

Grade 6 · Ratios and Ratio Language · Worksheet Answer Key

Common Core 6.RP.A.1, 6.RP.A.3a · mathovore.fr

This answer key gives a full worked solution for each of the 20 ratios problems, with every step shown. Check each final answer in bold and compare your reasoning, especially the multiplication used to find equivalent ratios.

Grade 6 Common Core: 6.RP.A.1 · 6.RP.A.3a

Problem 1: Writing a ratio

Apples to oranges: 4 apples and 7 oranges.

The ratio is **4 to 7**, $4:7$, or $\frac{4}{7}$.

Problem 2: Socks in a drawer

- a. Black to white: $5:9$
- b. White to black: $9:5$ (the order of the words sets the order of the numbers)
- c. All socks: $5+9=14$. Black to all: $5:14$

Part-to-part ratios compare two groups. Part-to-whole ratios compare one group with the total.

Problem 3: Part-to-whole ratio

Total players: $9+6=15$.

Girls to all players: $9:15$ (or $3:5$ in simplest form).

Problem 4: Equivalent ratios

Multiply both numbers by the same value: $2 \times 2 = 4$ and $5 \times 2 = 10$; $2 \times 3 = 6$ and $5 \times 3 = 15$; $2 \times 4 = 8$ and $5 \times 4 = 20$.

Three equivalent ratios: $4:10$, $6:15$, $8:20$. Other correct answers are possible.

Problem 5: Equivalent or not

- a. Simplify both: $4:6 = 2:3$ (divide by 2) and $10:15 = 2:3$ (divide by 5). **Yes, equivalent.**
- b. Simplify both: $6:8 = 3:4$ (divide by 2). The ratio $9:13$ is already in simplest form, and

$3:4 \neq 9:13$. **No, not equivalent.**

c. Multiply 5:2 by 4: $5 \times 4 = 20$ and $2 \times 4 = 8$. **Yes, equivalent.**

Problem 6: Missing value

The first ratio is 3:4. To go from 3 to 12, multiply by 4 ($3 \times 4 = 12$).

Multiply the second number by 4 too: $4 \times 4 = 16$.

The missing number is **16**.

Problem 7: Missing numbers

a. From 8 to 40 is a factor of $40 \div 8 = 5$. So $5 \times 5 = 25$. **25**

b. From 7 to 28 is a factor of $28 \div 7 = 4$. So $3 \times 4 = 12$. **12**

c. From 12 to 4, divide by $12 \div 4 = 3$. So $18 \div 3 = 6$. **6**

Problem 8: Simplest form

The greatest common factor of 18 and 24 is 6.

$18 \div 6 = 3$ and $24 \div 6 = 4$.

Simplest form: 3:4.

Problem 9: Simplest forms

a. The greatest common factor of 20 and 35 is 5. $20 \div 5 = 4$ and $35 \div 5 = 7$. 4:7

b. The greatest common factor of 48 and 36 is 12. $48 \div 12 = 4$ and $36 \div 12 = 3$. 4:3

c. The greatest common factor of 15 and 45 is 15. $15 \div 15 = 1$ and $45 \div 15 = 3$. 1:3

Problem 10: Ratio from a tape diagram

a. Red has 4 parts and blue has 6 parts: 4:6. The greatest common factor is 2, so 2:3

b. All the paint is $4 + 6 = 10$ parts: 4:10, which is 2:5 in simplest form

c. 6:4 simplifies to 3:2

Problem 11: Ratio table

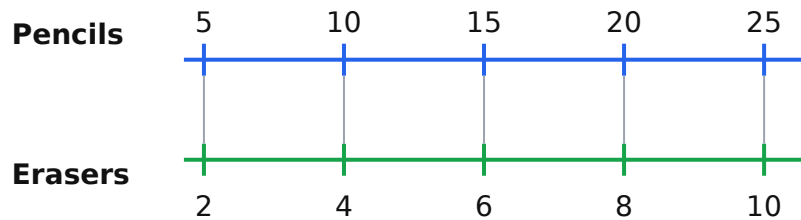
Each column keeps the ratio 5 pencils to 2 erasers.

15 pencils is 5×3 , so erasers are $2 \times 3 = 6$.

8 erasers is 2×4 , so pencils are $5 \times 4 = 20$.

25 pencils is 5×5 , so erasers are $2 \times 5 = 10$.

Missing values in order: **20 pencils, 6 erasers, 10 erasers.**



Completed: 20 pencils, 6 erasers, 10 erasers.

Problem 12: Smoothie table

Every column keeps the ratio 4 strawberries to 3 bananas.

8 strawberries is 4×2 , so bananas are $3 \times 2 = 6$.

9 bananas is 3×3 , so strawberries are $4 \times 3 = 12$.

16 strawberries is 4×4 , so bananas are $3 \times 4 = 12$.

