



Preca College Korçë
Mathematics Entrance Exam
4th July 2016
Time: 8:00 - 10:00

Name: _____

Index number: _____

INSTRUCTIONS

* Answer all questions

* Do all your working in the space provided besides each question

* Write down the answer to each question in the space provided (*Ans.*____)

Q.1. Put 'a' subject of the formula:

(5 marks)

a) $am - n = a$

Ans. _____

b) $\frac{a+b}{a} = c$

Ans. _____

c) $\sqrt{\frac{a-1}{b}} = c$

Ans. _____

d) $\sqrt{a^2 + b^2} = p$

Ans. _____

Q.2. Factorize:

(5 marks)

a) $x^2 - 7x - 18$

b) $x^2 - 19x + 18$

c) $a^2 + 9a - 10$

d) $a^2 - 11a + 10$

e) $a^2 - 3ab - 10b^2$

Q.3. Simplify the following:

(6 marks)

a) $\frac{x^6 y^6 z^8}{x^2 y^3 z^2}$

Ans. _____

b) $\frac{15p^4q}{3pqr}$

Ans. _____

c) $\frac{6mn^6p}{9mnp^3}$

Ans. _____

Q.4. Solve:

(7 marks)

a) $2x^2 + 7x + 6 = 0$

Ans. _____

b) $2x^2 = 3x + 27$

Ans. _____

Q.5. Solve the simultaneous equations:

(10 marks)

a) $5a - 2b = -23$

Ans. _____

$3a + 4b = 7$

Ans. _____

b) $9a + 5b = 7$

Ans. _____

$8a - 3b = -31$

Ans. _____

Q.6. Work out the value of: Show your steps.

(7 marks)

a) $25^{1/2}$

Ans. _____

b) $36^{1/2}$

Ans. _____

c) $\left(\frac{4}{9}\right)^{1/2}$

Ans. _____

d) $\left(\frac{8}{27}\right)^{1/3}$

Ans. _____

Q.7. Simplify:

(9 marks)

a) $\sqrt{\frac{a^5 b^{-4}}{ab^0}}$

Ans. _____

b) $\sqrt{\frac{m^{-2} n^2}{m^2 n^4}}$

Ans. _____

c) $\sqrt[3]{\frac{c^{-2} d^4}{c^4 d}}$

Ans. _____

Q.8. Solve the following:

(10 marks)

a) $2^{x-1} = 4$

Ans. _____

b) $2^{x-1} = 16$

Ans. _____

c) $3^{3x-5} = \frac{1}{9}$

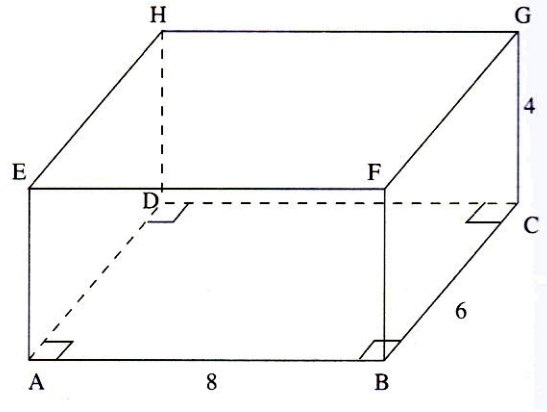
Ans. _____

d) $25^{x-1} = \frac{1}{125}$

Ans. _____

Q.9.

(9 marks)



The given diagram shows a cuboid in which $AB = 8$ cm, $BC = 6$ cm and $GC = 4$ cm. Find

- a) the length of AC Ans. _____
- b) the length of AG Ans. _____
- c) the angle between GA and AC. Ans. _____

Q.10. Suppose you have four cards, A, B, C and D placed face downwards on your table. You pick up one card and then replace it. You pick a second card and again replace it. Some of the possible outcomes of picking up the two cards are shown in the table below. (10 marks)

	A	B	C	D
A	AA			AD
B			BC	
C		CB		CD
D	DA		DC	

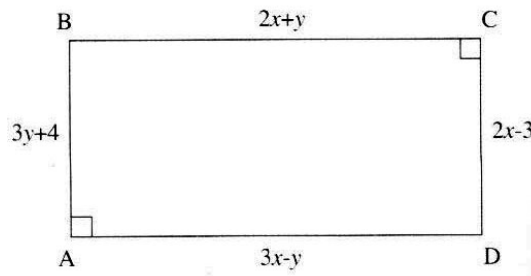
- a) Complete the table with the remaining outcomes. Ans. _____
- b) What is the probability of picking **2D** s ? Ans. _____
- c) What is the probability of the two cards being picked in **alphabetical order** ? Ans. _____

d) What is the probability of picking **at least** one C ? Ans. _____

e) What is the probability of both cards being **the same**. Ans. _____

Q.11.

(10 marks)



In the given diagram ABCD is a rectangle and the lengths of the sides are in cm.

Find:

a) The values of x and y. Ans. _____

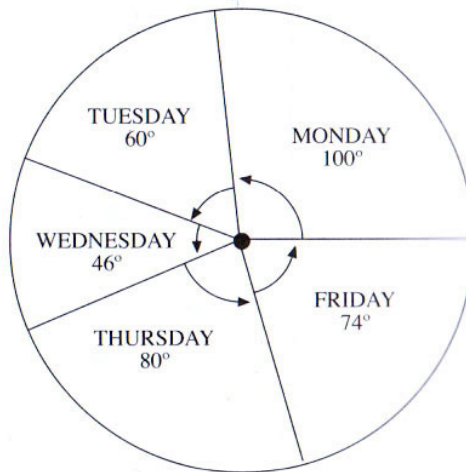
b) The lengths of AB and BC Ans. _____

c) The area of the rectangle ABCD. Ans. _____

Q.12. The given pie chart represents the absences of students in a week for a particular school.

If 23 students were absent on Wednesday.

(12 marks)



a) How many students were absent on Monday?

Ans. _____

b) How many students were absent on Friday?

Ans. _____

c) How many students were absent over the whole week?

Ans. _____

d) On the axes below, draw a Bar Chart to represent the number of students absent each day.
Use the scale of 1 cm to represent 10 students and 2 cm to represent each day.

