Westminster International University in Tashkent

Mathematics Entrance Examination

DATE:

i.   **Time allowed: One hour ten minutes**

ii. **Answer all questions.**

iii. **No calculators are allowed.**

iv. **All your working must be presented <u>on the same page as the question.</u> Answers with no evidence of calculations will not score any marks.**

v.   **Write your answers in the spaces below the questions.**

vi. **Nothing should be removed from the exam room.**

Please note the additional requirements:

vii. You are not allowed to leave the exam room during the examination.

viii. You are not allowed to talk, to whisper, to turn around, use any pre-prepared notes, calculators, dictionaries or to look at another candidate's examination papers, all of which are considered violation of exam rules and may incur a penalty. You will be given no warning; should you do any of these things you will be reported to the Assessment Board for penalty application.

ix.   You may use non-erasable blue or black pen to write your answers including graphs. Any answers written in pencil will not be marked.

x.   You may not use whiteout/correction fluid. If you make a mistake, simply draw a line through the mistake with pen and continue.

xi.   You may not borrow another student's stationery or materials even with the consent of the invigilator.

xii. If your pen runs out of ink you may request a replacement from the invigilator. If any are available a replacement will be provided for you. No other stationary or materials may be provided for you by the invigilator.

xiii. All mobile phones and other electronic devices must be switched off and left at a place indicated by the invigilators.

Applicant ID:	

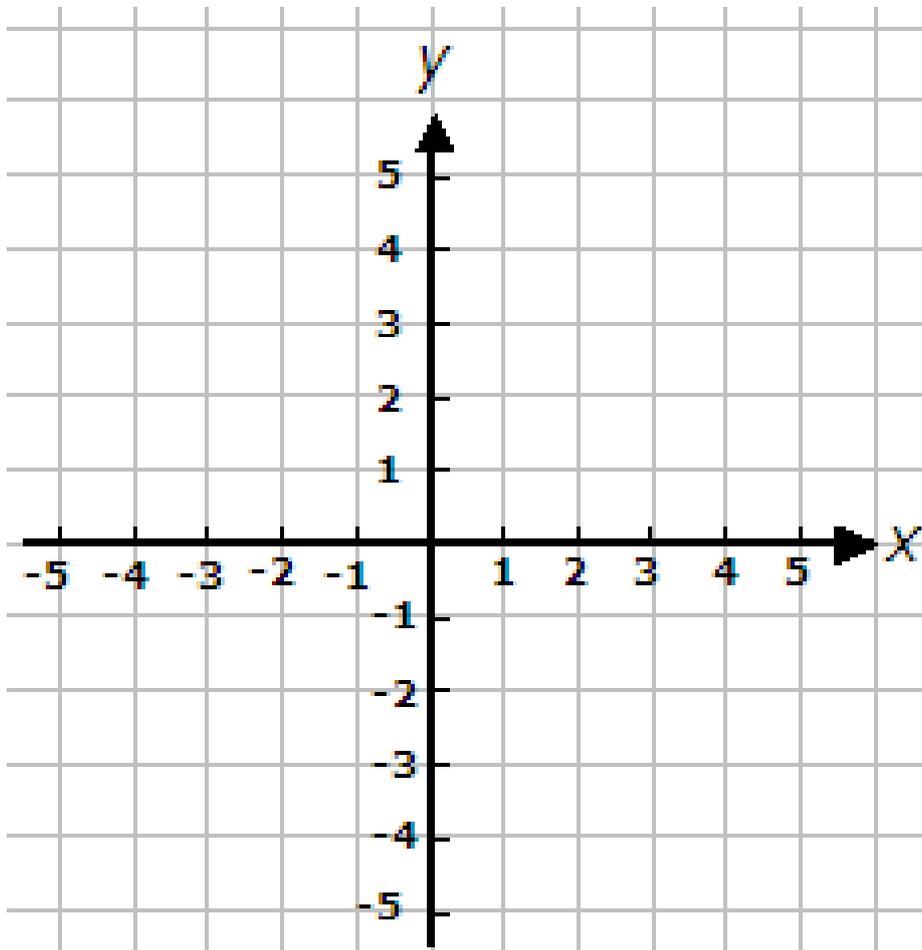All questions on this paper must be answered.

Write the answers in the space below each question.

Show **ALL** working for each question.

