) \_\_\_\_\_  $^{\circ}F$  [1]

(ii) \_\_\_\_\_ [1]

8. Solve the following equations.

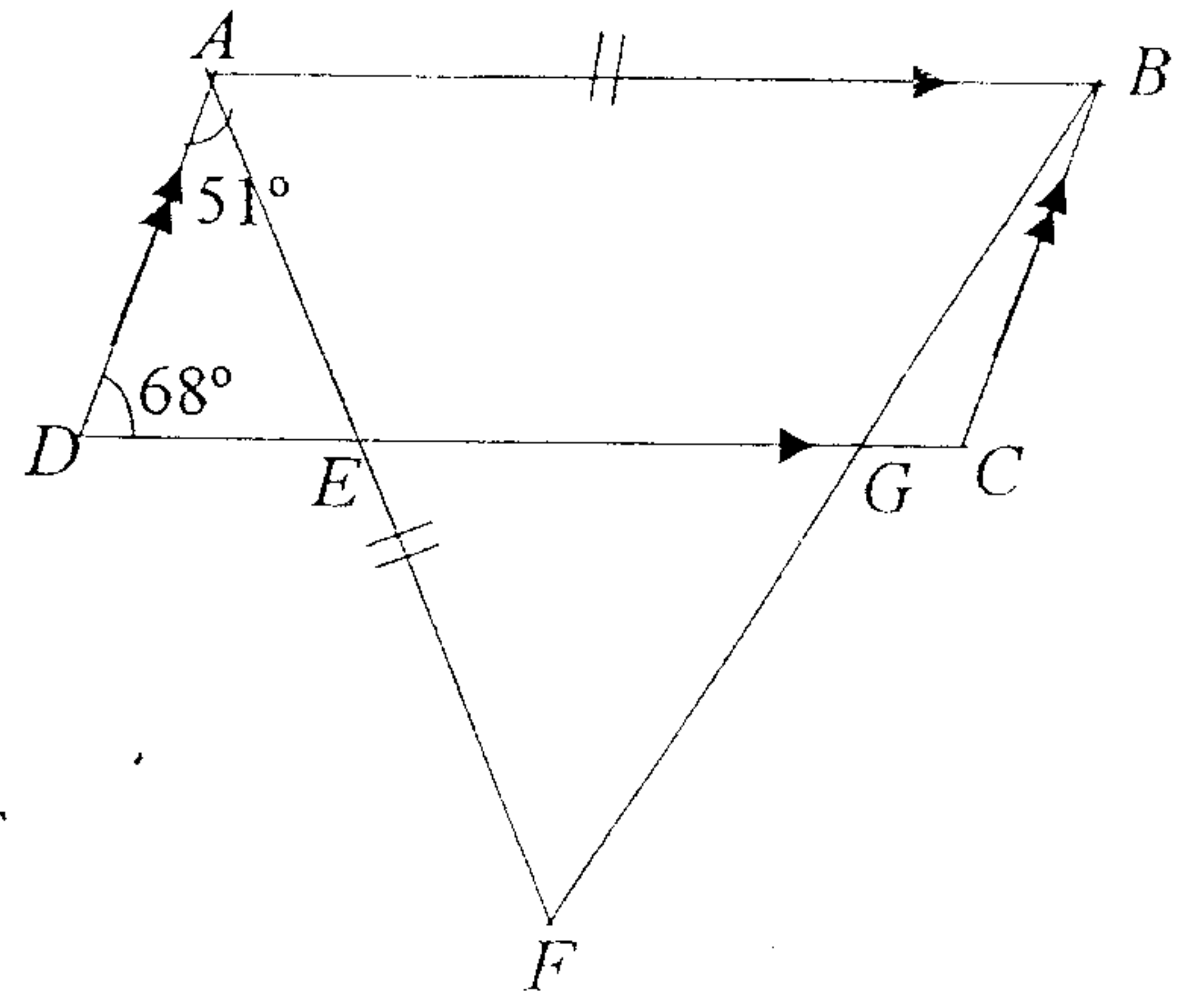
(a)  $\frac{2}{3x} + 5 = \frac{2}{5}$

(b)  $\frac{2}{3x-1} = 4$

Answer (a)  $x =$  \_\_\_\_\_ [2]

