



**ACADEMIC LYCEUM OF  
WESTMINSTER INTERNATIONAL  
UNIVERSITY IN TASHKENT**

**ENTRANCE EXAM**

**Academic year: 2023/2024**

**Time allowed: 1.15 hour**

<b>ID number and name &amp; surname:</b>	
<b>Signature:</b>	
<b>Do you have IELTS or CEFR certificate?</b>	<b>If YES, your score?</b>

**Instructions to candidates:**

- ANSWER ALL QUESTIONS IN DETAIL, SHOWING ALL YOUR WORK ON THE SAME PAGE AS THE QUESTION.
- NO BOOKS, NOTES, CALCULATORS OR ANY SORT OF ASSISTING MATERIAL ARE ALLOWED.
- IF NECESSARY, YOU CAN ASK FOR A BLANC PAPER.

**PLEASE DO NOT TURN OVER THIS PAGE UNTIL TOLD TO DO SO**

**FOR OFFICE USE ONLY**

**PART 1: MATHEMATICS**

**10 questions by 10 marks. Total: 100 marks**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>Total</b>

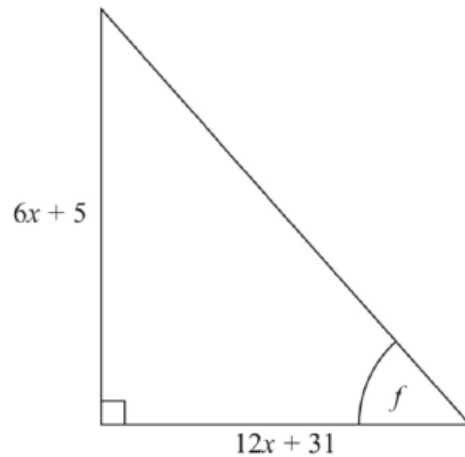
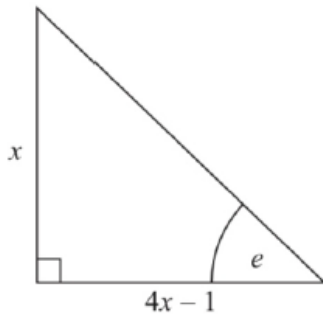
Staff name and signature: \_\_\_\_\_

**PART 1  
MATHEMATICS**

1. Calculate:  $\left( \frac{\left(2.7 - \frac{4}{5}\right) \cdot 2 \cdot (3)}{\left(5\frac{1}{5} - 1.4\right) \div \frac{3}{70}} + \frac{1}{8} \right) \div 2.5 + \frac{43}{100}$

**Write your answer here: .....(10 marks)**

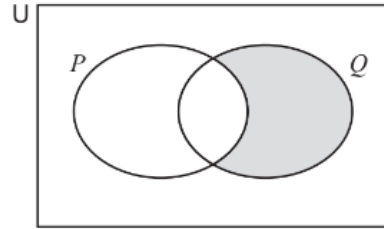
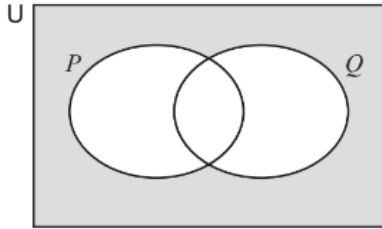
2. Here are two right-angled triangles.



Given that  $\tan e = \tan f$ , find the value of  $x$ . *You must show all your working.*

**Write your answer here: .....(10 marks)**

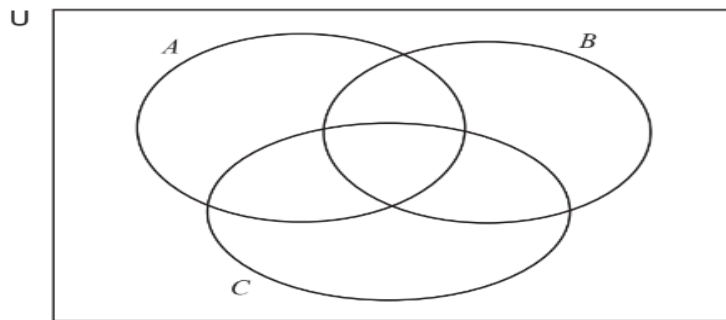
3. (a) Use set notation to describe the shaded regions



(2 marks)

