Merit Tutoring

WORKSHEET 19

Year 6 Mathematics: Fractions, Decimals & Percentages

Adding & Subtracting Fractions

Focus: Like Denominators & Visual Models

Name: _____ **Date:** _____

Understanding Fractions with Like Denominators

Parts of a Fraction:

$$\frac{\text{Numerator (top)}}{\text{Denominator (bottom)}}$$

The denominator tells us how many equal parts the whole is divided into.
The numerator tells us how many of those parts we have.

Adding and Subtracting with Like Denominators:

When denominators are the SAME, we just add or subtract the numerators:

$$\frac{2}{5} + \frac{1}{5} = \frac{2+1}{5} = \frac{3}{5}$$

$$\frac{7}{9} - \frac{4}{9} = \frac{7-4}{9} = \frac{3}{9}$$

Simplification: Always simplify your answer to its lowest form:

$$\frac{3}{9} = \frac{1}{3} \text{ (divide both top and bottom by 3)}$$

Key Rule: The denominator stays the same - only the numerators change!

Section 1: Same Denominator (Fluency)

1. Calculate: $\frac{2}{7} + \frac{3}{7}$

Answer: _____

2. Calculate: $\frac{5}{9} + \frac{2}{9}$

Answer: _____

3. Calculate: $\frac{8}{10} - \frac{3}{10}$. Simplify your answer.

Answer: _____

4. Calculate: $\frac{6}{8} - \frac{2}{8}$. Simplify your answer.

Answer: _____

5. Calculate: $\frac{4}{12} + \frac{5}{12}$. Simplify your answer.

Answer: _____

6. Calculate: $\frac{11}{15} - \frac{4}{15}$

Answer: _____

FRACTION FANATIC!

Fraction Frog

Why did the fraction go to the therapist?
Because it had too many problems with its other half!

Section 2: Visualising Addition (Reasoning)

7. Use the diagram to add $\frac{1}{4} + \frac{1}{4}$. Write the answer as a fraction.

$\frac{1}{4}$ shaded

$\frac{1}{4}$ shaded

Answer: _____

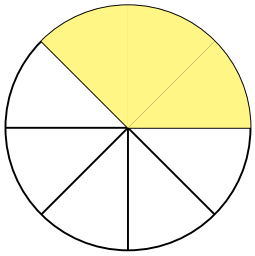
8. Use the diagram to calculate $\frac{3}{5} - \frac{1}{5}$:

$\frac{3}{5}$ shaded

Cross out $\frac{1}{5}$ to subtract

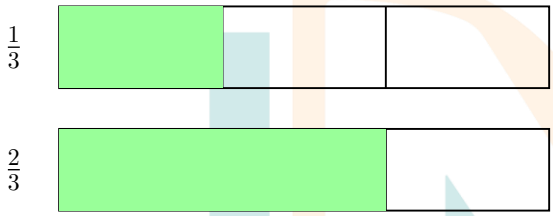
Answer: _____

9. This pie chart shows eighths. How much is shaded in total?



Answer: _____

10. Look at these fraction bars:



Calculate: $\frac{1}{3} + \frac{2}{3}$

Answer: _____

11. Draw a diagram showing $\frac{2}{6} + \frac{3}{6}$ and write the answer.

Answer: _____

VISUAL VICTOR!

Pie Penguin

What do you call a number that can't sit still?
A roamin' numeral!

Section 3: Missing Numbers (Challenge)

12. Fill in the blank: $\frac{3}{8} + \_\_\_\_ = \frac{7}{8}$

Answer: _____

13. Fill in the blank: $\frac{9}{10} - \_\_\_\_ = \frac{4}{10}$

Answer: _____

14. I have $\frac{5}{6}$ of a cake. I eat $\frac{2}{6}$. How much is left? Simplify the answer.

Answer: _____

15. Fill in the blank: $\_\_\_\_ + \frac{2}{9} = \frac{8}{9}$

Answer: _____

16. A ribbon is $\frac{11}{12}$ metres long. I cut off $\frac{5}{12}$ metres. How much ribbon is left? Simplify if possible.

Answer: _____

17. True or False: $\frac{4}{7} + \frac{3}{7} = \frac{7}{7} = 1$
Explain your answer.

Answer: _____

PROBLEM-SOLVING PRO!

Numerator Ninja

Why did the student do multiplication problems on the floor?
The teacher told them not to use tables!

Fantastic Work! Check your answers on the next page.