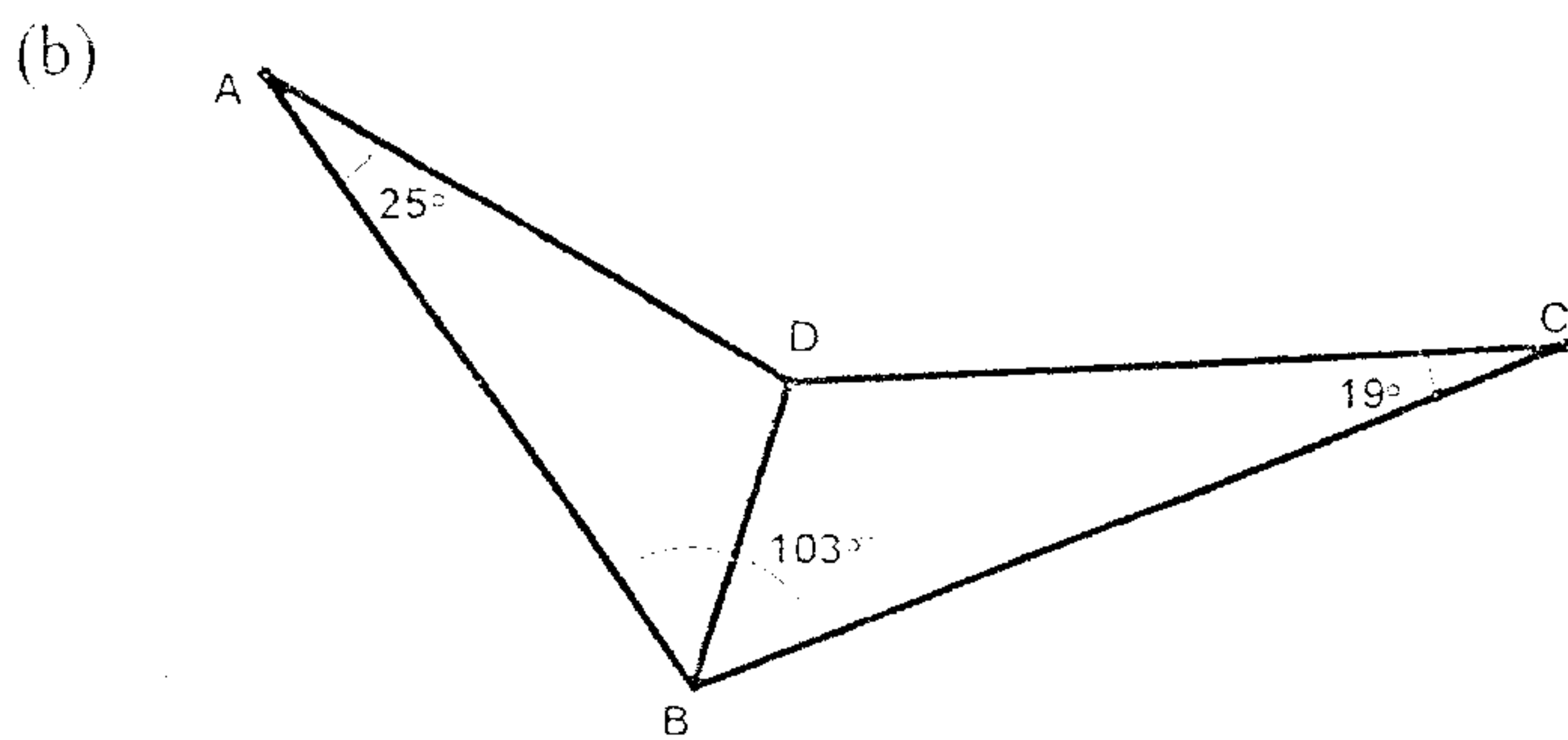
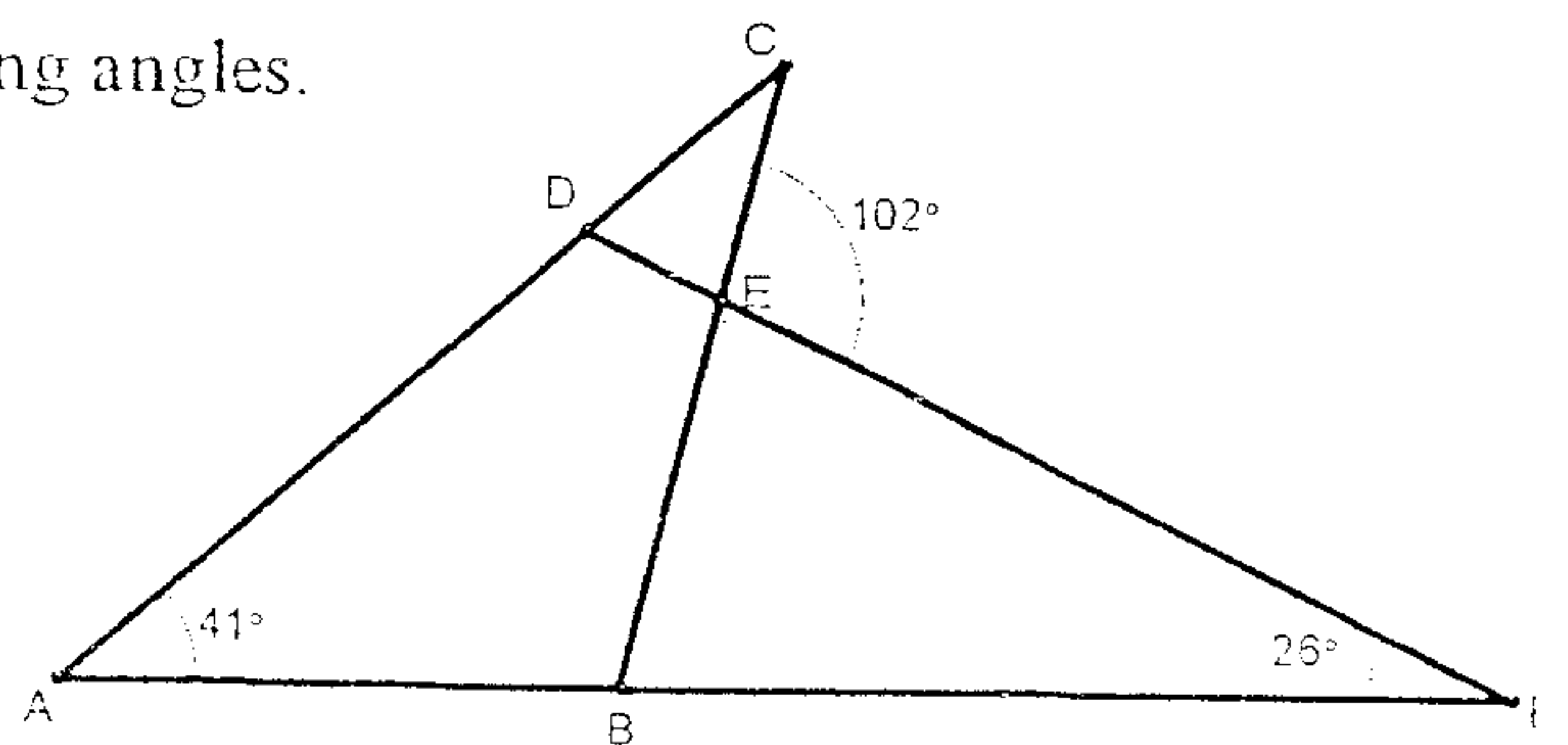
(b)  $x =$  \_\_\_\_\_ [2]

