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

DELIVERY DATE: November 12th

1. 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:

2. How long is the side of the land?

3. How much money would you invest in buying wire?

4. The Physical Education teacher held a contest with 4 students, put them jogging for half an hour, and measured the distance traveled by each one. Look at the distances traveled.

| LETICIA	VIVIANA
5.1 kilometres	5.25 kilometres
EDUARDO	JAVIER
5 kilometers	5,134 kilometers

In the competition, the positions were occupied according to the distance traveled, from highest to lowest. What would be the table correctly represents the position that each student occupied in the contest?

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


x^2+x+1

$4x+1$

$3x-2$

$2x^2-x-1$
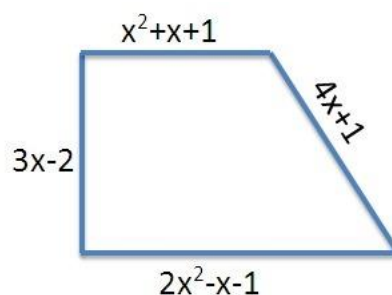
5. What is the value of the perimeter of the figure?

6. If we take the upper side and subtract the lower side, what is the expression that is obtained?

7. 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?

8. If we subtract the green zone area from the total area, what would be the area we would have left?

9. What is the area of the following figure?

$$3x - 4$$

$$5x^2$$
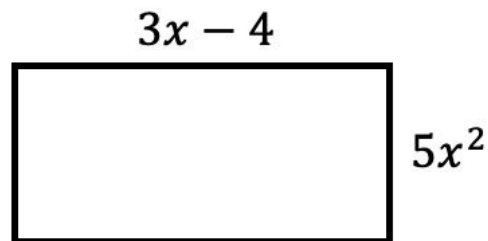
10. What is the area of the following figure?

$$-11x^2 + 4x$$

$$6x^3 - 8x^2$$
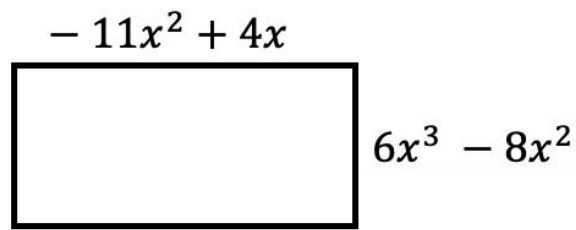
11. A rectangular tablecloth whose area is expressed as , has for length , what is the width of the tablecloth? $4\,x^2\,2x$

12. The area of a rectangle is . If the length of its base is equal to , what is the height of the rectangle? $y^3 + 3y^2 - 2y - 1 y^2 + 2y$

13. How many ways can you cross a river once, if you have 1 boat, 2 boats and 3 boats?

14. 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?

15. How many results can be obtained if a coin or dice is thrown?

16. 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?

17. What mathematical operation must be performed to find the height of the model?

Look at the equations written by Oscar in his notebook:

$$1,5 + \square = 2$$

$$2,5 - \square = 2$$

$$3 + \square = 3,5$$
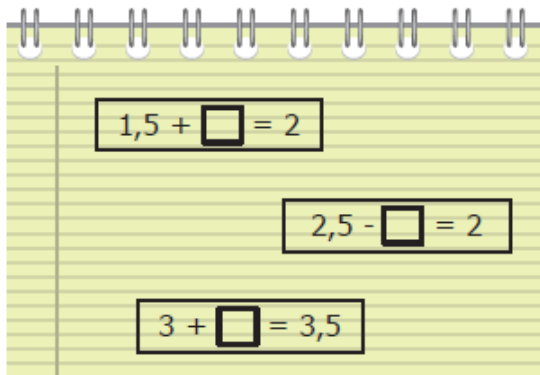
18. If a friend told Oscar that he must write 0.5 in ⬜ each of them, how many equations does that value work correctly?

Look at the scale and assume that an empty box weighs zero.
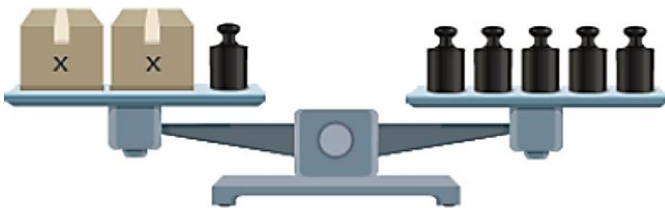
19. What is the number of weights that each box must have for the balance to remain balanced?

20. What is the number of weights that each box must have so that the scale has more weight on the left side?

21. **Cost of a lunch in Chapinero:** Juan went to a restaurant in Chapinero and spent $24,000 in total for two identical lunches and a drink that cost $4,000. How much did each lunch cost?

22. **Travel time on TransMilenio:** Andrea took the TransMilenio to get to work. It took 15 minutes to get to the station and then, the bus ride was 3 times longer than the time it took to get to the station. If your trip took 75 minutes in total, how long did it take on the bus?

23. **TransMilenio card load:** Sofia has $50,000 on her TransMilenio card. After making 6 trips, he has $32,300 left. How much does each ticket cost?

24. **Distribution of empanadas in the park:** On an afternoon in the Simón Bolívar Park, David buys a dozen empanadas and decides to share them with his friends. If each friend (including him) gets 3 empanadas and 2 were left undistributed, how many friends were with David?

25. **TransMilenio bus planning:** A TransMilenio bus can carry up to 160 passengers. If there are 960 passengers waiting at the Portal Norte station, how many buses are needed for all passengers to travel?

26. **Shopping at the Paloquemao market:** Maria went to the Paloquemao market to buy fruits. He bought 3 kilos of mangoes at $4,500 per kilo and also bought a kilo of bananas. If in total he spent $18,500, how much did the kilo of bananas cost?

27. **Savings to buy a bike:** Julian wants to buy a bike that costs $400,000. She already has $150,000 saved and plans to save $25,000 each week. How many more weeks should you save to buy the bike?

28. **Filling a water tank in Suba:** A water tank in Suba already has 300 liters, and 50 liters per minute are added. How many minutes will it take to reach a capacity of 800 liters?

29. **Fuel needed for a trip:** A taxi in Bogota travels 12 kilometers per liter of gasoline. If the taxi driver has to travel 96 kilometers, how many liters of gasoline will he need?

30. **Bike tour along the Ciclovía:** Carlos rides 15 kilometers on his bike along the Ciclovía on Sundays. If you decide to increase your ride by 2 kilometers each week, how many weeks will it take to be covering a total of 25 kilometers?