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

UNIVERSITY OF WESTMINSTER

Mathematics Entrance Examination

23 April 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. a) Zahid says that $\frac{13}{24}$ can be converted into a terminating decimal. Anya says that the fraction converts to a recurring decimal. Who is correct? You must show your workings.

.....

(2 marks)

b) Work out

46.2÷ 0.03

.....

(1 mark)

c) Work out

$8\frac{7}{10} + 3\frac{1}{3}$

.....

(1 mark)

(Total for page: 4 marks)

2. a) Expand and simplify $(x-2)(x+10)$

.....

(2 marks)

b) Solve the simultaneous equations

$$4x+7y=1$$
$$3x+10y=15$$

x =.....

y = ...

(4 marks)

c) Factorise

$$x^2+3x-10$$

.....

(2 marks)

(Total for page: 8 marks)

3. A, B and T are points on the circumference of a circle, centre O.

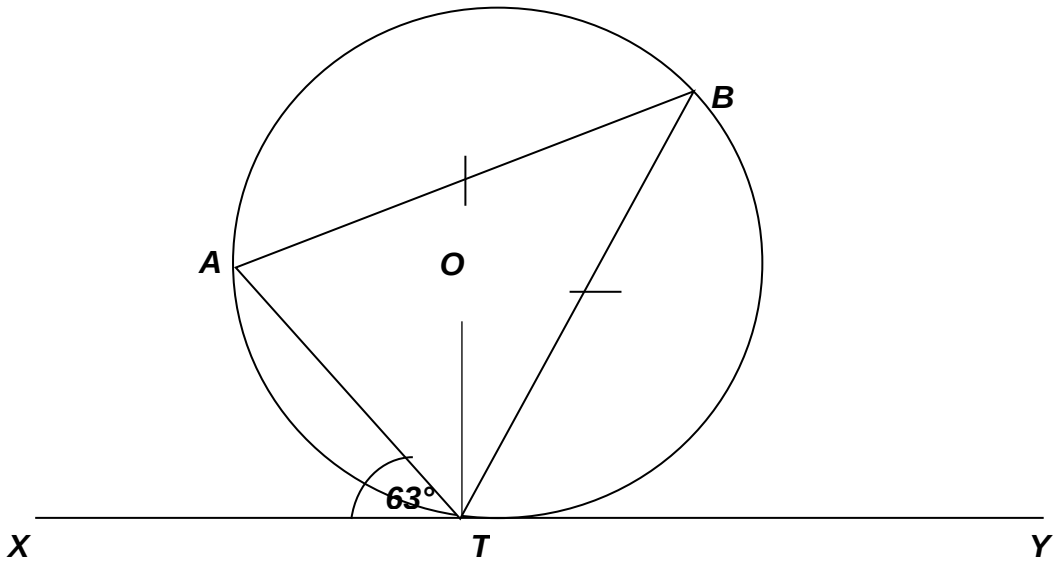
The line XTY is the tangent at T to the circle.

AB = TB.

Angle XTA = 63°.

Calculate the size of angle OTB.

Give a reason for each stage in your working.



……..

(Total for page: 4 marks)

4. a) There are 5×10^9 red blood cells in 1ml of blood.

Calculate, in standard form, the number of red blood cells in 3.25 litres of blood.

……..

(3 marks)

b) **a** is directly proportional to **b**, when **a** = 5, and **b** = 8. What is the value of **a** when **b** = 24?

……..

(4 marks)

(Total for page: 7 marks)

5. a) Wilhelm has 100 cards.

There is a whole number from 1 to 100 written on each card.

Wilhelm puts a **T** on every card that has a multiple of 3 on it.

He puts an **F** on every card that has a multiple of 5 on it.

Work out how many cards will have both a **T** and an **F** on them.

……

(3 marks)

b) Find the value of the 18th term in this sequence

$$\frac{1}{2}n - 3$$

……

(1 mark)

(Total for page: 4 marks)

6. Three hairdressers received $57.40 in tips to share between them. They share this money in the ratio of the amount of time each of them worked. Sasha worked for $2\frac{1}{2}$ hours. Munisa worked for 3 hours and Raya worked for $4\frac{1}{2}$ hours. Calculate the amount of money each hairdresser gets.

Sasha…….

Munisa……..…….

Raya……..

(Total for page : 4 marks)

7. Given that 1793 x 185 = 331 705

Write down the value of

a) 1.793 x 185

……

(1 mark)

b) 331 705 ÷ 1.85

……..