9. In the diagram,  $ABCD$  is a parallelogram.  $\angle ADE$  is  $68^\circ$ ,  $\angle DAE$  is  $51^\circ$  and  $AB = AF$ . Find
- $\angle AEG$ ,
  - $\angle EAB$ ,
  - $\angle AFB$ .



Answer (a) \_\_\_\_\_  $^\circ$  [1]  
 (b) \_\_\_\_\_  $^\circ$  [1]  
 (c) \_\_\_\_\_  $^\circ$  [2]

10. (a) From the diagram on the right, find the following angles.
- $\angle CBA$
  - $\angle EDA$



Find obtuse  $\angle ADC$ .

Answer (a)(i) \_\_\_\_\_  $^\circ$  [2]  
 (ii) \_\_\_\_\_  $^\circ$  [1]  
 (b) \_\_\_\_\_  $^\circ$  [2]

11. Simplify the following.

(a)  $2e - [5(e + 2d) + 6d]$

(b)  $1 - \frac{x+5}{3} - \frac{3(x-1)}{4}$

Answer (a) \_\_\_\_\_ [2]

(b) \_\_\_\_\_ [3]

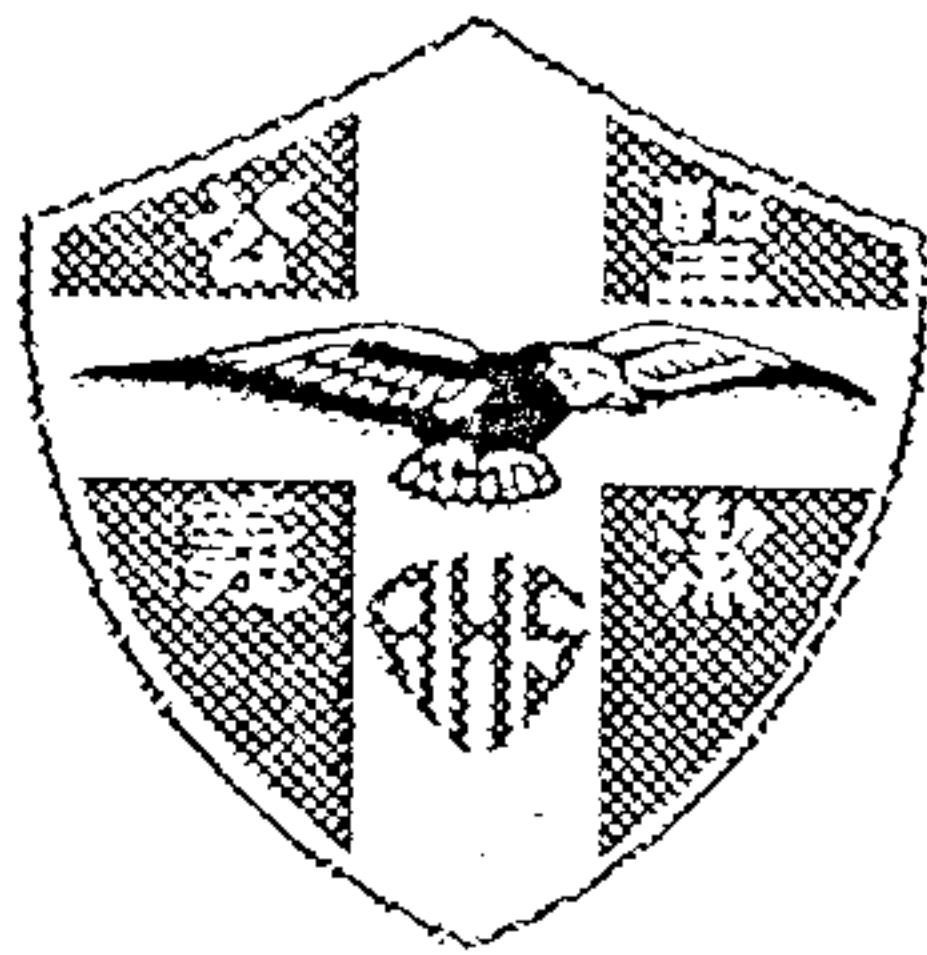
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12. In a secondary school, 50 more Secondary Three students opted to take Additional Mathematics than English Literature.  $\frac{1}{5}$  of those who took Additional Mathematics were girls and  $\frac{1}{4}$  of those who took English Literature were girls. The number of girls who took Additional Mathematics was 6 more than those who took English Literature. Let the number of students who took Additional Mathematics be  $y$ . Form an equation in  $y$  and solve for the number of students who took Additional Mathematics.

Answer \_\_\_\_\_ students [4]

End of Part I

Name \_\_\_\_\_ ( ) Secondary 1 \_\_\_\_\_



**ANGLICAN HIGH SCHOOL  
Mid Year Examination  
Secondary One  
MATHEMATICS (SYLLABUS D)  
Part 2**

Wednesday 9 May 2007 1 hour

Additional Materials: Writing paper

**INSTRUCTIONS TO CANDIDATES**

Answer all questions in Section A and any 1 question in Section B.  
Write your answers and working on the separate writing paper provided.  
Show all your working on the same page as the rest of your answers.  
Omission of essential working will result in loss of marks.