- (b)  $U = \{\text{Integers } x \mid 3 \leq x \leq 15\}$   
 $A = \{\text{Multiples of 3}\}$   
 $B = \{\text{Integers } x \mid 6 \leq x \leq 12\}$   
 $C = \{\text{Factors of 24}\}$

(i) Write all elements of  $U$  in the correct parts of the Venn diagram. (4 marks)



List the members of the set  $A \cap B \cap C'$

**Write your answer here: .....** (1 mark)

List the members of the set  $(A \cup C)' \cap B$

**Write your answer here: .....** (1 mark)

Find  $n((B \cup C) \cap A')$

**Write your answer here: .....** (1 mark)

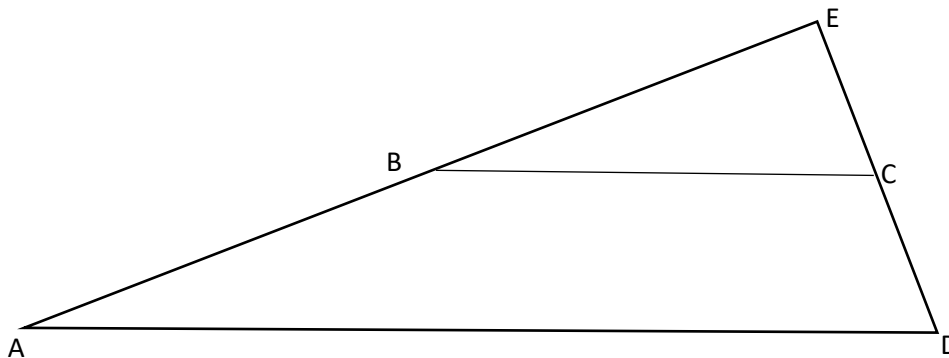
4. While climbing the mountain, the tourist climbed 800m in the first hour, and in each subsequent hour, he climbed 25m less than the previous one. How many hours will it take to reach the height of 5700m?

**Write your answer here: .....(10 marks)**

5. Simplify:  $\frac{(\sqrt[4]{a} + \sqrt[4]{b})^2 + (\sqrt[4]{a} - \sqrt[4]{b})^2}{2(a-b)} \div \frac{1}{\sqrt{a^3 - b^3}} - 3\sqrt{ab}$

Write your answer here: .....(10 marks)

6.



$\angle E = 90^\circ$

$\angle A = 30^\circ$

$BC = 8$

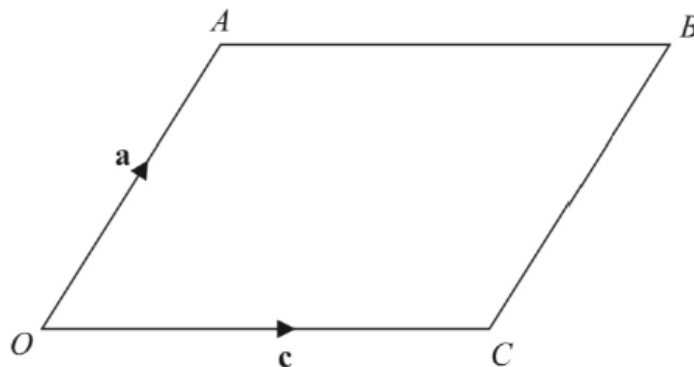
If the middle line of the ABCD trapezium is 10, then find its height.

Write your answer here: .....(10 marks)

7. An electric power company charges its consumers \$ 0.40 per kilowatt for the first 100 kilowatts in a month, \$ 0.50 per kilowatt for the second 100 kilowatts, and \$ 0.60 for each additional kilowatt beyond. Mary pays \$ 120 for electricity used in last month. How much electricity did her family consume in the month?

**Write your answer here: .....(10 marks)**

8.  $OABC$  is a parallelogram.  $\overrightarrow{OA} = a$ ,  $\overrightarrow{OC} = c$ .  $X$  is the midpoint of the line  $AC$ .  $OCD$  is a straight line so that  $OC:CD = k:1$ . Given that  $\overrightarrow{XD} = 3c - \frac{1}{2}a$ , find the value of  $k$ .



