WESTMINSTER INTERNATIONAL UNIVERSITY IN TASHKENT
An Accredited Institution of the University of Westminster (UK)

UNIVERSITY OF WESTMINSTER

Mathematics Entrance Examination

4 June 2019

1. **You have 1 hour and 10 minutes for the exam.**
2. **Answer all questions.**
3. **No calculators are allowed.**
4. **Write your answers in the spaces below the questions. Answers with no evidence of calculations will not score any marks. Workings and answers written on any other page will not be marked.**

Please note additional requirements:

a) You are not allowed to leave during the first 30 minutes or the last 15 minutes of the examination.
b) If you are left handed or ambidextrous with left hand preference you should inform the invigilator before the start of the exam so that seating arrangements can fit your requirements.
c) You are not allowed to talk, to whisper, to turn around or to look at another candidate's examination, all of which are offences and you will be penalized. If you commit this offence you will be given a single written warning; after which if you commit a further offence, you will be reported to an assessment board without a right of appeal or refund of the exam administration fee.
d) No scrap paper may be used. All work must be written in the exam booklet.
e) You can use non-erasable blue or black pen only. Any answers written in pencil may not be marked.
f) You cannot use whiteout/correction fluid. If you use this material to correct any of your answers they may not be marked. If you make a mistake, you should simply draw a line through the mistake with pen and continue.
g) You cannot borrow another student's stationery or materials.
h) If your pen runs out of ink, you may request a replacement from the invigilator. No other stationery or materials may be provided for you by the invigilator.
i) If you are found to have any unauthorized exam related materials during the examination this will constitute an offence and you will be disqualified from the exam without a right to claim the reimbursement of the exam administration fee.
j) If you are caught cheating in the examination, you will be disqualified from the exam without a right to claim the reimbursement of the exam administration fee.
k) Failure to show contents of your pockets or any other containers to the invigilators will be considered as an offence and you will be disqualified from the exam with no right of appeal or refund of the fee.
l) All mobile phones and other electronic devices must be switched off and left at a place indicated by the invigilators. If you are found to have a mobile phone or other electronic device (switched on or off) on you during the exam, this will be considered as unauthorised examination materials and you will be disqualified from the exam without a right of appeal or refund of the fee.

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. Nina spends 40% of her birthday money on a bracelet and $\frac{1}{2}$ of the remainder on perfume.

   She has $16.50 left. How much birthday money did she have in the first place?

.....

(3 marks)

2. The sum of 2 numbers is 64. One number is 7 times as big as the other.

   What is the bigger number?
   (You MUST show working)

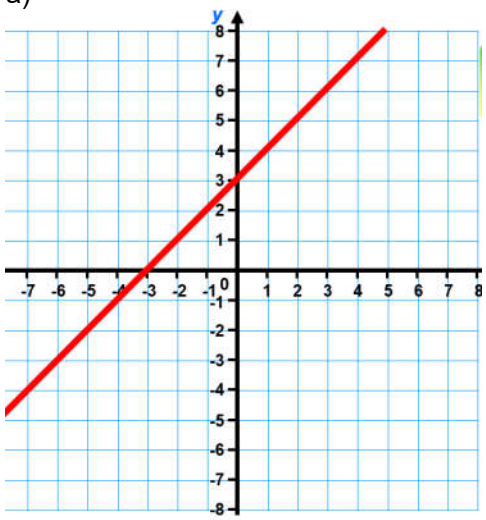
.....

