Ratios and Proportions **(KEY)**

Write each ratio in lowest terms.

1) 15 to 3 = **5 to 1** 2) 12:6 = **2:1** 3) $\frac{24}{14}=\frac{12}{7}$ 4) 18/10 = **9/5** 5) 52:39 = **4:3**

Put in lowest terms.

6) 9 apples to 21 oranges 7) 5 horses to 300 cows 8) 200 bats to 400,000 insects

= 3 apples to 7 oranges **=1 horse to 60 cows** **= 1 bat to 2,000 insects**

Use the table of information at the right to answer the following questions by giving a ratio in lowest terms.

9) Honda to Dodge?

= **48:84 = 4:7**

10) Toyota to Nissan?

= **42:30 = 7:5**

11) Geo to Chevrolet?

= **15:65 = 3:13**

12) Chevrolet to Ford?

= **65:72**

13) Mercedes to Toyota?

= **3:42 = 1:14**

14) Ford to Honda?

= **72:48 = 3:2**

A group of students counted the types of cars in the parking lot and found the following distribution:

Chevrolet:	65
Dodge:	84
Geo:	15
Ford:	72
Honda:	48
Mercedes:	3
Nissan:	30
Toyota:	42

Use two different methods to show whether the following ratios are proportional or not.

15) $\frac{5}{3}$ *and* $\frac{15}{9}$; $\frac{5}{3}=\frac{15}{9}$? **16)** $\frac{12}{20}$ *and* $\frac{2}{5}$; $\frac{12}{20}$ *and* $\frac{2}{5}$? **17)** $\frac{51}{17}$ *and* $\frac{12}{4}$; $\frac{51}{17}$ *and* $\frac{12}{4}$ **18)** $\frac{27}{54}$ *and* $\frac{13}{26}$

$\frac{5}{3}=\frac{5}{3}$ 45 = 45 $\frac{3}{5}\neq\frac{2}{5}$ 60 ≠40 $\frac{3}{1}=\frac{3}{1}$ 204 = 204 $\frac{1}{2}=\frac{1}{2}$

Yes, Proportional **NO!** **Yes, Proportional** **Yes, Propor.**

Solve each proportion for the missing value.

19) $\frac{8}{6}=\frac{x}{15}$; (8)(15) = 6x 20) $\frac{a}{4}=\frac{35}{20}$; 20a = (4)(35) 21) $\frac{12}{5}=\frac{72}{k}$; 12k = (5)(72) 22) $\frac{9}{v}=\frac{63}{42}$

$\frac{120}{6}=\frac{6x}{6}$ $\frac{20a}{20}=\frac{140}{20}$ $\frac{12k}{12}=\frac{360}{12}$ $\frac{(9)(42)}{63}=\frac{63v}{63}$

x = 20	**a = 7**	**k = 30**	**v = 6**

In a university music class there are 3 brass musicians for every 5 that play the strings.

23) If there are 12 brass musicians in the class, how many musicians play the strings?

$\frac{3}{5}=\frac{12}{x}$ $\frac{3x}{3}=\frac{60}{3}$ **x = 20 string musicians**

24) If there are 40 that play the strings, how many brass are there?

$\frac{3}{5}=\frac{x}{40}$ $\frac{120}{5}=\frac{5x}{5}$ **x = 24 brass musicians**

25) What is the smallest possible number of total brass and string players in the class?

3 brass to 5 string. 3 + 5 = **8 brass and string musicians**

26) If the ratio of brass and string musicians in the class compared to all others is 5 to 7, and there are 35 brass and string musicians in class, how many students are enrolled in the class?

$\frac{5}{7} = \frac{35}{x}$ $\frac{5x}{5} = \frac{245}{5}$ x = 49 other musicians. 35 brass and string + 49 others

= **84 students**