PROPORTION – PERCENTAGE - FRACTIONS

Name:..

1) Calculate and simplify: (3 points)

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

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

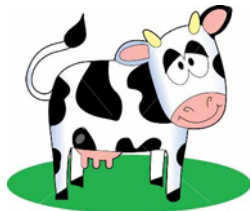4) There are 750 students at Murillo School. 135 students ride the bus to school. What percentage of the students do not ride the bus?   (1 point)

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)

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

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

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

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

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

3) Find the value of X:

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

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 $\dfrac{750}{100}=\dfrac{615}{x}\to 750x=61500\to x=82$

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 $\dfrac{6}{100}=\dfrac{1.5}{x}\to 6x=150\to x=25\%$

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

SOLUTION: the percentage increases is 25%

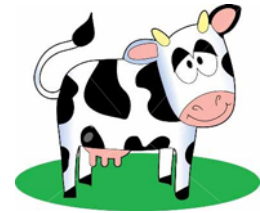6) If a farmer has enough cattle feed to feed 240 cows for 15 days.
How long would the same food last for 360 cows ?
240 cows -------------- 15 days   INVERSE proportion
360 cows -------------- x days

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

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