(2 marks)

c) Make a the subject of the formula

$$\frac{T(M-a)}{E} = F$$

a = ……

(2 marks)

(Total for page: 5 marks)

8. The diagram below shows a piece of wood.

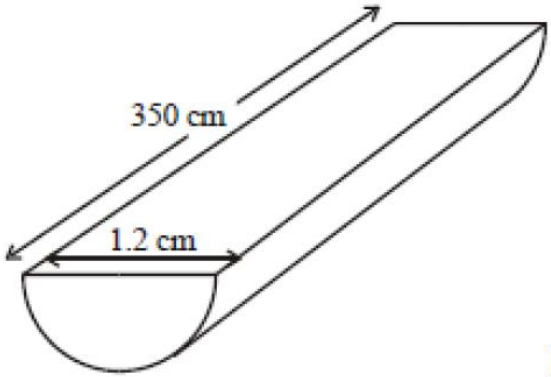


Diagram **NOT** accurately drawn

The diagram shows a piece of wood.

The wood has a diameter of 1.2 cm and a length of 350 cm.

Calculate the surface area of the wood.

Use 3.14 as the value of π

State the units in your answer.

(Total for page: 5 marks)

9. Paul, Kachi and Ann each played a game of darts.

Paul's score was four times Kachi's score.

Ann's score was half of Paul's score.

Write down the ratio of Pauls's score to Kachi's score to Ann's score.

……..

(2 marks)

10. If the cost of 5.7grams of platinum is $15960, work out the cost of 4.6 grams of platinum.

……

(2 marks)

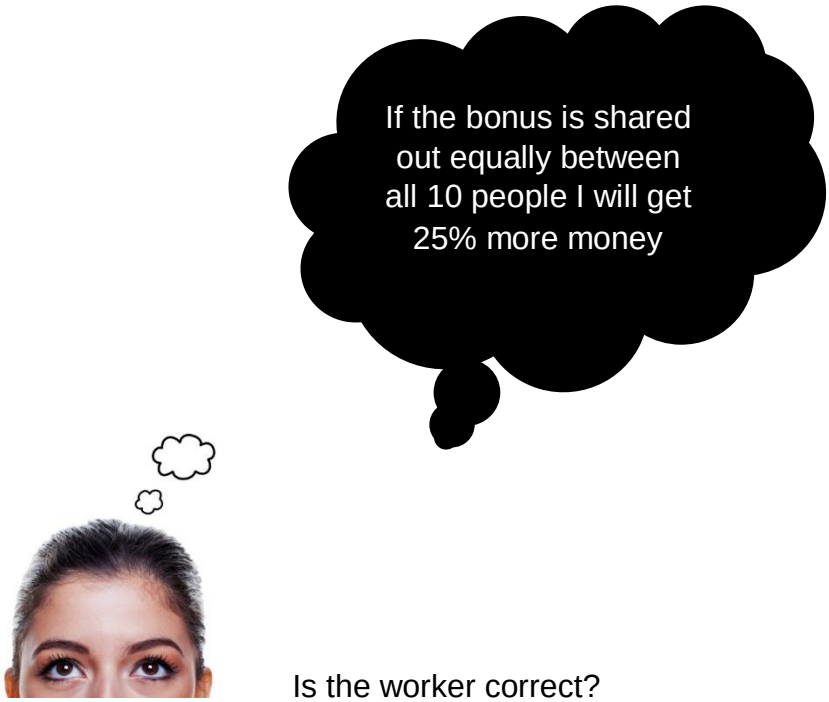
Total marks for page: 4 marks

11. A bonus of $4200 is shared by 10 people who work for the Westminster Coffee Company,

40% of the bonus is shared equally between 3 managers.

The rest is shared equally between 7 café staff.

One of the café staff says



Is the worker correct?

You must show how you get your answer.

……..

Total marks for page: 5 marks

12. (a) On the grid on the next page draw the curve of

$y = 2x^2 + 3$

clearly showing the minimum point.

