Ratio, Rates and Percent

Looks like 7 to 8 / words / symbols 7:8

Ratios
→ a relationship between 2 quantities

must know

If 3 to 1 → $\frac{3}{1}$ must keep the ONE → or the relationship is lost

Application

There is a fish bowl with 6 guppies and a goldfish. How can we show different relationships among the fish?

Rates
→ a ratio using two different units of measure
UNITS

Look like: miles per gal. $\frac{23 \text{ miles}}{1 \text{ gallon}} = 23 \text{ mpg}$

per weight $\frac{\$2.99}{1 \text{ pound}} = \$2.99/\text{lb}$

Rate Table

Cost of oranges

# of oranges	10	5	1	20
cost	$2			

Application

A black racer snake can travel 4.6 km in 2 hours. What is its rate of speed in kilometers per hour?

$\frac{4.6 \text{ km}}{2 \text{ hr}} \mid \frac{?}{1 \text{ hr}}$

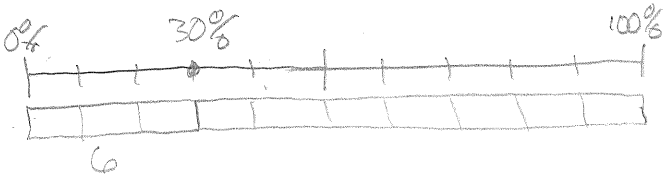
Percent
→ a type of ratio that compares a quantity to 100

Looks like $\frac{50}{100}$ or 50%

50% → 50 out of 100 / part per one hundred

Application

If 30% of the students in Mrs. Coker's class like chocolate ice cream, then how many students are in Mrs. Coker's class if 6 like chocolate ice cream?



_____ students in the class

Mathematical Standards & Practices

We will make sense of the context of problems in order to translate them into ratios and persevere in solving them.

We will construct and critique arguements regarding our reasoning of ratios and rates used in real world problems.

We will model our thinking of ratios, rates and percents.

We know...

Inquiry: Ratios Rates Percents

We want to know...

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UNIT PLANNING TOOL

Planning Focus: Ratios & Proportional Reasoning **Module(s)/Unit(s)**_____

CCSSM: 6.RP.A.1 - Understand the concept of a ratio & use ratio language to describe a ratio relationship b/w 2 quantities

6.RP.A.2 Understand the concept of a rate

6.RP.A.3A make tables of equivalent ratios relating quantities

6.RP.A.3B Solve unit rate problems involving unit pricing & constant

6.RP.A.3.C find % of a quantity as a rate per 100 - give part and the %

6.RP.A.3.D use ratio reasoning to convert measurement units

Mathematical Practices being emphasized:

(1) Make sense of probs. & persevere in solving

(3) Construct viable arguements & critique the reasoning of others

(4) Model with mathematics

Essential Questions

What is the difference b/w a multiplicative and an additive relationship?

What are percentages best used for?

What kind of models can I use to show solutions to word problems using %, ratios and rates?

Key Concepts

understand that fractions are part-whole ratios

% are ratios & are sometimes used to express ratios

A rate is a comparison of the measures of 2 different things or quantities

Pre and Post Assessments

Pre: Metacognitive Boxes
Rate Ratio Percentage Units
Application Problems

Quarter 1 Interm Assessment

Visual Models/ Algorithms/ Diagrams for Compendium

Fractions

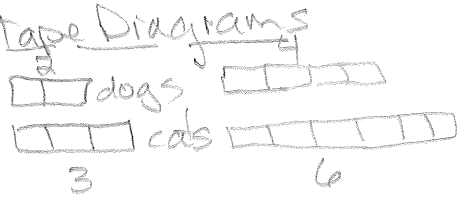
$\frac{3}{4}$ $\frac{5}{4}$ $1\frac{1}{4}$

Decimals

Percents

Ratios

Tape Diagrams

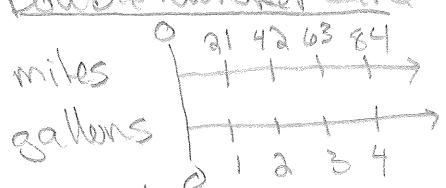


Ratio Tables

dogs	2	4	X
cats	3	6	9

Rates

Double Number Line



Unit Rate

3 cans	6 cans
$2.25	$4.50

Unit Rate

%

table

Part	Whole
12	25
X	100

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Connections (Real World Applications)

- recipes
- sculpture
- Art
- video games
- computer scientists
- artists
- architects
- doctors
- engineers
- cost
- sales (discount)
- surveyors
- statisticians
- sports analysts

Language Functions/Structures

Describe

for every ____, there are ____.

Predicting

I predict ____ because ____.

Explain

We can describe ____ ratios as ____.

Compare & Contrast

A percent is similar to a ratio because ____.

the ratio ____ is equiv. to the ratio ____ because ____.

Vocabulary

Algorithm, difference, distributive, divided, divisor, factor, GCF, property, LCM, quotient, multiplicative, reciprocal, rate, ratio, scale, percent, quantity, fraction, rational number, decimal, variable, portion, unit

Focus and Motivation

Video (animations)

Study Jams - Percents

Brain pop - Ratios

Math Snacks - Ratios

Games

Paper Basket Throw

Literature

Only One by Marr Harshman

Fraction Action by Loreen Leedy

Math Curse by Jon Scieszka + Lane Smith

Cut Down to Size at High Noon by Scott Sundby