**NEITHER ELECTRONIC CALCULATORS NOR MATHEMATICAL TABLES MAY BE USED IN THIS PAPER.**

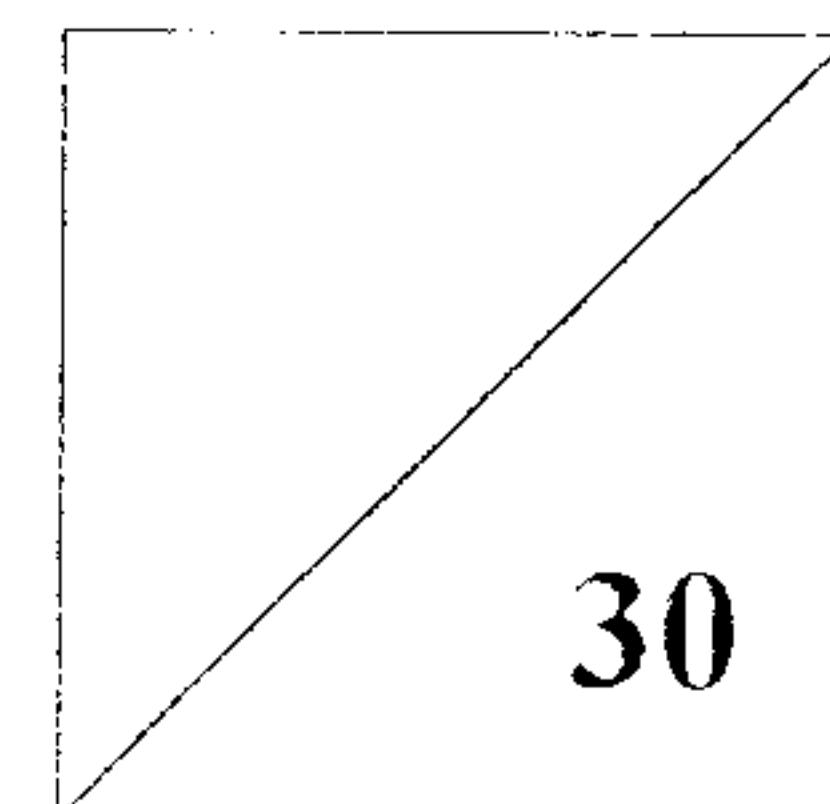
**Attach this cover page to the first page of your answer scripts.  
Circle the question in Section B you have attempted.**

**INFORMATION FOR CANDIDATES**

The number of marks is given in brackets [ ] at the end of each question or part question.  
The total of the marks for this part is 30.

For Examiner's Use

<b>SECTION A</b>	1	2	3	4	5
<b>MARKS</b>					
<b>SECTION B</b>	1	2			
<b>MARKS</b>					



This question paper consists of 4 pages.



Part 2 Section A [22 marks]  
Answer all the questions.

1. Products of prime factors of 240 and 540 are shown below.

$$240 = 2^4 \times 3 \times 5, \quad 540 = 2^2 \times 3^3 \times 5$$

Write down as *products of prime factors*

- (a) the lowest common multiple, [1]
- (b) the highest common factor of the two numbers and [1]
- (c) the square root of the product of 240 and 540. [1]
- 

2. (a)  $a$ ,  $b$  and  $c$  are positive integers such that  $a > b > c$ . If the average value of these integers is 8 and  $b = 5$ , find

(i) the greatest possible value of  $a$  if it is a prime, [3]

(ii) the smallest possible value of  $a$ . [1]

- (b)  $\sqrt{6\frac{1}{4}}$  can be expressed as the rational number  $\frac{p}{q}$  where  $p$  and  $q$  are integers.

Find the value of  $p$  and of  $q$ . [2]

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3. (a) Estimate, correct to one significant figure, the value of

$$\frac{\sqrt[3]{125.107 + 4.903^2}}{\sqrt{35.896}} \quad [2]$$

- (b) The length and breadth of a rectangle are recorded as 10 and 5 cm correct to the nearest cm, respectively. Find the smallest possible value of the perimeter of the rectangle. [2]
- 

4. Factorize

(a)  $7ab - 4bc + 3ba - 2cb$  [2]

(b)  $8bx - 15ay - 6by + 20ax$  [2]

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5. (a) Given that  $ABCDE$  is a regular polygon, calculate