(2 marks)

Total for page: 5 marks

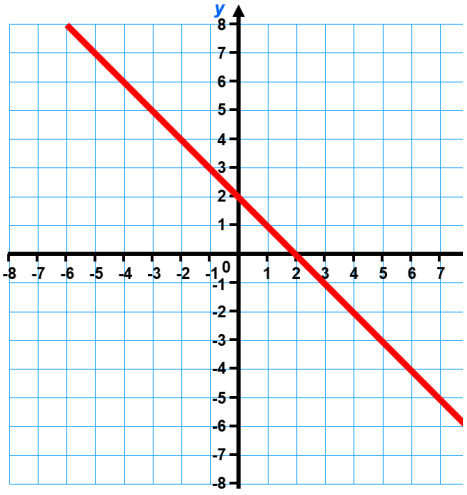
3. Give the equation of each straight line or curve

a)



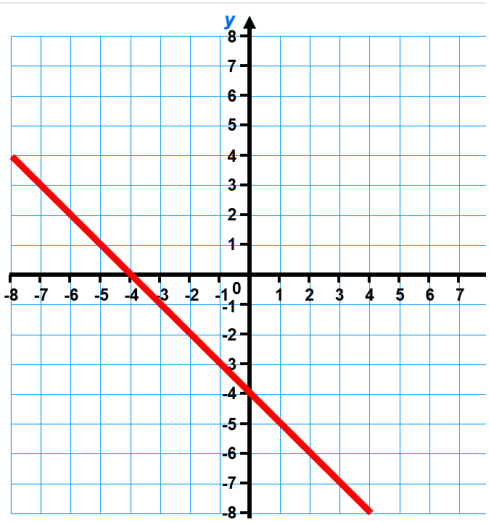
Equation……
(2 marks)

b)



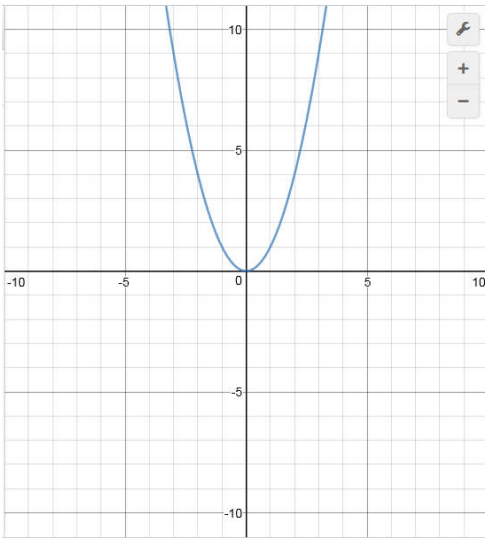
Equation……
(2 marks)

c)



Equation……
(2 marks)

d)



Equation……
(2 marks)

Total marks for page: 8 marks

4. Given that z $\propto x$, complete the table

x	1	3		5.5
z	4		16	

(4 marks)

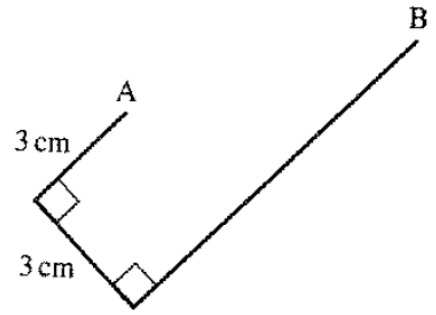
5. When 3 litres of oil is removed from an upright cylindrical can, the level falls by 10 cm.
   Find the radius of the can.
   Use 3 as the value of π

……

(5 marks)

Total marks for page: 9 marks

6. A thin wire of length 18cm is bent in the shape shown.

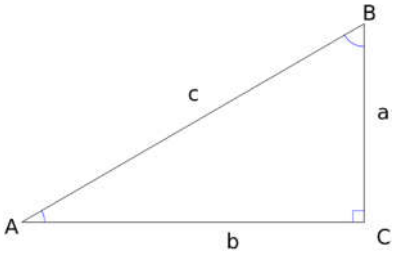


Calculate the length from A to B to 1 decimal place.

……..

(4 marks)

7. The most well-known right angled triangle is the 3,4,5 triangle ($3^2 + 4^2 = 5^2$)



Using Pythagoras' theorem, complete the following table (2 marks each)

a	*b*	*c*
3	4	5
5	12	
7	24	
	40	41

(6 marks)

Total marks for page: 10 marks

8.a)Simplify as far as possible

$$\frac{7a^2b}{35ab^2}$$

……..