1. On the grid below shade the area which is bounded by the following inequalities

$$x < 1, \quad y < 0, \quad y < x + 1, \quad x + y > -3$$

Clearly label each inequality and shade the bounded region.

8 marks

2. Find the value of x

$$\frac{x}{3} + \frac{x}{2} = 2 - \frac{x}{6}$$

$x =$ ………………

3 marks

3. Solve the simultaneous equations

$$4x - 3y = 4$$
$$4y - 3x = -6.5$$

$x =$ …………………….

$y =$ ……………………..

5 marks

Total for this page: 8 marks

4. (a) Factorise $k^2 - 13k + 30$

....

2 marks

(b) Simplify the following expression *6n – 3n x 2n +n*

....

2 marks

5. Expand and simplify

$$(a^2 + ab + b^2)(a - b)$$

....

3 marks

6. Rearrange to make *x* the subject of the formula

$$y = \frac{a - bx}{1 + ax}$$

....

4 marks

Total marks for page: 11 marks

7. Two similar solids have heights of 6 cm and 9 cm. Given that the volume of the smaller solid is 88 cm^3, calculate the volume of the larger solid.

……………………….

4 marks

8. A train, 160 m long, is travelling at 24 kph. Find how many seconds it will take to pass completely over a bridge which is 720 m long.
Give your answer to a whole number.

Time…………………………..seconds

6 marks

Total marks for page: 10 marks

9. Omar borrows $1 640 with compound interest of 5% per year. He has to pay the money back in two equal instalments (payments) - one payment at the end of year one, and the second payment at the end of year two.
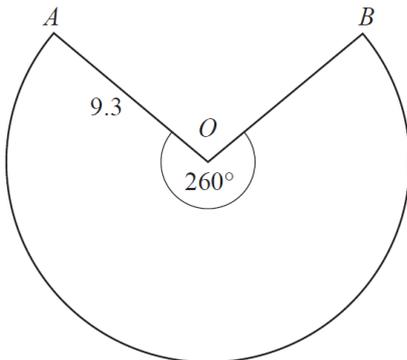
   Calculate the value of each instalment.

   ………………………..

   4 marks

10. From the diagram below calculate

    Use 3.14 as the value of π

    a. The length of the arc AB (Give your answers to the nearest centimetre)
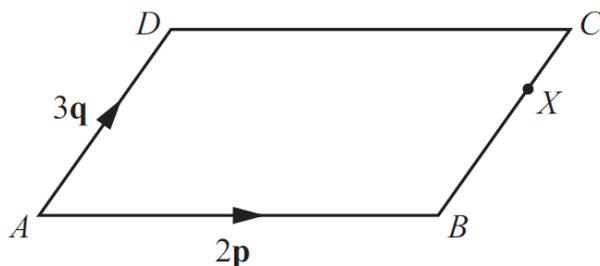   b. The area of the sector

a………………………cm (3 marks)

b………………………cm² (3 marks)

Total marks for page:10 marks

11. From the diagram below find the following in terms of p and q

   X is the point on BC such that BX : XC = 2 : 1

   a. $\overrightarrow{AC}$
   b. $\overrightarrow{AX}$
   c. $\overrightarrow{XD}$

a.………………………..2 marks

b.………………………..2 marks

c.………………….……2 marks

12. The table shows information about rice production in four countries in 2016.

Country	Number of kg per year
China	
Taiwan	8.52×10^6
Indonesia	9.2×10^6
Japan	1.85×10^7

a. In 2016 China produced 48 million kg of rice. Enter this amount on to the table in standard form.

1 mark

b. How many more kilograms of rice were produced in Japan than in Taiwan?

………………………..

4 marks

Total marks for page: 11 marks

13. 5640 is divided between three people Afifa, Bobur and Cute so that A receives $100 more than B, and B receives $\frac{3}{4}$ of the amount C receives.

Find the amount that each receives.

Afifa……………………..
Bobur……………………..
Cute……………………..
6 marks

14. **Pina Colada** cocktails are made by mixing pineapple juice and coconut juice in the ratio 3:1

Alloa Havana cocktails are made by mixing pineapple juice and coconut juice in the ratio 1:3

A litre of Pina Colada cocktail is mixed with 500ml of Alloa Havana cocktail by mistake.

How much pineapple juice needs to be added to the mixture to make it Pina Colada again?

…………………………
6 marks
Total marks for page:12

END OF TEST
DO NOT WRITE ON THIS PAGE