(i)  $\angle ABC$ ,

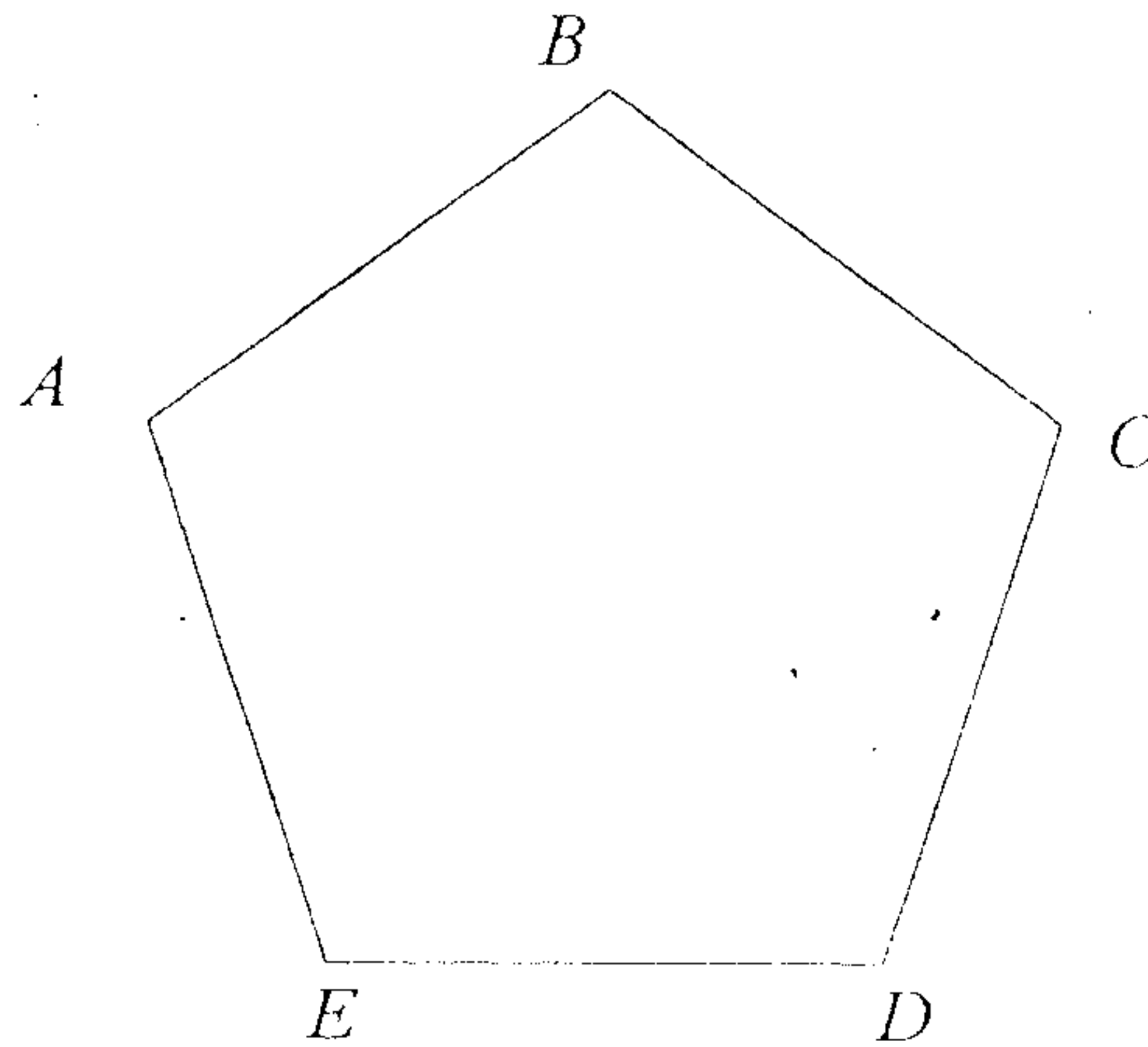
(ii)  $\angle BCA$ ,

(iii)  $\angle BDE$ .

[1]

[1]

[1]



