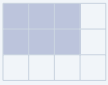
Multiplying and Dividing Fractions

Name: _____	Date: _____	Score: _____ / 18

Quick Review and Helpful Hints

To *multiply* fractions, multiply the numerators together and the denominators together, then simplify. To *divide*, multiply by the reciprocal of the second fraction (flip it, then multiply). Canceling common factors before you multiply keeps the numbers small.

▷ **Example:** Multiply $\frac{2}{3} \times \frac{3}{4}$. **Work:** Multiply straight across: $\frac{2\times3}{3\times4} = \frac{6}{12}$. Simplify by dividing top and bottom by 6. ★ **Answer:** $\frac{1}{2}$



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

Practice Problems

Multiply or divide. Write each answer in simplest form.

1. $\frac{1}{2} \times \frac{1}{3}$ _____
2. $\frac{2}{3} \times \frac{3}{5}$ _____
3. $\frac{3}{4} \times \frac{2}{9}$ _____
4. $\frac{1}{2} \div \frac{1}{4}$ _____
5. $\frac{2}{3} \div \frac{4}{9}$ _____
6. $\frac{5}{6} \times \frac{3}{10}$ _____
7. $\frac{4}{5} \times \frac{5}{8}$ _____
8. $\frac{3}{4} \div \frac{1}{2}$ _____
9. $\frac{7}{8} \times \frac{2}{7}$ _____
10. $\frac{5}{9} \div \frac{5}{6}$ _____
11. $\frac{2}{5} \times \frac{10}{3}$ _____
12. $\frac{6}{7} \div \frac{3}{14}$ _____
13. $\frac{3}{8} \times \frac{4}{9}$ _____
14. $\frac{8}{15} \div \frac{2}{5}$ _____

Word Problems

15. A recipe calls for $\frac{3}{4}$ cup of flour. How much flour is needed for half a batch? _____
16. A 6-foot ribbon is cut into pieces that are each $\frac{3}{4}$ foot long. How many pieces are there? _____
17. A farmer plants $\frac{2}{3}$ of a 9-acre field. How many acres are planted? _____
18. A baker has $\frac{5}{8}$ lb of chocolate and packages it into $\frac{1}{4}$-lb gift bags. How many bags can be filled, counting a partial bag if needed? _____

Answer Keys

1. $\frac{1}{6}$
2. $\frac{2}{5}$
3. $\frac{1}{6}$
4. 2
5. $\frac{3}{2}$
6. $\frac{1}{4}$
7. $\frac{1}{2}$
8. $\frac{3}{2}$
9. $\frac{1}{4}$
10. $\frac{2}{3}$
11. $\frac{4}{3}$
12. 4
13. $\frac{1}{6}$
14. $\frac{4}{3}$
15. $\frac{3}{8}$ cup
16. 8 pieces
17. 6 acres
18. $\frac{5}{2}$ bags

Step-by-Step Explanations

1. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is To multiply, go straight across: $\frac{1\times1}{2\times3} = \frac{1}{6}$. It is already in simplest form. So the final answer is $\frac{1}{6}$.

2. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Multiply across: $\frac{2\times3}{3\times5} = \frac{6}{15}$. Top and bottom share 3, so simplify to $\frac{2}{5}$. So the final answer is $\frac{2}{5}$.

3. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Multiply across: $\frac{3\times2}{4\times9} = \frac{6}{36}$. Divide top and bottom by 6 to get $\frac{1}{6}$. So the final answer is $\frac{1}{6}$.

4. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Dividing means multiply by the reciprocal – flip $\frac{1}{4}$ to $\frac{4}{1}$. Then $\frac{1}{2} \times \frac{4}{1} = \frac{4}{2} = 2$. So the final answer is 2.

5. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Flip the second fraction and multiply: $\frac{2}{3} \times \frac{9}{4} = \frac{18}{12}$, which simplifies to $\frac{3}{2}$. So the final answer is $\frac{3}{2}$.

6. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Multiply across: $\frac{5\times3}{6\times10} = \frac{15}{60}$. Divide by 15 to reach $\frac{1}{4}$. So the final answer is $\frac{1}{4}$.

7. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Multiply across: $\frac{4\times5}{5\times8} = \frac{20}{40}$, which simplifies to $\frac{1}{2}$ (the 5's cancel). So the final answer is $\frac{1}{2}$.

8. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Flip and multiply: $\frac{3}{4} \times \frac{2}{1} = \frac{6}{4} = \frac{3}{2}$. So the final answer is $\frac{3}{2}$.

9. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Multiply across: $\frac{7\times2}{8\times7} = \frac{14}{56} = \frac{1}{4}$ (the 7's cancel). So the final answer is $\frac{1}{4}$.

10. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Flip the second fraction: $\frac{5}{9} \times \frac{6}{5} = \frac{30}{45} = \frac{2}{3}$ (the 5's cancel). So the final answer is $\frac{2}{3}$.

11. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Multiply across: $\frac{2\times10}{5\times3} = \frac{20}{15} = \frac{4}{3}$. So the final answer is $\frac{4}{3}$.

12. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Flip and multiply: $\frac{6}{7} \times \frac{14}{3} = \frac{84}{21} = 4$. So the final answer is 4.

13. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Multiply across: $\frac{3\times4}{8\times9} = \frac{12}{72} = \frac{1}{6}$. So the final answer is $\frac{1}{6}$.

14. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Flip and multiply: $\frac{8}{15} \times \frac{5}{2} = \frac{40}{30} = \frac{4}{3}$. So the final answer is $\frac{4}{3}$.

15. Step by step: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Half a batch means multiply by $\frac{1}{2}$: $\frac{3}{4} \times \frac{1}{2} = \frac{3}{8}$ cup of flour. So the final answer is $\frac{3}{8}$ cup.

16. Take it one move at a time: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Divide the total length by the piece length: $6 \div \frac{3}{4} = 6 \times \frac{4}{3} = \frac{24}{3} = 8$ pieces. So the final answer is 8 pieces.

17. Start by naming the process: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Find $\frac{2}{3}$ of 9 by multiplying: $\frac{2}{3} \times 9 = \frac{18}{3} = 6$ acres. So the final answer is 6 acres.

18. A good way to think about this is: Read what the problem is asking, choose the matching rule, write the setup, and then simplify one step at a time. The setup/work is Divide the bar by the bag size: $\frac{5}{8} \div \frac{1}{4} = \frac{5}{8} \times 4 = \frac{20}{8} = \frac{5}{2}$, which is $2\frac{1}{2}$ bags. So the final answer is $\frac{5}{2}$ bags.

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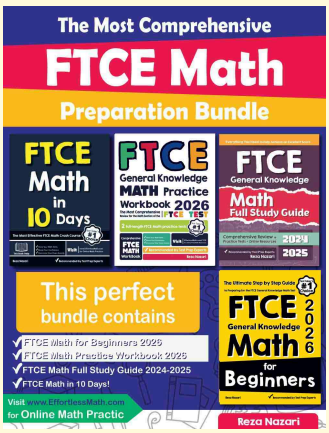

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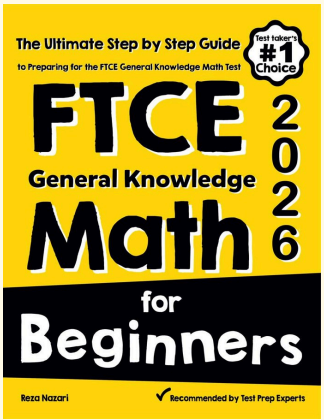

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