

Westminster International University in Tashkent

Mathematics Entrance Examination

26th April 2018

- i. Time allowed: One hour ten minutes
- ii. Answer all questions.
- iii. No calculators are allowed.
- iv. All your working must be presented on the same page as the question. 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:	
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All questions on this paper must be answered.

Write the answers in the space below each question.

Show **ALL** working for each question.

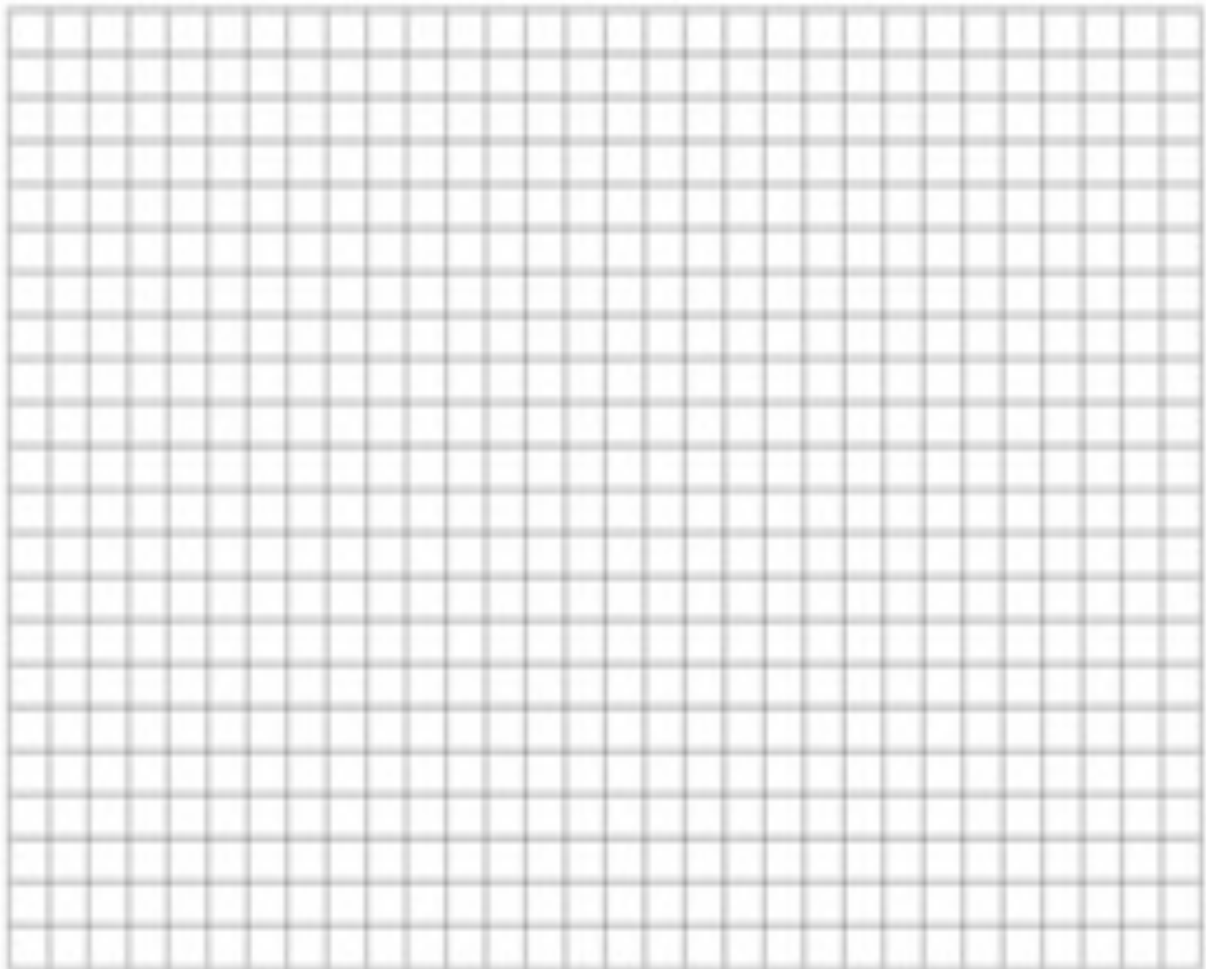
1. a) Complete the table of values for $y = x^2 + x$

x	-3	-2	-1	0	1	2	3
y				0			

3 marks

b) On the grid, draw the graph of $y = x^2 + x$

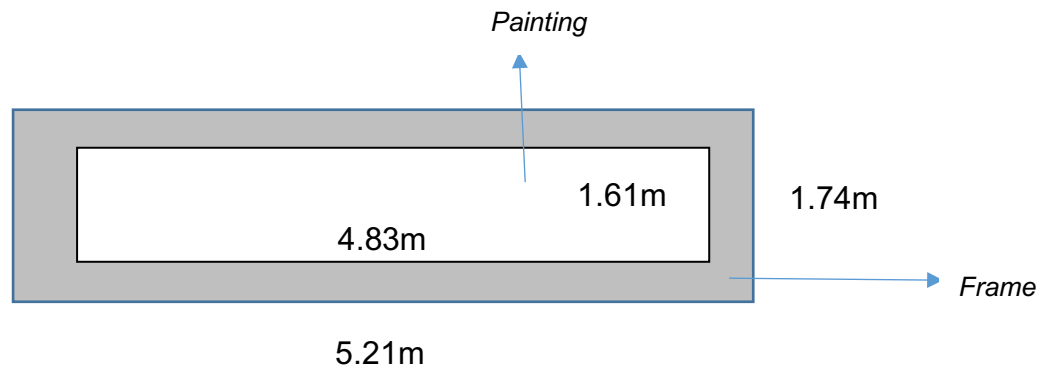
You must choose an appropriate scale and label the axes correctly



4 marks

Total marks for page:7

2. A large painting is going to be framed.
Here is a sketch of the wooden frame showing the internal and external lengths of the frame.
What is the area of the wood which is needed to make the frame?
Give your answer to 2 significant figures



.....