(3 marks)

(b) Use the same axes and draw the line $y= 3x + 5$

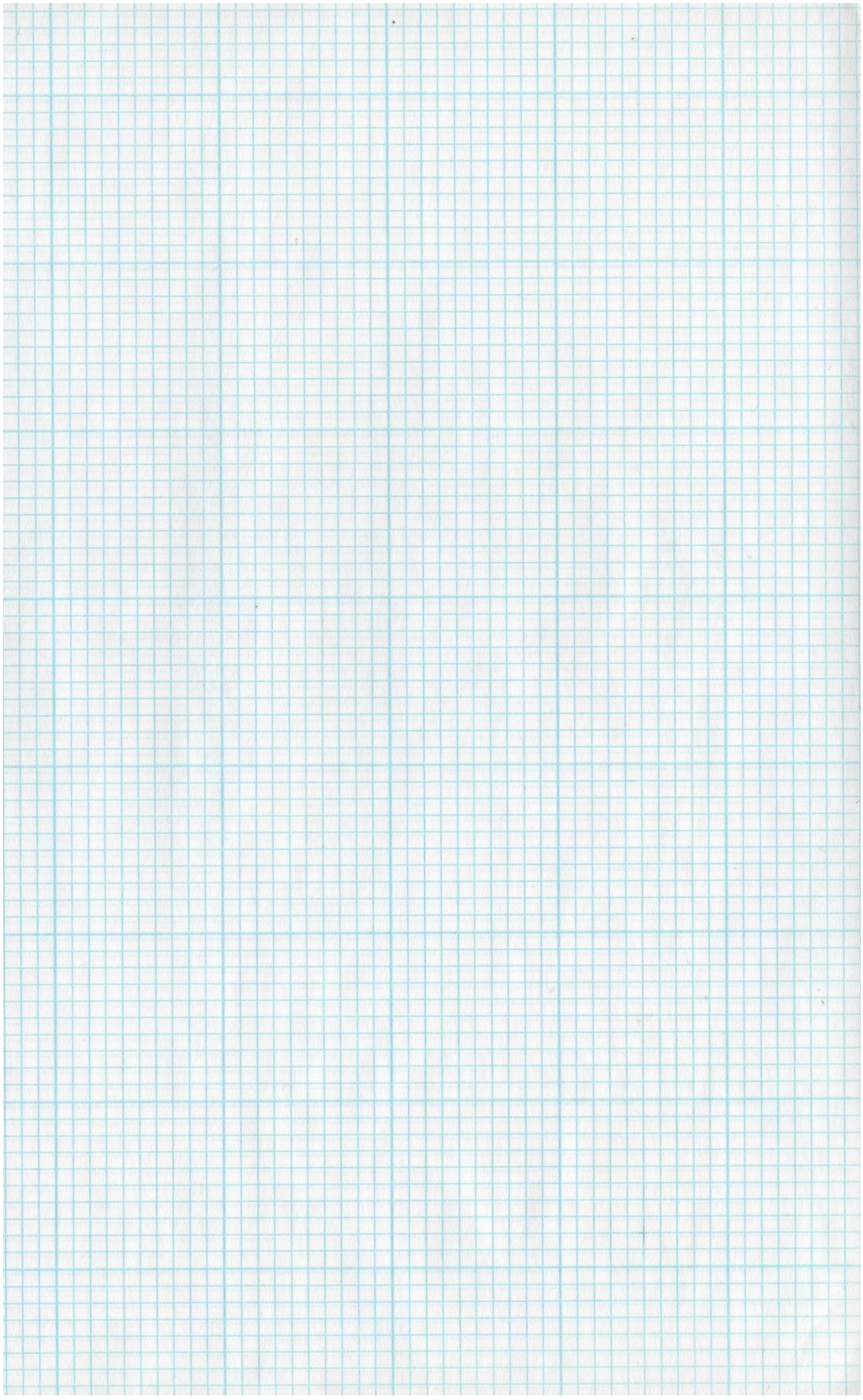
(1 mark)

(c) From the graphs, find the values of x and y that satisfy these equations:

$y= 2x^2 + 3$ and $y = 3x + 5$

x =…….. y = ……. (2 marks)

x = …….. y = …… (2 marks)



(Total for page: 8 marks)

13. There are 130 students on a Sports course

Each student studies one of football or tennis or basketball

96 of the students are women

12 of the women study football

73 of the students study tennis

55 of the women study tennis

9 of the men study basketball

How many of the students study football?

……..

(3 marks)

14. A Formula 1 sports car travels at 213 km per hour.

How many seconds does it take for the car to travel 1 km?

Give your answer to the nearest whole second

……

(4 marks)

Total marks for page: 6

15.

Michel changes £450 to euros.

The exchange rate is £1 = 1.16 euros.

a) Change the £450 to euros

……..

(2 marks)

When he is in Paris, Michel uses his credit card to pay for a watch costing 850 euros.

He has to pay a bank charge of £3.50 for using his credit card as well as the cost of the watch.

b) Work out the total cost, in pounds(£), of the watch and the bank charge.
Give your answer to 2 decimal places.

……

(4 marks)

Total for page: 6 marks

END OF TEST

DO NOT WRITE ON THIS PAGE