ANSWER KEY

Worksheet 19: Like Denominators & Visual Models

Section 1: Same Denominator

1. $\frac{5}{7}$ (add numerators: 2 + 3 = 5)

2. $\frac{7}{9}$ (add numerators: 5 + 2 = 7)

3. $\frac{5}{10} = \frac{1}{2}$ (subtract numerators: 8 - 3 = 5, then simplify)

4. $\frac{4}{8} = \frac{1}{2}$ (subtract numerators: 6 - 2 = 4, then simplify)

5. $\frac{9}{12} = \frac{3}{4}$ (add numerators: 4 + 5 = 9, then simplify by dividing by 3)

6. $\frac{7}{15}$ (subtract numerators: 11 - 4 = 7)

Section 2: Visualising Addition

7. $\frac{2}{4} = \frac{1}{2}$ (two quarters shaded in total)

8. $\frac{2}{5}$ (3 fifths minus 1 fifth equals 2 fifths)

9. $\frac{3}{8}$ (three eighths are shaded)

10. $\frac{3}{3} = 1$ (one third plus two thirds equals three thirds, which is one whole)

11. $\frac{5}{6}$ (student should draw a bar divided into 6 parts with 5 shaded)

Section 3: Missing Numbers

12. $\frac{4}{8} = \frac{1}{2}$ (because $\frac{3}{8} + \frac{4}{8} = \frac{7}{8}$)

13. $\frac{5}{10} = \frac{1}{2}$ (because $\frac{9}{10} - \frac{5}{10} = \frac{4}{10}$)

14. $\frac{3}{6} = \frac{1}{2}$ (because $\frac{5}{6} - \frac{2}{6} = \frac{3}{6}$, simplified to $\frac{1}{2}$)

15. $\frac{6}{9} = \frac{2}{3}$ (because $\frac{6}{9} + \frac{2}{9} = \frac{8}{9}$)

16. $\frac{6}{12} = \frac{1}{2}$ metres (because $\frac{11}{12} - \frac{5}{12} = \frac{6}{12}$, simplified to $\frac{1}{2}$)

17. True. $\frac{4}{7} + \frac{3}{7} = \frac{7}{7} = 1$ (seven sevenths equals one whole)

Merit Tutoring

WORKSHEET 20

Year 6 Mathematics: Fractions, Decimals & Percentages

Adding & Subtracting Fractions

Focus: Related Denominators

Name: _____ **Date:** _____

Understanding Related Denominators

What are Related Denominators?

Related denominators are denominators where one is a multiple of the other.

Examples: 2 and 4, 3 and 6, 4 and 8, 5 and 10

Making Denominators the Same:

To add or subtract fractions with different denominators, we must first convert them to have the SAME denominator.

Example 1: $\frac{1}{2} + \frac{1}{4}$

Step 1: Convert $\frac{1}{2}$ to quarters: $\frac{1}{2} = \frac{2}{4}$

Step 2: Add: $\frac{2}{4} + \frac{1}{4} = \frac{3}{4}$

Example 2: $\frac{2}{3} + \frac{1}{6}$

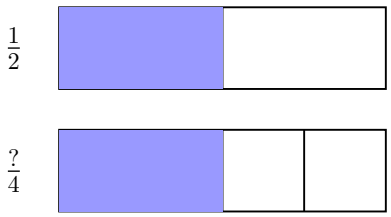
Step 1: Convert $\frac{2}{3}$ to sixths: $\frac{2}{3} = \frac{4}{6}$

Step 2: Add: $\frac{4}{6} + \frac{1}{6} = \frac{5}{6}$

Visual Aid: Think of halves as ”big pieces” and quarters as ”small pieces” - two small pieces make one big piece!

Section 1: Making Denominators the Same (Fluency)

1. To add $\frac{1}{2} + \frac{1}{4}$, first change $\frac{1}{2}$ into quarters. What is $\frac{1}{2}$ as quarters?

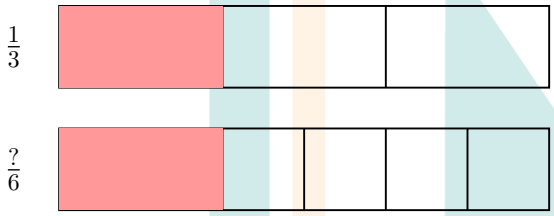


Answer: _____

2. Now calculate: $\frac{1}{2} + \frac{1}{4}$ (Use your answer from Question 1)

Answer: _____

3. Convert $\frac{1}{3}$ to sixths. (Hint: $\frac{1}{3} = \frac{?}{6}$)



Answer: _____

4. Calculate: $\frac{1}{3} + \frac{1}{6}$ (Hint: $\frac{1}{3} = \frac{2}{6}$)

Answer: _____

5. Convert $\frac{3}{4}$ to eighths. (Hint: multiply numerator and denominator by 2)

Answer: _____

6. Calculate: $\frac{1}{4} + \frac{3}{8}$ (First convert $\frac{1}{4}$ to eighths)

Answer: _____

DENOMINATOR DOMINATOR!

Fraction Fox

What did the zero say to the eight?
"Nice belt!"

