

## MATH TEST (SAMPLE)

*Please find the solutions on the last page.*

**1,** At a big sale we get the HUF 4,000 blouse 30% cheaper. How much do we have to pay for the blouse?

**2,** At a company meeting, there were 90 people attending, 63 managers among them. What percentage of the attendants were managers?

**3,** In a group of 123 students, 72 can speak English, 43 can speak French and 11 can speak both languages. How many of them can not speak any language?

**4,** How much is the following expression?  $\frac{\left(\frac{13}{17} - 2\right)}{\left(\frac{2}{3} + \frac{3}{4}\right)}$

**5,** How much is  $\frac{4 \cdot (\sqrt{9} + \sqrt{4})^2 - 3\sqrt{100}}{7}$  ?

**6,** Find the value of  $x^3 - 2x - 5 \cdot \sqrt{x}$  if  $x = 4$ .

**7,** Find the value of  $3x^3 + 2y^2 + \frac{5}{7}xy$  for  $x = -3$  and  $y = 7$

**8,** Solve for b.  $\frac{2}{-4}b - 2 = -\frac{9}{18}b + 4$

**9,** Solve for x.  $2(x+3) - 3(2x-5) - 5 = 4(3x-4)$

**10,** Solve the quadratic equation  $(2x+4) \cdot (x-7) = x^2 - 2x - 35$

**11,** Solve the quadratic equation  $(x-3) \cdot (x+5) = (x+5)^2$

**12,** What are the coordinates of the common point of these two lines?

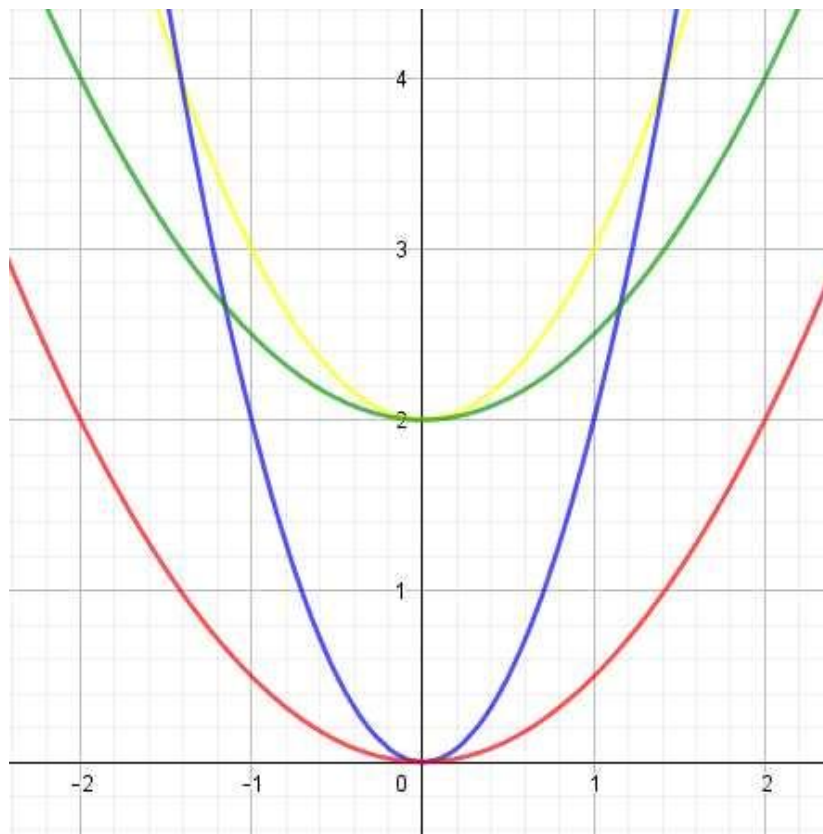
$$2x - 3y = -19$$

$$-9x - 3y = 3$$

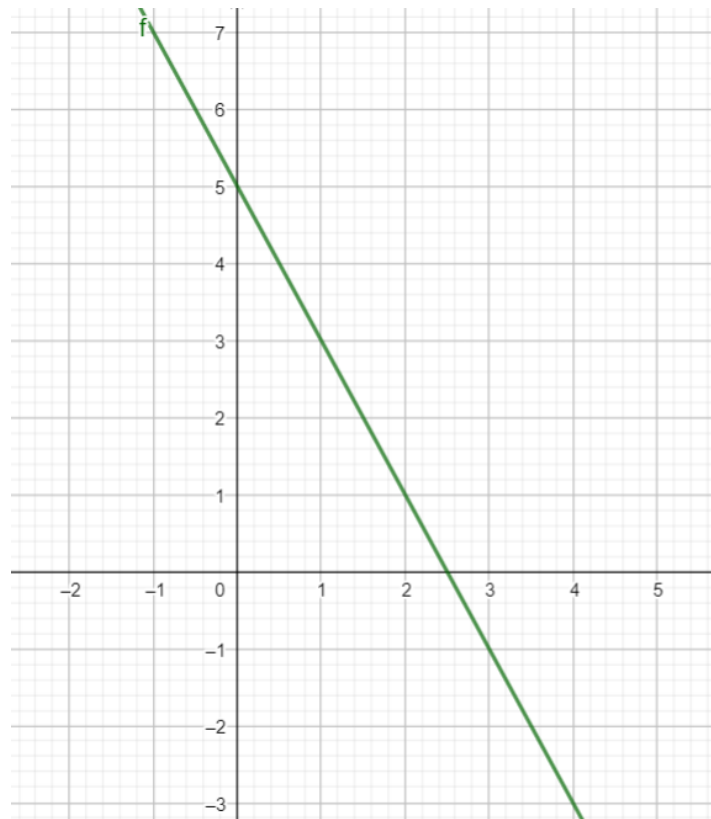
**13,** Simplify the expression:  $\frac{a^{-1} \cdot b^3}{a^{-2} \cdot \sqrt[3]{b^6}}$

