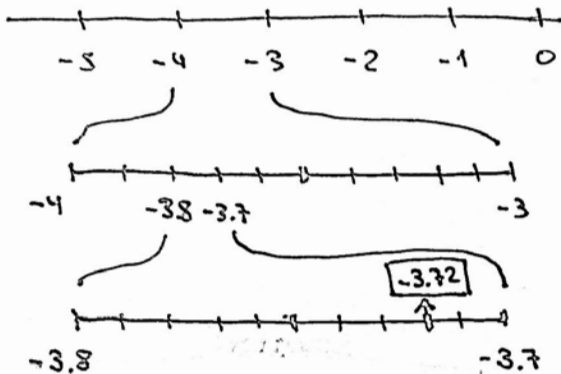


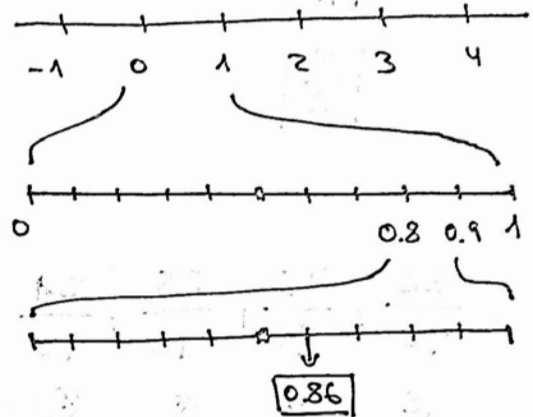
DECIMAL NUMBERS AND FRACTIONS EXERCISES

1.- Represent in a numbered line the following decimal numbers:

a) -3.72



b) 0.86



2.- Round off these decimal numbers:

- a) To the tenths: $6.472 \rightarrow 6.5$
- b) To the millionths: $0.02048714 \rightarrow 0.020487$
- c) To the thousandths: $794.193509 \rightarrow 794.194$

3.- Order from least to greatest: 2.94, 2.094, -2.94, 2.49, -2.904, 2.994, 2.914

$$-2.94 < -2.904 < 2.094 < 2.49 < 2.914 < 2.94 < 2.994$$

4.- Solve:

a) $75.23 - 4.8 \cdot (2.1 + 6.24 : 1.6) = 75.23 - 4.8 \cdot (2.1 + 3.9) = 75.23 - 4.8 \cdot 6 = 75.23 - 28.8 = 46.43$

b) $17.12 : 21.4 + 17.7 - 1.08 \cdot 9.2 = 0.8 + 17.7 - 9.936 = 8.564$

5.- John bought several items in the supermarket; 250 grams of cheese at 5.24 €/kg, 2.4 kilograms of oranges at 1.70 €/kg and 8 soft-drinks at a price of 0.65€ each. If he paid with a 20€ note, how much money was returned to him?

$0.250 \cdot 5.24 = 1.31 \text{ €}$ CHEESE

$2.4 \cdot 1.70 = 4.08 \text{ €}$ ORANGES

$8 \cdot 0.65 = 5.20 \text{ €}$ SOFT-DRINKS

10.59 € TOTAL

SOLUTION:

$20 - 10.59$

9.41 €

6.- Get "x" to be equivalent fractions:

a) $\frac{3}{13} = \frac{x}{169}$; $x = \frac{3 \cdot 169}{13} = \boxed{39}$

b) $\frac{16}{9} = \frac{32}{x}$; $x = \frac{9 \cdot 32}{16} = \boxed{18}$

7.- Find the irreducible fraction of:

a) $\frac{243}{432} = \boxed{\frac{9}{16}}$

b) $\frac{144}{96} = \boxed{\frac{3}{2}}$

8.- Order these fractions from least to greatest:

$\frac{11}{45}$, $\frac{1}{2}$, $\frac{5}{18}$, $\frac{7}{30}$

$\frac{22}{90}$, $\frac{45}{90}$, $\frac{25}{90}$, $\frac{21}{90}$;
 ② , ④ , ③ , ①