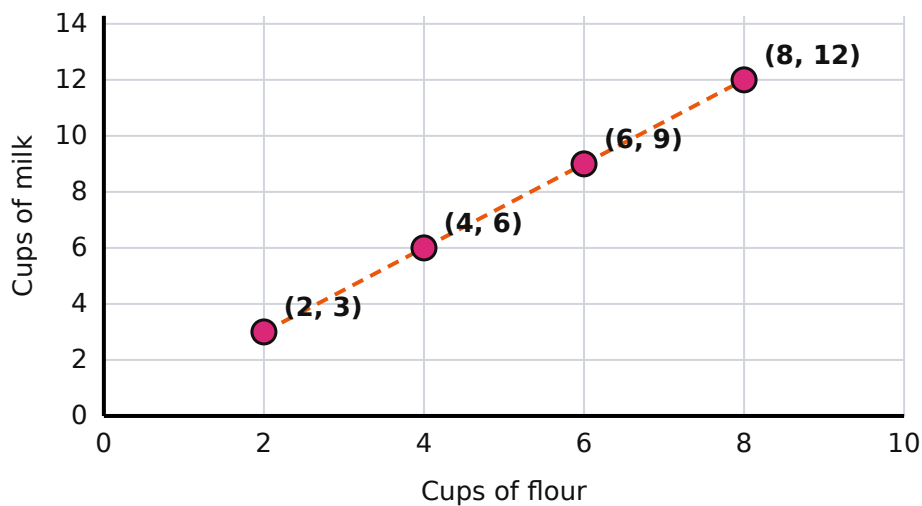
28 strawberries is 4×7 , so bananas are $3 \times 7 = 21$.

Strawberries	4	8	12	16	28
Bananas	3	6	9	12	21

Missing values in order: **6 bananas, 12 strawberries, 12 bananas, 21 bananas.**

Problem 13: Plot equivalent ratios

- Multiply both numbers of 2:3 by the same value: 2:3, 4:6, 6:9, 8:12. **3, 6, 9, and 12 cups of milk**
- The ordered pairs are (2,3), (4,6), (6,9), (8,12). Plot each one: move right for flour, then up for milk.
- The points lie on a straight line that would pass through (0,0). Equivalent ratios make points on one line.



The four ratio pairs on a coordinate plane.

Problem 14: Comparing ratios

Mix A: 3:5. Since $5 \times 3 = 15$, concentrate is $3 \times 3 = 9$ cups.

Mix B: 2:3. Since $3 \times 5 = 15$, concentrate is $2 \times 5 = 10$ cups.

With the same 15 cups of water, Mix B has more concentrate (10 versus 9).

Mix B is stronger.

Problem 15: Trail mix

- Total parts: $3 + 2 = 5$. Each part: $45 \div 5 = 9$ ounces. Peanuts: $3 \times 9 = 27$. Raisins: $2 \times 9 = 18$.
Check: $27 + 18 = 45$. **27 ounces of peanuts and 18 ounces of raisins**
- Raisins: $18 + 6 = 24$. The ratio is 27:24. Divide both by 3: 9:8

Problem 16: School store word problem

Pencils: 7 parts, and $63 \div 7 = 9$, so each part is 9.

Notebooks: $3 \times 9 = 27$.

Total: $63 + 27 = 90$.

27 notebooks, 90 items in all.

Pencils

9	9	9	9	9	9	9
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Notebooks

9	9	9
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Each unit is 9 items: 63 pencils and 27 notebooks.

Problem 17: Mixing paint

Total parts: $3+5=8$. Each part: $40\div 8=5$ cups.

Blue: $3\times 5=15$ cups. Yellow: $5\times 5=25$ cups.

Check: $15+25=40$.

15 cups of blue and 25 cups of yellow.

Blue

5	5	5
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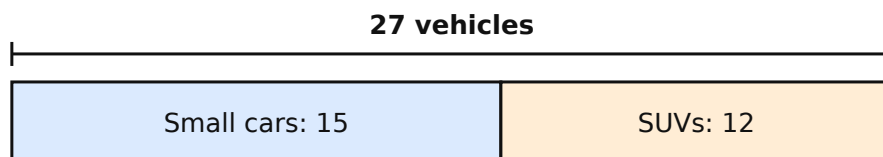
Yellow

5	5	5	5	5
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Each part is 5 cups: 15 cups blue and 25 cups yellow.

Problem 18: Car wash

- a. Total parts: $5+4=9$. Each part: $27\div 9=3$. Small cars: $5\times 3=15$. SUVs: $4\times 3=12$. **15 small cars and 12 SUVs**
- b. SUVs: $12+9=21$. The ratio is 15:21. Divide both by 3: 5:7



$27 \div 9$ parts = 3 vehicles per part

Each part is 3 vehicles.

Problem 19: School band

- a. Total parts: $4+3+5=12$. Each part: $36\div 12=3$. Flutes: $4\times 3=12$. Drums: $3\times 3=9$. Trumpets: $5\times 3=15$. Check: $12+9+15=36$. **12 flutes, 9 drums, 15 trumpets**
- b. 15:36. Divide both by 3: 5:12

36 students in the band		
Flutes: 12	Drums: 9	Trumpets: 15

$$36 \div 12 \text{ parts} = 3 \text{ students per part}$$

Each part is 3 students.

Problem 20: Farmers market

(a) Total parts: $5+3=8$. Each part: $96 \div 8 = 12$.

Apples: $5 \times 12 = 60$. Pears: $3 \times 12 = 36$.

(b) After selling 12 apples: $60 - 12 = 48$ apples, 36 pears. The ratio is 48:36. Divide both by 12: 4:3.

(a) 60 apples and 36 pears. (b) 4:3.

Apples	12	12	12	12	12
Pears	12	12	12		

Each unit is 12: 60 apples and 36 pears.