3 marks

Total marks for page:3

3. Mr Gorkhan wants to build a pond in his back garden.

The pond is going to be **circular** (round). It must fit into a 6m x 8m space

What is the largest surface area the pond can have?

Use **3.14** as the value of π

Give your answer to 2 decimal places with appropriate units

6m



8m

.....

4 marks

Total marks for page:4

4. Give that: $a = \frac{3}{4}$, $b = \frac{2}{5}$, $c = \frac{1}{3}$ work out

(i) a^2

(ii) $a - b$

(iii) $\frac{b}{c}$

(iiii) $\frac{1}{b} - \frac{1}{a}$

(i).....1 mark

(ii)..... 2 marks

(iii).....2 marks

(iv)..... 2 marks

Total marks for page:7

5. Simplify fully

a) $\frac{x^2+3x-4}{2x^2-5x+3}$

.....

3 marks

a) $5x + 2y = 13$
 $2x + 6y = 26$

.....

3 marks

b) Write $\frac{4}{x+2} + \frac{3}{x-2}$ as a single fraction in its simplest form

.....

3 marks

6. The 8th hole at a famous golf course is 420m in length.

How long will it appear on the plan of the course which has a scale of 1:8000?



.....

3 marks

7.

a) n is an integer.

Prove algebraically that the sum of $\frac{1}{2}n(n+1)$ and $\frac{1}{2}(n+1)(n+2)$ is always a square number.

.....

2 marks

b) Show that $\frac{6-\sqrt{8}}{\sqrt{2}-1}$ can be written in the form $a + b\sqrt{2}$ where a and b are integers.

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2 marks

Total marks for page:7

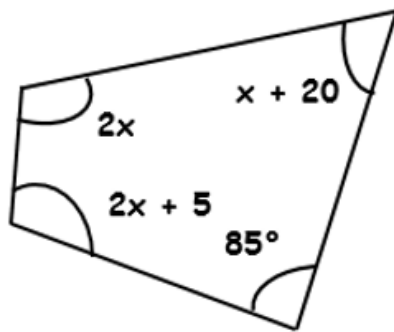
8. Work out the following and give your answer in standard form

$$(7 \times 10^{22}) + (7 \times 10^{20})$$

.....

2 marks

9. Find the value of the largest angle in this polygon

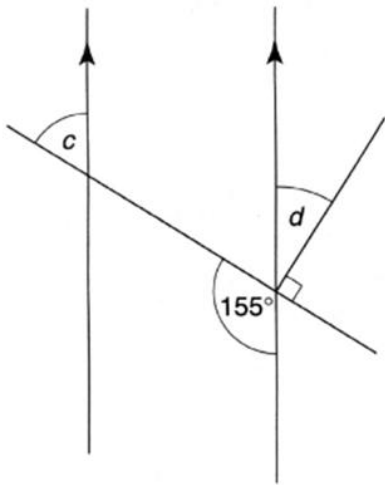


Largest angle is

4 marks

Total marks for page:6

10. Find the values of c and d .
Give reasons for each value you find.



$c = \dots\dots\dots$

$d = \dots\dots\dots$

3 marks

11. y is directly proportional to x

$y = 2$ when $x = 5$

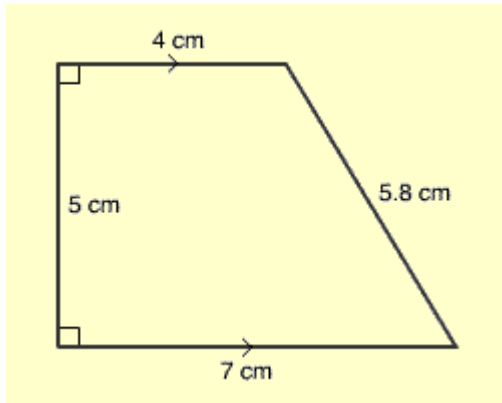
Find y when $x = 6$

$y = \dots\dots\dots$

2 marks

Total marks for page:5

12a) Find the area of this trapezium



.....

2 marks

b) What would be the area of a **similar** trapezium with a base of 10.5 cm?

Give your answer to the nearest whole cm^2

.....

3 marks

Total marks for page:5

13a) Rearrange this formula to make p the subject

$$d = 4(2p - 3q)$$

.....

2 marks

b) Solve $-6 < 2x \leq 4$

.....

2 marks

c) Given that x is an integer, write down the possible values of x

.....

2 marks

Total marks for page:6

14. Caren sells her motor scooter for \$600. She makes a 20% profit on the price she paid for it.

What price did she originally pay for the scooter?



.....
2 marks

15. Find the missing index number

a) $\sqrt{80} = 80^a$

$a = \dots\dots\dots$

1 mark

b) $\frac{1}{\sqrt{3}} = 3^b$

$b = \dots\dots\dots$

2 marks

c) $(\sqrt{2})^3 = 2^c$

$c = \dots\dots\dots$

2 marks

Total marks for page:7

16. Pritti owns a clothes shop.

She buys 60 pairs of jeans to sell in her shop. Pritti pays \$8 for each pair of jeans

She sells $\frac{1}{4}$ of the jeans for \$16 per pair.

She then has a sale.

She sells all the jeans that are left for \$10 each pair.

What is the total amount of **profit** that Pritti made?

You **MUST** show all your workings.



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4 marks

Total marks for page:4

END OF TEST

DO NOT WRITE ON THIS PAGE