**Write your answer here: .....(10 marks)**

9. The table shows the number of goals scored in 100 matches

(a)

Number of goals	0	1	2	3	4	5	6	7
Frequency	17	23	20	18	11	6	4	1

Find

(a) the mode:

Write your answer here: .....(1 mark)

(b) the range:

Write your answer here: .....(2 marks)

(c) the median:

Write your answer here: .....(2 marks)

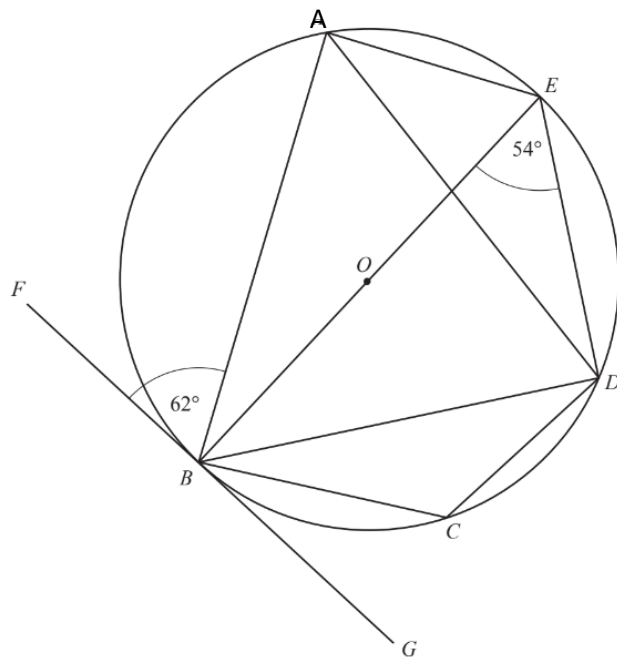
(d) the interquartile range:

Write your answer here: .....(2 mark)

(d) the mean:

Write your answer here: .....(3 marks)

10. (a)  $A, B, C, D$  and  $E$  are points on the circle center  $O$ .  $FBG$  is a tangent to the circle at  $B$ . Angle  $ABF = 62^\circ$  and angle  $BED = 54^\circ$ .



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Find

(i) angle  $AEB$ ,

Write your answer here: Angle  $AEB = \dots\dots\dots$ (1 mark)

(ii) angle  $BAD$ ,

Write your answer here: Angle  $BAD$ =.....(1 mark)

(iii) angle  $EAD$ ,

Write your answer here: Angle  $EAD$ =.....(1 mark)

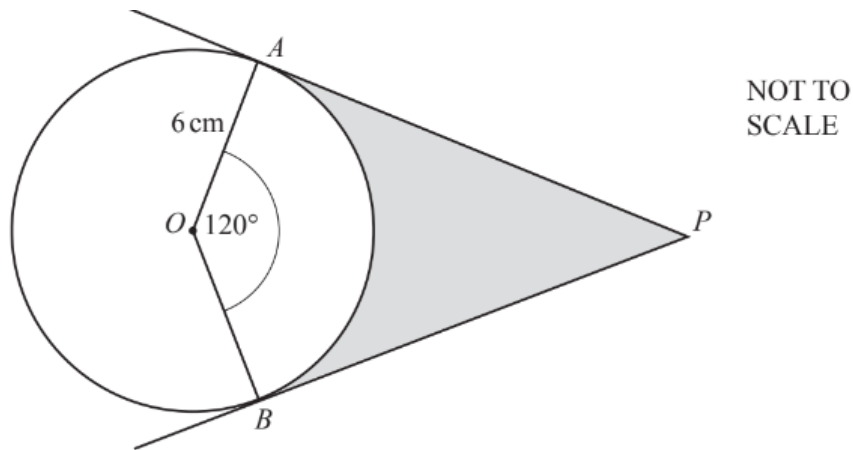
(iv) angle  $BCD$ ,

Write your answer here: Angle  $BCD$ =.....(1 mark)

(v) angle  $FBD$ .

Write your answer here: Angle  $FBD$ =.....(1 mark)

(b)



$PA$  and  $PB$  are tangents to the circle center  $O$ .

The radius of the circle is  $6\text{ cm}$  and angle  $AOB = 120^\circ$ .

The shaded Area  $= (a\sqrt{3} - b\pi)\text{ cm}^2$ .

Find the value of  $a$  and the value of  $b$ .

Write your answer here:  $a$ =.....,  $b$ =.....(5 marks)

USE THIS SPACE AS DRAFT