

Ratio Language and Equivalent Ratios

Grade 6 math · Worksheet Answer Key · Standards: 6.RP.A.1, 6.RP.A.3a

Every problem has a full worked solution with the final answer in bold. Compare each step with your own work, not only the result, and redo any problem where the method differed.

Standards: 6.RP.A.1, 6.RP.A.3a · **Level:** Grade 6

Problem 1 Writing a Ratio

Flutes come first, so the ratio is 14 to 9.

Answer: **14 : 9, 14 to 9, and $\frac{14}{9}$.**

Problem 2 Order Matters

Clarinets are named first, so the ratio is 9 : 14. The terms are swapped, so it compares clarinets with flutes, a different relationship.

Answer: **9 : 14.**

Problem 3 Reading a Tape Diagram

(a) Count 4 muffin blocks and 7 scone blocks: 4 : 7.

(b) The whole is $4 + 7 = 11$ blocks, so scones to all pastries is 7 : 11.

Answer: **(a) 4 : 7; (b) 7 : 11.**

Problem 4 Part-to-Part and Part-to-Whole

Walkers: $27 - 12 = 15$.

(a) 12 : 15 (b) 12 : 27 (c) 15 : 27

Answer: **(a) 12 : 15; (b) 12 : 27; (c) 15 : 27.**

Problem 5 Making Equivalent Ratios

Multiply both terms by 2, 3 and 4: $4 \times 2 = 8$ and $7 \times 2 = 14$; $4 \times 3 = 12$ and $7 \times 3 = 21$; $4 \times 4 = 16$ and $7 \times 4 = 28$.

Answer: **8 : 14, 12 : 21, 16 : 28** (other correct answers are possible).

Problem 6 Completing a Ratio Table

Each column is 3 : 2. Flour 6 is 3×2 , so sugar is $2 \times 2 = 4$. Flour 9 is 3×3 , so sugar is 6. Sugar 10 is 2×5 , so flour is $3 \times 5 = 15$. Flour 30 is 3×10 , so sugar is 20.

Answer: **sugar 4, 6, 20 and flour 15.**

Flour (cups)	3	6	9	15	30
Sugar (cups)	2	4	6	10	20

Every column simplifies to 3 : 2.

Problem 7 Simplest Form

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

(b) The greatest common factor of 45 and 30 is 15: $45 \div 15 = 3$ and $30 \div 15 = 2$.

Answer: **(a) 3 : 4; (b) 3 : 2.**

Problem 8 Equivalent or Not?

(a) $5 \times 7 = 35$ and $8 \times 7 = 56$, so they match.

(b) $9 : 12$ simplifies to $3 : 4$; $15 : 21$ simplifies to $5 : 7$. They differ.

(c) $16 : 10$ simplifies to $8 : 5$; $24 : 15$ simplifies to $8 : 5$. They match.

Answer: **(a) yes; (b) no; (c) yes.**

Problem 9 Finding the Missing Term

(a) $28 \div 7 = 4$, and $3 \times 4 = 12$.

(b) $63 \div 9 = 7$, and $5 \times 7 = 35$.

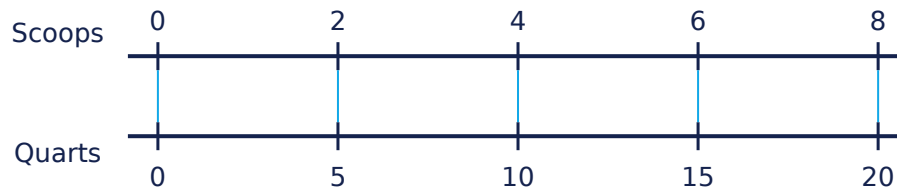
Answer: **(a) 12; (b) 35.**

Problem 10 Double Number Line

(a) Each step is 2 scoops and 5 quarts. After 10 quarts the next values are 15 and 20.

(b) $14 \div 2 = 7$ steps, so $7 \times 5 = 35$ quarts.

Answer: **(a) 15 and 20; (b) 35 quarts.**



Every step adds 2 scoops and 5 quarts.

Problem 11 Finding a Whole from a Part

$30 \div 5 = 6$, so multiply 6 by 6: 36 sopranos.

Total: $30 + 36 = 66$.

Answer: **36 sopranos and 66 singers.**

Problem 12 Comparing Two Recipes

Use 35 cups of water for both. A: $3 : 5 = 21 : 35$. B: $4 : 7 = 20 : 35$.

With the same water, A has 21 cups of juice and B only 20.

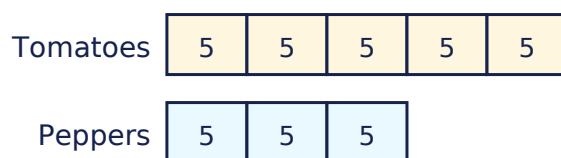
Answer: **Punch A.**

Problem 13 Sharing a Total

The tape has $5 + 3 = 8$ equal blocks. Each block is $40 \div 8 = 5$ plants.

Tomatoes: $5 \times 5 = 25$. Peppers: $3 \times 5 = 15$. Check: $25 + 15 = 40$.

Answer: **25 tomato plants and 15 pepper plants.**



Each block is 5 plants.

Problem 14 Camp Staffing

The ratio 2 : 14 simplifies to 1 : 7.

(a) $98 \div 7 = 14$ counselors.

(b) $11 \times 7 = 77$ campers.

Answer: **(a) 14 counselors; (b) 77 campers.**

Problem 15 Mixing Green Paint

Parts: $4 + 9 = 13$. One part: $52 \div 13 = 4$ quarts.

Blue: $4 \times 4 = 16$. Yellow: $9 \times 4 = 36$. Check: $16 + 36 = 52$.

Answer: **16 quarts of blue and 36 quarts of yellow.**

Problem 16 Season Record

9 : 6 simplifies to 3 : 2, so each group has 5 games. $45 \div 5 = 9$ groups.

Wins: $3 \times 9 = 27$. Losses: $2 \times 9 = 18$.

Answer: **27 wins and 18 losses.**

Problem 17 Pet Store Difference

Fish have 8 blocks and hamsters 3 blocks, so the difference is 5 blocks. 5 blocks = 20, so 1 block = 4.

Fish: $8 \times 4 = 32$. Hamsters: $3 \times 4 = 12$. Check: $32 - 12 = 20$.

Answer: **32 fish and 12 hamsters.**

Problem 18 Science Fair Entries

$7 + 5 = 12$ parts, and $168 \div 12 = 14$ students per part.

Sixth: $7 \times 14 = 98$. Seventh: $5 \times 14 = 70$. Difference: $98 - 70 = 28$.

Answer: **28 more sixth graders.**

Problem 19 Spot the Error

Adding the same number to both terms does not keep the relationship. To keep the ratio, multiply both terms by the same number. Here $3 \times 2 = 6$, so $5 \times 2 = 10$.

Answer: **10**.

Problem 20 Fundraiser Revenue

$3 + 2 = 5$ items per group, and $135 \div 5 = 27$ groups.

T-shirts: $3 \times 27 = 81$, so $81 \times 12 = \$972$. Hoodies: $2 \times 27 = 54$, so $54 \times 25 = \$1,350$.

Total: $972 + 1,350 = 2,322$.

Answer: **\$2,322**.