UNITED NATIONS COLLEGE I.E.D.
PREPARATORY WORKSHOP
II TRIMESTER
MATHEMATICS 7°

This workshop must be copied and solved in the mathematics notebook, as a requirement to present the competency-based test.

DELIVERY DATE: JULY 16

1. What happens when we raise a negative number to an odd exponent?
2. What happens when we have a negative exponent in a power?
3. What are the characteristics of numbers whose square root is an integer?

In the next operation.

$$\left(\frac{1}{2}\right)^5 = \frac{1}{32}$$

4. What is the number 1/2 called in potentiation?
5. What is the function of the exponent in potentiation?

Observe the following operation:

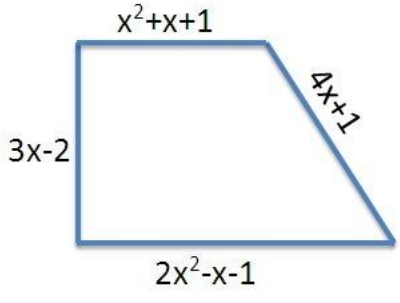
$$\sqrt{\frac{4}{25}} = \frac{2}{5}$$

6. What is the value of the root index and what is its function in the establishment?
7. In city A there are 9 neighborhoods. Each neighborhood has 9 buildings. In each building there are 9 floors. On each floor there are 9 apartments. What operation is needed to find out how many apartments there are in total in the neighbourhoods? Justify your answer
8. In city B the number of neighborhoods, buildings, flats and apartments changes to 3/4. How many apartments are there in all the neighborhoods?
9. In a video game X, the number of tests to be passed in each level is double those of the previous level. If there are 2 tests at level 1, how many are there at level 9?
10. In the video game Y the number of tests to be passed in each level is double those of the previous level. If there are 3/2 tests at level 1, how many are there at level 9?
11. Which of the two games has the highest number of tests at level 2? Justify your answer.
12. Which of the two games has the highest number of tests at level 9? Justify your answer.
13. Bacteria are tiny living beings that reproduce by dividing in half from time to time. We assume a bacterium that divides every minute. In that case, after two minutes we would have four bacteria, after three minutes eight bacteria and so on. How many bacteria would we have after 10 minutes?

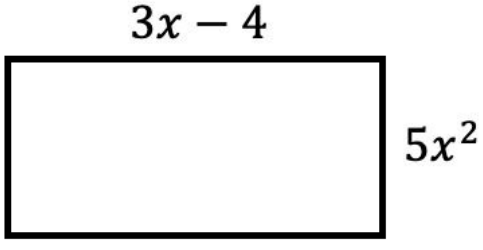
Don Jeremias has a square lot of 4/25 m2. He wants to fence his land with barbed wire. If each meter of wire costs 7000 pesos, answer:

14. How long is the side of the land?
15. How much money would you invest in buying wire?
16. A battalion of soldiers is made up of 144 people, if the number of rows is equal to the number of columns. How many soldiers are in each row and in each column?
17. The logarithm of 1/81, in base 1/9 and the logarithm of 81, in base 3, are the sides of a rectangle. What is the area of the rectangle?

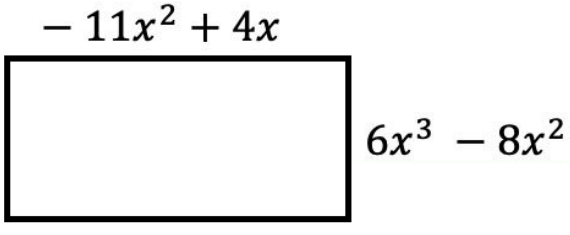
In the following figure the length of each side is represented by a polynomial.



18. What is the value of the perimeter of the figure?
19. If we take the upper side and subtract the lower side, what is the expression that is obtained?
20. A holiday club is distributed by zones. The sports area has an area of (15mn – 5m), the green zone has an area of (7mn + 10m) and the housing area has an area of (5mn + 3m). What is the total area of the club?
21. If we subtract the green zone area from the total area, what would be the area we would have left?
22. What is the area of the following figure?



23. What is the area of the following figure?



24. A rectangular tablecloth whose area is expressed as, has for length, what is the width of the tablecloth?$4\ x^2 2x$
25. The area of a rectangle is. If the length of its base is equal to, what is the height of the rectangle?$y^3+3y^2-2y-1y^2+2y$
26. How many ways can you cross a river once, if you have 1 boat, 2 boats and 3 boats?
27. A car part is sold in three stores in Medellín and in eight stores in Bogotá. How many ways can the spare part be purchased?
28. How many results can be obtained if a coin or dice is thrown?

29. John is designing a scale model of a building. The actual building is 50 meters high. If John uses a 1:100 scale on his model, what will the height of the model be?
30. What mathematical operation must be performed to find the height of the model?