Section 2: Addition and Subtraction (Reasoning)

7. Calculate: $\frac{1}{2} + \frac{3}{8}$ (Turn halves into eighths: $\frac{1}{2} = \frac{4}{8}$)

Answer: _____

8. Calculate: $\frac{3}{4} - \frac{1}{2}$ (Turn halves into quarters: $\frac{1}{2} = \frac{2}{4}$)

Answer: _____

9. Calculate: $\frac{2}{3} + \frac{1}{6}$ (Turn thirds into sixths: $\frac{2}{3} = \frac{4}{6}$)

Answer: _____

10. Calculate: $\frac{5}{6} - \frac{1}{3}$ (Turn thirds into sixths: $\frac{1}{3} = \frac{2}{6}$)

Answer: _____

11. Calculate: $\frac{1}{2} + \frac{1}{8}$

Answer: _____

12. Calculate: $\frac{7}{10} - \frac{2}{5}$ (Hint: $\frac{2}{5} = \frac{4}{10}$)

Answer: _____

CONVERSION KING!

Conversion King

Why was six afraid of seven?
Because seven eight (ate) nine!

Section 3: Word Problems (Challenge)

13. Tom ate $\frac{1}{2}$ of a pizza. Sarah ate $\frac{1}{4}$ of the same pizza. How much pizza did they eat altogether?

Answer: _____

14. A jug is $\frac{3}{5}$ full. Someone drinks $\frac{1}{10}$ of the jug's capacity. What fraction of the jug is left?
(Hint: Convert $\frac{3}{5}$ to tenths first)

Answer: _____

15. Lucy walked $\frac{3}{4}$ of a kilometre to school. Then she walked $\frac{1}{2}$ of a kilometre to the library. How far did she walk in total?

Answer: _____

16. A recipe needs $\frac{2}{3}$ cup of sugar. You have $\frac{5}{6}$ cup of sugar. How much sugar will you have left after making the recipe?

Answer: _____

17. Ben painted $\frac{1}{2}$ of a fence on Monday and $\frac{3}{8}$ on Tuesday. What fraction of the fence has he painted? What fraction is still unpainted?

Answer: _____

18. A tank is $\frac{7}{8}$ full of water. After using $\frac{1}{4}$ of the tank's capacity, how much water remains in the tank?

Answer: _____

WORD PROBLEM WIZARD!

Wizard Owl

What do you call friends who love math?
Alge-bros!

Outstanding Work! Check your answers on the next page.

ANSWER KEY

Worksheet 20: Related Denominators

Section 1: Making Denominators the Same

1. $\frac{2}{4}$ (one half equals two quarters)
2. $\frac{3}{4}$ (because $\frac{2}{4} + \frac{1}{4} = \frac{3}{4}$)
3. $\frac{2}{6}$ (one third equals two sixths)
4. $\frac{3}{6} = \frac{1}{2}$ (because $\frac{2}{6} + \frac{1}{6} = \frac{3}{6}$, which simplifies to $\frac{1}{2}$)
5. $\frac{6}{8}$ (multiply both parts by 2: $\frac{3\times2}{4\times2} = \frac{6}{8}$)
6. $\frac{5}{8}$ (because $\frac{1}{4} = \frac{2}{8}$, so $\frac{2}{8} + \frac{3}{8} = \frac{5}{8}$)

Section 2: Addition and Subtraction

7. $\frac{7}{8}$ (because $\frac{4}{8} + \frac{3}{8} = \frac{7}{8}$)
8. $\frac{1}{4}$ (because $\frac{3}{4} - \frac{2}{4} = \frac{1}{4}$)
9. $\frac{5}{6}$ (because $\frac{4}{6} + \frac{1}{6} = \frac{5}{6}$)
10. $\frac{3}{6} = \frac{1}{2}$ (because $\frac{5}{6} - \frac{2}{6} = \frac{3}{6}$, simplified to $\frac{1}{2}$)
11. $\frac{5}{8}$ (because $\frac{1}{2} = \frac{4}{8}$, so $\frac{4}{8} + \frac{1}{8} = \frac{5}{8}$)
12. $\frac{3}{10}$ (because $\frac{7}{10} - \frac{4}{10} = \frac{3}{10}$)

Section 3: Word Problems

13. $\frac{3}{4}$ of the pizza ($\frac{1}{2} = \frac{2}{4}$, so $\frac{2}{4} + \frac{1}{4} = \frac{3}{4}$)
14. $\frac{5}{10} = \frac{1}{2}$ of the jug ($\frac{3}{5} = \frac{6}{10}$, so $\frac{6}{10} - \frac{1}{10} = \frac{5}{10}$)
15. $\frac{5}{4} = 1\frac{1}{4}$ kilometres ($\frac{3}{4} + \frac{2}{4} = \frac{5}{4}$)
16. $\frac{1}{6}$ cup ($\frac{2}{3} = \frac{4}{6}$, so $\frac{5}{6} - \frac{4}{6} = \frac{1}{6}$)
17. Painted: $\frac{7}{8}$ ($\frac{1}{2} = \frac{4}{8}$, so $\frac{4}{8} + \frac{3}{8} = \frac{7}{8}$); Unpainted: $\frac{1}{8}$
18. $\frac{5}{8}$ of the tank ($\frac{1}{4} = \frac{2}{8}$, so $\frac{7}{8} - \frac{2}{8} = \frac{5}{8}$)

Exceptional Achievement!

You've mastered Adding & Subtracting Fractions!
From like denominators to related denominators
- brilliant work!