**14,** Simplify the expression:  $\frac{x^{\frac{1}{3}}(y^{-2}+1)}{\sqrt[3]{x}(1+\frac{1}{y^2})}$

**15,** What graph belongs to the following function:  $f(x) = 0,5x^2 + 2$



**16,** Which function belongs to the following graph?



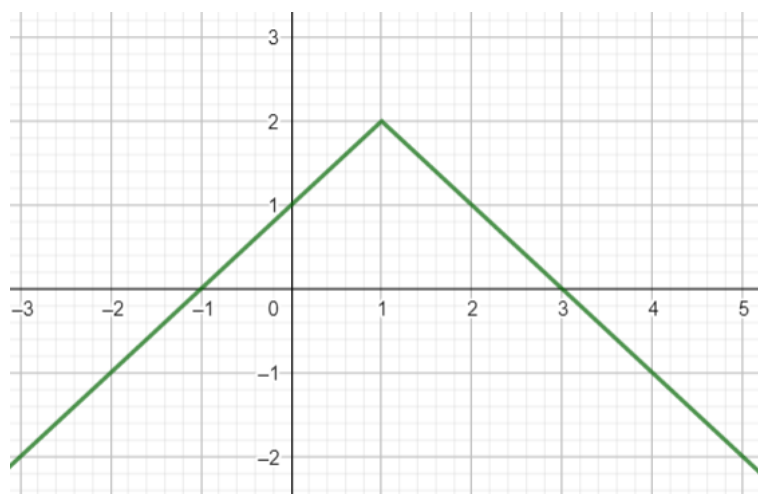
A,  $f(x) = -2x + 5$

B,  $f(x) = 2x + 5$

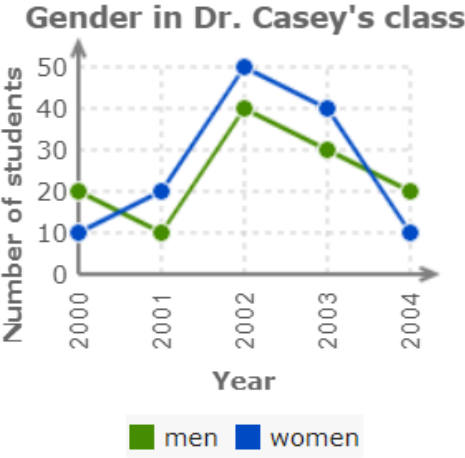
C,  $f(x) = -5x + 2,5$

D,  $f(x) = -x + 5$

**17,** Give the range set of the following function:  $f(x) = -|x+1|+2$

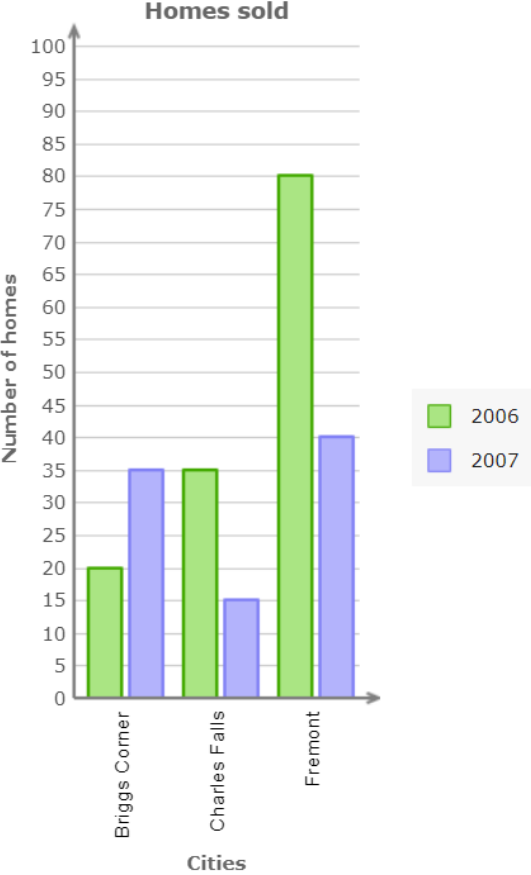


**18**, Dr. Casey, an international relations professor, kept track of the gender of his students.



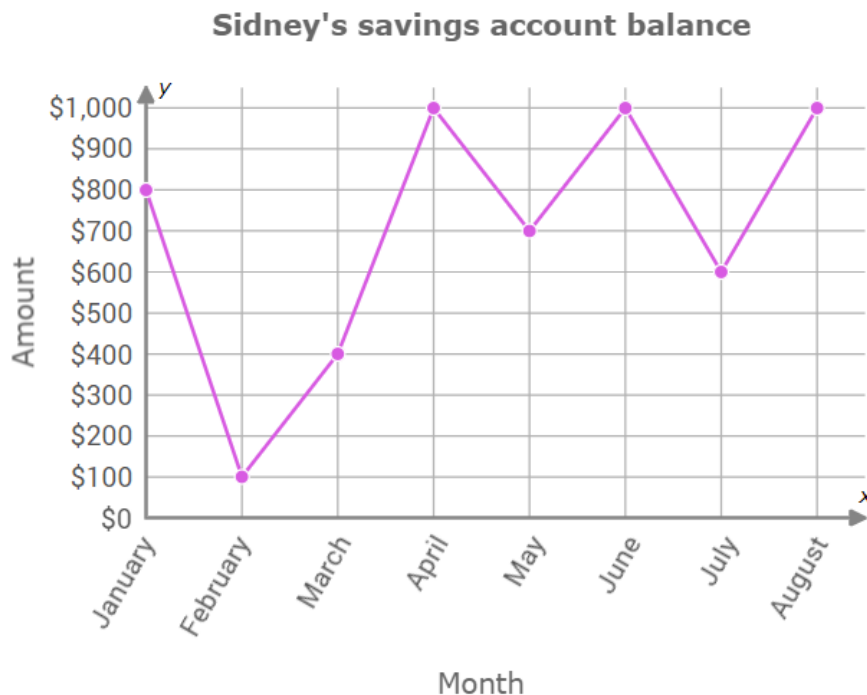
How many people (men and women) took his class in 2003?

**19**, A real estate agent tracked the number of homes recently sold in each of the nearby cities she served.



In which city were most houses sold in 2007?

**20,** At the end of each month, Sidney received a statement showing the balance of her savings account.



How much is the average amount of Sidney's savings in this period (from January to August)?

**21,** We have 4 numbers: 2, 4, 7, 8.

How many 4-digit numbers can we make from them, which are less than 4000?  
(Repetition is not allowed.)

