Preca College Korçë

Mathematics Entrance Exam

3th June 2023

Time: 8:00 – 10:00

*Name:*_____   ***Registration number:*** _____

INSTRUCTIONS TO CANDIDATES

- Answer all the questions in the space provided.
- Show all your working.

Q.1.   (7 marks)   Simplify : Thjeshtoni

(i) $\dfrac{(2x)^3}{x^{-2}}$

(ii) $a^6 \times a^4 \div a^3$

(iii) $(y^3\sqrt{x})^4$

Q.2. (6 marks)   Solve the equations: Zgjidhni ekuacionin:

(i) $7(3a - 1) = 56$

(ii) $7x - 8 = 3x + 22$

Q.3. (7 marks)   Find the value of x. Gjeni vlerën e x-it nga barazimi.

(i) $3^{2x} = 27$

(ii) $3^x + 5 = 32$

Work out the value of : Gjeni vlerën:

(iii) $3^2 + 2^{-3} - 5^0$

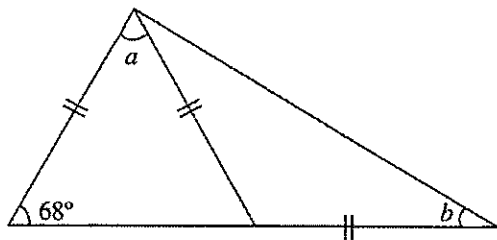**Q.4.** (8 marks)   Simplify: Thjeshtoni:

(i) $2(y - 5) + y (y^2 - 2)$

(ii) $\dfrac{4x-12}{6x^2-18x}$

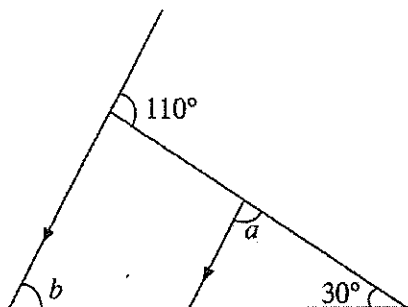(iii) $5(2a + 3) + 3(4 - 3a)$

(iv) $\dfrac{2x+9}{8} - \dfrac{x+1}{4}$

Q.5. (8 marks)   Find the values of the angles a,b: (Gjeni masën e këndeve a,b.)
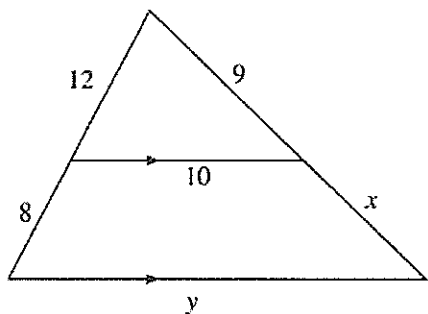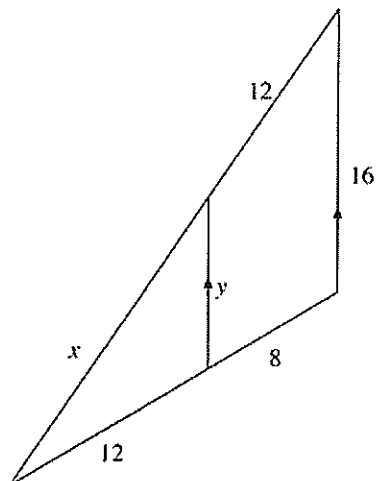
(i)

(ii)

Q.6. (8 marks)   Find the values (in cm) of x ,y : (Gjeni vlerën e x-it dhe y-it):

(i)

(ii)

Q.7. (10 marks)   Solve the system of equations: Zgjidhni sistemin:

$9y - 2x - 23 = 0$

$7y = 3(9 - x)$

Q.8. (7 marks)   A person has an annual salary (rroga vjetore) of € 15.000. The income tax (tatim mbi të ardhurat) is calculated as follows:

On the first € 2.000   the tax rate is 0%

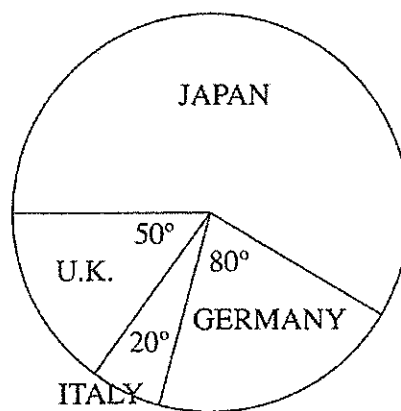On the next € 3.000   the tax rate is 10%

On the next € 4.000   the tax rate is 20%

On the remainder   the tax rate is 35%

Calculate : (i) the value (gjeni vlerën) of the tax paid on the salary.

