



**WESTMINSTER**  
INTERNATIONAL UNIVERSITY IN TASHKENT

An Accredited Institution of the University of Westminster (UK)

**Entrance test**

**Mathematics**

January 2012

**Time allowed: One hour ten minutes**

**Answer all questions.**

**It is advised that you work quickly and that you leave behind questions that are taking you too long to answer.**

**You should only bring in writing material (pens, pencils, erasers, rulers).**

**No calculators are allowed.**

**All your rough calculations have to be presented. Answers with no evidence of calculations will not score any marks.**

**Use the blank pages of the exam paper to do your rough work.**

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

January 2012

**Question 1**

a) If  $p=x-11$  and  $q=x+4$ , find the value of  $x$  for which  $p^2=4q$ .

b) If  $A$  and  $B$  are the values of  $x$  you found in a), calculate  $C = \frac{100A^2 - 100B^2}{A - B}$

Answer: a)  $x =$                       and                      b)  $C =$                       .

**Question 2**

Find  $u$ ,  $v$  and  $w$  in terms of  $c$  if

$$u+v=17-c$$

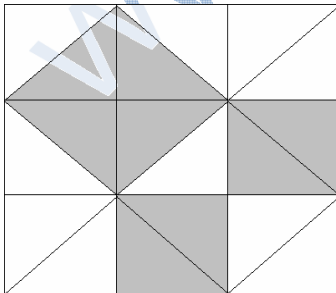
$$v+w=10+3c$$

$$w+u=3+2c^2$$

Then find the value of  $c$  for which  $u+v+w=15$

Answer:  $u =$                       ,  $v =$                       ,  $w =$                       ,  $c =$                       and                      .

**Question 3**

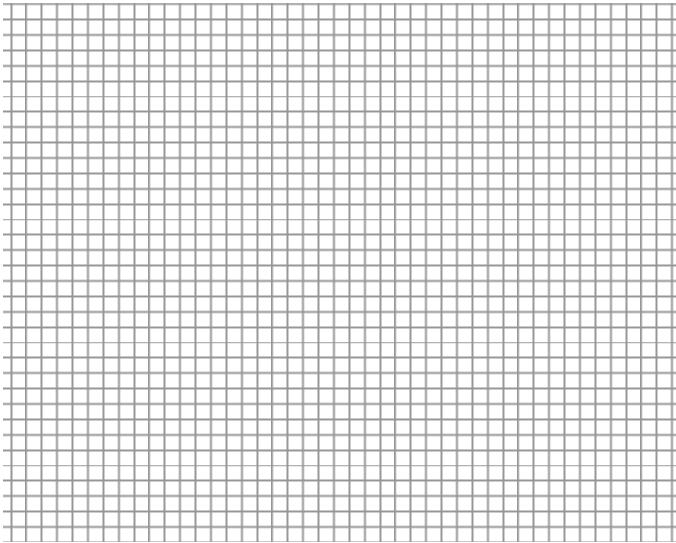


A  $3m \times 3m$  garden is split into 9 equal squares as shown. The shaded areas are to be planted once every year with flowers that cost 10,000 (ten thousand) Uzbek soum per square metre ( $m^2$ ). The white areas are to be cleared once a month, at a cost of  $X$  Uzbek soum per square metre. What is the value of  $X$  if the cost to maintain the garden is 200000 Uzbek soum per year?

Answer:  $X =$                       Uzbek soum

**Question 4**

Draw the curve  $y=x^2-2x-3$ , clearly showing the points it meets the axes and the turning point. Also, if this curve cuts the line  $y=-2x$  at A and B, find the length of AB.



**Question 5**

The 9<sup>th</sup> term of an arithmetic progression is 66 and the 51<sup>st</sup> is 444. a) Find the first term and the 2012<sup>th</sup> term and b) How many terms of this progression sum up to 60?

Answer: a) Term number 1 is =                      and term number 2012 is=                      .  
b) we need to sum                      terms.

**Question 6**

PQRS is a quadrilateral in which  $\angle PQR$  and  $\angle PRS$  are right angles. If  $PQ=12m$ ,  $QR=9m$ ,  $RS=8m$ , find a) the length of PS and b) the distance of R from PS (Hint: Calculate the area of PRS in two different ways)

Right angle= $90^\circ$

Answer: a) PS=                      m, b) distance of R from PS is                      m