



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**.



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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.



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Equivalent Ratios

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

1. Grow each ratio. The multiplier is given.

$$3 : 4 \times 2 \rightarrow \underline{\quad} : \underline{\quad} \quad 5 : 2 \times 3 \rightarrow \underline{\quad} : \underline{\quad} \quad 1 : 6 \times 10 \rightarrow \underline{\quad} : \underline{\quad}$$

2. Shrink each ratio to its simplest form.

$$10 : 15 \rightarrow \underline{\quad} : \underline{\quad} \quad 12 : 4 \rightarrow \underline{\quad} : \underline{\quad} \quad 18 : 24 \rightarrow \underline{\quad} : \underline{\quad}$$

3. Circle every ratio equivalent to $2 : 5$. Show a check for one of your circles in the work space.

☐ $4 : 10$

☐ $5 : 2$

☐ $6 : 15$

☐ $3 : 6$

☐ $20 : 50$

Equivalent ratios show the **same comparison** with different numbers.



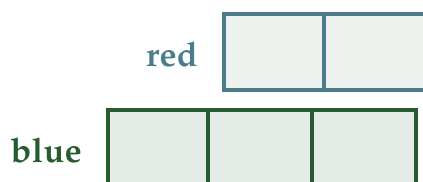
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Tape Diagrams

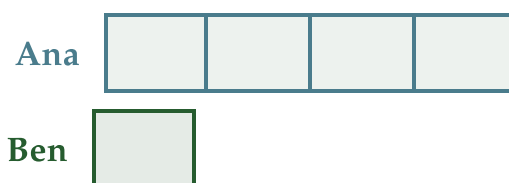
The tapes are drawn. Your job: find what **one box** is worth, then count.

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.

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

cups of oats =

total songs = _____

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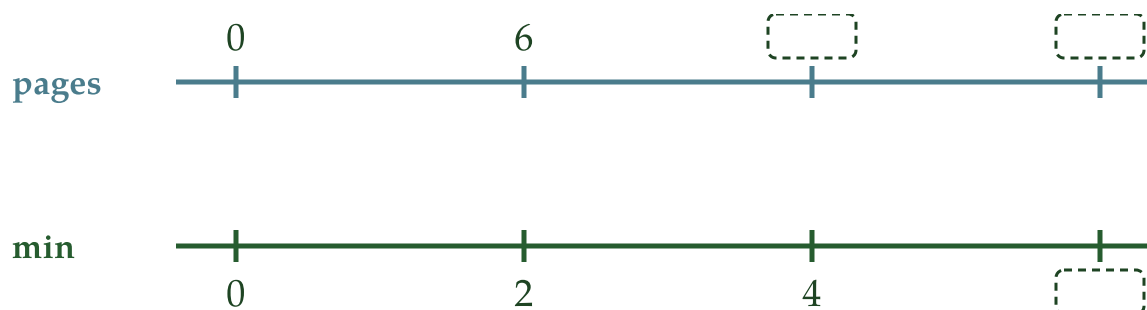
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Double Number Lines

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): _____

The zeros line up, and each pair of matching values lines up.



Ratio Tables

Every column must show the same ratio. 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?

Once you know the **1 column**, you can find every other column.



Ratios on the Coordinate Plane

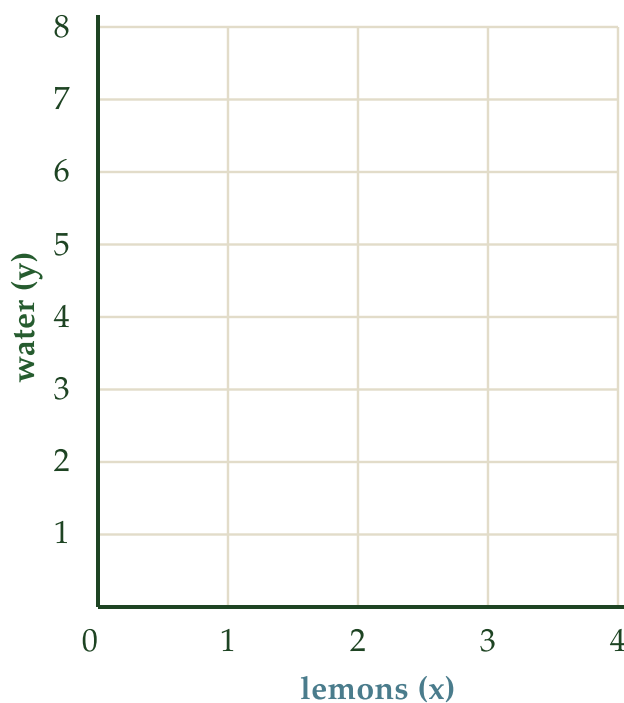
Each column of a ratio table is a point (x, y) . Plot them all.

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?

Points for equivalent ratios lie on a **straight line through $(0, 0)$** .

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

- 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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