



Roots of Reason

Name _____

Date _____

Ratio Language

Look first. Count second. **Order matters.**

1. The garden has tulips (T) and daisies (D). Write the ratio of **tulips to daisies** three ways.



_____ : _____ to _____ as a fraction: _____

2. Fill in the sentence frames for the garden above.

For every _____ tulips, there are _____ daisies.

The ratio of daisies to tulips is _____ to _____.

The ratio of tulips to **all flowers** is _____ : _____.

3. A fruit bowl holds 5 apples and 2 bananas. Write each ratio.

apples to bananas _____ bananas to apples _____ apples to all fruit _____

A ratio is a comparison. The numbers only mean something **in order**.



Two Kinds of Ratios

Before you write a ratio, decide: is the second number a **part** or the **whole**?

1. A class has 12 sixth graders and 8 fifth graders. Label each ratio **PP** (part to part) or **PW** (part to whole), then write it.

sixth graders to fifth graders

_____ ratio _____

fifth graders to the whole class

_____ ratio _____

sixth graders to the whole class

_____ ratio _____

2. A team's ratio of wins to losses is 5 : 3. They played 8 games, no ties. Answer, then explain which ratio type you used.

Wins out of all games: _____

What fraction of the games did they win? _____

Because: _____

3. Tom says the ratio 5 : 3 above means the team won $\frac{5}{3}$ of their games. What did Tom mix up?

Only **part to whole** ratios can act like fractions of the total.

Multiply or divide **both** numbers by the same amount. Always both.

- $3 : 4 \times 2 \rightarrow \underline{\hspace{2cm}} :$
 $5 : 2 \times 3 \rightarrow \underline{\hspace{2cm}} :$
 $1 : 6 \times 10 \rightarrow \underline{\hspace{2cm}} :$

- $10 : 15 \rightarrow \underline{\hspace{2cm}} :$
 $12 : 4 \rightarrow \underline{\hspace{2cm}} :$
 $18 : 24 \rightarrow \underline{\hspace{2cm}} :$
 $\underline{\hspace{2cm}}$
 $\underline{\hspace{2cm}}$
 $\underline{\hspace{2cm}}$

- ☐ 4 : 10
 ☐ 5 : 2
 ☐ 6 : 15
 ☐ 3 : 6
 ☐ 20 : 50

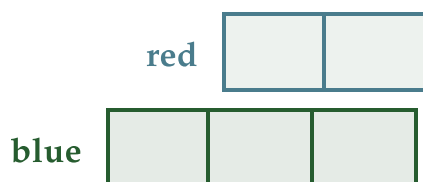
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Tape Diagrams

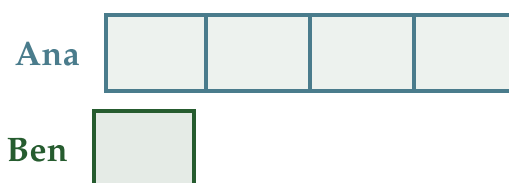
The tapes are drawn. Your job: find what **one box** is worth, then count.

1. Red to blue marbles is 2 : 3. There are 30 marbles in all.



boxes in all: _____ one box = $30 \div$ _____ = red = _____ blue = _____

2. Ana and Ben split \$35 in the ratio 4 : 1.



one box = _____ Ana gets _____ Ben gets _____

Total $\div$ total boxes = one box. Everything else is counting.

One box per part. Same size boxes. Label both tapes.

cups of oats =

total songs = _____

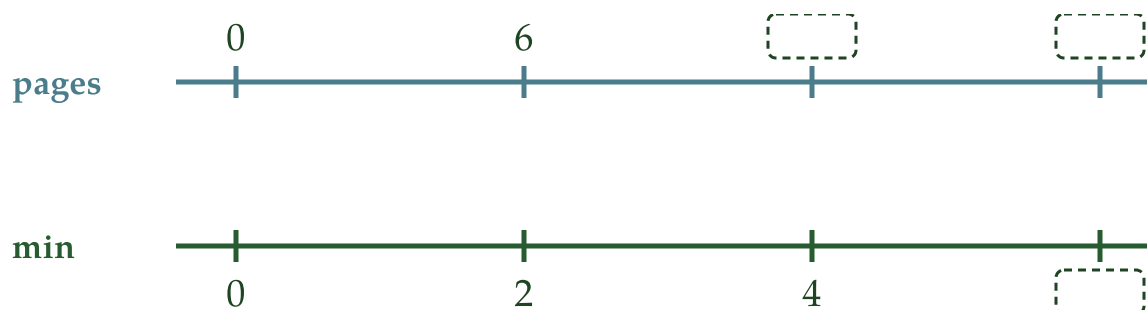
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Double Number Lines

Fill the missing tick labels. The lines must grow together.

1. A printer prints 6 pages every 2 minutes. Label every tick.



2. Use your finished lines. Answer without a calculator.

Pages printed in 6 minutes: _____

Minutes to print 30 pages: _____

Pages in 1 minute (the unit rate): _____

Zeros line up. Partners line up. That is the whole diagram.



Ratio Tables

Every column must tell the same story. Write the multiplier you used above each column.

1. Trail mix: 3 cups of peanuts for every 2 cups of raisins.

peanuts	3	6		15	
raisins	2		6		20

2. A car travels 120 miles on 4 gallons of gas.

miles	120			300
gallons	4	1	6	

miles on 1 gallon = _____

3. Which column in problem 2 was the most useful to find first? Why?

The **1 column** unlocks every other column.



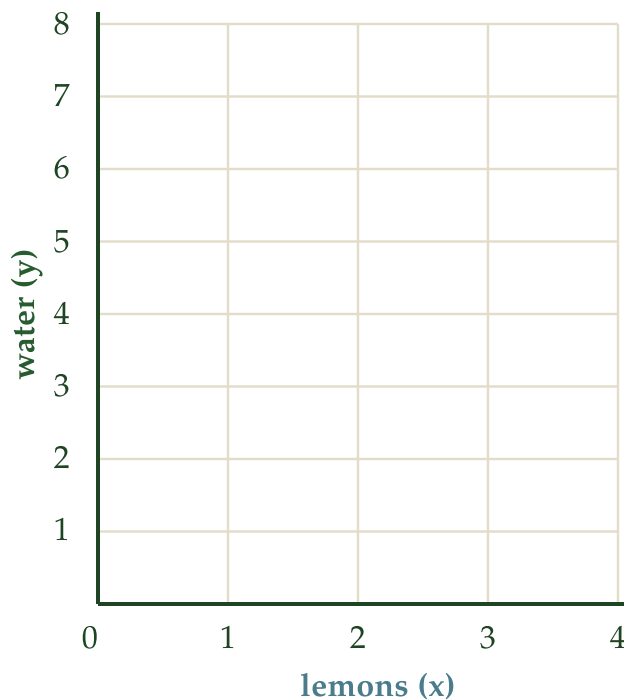
Ratios on the Coordinate Plane

Each column of a ratio table is a point (x, y) . Plot them all.

1. Lemonade: 1 lemon per 2 cups of water.
Finish the table.

lemons (x)	1	2	3	4
water (y)	2			

2. Plot each (x, y) pair.



3. What do you notice about your four points?

Equivalent ratios land in a **straight line through $(0, 0)$** . Every time.

Name _____ Date _____

Scale down until one side reads 1. Then the rate does the work.

- per pound

per hour

per day

Store A: each

Store B: each

○_A ○_B

flour = cups

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Tape diagram, double number line, ratio table, or unit rate. You pick. You defend.

tool:

cost = _____

purple = _____

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