

Grade 7 · Unit Rates with Fractions · Worksheet Answer Key

Common Core 7.RP.A.1 · mathovore.fr

Every one of the twenty solutions below shows the division, the multiplication by the reciprocal, and the final unit rate with its units. Check each answer by multiplying the unit rate by the second quantity, and compare your steps with the ones shown here.

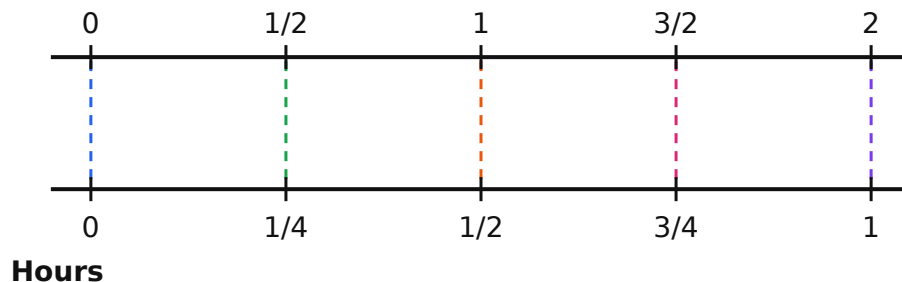
Grade 7 Common Core: 7.RP.A.1

Problem 1: Basic complex fraction

$$\frac{1}{2} \div \frac{1}{4} = \frac{1}{2} \times 4 = 2$$

Check: $2 \times \frac{1}{4} = \frac{1}{2}$. **2 miles per hour**

Miles walked



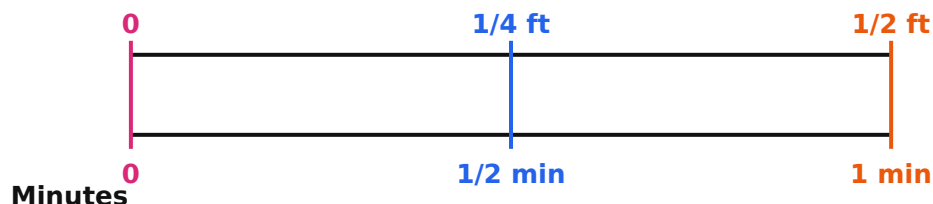
Four quarter hours add up to 1 hour and 2 miles.

Problem 2: Snail speed

$$\frac{1}{4} \div \frac{1}{2} = \frac{1}{4} \times 2 = \frac{2}{4} = \frac{1}{2}$$

Check: $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$. **$\frac{1}{2}$ foot per minute**

Feet



Doubling both quantities gives $\frac{1}{2}$ foot in 1 minute.

Problem 3: Chapters per hour

$$\frac{2}{3} \div \frac{1}{6} = \frac{2}{3} \times 6 = \frac{12}{3} = 4$$

Check: $4 \times \frac{1}{6} = \frac{2}{3}$. **4 chapters per hour**

Problem 4: Pages per minute

$$\frac{3}{4} \div \frac{1}{8} = \frac{3}{4} \times 8 = \frac{24}{4} = 6$$

Check: $6 \times \frac{1}{8} = \frac{6}{8} = \frac{3}{4}$. **6 pages per minute**

Problem 5: Buckets per minute

$$\frac{3}{4} \div \frac{1}{2} = \frac{3}{4} \times 2 = \frac{6}{4} = \frac{3}{2}$$

$1\frac{1}{2}$ **buckets per minute**



Each step of the solution.

Problem 6: Price of grapes

$$\$2.40 \div \frac{3}{4} = \$2.40 \times \frac{4}{3} = \$3.20$$

Check: each quarter pound costs $\$2.40 \div 3 = \$0.80$, and $4 \times \$0.80 = \$3.20$. **\$3.20 per pound**



Four quarter-pound pieces make 1 pound.

Problem 7: Bike speed

$$\frac{3}{4} \div \frac{1}{6} = \frac{3}{4} \times 6 = \frac{18}{4} = \frac{9}{2}$$

$4\frac{1}{2}$ **miles per hour**

Problem 8: Cups of sugar

$$\frac{5}{6} \div \frac{2}{3} = \frac{5}{6} \times \frac{3}{2} = \frac{15}{12} = \frac{5}{4}$$

Check: $\frac{5}{4} \times \frac{2}{3} = \frac{10}{12} = \frac{5}{6}$. $1\frac{1}{4}$ cups per batch

Problem 9: Cost per pound

$$\$3.75 \div \frac{1}{2} = \$3.75 \times 2 = \$7.50$$

Check: half of \$7.50 is \$3.75. **\$7.50 per pound**

Problem 10: Sealant coverage

$$\frac{5}{6} \div \frac{1}{3} = \frac{5}{6} \times 3 = \frac{15}{6} = \frac{5}{2}$$

Check: $\frac{5}{2} \times \frac{1}{3} = \frac{5}{6}$. $2\frac{1}{2}$ square yards per gallon

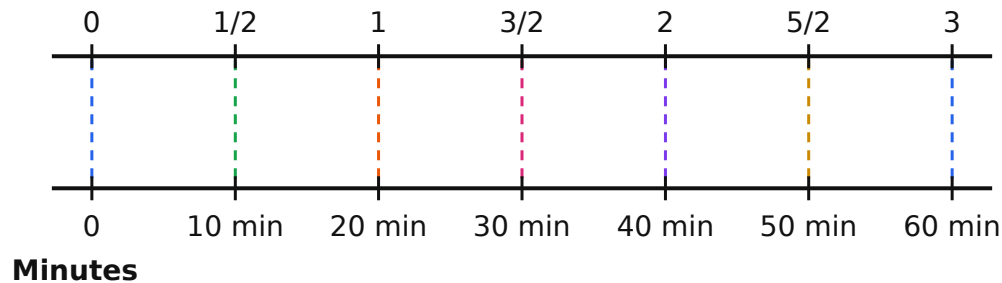
Problem 11: Different units

10 minutes is $\frac{10}{60} = \frac{1}{6}$ hour.

