Name: _____ Period: _____ Date: _____

RATIOS AND PROPORTIONS Guided Notes

What is a Ratio?

A ratio is a comparison of a number $\boldsymbol{a}$ and a non-zero number $\boldsymbol{b}$ using division.

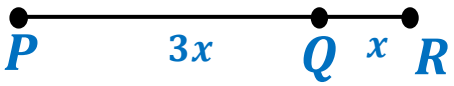
There are three different ways of writing a ratio:

$\frac{a}{b}$ $\quad$ $a : b$ $\quad$ a to b

The ratio is written is simplest form and can be simplified if the quantity in the numerator and denominator is of same units.

$4ft:6\ ft$ ⇒ $\frac{4\ ft}{6\ ft}$ ⇒ $\frac{2\ ft}{3\ ft}$ ⇒ $2ft:3\ ft$

Problem 1: In the figure below, $PQ : QR$ is $3 : 1$. Find the values of PQ and QR if $PR = 28$.



Let x be the length of $\boldsymbol{QR}$. Since the ratio of $\boldsymbol{PQ\ to\ QR}$ is $3 : 1$, we can write $3x : x$.

⇒ $3x + x = 28$ **By Segment Addition postulate $PQ + QR = PR$**

⇒ $4x = 28$ ⇒ $x = 7$

⇒ $QR = x = 7$

⇒ $PQ = 3x = 3 \times 7$ ⇒ $PQ = 21$

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RATIOS AND PROPORTIONS Guided Notes

What is a Proportion?

A proportion is an equation having two ratios equal.

$$\frac{a}{b} = \frac{c}{d}$$

b & c ⇨ means

a & d ⇨ extremes

Cross-Product Property in Proportions

In a proportion, the product of extremes is equal to the product of means.

$$\frac{a}{b} = \frac{c}{d}$$

⇨ $ad = bc$

Problem 2: Solve the proportion $\frac{4}{3} = \frac{y+2}{6}$.

Apply the cross product property of proportions:

⇨ $6 \times 4 = 3 \times (y + 2)$

⇨ $24 = 3y + 6$

⇨ $24 - 6 = 3y$ ⇨ $3y = 18$

⇨ $y = 6$