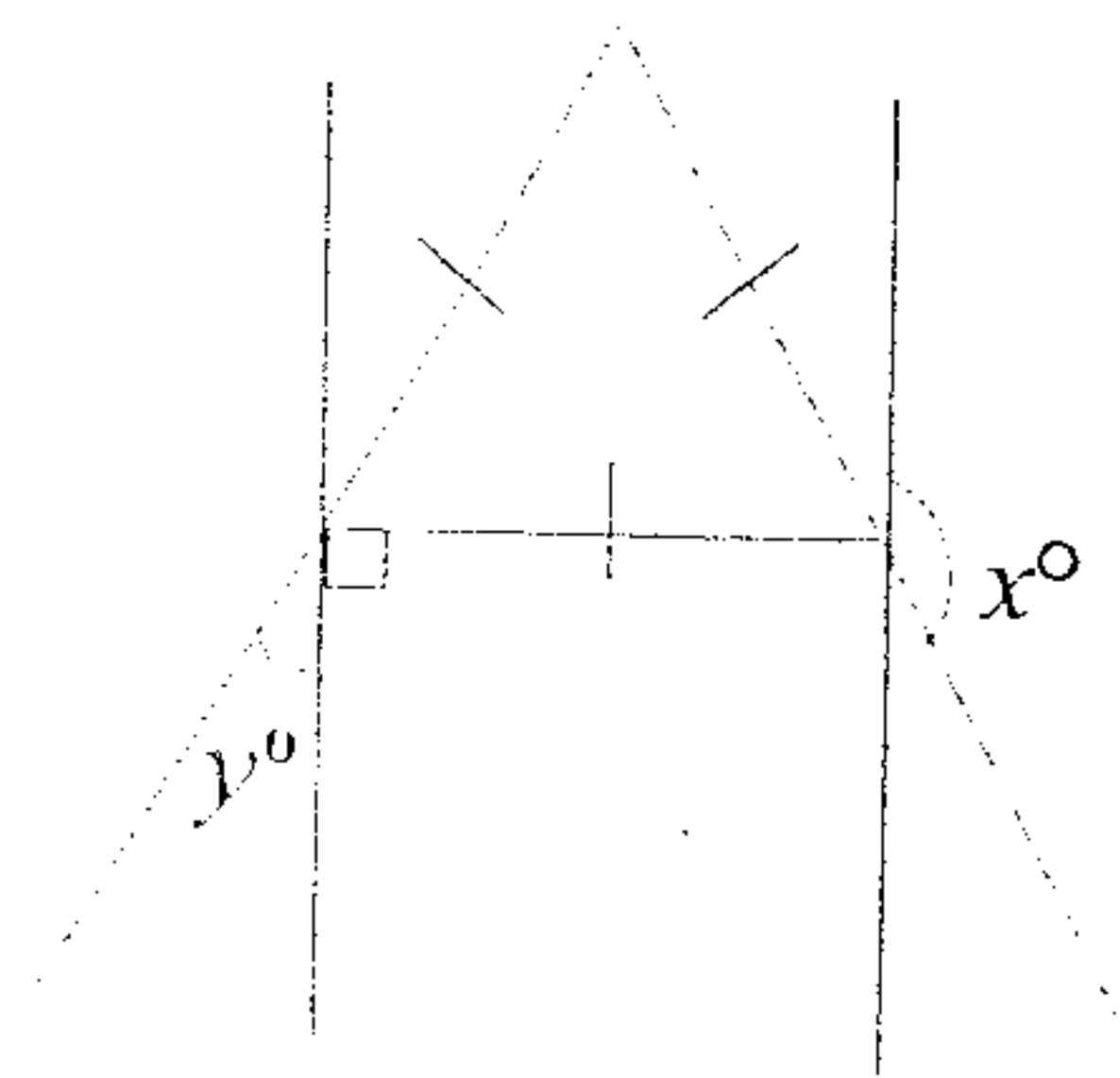
(b) The interior angle of a regular polygon is 35 times its exterior angle.  