$$\frac{1}{2} \div \frac{1}{6} = \frac{1}{2} \times 6 = 3$$

3 miles per hour

Miles walked



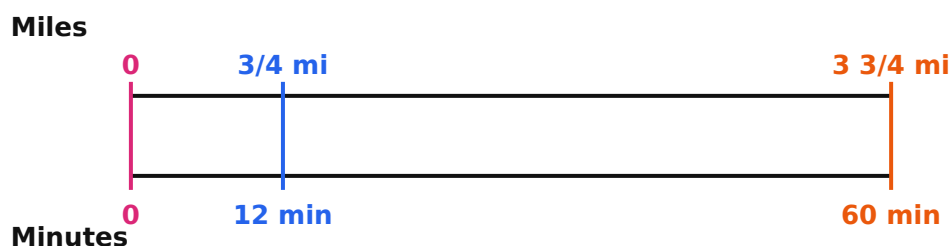
Six 10-minute steps give 3 miles.

Problem 12: Walk in minutes

12 minutes is $\frac{12}{60} = \frac{1}{5}$ hour.

$$\frac{3}{4} \div \frac{1}{5} = \frac{3}{4} \times 5 = \frac{15}{4}$$

Check: $\frac{15}{4} \times \frac{1}{5} = \frac{3}{4}$. $3\frac{3}{4}$ miles per hour



Five 12-minute pieces fill 1 hour: $5 \times \frac{3}{4} = 3\frac{3}{4}$ miles.

Problem 13: Painting area

$$\frac{2}{3} \div \frac{1}{6} = \frac{2}{3} \times 6 = 4$$

Check: $4 \times \frac{1}{6} = \frac{2}{3}$. **4 square yards per quart**

Problem 14: Better buy

Store A: $\$8.00 \div \frac{2}{3} = \$8.00 \times \frac{3}{2} = \$12.00$ per pound.

Store B: $\$8.25 \div \frac{3}{4} = \$8.25 \times \frac{4}{3} = \$11.00$ per pound.

Difference: $\$12.00 - \$11.00 = \$1.00$.

Store B is cheaper, by \$1.00 per pound.

Problem 15: Faster plant

First plant: $\frac{3}{8} \div \frac{1}{4} = \frac{3}{8} \times 4 = \frac{3}{2}$ inches per week.

Second plant: $\frac{5}{6} \div \frac{1}{2} = \frac{5}{6} \times 2 = \frac{5}{3}$ inches per week.

Common denominator 6: $\frac{5}{3} = \frac{10}{6}$ and $\frac{3}{2} = \frac{9}{6}$, so $\frac{10}{6} - \frac{9}{6} = \frac{1}{6}$.

The neighbor's bamboo grows faster, by $\frac{1}{6}$ inch per week.

Plant	Division	Unit rate
Priya's	$3/8 \div 1/4$	$3/2 = 9/6$
Neighbor's	$5/6 \div 1/2$	$5/3 = 10/6$

The neighbor's rate is larger.

Problem 16: Garden hose

(a) $2\frac{1}{2} = \frac{5}{2}$, so $\frac{5}{2} \div \frac{3}{4} = \frac{5}{2} \times \frac{4}{3} = \frac{20}{6} = \frac{10}{3}$. **$3\frac{1}{3}$ gallons per minute**

(b) $\frac{10}{3} \times 6 = 20$. **20 gallons**

Problem 17: Gas mileage

(a) $7\frac{1}{2} = \frac{15}{2}$, so $\frac{15}{2} \div \frac{1}{4} = \frac{15}{2} \times 4 = 30$. **30 miles per gallon**

(b) $30 \times 12 = 360$. **360 miles**

Problem 18: Book club

(a) $\frac{3}{4} \div \frac{1}{2} = \frac{3}{4} \times 2 = \frac{3}{2}$. **$1\frac{1}{2}$ chapters per hour**

(b) $12 \div \frac{3}{2} = 12 \times \frac{2}{3} = 8$. Check: $\frac{3}{2} \times 8 = 12$. **8 hours**

Problem 19: Muffin batches

(a) $\frac{3}{4} \div \frac{1}{2} = \frac{3}{4} \times 2 = \frac{3}{2}$. **$1\frac{1}{2}$ cups per batch**

(b) $\frac{3}{2} \times 2\frac{1}{2} = \frac{3}{2} \times \frac{5}{2} = \frac{15}{4}$. **$3\frac{3}{4}$ cups of oil**

Batches	$\frac{1}{2}$	1	$2\frac{1}{2}$
Cups of oil	$\frac{3}{4}$	$1\frac{1}{2}$	$3\frac{3}{4}$

The completed table.

Problem 20: Scooter battery

(a) $3\frac{3}{4} = \frac{15}{4}$, so $\frac{15}{4} \div \frac{1}{5} = \frac{15}{4} \times 5 = \frac{75}{4}$. **$18\frac{3}{4}$ miles**

(b) $\frac{3}{5} \times \frac{75}{4} = \frac{225}{20} = \frac{45}{4}$. Check: three cells of $3\frac{3}{4}$ miles give $3 \times \frac{15}{4} = \frac{45}{4}$. **$11\frac{1}{4}$ miles**



5 cells: $18\frac{3}{4}$ miles

A full battery is 5 cells of $3\frac{3}{4}$ miles.