    (ii) the tax paid as a percentage (përqindje) of the salary.

Q.9. (12 marks)   In an automobile fair (panairi i makinave) automobiles from four countries were displayed (reklamuar). The distribution of the automobiles displayed is as shown in the diagram below. If the **total number** of automobiles taking part was **1080**:

i   How many Italian automobiles were displayed?

ii How many Japanese automobiles were displayed?

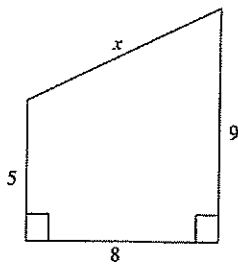iii What percentage (përqindje) of the automobiles were Japanese?

If we pick an automobile at random (rastësisht) what is the probability
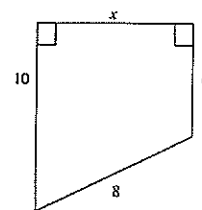
a. of it being made in U.K.

b. of it **not** being made in Germany.

Q.10. (8 marks)   Find the values (gjeni vlerën) of x (in cm) and the area (sipërfaqe), in the figures below.
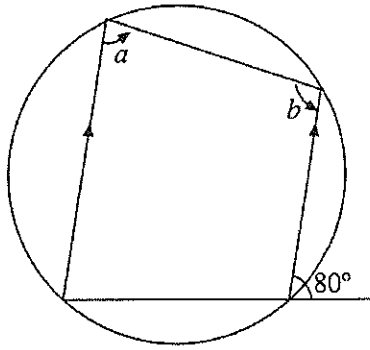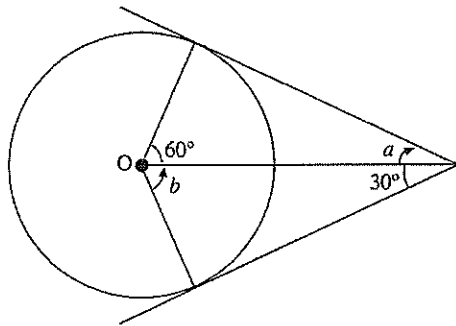
(i)

(ii)

Q.11 (10 marks)   Find the values of the angles marked a, b; (Gjeni masën e këndeve a,b).
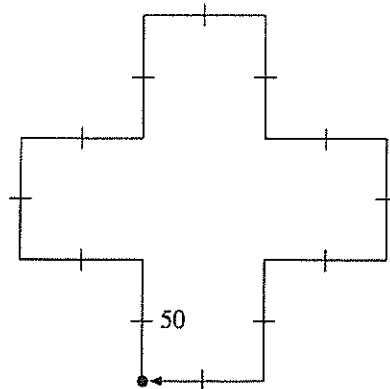
(i)

(ii)

Q.12. (11 marks)   A building company (kompani ndërtimi) bought a plot of land (truall) in the shape of a cross as shown in the figure below. Each side of the cross is 50m long.

(i)   Calculate the surface area (sipërfaqe) of this plot.

(ii)   If the land was bought at €100 per m² how much did the company pay for the whole plot?

The central space of the plot (50m by 50m) was left as open space. On the rest of the land were built five floors (pesë kate) of apartments; each apartment of surface area of 250m².

(iii) Calculate the surface area (sipërfaqe) of the first floor (kati i parë).

How many apartments could fit:

(iv) in the first floor?

(v) in the whole building?

The apartments were sold at € 100.000 each and a tax of 10% was paid on each apartment. If all the apartments were sold:

(vi) how much tax did the company pay?

Good Luck — End of Paper