Solution
 $\frac{7}{30} < \frac{22}{90} < \frac{25}{90} < \frac{45}{90}$

9.- Convert the following decimal numbers to fraction:

a) $5.\overline{39} = \frac{539.5}{99} = \frac{534}{99} = \boxed{\frac{178}{33}}$

b) $0.\overline{727} = \frac{727.7}{990} = \frac{720}{990} = \frac{72}{99} = \boxed{\frac{8}{11}}$

c) $6.0\overline{8} = \frac{608}{100} = \frac{304}{50} = \boxed{\frac{152}{25}}$

10.- Work out:

a) $-\frac{8}{3} + \frac{3}{4} \cdot \left(-\frac{2}{5}\right) = -\frac{8}{3} + \frac{-6}{20} = -\frac{8}{3} - \frac{6}{20} = \frac{-160}{60} - \frac{18}{60} = \frac{-178}{60} = \boxed{\frac{-89}{30}}$

b) $\frac{5}{6} : \left(\frac{2}{3} + 1\right) - \frac{3}{4} \cdot \left(\frac{2}{3} - 1\right) = \frac{5}{6} : \left(\frac{2}{3} + \frac{3}{3}\right) - \frac{3}{4} \cdot \left(\frac{2}{3} - \frac{3}{3}\right) = \frac{5}{6} : \frac{5}{3} - \frac{3}{4} \cdot \frac{-1}{3}$
 $= \frac{1}{2} + \frac{9}{4} = \frac{2}{4} + \frac{9}{4} = \boxed{\frac{11}{4}}$

c) $\frac{29}{7} - \left(2 - \frac{4}{5}\right) : \left(\frac{3}{5} + \frac{1}{2} - \frac{3}{4}\right) = \frac{29}{7} - \left(\frac{10}{5} - \frac{4}{5}\right) : \left(\frac{12}{20} + \frac{10}{20} - \frac{15}{20}\right) =$
 $= \frac{29}{7} - \frac{6}{5} : \frac{7}{20} = \frac{29}{7} - \frac{24}{7} = \boxed{\frac{5}{7}}$ 2

$$\begin{aligned}
 \text{d) } 1 - \left[\frac{1}{2} + \frac{2}{5} - \left(\frac{1}{14} + \frac{2}{7} - \frac{2}{35} \right) \right] + \frac{3}{10} &= 1 - \left[\frac{1}{2} + \frac{2}{5} - \left(\frac{5}{70} + \frac{20}{70} - \frac{4}{70} \right) \right] + \frac{3}{10} = \\
 &= 1 - \left[\frac{1}{2} + \frac{2}{5} - \frac{21}{70} \right] + \frac{3}{10} = 1 - \left[\frac{35}{70} + \frac{28}{70} - \frac{21}{70} \right] + \frac{3}{10} = 1 - \frac{42}{70} + \frac{3}{10} = \frac{70}{70} - \frac{42}{70} + \frac{21}{70} \\
 &= \frac{49}{70} = \boxed{\frac{7}{10}}
 \end{aligned}$$

$$\begin{aligned}
 \text{e) } \left[\left(\frac{1}{4} - \frac{7}{8} \right) : \frac{2}{3} + 1 \right] : \left[\frac{5}{6} \cdot \left(\frac{2}{3} - \frac{3}{4} \right) \right] &= \left[\left(\frac{2}{8} - \frac{7}{8} \right) : \frac{2}{3} + 1 \right] : \left[\frac{5}{6} \cdot \left(\frac{8}{12} - \frac{9}{12} \right) \right] = \\
 &= \left[\frac{-5}{8} : \frac{2}{3} + 1 \right] : \left[\frac{5}{6} \cdot \left(-\frac{1}{12} \right) \right] = \left[\frac{-15}{16} + 1 \right] : \left[\frac{-5}{72} \right] = \left[\frac{-15}{16} + \frac{16}{16} \right] : \left[\frac{-5}{72} \right] = \\
 &= \frac{1}{16} : \frac{-5}{72} = - \frac{72}{80} = \boxed{-\frac{9}{10}}
 \end{aligned}$$

