Exercise 1: (1.5 points) Fill in the gaps and find the value of the constant of proportion.

a)

DP		12	9		1	0.5
	56		63	91		

b)

IP	18			3	9	
		1	12		8	0.5

Exercise 2: (1.25 points) Seventeen elves working non-stop need fifteen days to wrap a bunch of presents.
   a) How long would five elves need?
   b) How many elves do I need to wrap the presents in just three days?

Exercise 3: (0.75 points) Elves are very angry because the price of mortgages for luxury mushrooms are going through the roof and they will have to settle for champignon mushrooms. If the price of a luxury mushroom has increased by 17% and its cost now is 585 gold coins, what was its price before?

Exercise 4: (0.75 points) Divide 765€ in a directly proportional way to 3, 5 and 9

Exercise 5: (0.75 points) An elf gets a salary of twenty gold coins if they work for three weeks. How much money will an elf get if they work for four weeks and a half?

Exercise 6: (1 point) Work out:

a) $3^{-2} =$

b) $\dfrac{1}{2^{-5}} =$

c) $\left(\dfrac{5}{2}\right)^{-3} =$

d) $7^{-1} =$

Exercise 7: (1.75 points) Work out the value of the following expressions:

a) $\left(\sqrt{\dfrac{81}{49}}\right)^{-1} : \dfrac{2}{3} - \left(\dfrac{2}{5}\right)^{-2} =$

b) $\left(2-\dfrac{2}{3}\right)^{-2} - \left(\dfrac{1}{2}-\dfrac{4}{5}\right)^{-1} - 2^{-3} =$

Exercise 8: (1 point) The North Express train has a total of twenty-eight cars. Two sevenths of the cars transport the elves to work, four fifths of the remaining cars are loaded with presents, and the rest carry coal. How many cars transport elves, presents and coal?

Exercise 9: (1.25 points) Two thirds of the elves are working the morning shift and three sevenths of the remaining elves are working the afternoon shift. If there are still 68 elves for the night shift, how many elves did Santa hire this year?