Maths 1º ESO

PROPORTION – PERCENTAGE - FRACTIONS

Name:……

1) Calculate and simplify: (3 points)

a) $\frac{2}{5}-\left(\frac{1}{2}+\frac{3}{5}\right)\times 2=$ b) $\frac{3}{5}\div\frac{6}{15}-\frac{4}{5}\div\frac{1}{3}=$ c) $\left(\frac{1}{7}+\frac{1}{3}\right)\times\left(\frac{1}{2}-\frac{3}{7}\right)=$

2) Write each ratio as a fraction, a decimal and a percent: (1 point)

RATIO	FRACTION	DECIMAL	PERCENT
15 to 100			
9 to 50			
6 to 100			
72 to 100			

3) Find the value of X: (1 point)

a) 30% of X = 36	b) 150% of X = 114
c) 74% of X = 111	d) 22% of X =77

4) There are 750 students at Murillo School. 135 students ride the bus to school. What percentage of the students do not ride the bus? (1 point)

5) The price of a cinema ticket increases from 6 euros to 7.5 euros. What is the percentage of increase? (1 point)

6) If a farmer has enough cattle feed to feed 240 cows for 15 days. How long would the same food last for 360 cows ? (1 point)

7) Rafael Nadal won 86% of his matches last year. If he won 80 matches in 2008, how many matches did he play? (1 point)

8) Walter got a 15% discount when he bought his new jacket. If the original price, before the discount, was €70, how much was the discount? (1 point)

SOLUTIONS

1) a) $\frac{2}{5}-\left(\frac{1}{2}+\frac{3}{5}\right)\times 2=\frac{2}{5}-\frac{5+6}{10}\times 2=\frac{2}{5}-\frac{22}{10}=\frac{2}{5}-\frac{11}{5}=-\frac{9}{5}$

b) $\frac{3}{5}\div\frac{6}{15}-\frac{4}{5}\div\frac{1}{3}=\frac{3\times 15}{5\times 6}-\frac{4\times 3}{5}=\frac{3}{2}-\frac{12}{5}=\frac{15}{10}-\frac{24}{10}=-\frac{9}{10}$

c) $\left(\frac{1}{7}+\frac{1}{3}\right)\times\left(\frac{1}{2}-\frac{3}{7}\right)=\frac{3+7}{21}\times\frac{7-6}{14}=\frac{10}{21}\times\frac{1}{14}=\frac{5}{147}$

2) Write each ratio as a fraction, a decimal and a percent:

RATIO	FRACTION	DECIMAL	PERCENT
15 to 100	$\frac{15}{100}=\frac{3}{20}$	0.15	15%
9 to 50	$\frac{9}{50}$	0.18	18%
6 to 100	$\frac{6}{100}=\frac{3}{50}$	0.06	6%
72 to 100	$\frac{72}{100}=\frac{18}{25}$	0.72	72%

3) Find the value of X:

a) 30% of X = 36 $\frac{30}{100}=\frac{36}{x}\rightarrow 30x=3600\rightarrow x=120$	b) 150% of X = 114 $\frac{150}{100}=\frac{114}{x}\rightarrow 150x=11400\rightarrow x=76$
c) 74% of X = 111 $\frac{74}{100}=\frac{111}{x}\rightarrow 74x=11100\rightarrow x=150$	d) 22% of X =77 $\frac{22}{100}=\frac{77}{x}\rightarrow 22x=7700\rightarrow x=350$

4) There are 750 students at Murillo School. 135 students ride the bus to school. What percentage of the students do not ride the bus? $750-135=615$

750 -------- 615 DIRECT proportion $\frac{750}{100}=\frac{615}{x}\rightarrow 750x=61500\rightarrow x=82$

100 --------- x

SOLUTION: 82% of the students do not ride the bus

5) The price of a cinema ticket increases from 6 euros to 7.5 euros. What is the percentage of increase?

$7.5-6=1.5$ 6 ---------- 1.5 $\frac{6}{100}=\frac{1.5}{x}\rightarrow 6x=150\rightarrow x=25\%$

100 ---------- x

SOLUTION: the percentage increases is 25%

6) If a farmer has enough cattle feed to feed 240 cows for 15 days. How long would the same food last for 360 cows ?

240 cows ---------- 15 days INVERSE proportion
360 cows ---------- x days

$$\frac{240}{360} = \frac{x}{15} \rightarrow 360x = 240 \times 15 \rightarrow 360x = 3600$$
$$x = 3600 \div 360 = 10$$

SOLUTION: The same food would last 10 days to feed 360 cows

7) Rafael Nadal won 86% of his matches last year. If he won 80 matches in 2008, how many matches did he play?

86% ---------- 80 matches $\frac{86}{100} = \frac{80}{x} \rightarrow 86x = 8000 \rightarrow x = 93.02$

100% --------- x matches

SOLUTION: Rafael Nadal played 93 matches in 2008

8) Walter got a 15% discount when he bought his new jacket. If the original price, before the discount, was €70, how much was the discount?

$$15\% \text{ of } 70 = \frac{15 \times 70}{100} = 10.5$$

SOLUTION: The discount was €10.5