**22,** We toss a coin two times. What is the probability that both are heads?

**23,** There are 5622 students in a university. Among them 933 students are from abroad, the others are Hungarian. We want to choose one student. What is the probability that we choose a Hungarian student?

**24,** In a little town there are 173 families. We know the number of children of all families. See the following table.

Number of children	0	1	2	3	4	5	more
Number of families	38	43	57	22	8	3	2

What can we say about this city generally? How many children do most families have?

**25,** We know that in 2020 there were 2287 pharmacies and 6218 pharmacists in Hungary. How many pharmacists worked in one pharmacy generally?

(Give the solution rounded to the nearest whole number.)

## SOLUTIONS

1. Solution: 2800 HUF
2. Solution: 70 %
3. Solution: 19
4. Solution:  $-7/4$
5. Solution: 10
6. Solution: 46
7. Solution: 2
8. Solution: there is no solution
9. Solution: 2
10. Solution:  $x_1 = 1$  and  $x_2 = 7$
11. Solution: there is only one solution,  $x = -5$
12. Solution:  $x = -2, y = 5$
13. Solution:  $ab$
14. Solution: 1
15. Solution: green
16. Solution: A
17. Solution:  $R_f = ]-\infty; 2]$
18. Solution: 70
19. Solution: Fermont
20. Solution: 700 \$
21. Solution: 6
22. Solution: 25 %
23. Solution: 83,4 %
24. Solution: 2
25. Solution: 3