11.- A travelling salesman bought 800 kilos of melons and has sold three quarters of them. How many kilos does he have left?

$$\frac{3}{4} \text{ of } 800 = \frac{3 \cdot 800}{4} = 600 \text{ melons has sold} \rightarrow \text{Solution: } \boxed{200} \text{ melons left}$$

12.- Francisco spends half of his savings on a guitar and two fifths on an amplifier. What fraction of his savings does he spend in total?

$$\begin{array}{l}
 \text{GUITAR: } \frac{1}{2} \\
 \text{AMPLIFIER: } \frac{2}{5}
 \end{array} \left\{ \frac{1}{2} + \frac{2}{5} = \frac{5}{10} + \frac{4}{10} = \boxed{\frac{9}{10}} \right.$$

13.- How many kilos of lentils do you need to fill 200 bags that hold three quarters of a kilo each?

$$200 \cdot \frac{3}{4} = \frac{200 \cdot 3}{4} = \boxed{150} \text{ kg of lentils}$$

14.- In a cycling race, a cyclist has covered 35 kilometres of 210 kilometre route. What fraction of the route is left to cover?

FRACTION · TOTAL = PART

$$x \cdot 210 = 35 ; \quad x = \frac{35}{210} = \frac{1}{6} \text{ covered}$$

$$\downarrow \\
 \boxed{\frac{5}{6}} \text{ is left to cover } ^3$$

15.- Compute these expressions:

$$a) \frac{(-6)^5 \cdot (-3)^5}{36^5} = \frac{(-18)^5}{36^5} = \left(-\frac{1}{2}\right)^5 = \boxed{-\frac{1}{32}}$$

$$b) \frac{m^4}{m^5 \cdot m^4} = \boxed{\frac{1}{m^5}}$$

$$c) \left(\frac{x}{y}\right)^4 \cdot \frac{y}{x} = \frac{x^4 \cdot y}{y^4 \cdot x} = \boxed{\frac{x^3}{y^3}}$$

$$d) \left(\frac{x}{y}\right)^4 \cdot y^4 = \frac{x^4 \cdot y^4}{y^4} = \boxed{x^4}$$

$$e) (-3)^{-2} = (+3)^{-2} = \frac{1}{3^2} = \boxed{\frac{1}{9}}$$

$$f) \left(-\frac{7}{5}\right)^0 = \boxed{1}$$

$$g) x^3 \cdot x^{-2} = \frac{x^3}{x^2} = \boxed{x}$$

$$h) \frac{1}{x^2} \cdot \frac{1}{x^4} = \boxed{\frac{1}{x^6}}$$

$$i) \left(\frac{z}{m}\right)^{-2} : m^3 = \left(\frac{m}{z}\right)^2 : m^3 = \frac{m^2}{z^2 \cdot m^3} = \boxed{\frac{1}{z^2 m}}$$

$$j) a^5 : \left(\frac{a}{b}\right)^{-4} = a^5 : \left(\frac{b}{a}\right)^4 = \boxed{\frac{a^9}{b^4}}$$

$$k) x^3 : \left(\frac{1}{x}\right)^5 = x^3 : \frac{1^5}{x^5} = \boxed{x^8}$$

$$l) (a^2)^3 \cdot \left(\frac{1}{a}\right)^7 = a^6 \cdot \frac{1^7}{a^7} = \boxed{\frac{1}{a}}$$

$$m) \left(\frac{1}{10}\right)^{-1} = \boxed{10}$$

$$n) a^2 : \frac{1}{a^{-2}} = a^2 \cdot a^2 = \boxed{a^4}$$