How many sides does the polygon have?

[2]

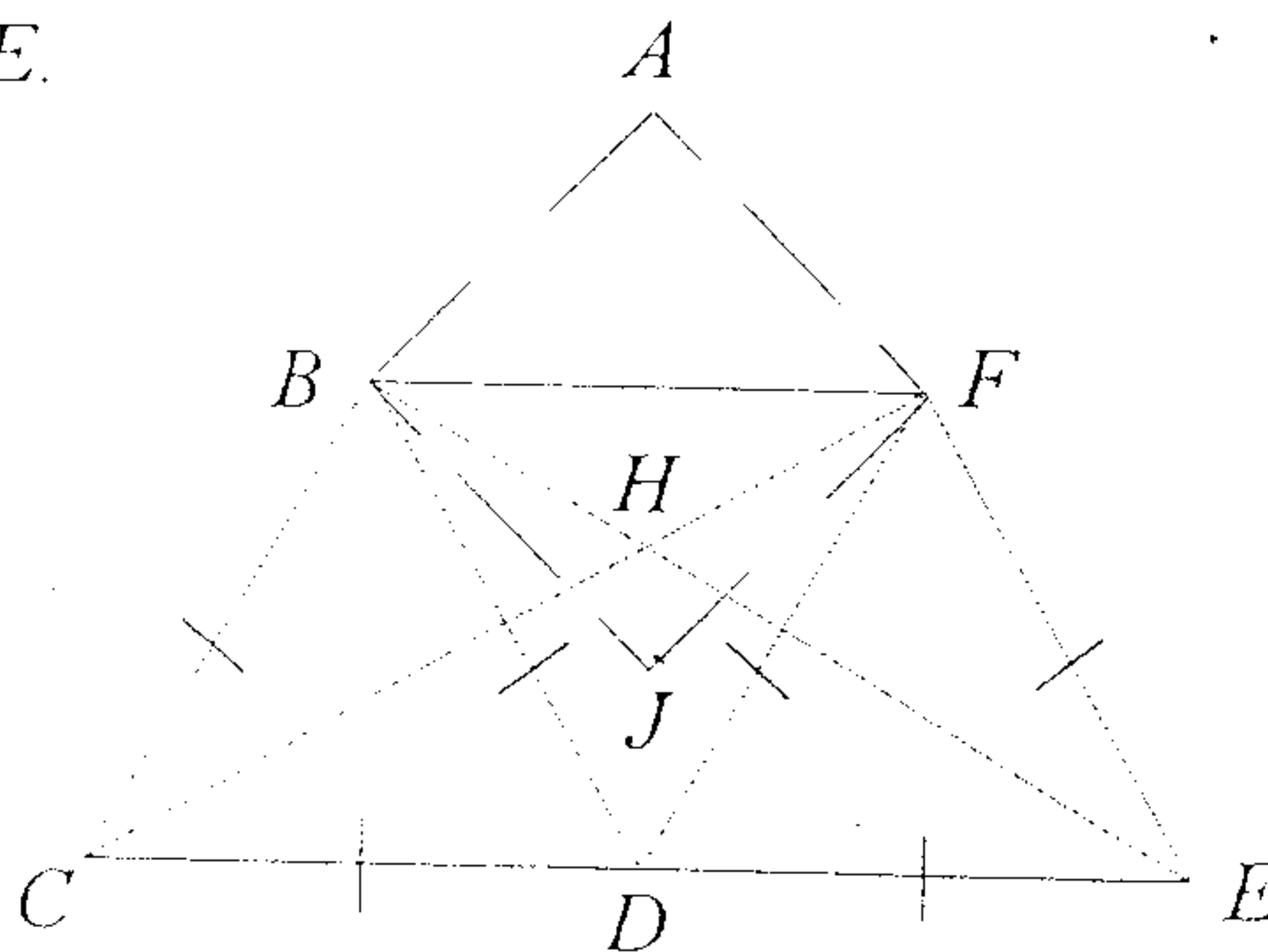
**Part 2 Section B [8 marks]**  
**Answer any one question.**