(2 marks)

b).Simplify to its lowest form

$$\frac{x^2}{x^2+2x} \div \frac{x}{x+2}$$

……

(2 marks)

c). Complete

a) $\frac{x^2}{3}$ x $\frac{\quad}{x} = 2x$

……..

(2 marks)

Total marks for page: 6 marks

9. On a map two points are 1.5 cm apart. In real life the points are 60 km apart.

What is the scale of the map?

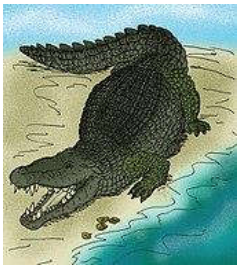
.....

(3 marks)

10.A crocodile has been eating fish from a lake.

It has eaten 70% of the fish. There are 600 fish left.

How many fish were originally in the lake?



.....

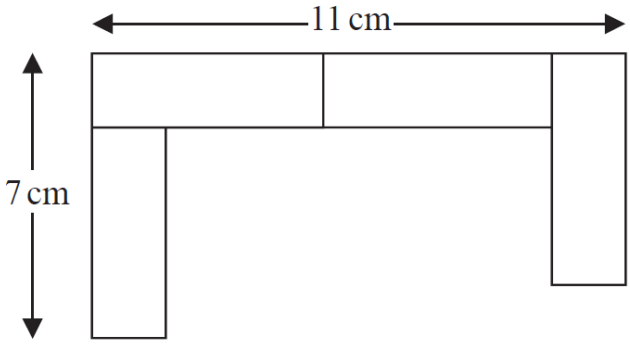
(2 marks)

Total marks for page:5 marks

11. A pattern is made using identical rectangular tiles.

Find the total area of the pattern

The diagram is not drawn to scale



……..

(4 marks)

12.a) Solve

$$3x(x+2) - x(x-2) + 6 = 0$$

……

(2 marks)

b) Factorise

$$4x^3 - x$$

……

(2 marks)

Total marks for page: 8 marks

c) Expand

$$(3 + \sqrt{2})^2$$

.....
(2 marks)

d) Simplify

$$(a^2 \times a^5 \div a^6)^3$$

.....
(2 marks)

13. Find an expression for the *n*th term of the sequence

$$\frac{1}{3} \qquad \frac{4}{9} \qquad \frac{9}{27} \qquad \frac{16}{81}$$

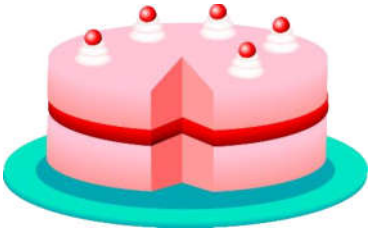
.....
(3 marks)

Total marks for page: 7 marks

14. A cake weighing 550g has three ingredients: flour, sugar and butter.

There is twice as much flour as sugar and one and a half times as much sugar as butter.

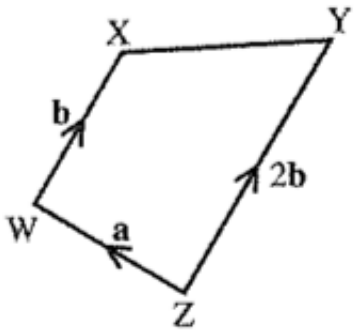
How much flour is there?



.....

(3 marks)

15. Write each of the following vectors in terms of **a, b,** or **a** and **b**



a) $\overrightarrow{ZX}$ .....1 mark

b) $\overrightarrow{YW}$ .....1 mark

Total marks for page: 5 marks

16. The land speed record in Mathsonia is 360 miles per hour.

Ana sets out to break this record.

She achieves a speed of 1 km per 6 seconds.

5 miles = 8 kilometers

You must show all your workings

Ana travelled at ……..km/hour

This is equivalent to ……..miles/hour

Did she break the land speed record?.....

Total marks for page: 7 marks

END OF TEST