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

UNIVERSITY OF WESTMINSTER

ONLINE MATHEMATICS ENTRANCE EXAMINATION

DATE: 23rd JUNE 2020

TIME: 16.00-17.30

1. You have 1 hour and 30 minutes for the exam.

2. You must answer all questions.

3. No calculators are allowed.

4. Type your answers in the spaces below the questions.

5. Answers with no evidence of calculations will not score any marks. Workings and answers written on any other page will not be considered.

6. You will need a computer connected to high speed Internet and stable electricity (You cannot take online math entrance exam on mobile phone).

Please note additional requirements:

7. Applicant will be automatically disqualified from the examination and will receive a score of 0 for the exam and exam administration fee payment will not be reimbursed:
   a) If he/she leaves the room during the examination.
   b) If he/she talks, whispers, or turns around.
   c) If he/she found to have any unauthorized materials during the examination
   d) If he/she caught cheating in the examination.
   e) If he /she fails to show contents of his/her pockets or any other containers to the invigilators.
   f) If he/she is found to have a mobile phone or other electronic device (switched on or off) on his/her room/table during the exam.

8. During the examination period, any technical problems including poor internet connection from applicant's side that may cause an applicant to leave the examination environment is under the applicant's responsibility.
9. Applicant *cannot* re-join the exam and continue the examination process. Once you leave the examination or you disconnect, you cannot continue the exam.
10. Invigilator may conduct room security checks at any point during your exam. You must perform all requested security checks. Loss of time during these security checks cannot be made up.
11. Please follow detailed exam instruction sent to applicant's personal account via admission system.
12. Applicant has to follow the instruction strictly during the examination.

Applicant ID: _____

All questions on this paper must be answered.

Write the answers in the space below each question.

Working must be shown for **all stages** of the questions.

1.

Bags of sweets at the cinema come in three sizes; small, medium and large.

Which size bag is the <u>best value for money</u>?

60g
$1.49

150g
$3.99

250g
$5.99

(3 marks)

2.

Solve this simultaneous equation

$$5x - 7y = 27$$

$$3x - 4y = 16$$

(3 marks)

3.

Maya is tiling a bathroom floor. She is using rectangular tiles 105 mm x 148 mm.

To fit an awkward (not regularly shaped) corner she needs to reduce the size of a tile.

She uses a scale factor of 0.8 to reduce the length of each side of the tile.

What is the area of the tile when she lays it on the floor?

Give your answer to the nearest whole number.

(3 marks)

4.

A sequence has the first four terms

$$\frac{1}{2} \quad \frac{4}{5} \quad \frac{9}{10} \quad \frac{16}{17}$$

a) Find the *n*th term of the sequence

(2 marks)

b) What is the 10th term of the sequence?

(1 mark)

5.

The Martin family want to go to Euro Disney in Paris for a holiday.

The costs are shown in the table below.

GREAT DEAL! 35% OFF IF YOU BUY IN FEBRUARY

	Adult (Age 18+)	Junior (Age 12-17)	Child (Age 11 and under)
1 day ticket	€55	€42	€26
2 day ticket	€90	€70	€45
3 day ticket	€130	€95	€62

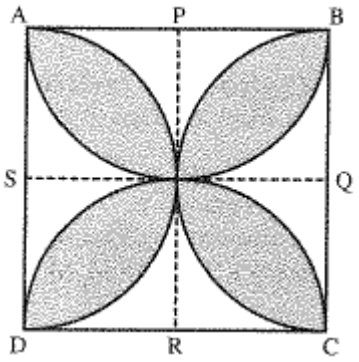
Mr. and Mrs. Martin have one son aged 13 and twins aged 9. They want to go to Euro Disney for three days in February. They also need to book one family room in a hotel for two nights at €152.50 per night. (There is no discount on the accommodation)

How much will the holiday cost altogether?

(5 marks)

6.

ABCD is a square of side 14 cm. Find the area of the shaded part.
Use $\frac{22}{7}$ as the value of π.



(6 marks)

7.

a) On a map a distance of 36 km is represented by a line of 1.8 cm.
What is the scale of the map?