1. Mrs Lee has a certain budget to buy lunch packs. She can buy exactly  $x$  chicken rice lunch packs at \$2.50 each. Alternatively, she can buy  $(x + 7)$  nasi lemak lunch packs at \$1.80 each and have \$1.40 left.
- (a) Form an equation in  $x$  and show that  $x = 20$ . [3]
- (b) What is Mrs Lee's budget? [1]
- (c) If Mrs Lee buys 8 chicken rice lunch packs and uses the rest of the money to buy nasi lemak lunch packs,
- (i) how many nasi lemak lunch packs can she buy? [3]
- (ii) how much money will she have left? [1]

2. (a) Find the value of  $x$  and of  $y$  in the following figure. [2]



- (b) Draw an angle  $ABC$  of  $66^\circ$ . Construct the angle bisector of  $ABC$ . [2]
- (c)  $ABJF$  is a square and  $BF$  is parallel to  $CE$ .  $\triangle BCD$  and  $\triangle FDE$  are equilateral triangles.  $BE$  and  $CF$  are the angle bisectors of  $\triangle FED$  and  $\triangle BCD$  respectively.
- (i) Find the angle  $JFD$ . [2]
- (ii) Find the reflex angle  $AFE$ . [2]



End of Part 2

## ANSWER KEY

PART 1	PART 2
1. 3, 13; -30, 33; $\sqrt{3}$ , $\pi$	Section A 1. (a) $2^4 \times 3^2 \times 5$ (b) $2^2 \times 3 \times 5$ (c) $2^3 \times 3^2 \times 5$
2. (a) 202 (b)(i) 6 (ii) 1260	2. (a) 19 (i) 17 (ii) 15 (b) $p = 5, q = 2p$
3. (a)(i) 70 (ii) 30 (b) $\times, +$	3. (a) 5 (b) 28
4. (a) 12.8 (ii) 2	4. (a) $2b(5a - 3c)$ (b) $(4x - 3y)(2b + 5a)$
5. (a)(i) 0.67 (ii) 102 000 000 (b) 500	5. (a)(i) $108^\circ$ (ii) $36^\circ$ (iii) $72^\circ$ (b) 72
6. (a) $-\frac{1}{8}$ (b) 39	Section B 1. (a) $2.5x = 1.8(x + 7) + 1.4$ (b) \$50 (c)(i) 16 (ii) \$1.20
7. (a) $2x + 4$ (b)(i) 80 (ii) $F = 2C + 80$	2. (a) $x = 150, y = 30$ (c)(i) $15^\circ$ (ii) $195^\circ$
8. (a) $-\frac{10}{69}$ (b) $\frac{1}{2}$	
9. (a) $119^\circ$ (b) $61^\circ$ (c) $59.5^\circ$	
10. (a) $104^\circ$ (b) $113^\circ$ (c) $147^\circ$	
11. (a) $-3e - 16d$ (b) $\frac{1 - 13x}{12}$	
12. 130	