MATHEMATICS · GRADES 4-6

Adding fractions with unlike denominators

Difficulty level: Intermediate

Mathematics: Grades 4-6

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Overview of the concept

This is how you add two amounts that come in different sized pieces, like a third of a pizza plus a quarter of the same pizza. You cannot add them as they are, because thirds and quarters are different sizes. You first cut them into matching pieces, then you can work out how much you have altogether.



Rule

Adding fractions with unlike denominators: first rewrite both fractions with a common denominator, then add the numerators and keep the denominator.

You cannot add pieces of different sizes until they are cut into matching pieces.

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Worked examples

EXAMPLE 1

Q $\frac{1}{2} + \frac{1}{3} = ?$

SOLUTION

$\frac{1}{2} = \frac{3}{6}, \frac{1}{3} = \frac{2}{6}$

$\frac{3}{6} + \frac{2}{6} = \frac{5}{6}$

Answer: $\frac{5}{6}$

Find the common denominator 6 and rewrite: $\frac{1}{2} = \frac{3}{6}$ and $\frac{1}{3} = \frac{2}{6}$

Add the numerators: 3 + 2 = 5, keeping 6.

So the answer is $\frac{5}{6}$

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EXAMPLE 2

Q $\frac{1}{4} + \frac{2}{3} = ?$

SOLUTION

$\frac{1}{4} = \frac{3}{12}, \frac{2}{3} = \frac{8}{12}$

$\frac{3}{12} + \frac{8}{12} = \frac{11}{12}$

Answer: $\frac{11}{12}$

Find the common denominator 12 and rewrite: $\frac{1}{4} = \frac{3}{12}$ and $\frac{2}{3} = \frac{8}{12}$

Add the numerators: 3 + 8 = 11, keeping 12.

So the answer is $\frac{11}{12}$

Practice questions

1 Maya eats $\frac{1}{2}$ of a pizza and Noah eats $\frac{1}{4}$ of the same pizza. How much of the pizza did they eat together?

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2 A garden bed has $\frac{1}{4}$ planted with carrots and $\frac{1}{3}$ planted with beans. How much of the bed is planted?

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3 Liam reads $\frac{1}{3}$ of a book on Monday and $\frac{1}{6}$ on Tuesday. How much of the book has he read?

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4 A jug is $\frac{2}{5}$ full of juice. Sara pours in $\frac{1}{10}$ more of a jug. How full is the jug now?

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5 Blue covers $\frac{3}{4}$ of the wall and yellow covers $\frac{1}{8}$. How much of the wall is painted?

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6 At lunch $\frac{1}{2}$ of a cake is eaten, and at snack time $\frac{1}{8}$ more is eaten. How much of the cake was eaten in all?

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7 Maya walks $\frac{2}{3}$ of it in the morning and $\frac{1}{4}$ in the afternoon. How much of the trail has she walked?

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8 A tank is $\frac{1}{5}$ full of water. Then $\frac{3}{10}$ more of a tank is added. How full is the tank now?

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9 Bows use $\frac{3}{5}$ of the ribbon and wrapping uses $\frac{1}{4}$. How much of the ribbon was used?

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10 Ana eats $\frac{1}{6}$ of a pizza and Ben eats $\frac{1}{3}$ of the same pizza. How much of the pizza did they eat together?

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ANSWER KEY

1. $\frac{3}{4}$

2. $\frac{7}{12}$

3. $\frac{1}{2}$

4. $\frac{1}{2}$

5. $\frac{7}{8}$

6. $\frac{5}{8}$

7. $\frac{11}{12}$

8. $\frac{1}{2}$

9. $\frac{17}{20}$

10. $\frac{1}{2}$

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