Preca College Korçë

Mathematics Entrance Exam

26th June 2019

Time: 8:00 – 10:00

*Name:*_____   *Index number:* _____

INSTRUCTIONS TO CANDIDATES

- Answer all questions
- Do all your working in the space provided next to each question

1.   (5 marks)

(a) Express $\frac{7}{25}$ as a percentage

(b) Find the sum of two **prime numbers** (numbers without factors) found

between 30 and 40.

(c) Rearrange the following to make '***x***' the subject of the formula: Y = 5x + 3.

2. (3 marks)

(a) Make **'b'** the subject of the formula: $3bc + d = 5$.

(b) Write 25% as a fraction in its simplest form.

3. (4 marks)

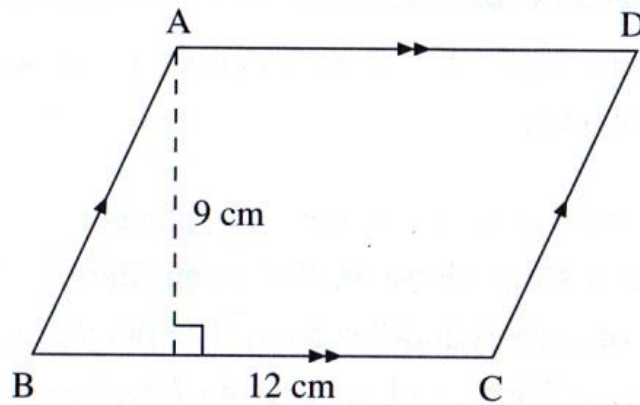(a) Find the value of $\dfrac{5a^2}{8b}$ given that a = 4 and b = $\dfrac{1}{2}$

(b) Put the following numbers in ascending order (smallest first, largest last):
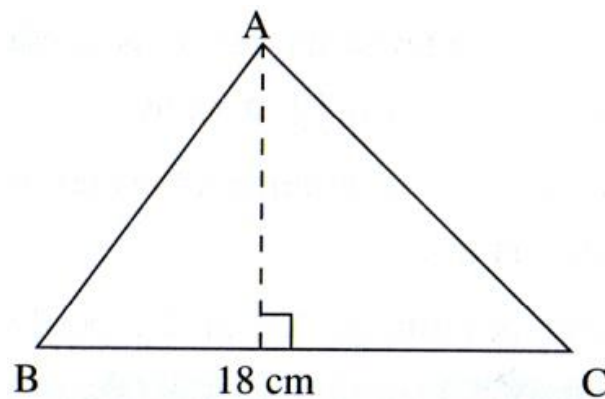
3, -7, 0.6, 9.9,√25, -3.5.

4. (4 marks)

(a.) ABCD is a parallelogram in which BC = 12 cm and the perpendicular height from A to BC is 9 cm. Find the area of ABCD.

(b) In triangle ABC, BC = 18 cm and the area is 90 cm^2.

Find the length of the perpendicular height from A to BC.

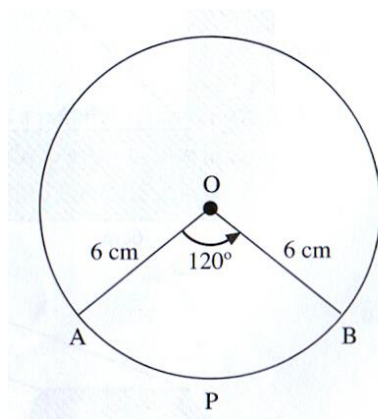5.   (5 marks)

(a) Find the value of $3fg - t^2$ when f = 5, g = -3 and t = -6.

(b) The area of a rectangle is 350 cm². One side of the rectangle is 14 cm long. Find the
    perimeter of the rectangle.

6.   (6 marks)

(a) Find the length of the arc APB;

(b) Find the area of the sector AOBP. Give your answers to 1 decimal point.

7.   (9 marks)

In a lottery, 200 tickets are sold, and 1 ticket is chosen at random. Mary buys 14 tickets and Peter buys 6 tickets. What is the probability that :

     (i)   Mary wins the lottery?

     (ii)   Peter wins the lottery?

     (iii)   Either Mary or Peter wins the lottery?

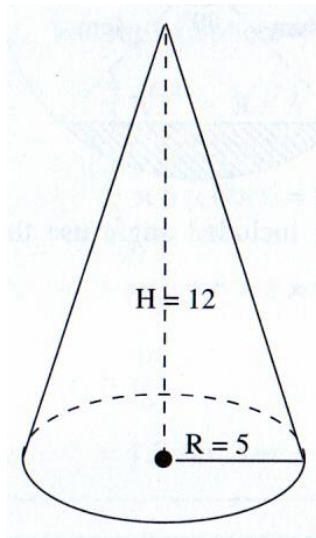8.   (10 marks)

(a) Two metal spheres with diameters 12 cm and 16 cm are melted to form another sphere. Find the *radius* of the new sphere. (Give your answer as a whole number)

(b) The diameter of planet *Mars* is half the diameter of *Earth*. How much **larger** are the **surface area** and **volume** of Earth than that of Mars?

9. (10 marks)

In the given cone, the radius of the base is 5cm and the height is 12cm.

Find (a) the curved surface area

(b) the total surface area

(c) the volume.

10. Solve the following equations: (7 marks)

(a) 7x + 4 = 88

(b) $\frac{x-4}{5}$ = 3

(c) 5(5g − 3) = 2(4g − 5) + 2

11. Make **'y'** the subject of the following formulae: (8 marks)

(a) $\frac{2}{c}$ = $\frac{1}{ay}$

(b) 4yb = 3yk − 6

(c) h = 3v - $\frac{x}{\sqrt{y}}$;

12. (6 marks)

Put the following numbers: 3,20,5,15,5,8,7, in ascending order (smallest first, largest last):

Then find the **mode**, **median**, **mean** and the **range** of these numbers.

13. (3 marks)

A ship has enough food for 100 people for 14 days. If there are 70 people on the ship, how many days will this food last?

14. (9 marks)

 Write the following in index form (example x^6):

(a) $(3^2)^5$;

(b) y^{-3} x y^5;

(c) $7^{12} \div 7^4$;

(d) Simplify $\left\{ \dfrac{24y^5}{3y^2 \text{ x } 4y^2} \right\}^2$.

15. (11 marks)

(a) The sum of €1400 is to be given as bonus (extra money) to three employees – Robert, Rebecca and Alex. Robert received the least amount. Rebecca received double the amount of Robert and Alex received double the amount of Rebecca. How much did each worker receive?

(b) A mother, *now*, is *9 times* as old as her son. In 4 years time she will be *5 times* as old as he. How old are the son and his mother *now*?

End of Paper – Good Luck