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)

SOLUTIONS

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
$\dfrac{30}{100} = \dfrac{36}{x} \rightarrow 30x = 3600 \rightarrow x = 120$

b) 150% of X = 114
$\dfrac{150}{100} = \dfrac{114}{x} \rightarrow 150x = 11400 \rightarrow x = 76$

c) 74% of X = 111
$\dfrac{74}{100} = \dfrac{111}{x} \rightarrow 74x = 11100 \rightarrow x = 150$

d) 22% of X =77
$\dfrac{22}{100} = \dfrac{77}{x} \rightarrow 22x = 7700 \rightarrow x = 350$

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

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

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