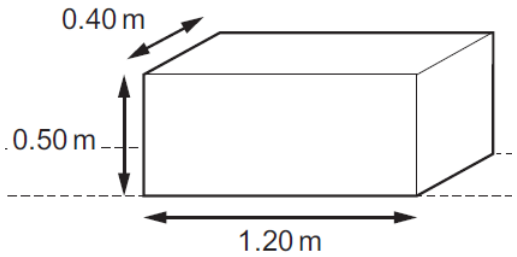
(2 marks)

b) If the ratio *x:z* = 1:6 and the ratio *y:z* = 2:5. Find the ratio *x:y:z.*
Give your answer in the simplest form.

(4 marks)

8.

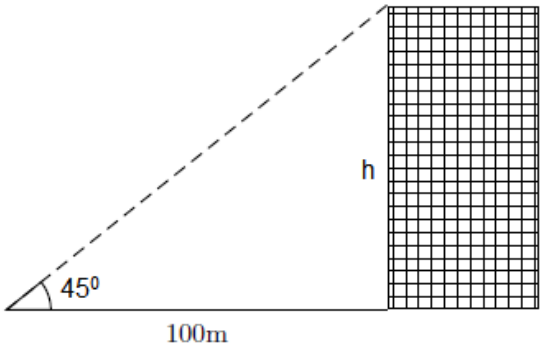
Anna is going to paint the *surface area* of a concrete block. She wants to paint the block three times. She has 1 litre of paint. She knows that 1 litre of paint covers 5 m^2.
Does Anna have enough paint?



(4 marks)

9.

a) Find the height of the building.



(2 marks)

b) Simplify, where tgx and $ctgx$ are trigonometric functions ($tan(x)$ and $cot\ (x)$)

$$(tgx + ctgx)^2 - (tgx - ctgx)^2$$

(3 marks)

10.

The tortoise and the hare left the START line of a race at the same time.

The course is 4 km long.

Tortoise walked at 5 m per minute. The hare ran at 0.5 km per hour.

After 1 hour the hare had a rest and went to sleep for 4 hours.

When he got up he continued to run at 0.5 km/h.

Who won the race and by how many minutes?

(4 marks)

11.

The density of liquid **A** is 1.09 g/cm^3. The density of liquid **B** is 0.97 g/cm^3.

30 litres of liquid **A** are mixed with 64 litres of liquid **B** to make a quantity of liquid **C**.

What is the density of liquid **C**? (*Give your answer to 1 decimal point).*

(4 marks)

12.

a) Factorize

$$6x^2 - 19x + 3$$

(2 marks)

b) Expand and simplify

$$(3x + 1)(x + 2)(x - 4)$$

(2 marks)

c) If $k = -3$, $m = 1$ and $n = -4$ find the value (in simplest form) of

$$\frac{k + m + n}{k^2 + m^2 + n^2}$$

(2 marks)

13.

a) Make a the subject of the formula

$$\frac{M\,(a+B)}{N} = T$$

(2 marks)

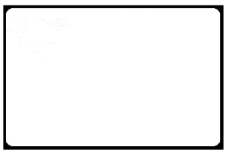
b) Complete these equations

$$\frac{x^2}{3} \times \frac{\boxed{?}}{x} = 2$$

(2 marks)

14.

The perimeter of this rectangle is 24 cm. Form an equation and find the value of x



$\frac{2}{x}$

$\frac{5}{x+1}$

(4 marks)

15.

Sort these into three pairs of equivalent expressions

A $\frac{x^2}{3x}$ B $\frac{x}{2} \times \frac{x}{2}$ C $\frac{12x+6}{6}$ D $\frac{x}{5} - \frac{2}{5}$

E $\frac{2x^2+x}{x}$ F $\frac{x(x+1)}{3x+3}$ G $\frac{x-2}{5}$

Pair 1…….

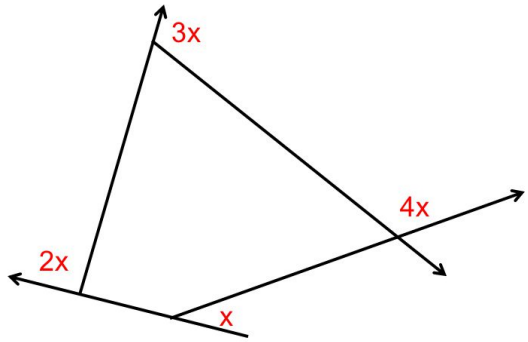
Pair 2…….

Pair 3……. (2 marks each)

(6 marks)

16.

Find the value of x



(4 marks)

END OF TEST