

ALGEBRA AND PROPORTION TEST - 2° ESO

Exercise 1: (1 point) Indicate the coefficient, the literal part and the degree of these monomials:

	Coefficient	Literal part	Degree
a) $\frac{7}{3}a^4bc^7$	$\frac{7}{3}$	a^4bc^7	12
b) $help$	1	$help$	4
c) $-t^5$	-1	t^5	5
d) x^{-3}	It's not a monomial		

Exercise 2: (1 point) Evaluate the polynomial $P(x) = 3x^2 + 5x - 9$

- a) When $x = 3$ $P(3) = 33$
b) When $x = -1$ $P(-1) = -11$

Exercise 3: (1.75 points) Given the polynomials:

$$P(x) = 5x^3 - 4x^2 + 3x - 2 \qquad Q(x) = 7x^3 - 3x - 5 \qquad R(x) = x^2 - 3x$$

Work out the value of the following operations:

- a) $P + Q = 12x^3 - 4x^2 - 7$
b) $P - Q = -2x^3 - 4x^2 + 6x + 3$
c) $Q \cdot R = 7x^5 - 21x^4 - 3x^3 + 4x^2 + 15x$

Exercise 4: (1 point) Take out all the possible common factors:

- a) $18x^7 + 27x^5 - 54x^4 - 9x^3 = 9x^3(2x^4 + 3x^2 - 6x - 1)$
b) $6a^2b^4c^3 - 4ab^5c^2 + 10a^7b^3c^4 = 2ab^3c^2(3abc - 2b^2 + 5a^6c^2)$

Exercise 5: (1 point) I am very happy because this year my sheep spent a very nice winter and they are giving 15% more wool than before. Yay, I can knit myself lots of jerseys :)

- a) If this year I am getting ninety-two kilos of wool, how many kilos did I get last winter?
80 kilos
- b) I have sixteen sheep, how many kilos of wool, in average, will I get from each one?
5.75 kilos

Exercise 6: (1 point) Last year, during the Solidarity Day, we took 210 students to clean the Guadalquivir shores, and they needed two hours and a half to finish the task. This year we are taking 315 students, how long is it going to take us? Express the answer with hours, minutes and seconds. **1 hour and 40 minutes**



Exercise 7: (1.5 points) Fill in the gaps and find the value of the constant knowing that the following magnitudes are:

a) Directly proportional:

2.5	0.9	5	10	4	0.1	$k = 7$
17.5	6.3	35	70	28	0.7	

b) Inversely proportional:

2	15	90	18	0.5	4	$k = 90$
45	6	1	5	180	22.5	

Exercise 8: (0.75 point)

I have decided, again, to quit teaching, and I am going to cultivate potatoes. I've read on the Internet, promise, that if I have 18 plants I can get 27 kilos of potatoes, but I am planning a giant omelet to celebrate my retirement and I am going to need 48 kilos.



- a) How many plants do I need then? **32 plants**
 b) How many kilos of potatoes does a single plant produce? **1.5 kilos**

Exercise 9: (1 point) Divide 1425€ in a directly proportional way to 3, 5 and 7

$a = 285€$ $b = 475€$ $c = 665€$

