

7th Grade Math Summer Packet

Name: _____

Period: _____

Grade: _____

Welcome to 7th Grade,

7th Grade Summer Math Assignment:

1. Student will complete Pretest.
2. Student will read teacher's notes and examples for each concept.
3. Student will complete skills practice questions for each concept.
4. Student will complete Posttest.

The packet will be graded on Tuesday, August 16th.

Pretest

Write each decimal as a fraction in simplest form.

1. 0.75

1. _____

2. 0.4

2. _____

Write each fraction as a decimal.

3. $\frac{4}{5}$

3. _____

4. $\frac{1}{25}$

4. _____

Write each percent as a fraction in simplest form.

5. 32%

5. _____

6. 48%

6. _____

Write each fraction as a percent.

7. $\frac{7}{20}$

7. _____

8. $\frac{1}{5}$

8. _____

Write each percent as a decimal.

9. 12%

9. _____

10. 64%

10. _____

Write each decimal as a percent.

11. 0.85

11. _____

12. 0.73

12. _____

Replace each \bullet with $<$, $>$, or $=$ to make a true statement.

13. $\frac{2}{3} \bullet \frac{3}{5}$

13. _____

14. $\frac{1}{8} \bullet \frac{1}{4}$

14. _____

Find the percent of the number.

15. 6% of 38

15. _____

Factors and Multiples:

The **greatest common factor (GCF)** of two or more numbers is the greatest of the common factors of the numbers. The smallest number that is a multiple of two or more whole numbers is the **least common multiple (LCM)** of the numbers.

Examples:

Find the GCF of 12 and 30.

List the factors for each number.

Factors of 12: 1, 2, 3, 4, 6, 12

Factors of 30: 1, 2, 3, 5, 6, 10, 15, 30.

The common factors are 1, 2, 3, and 6.

The greatest is 6.

So, the GCF of 12 and 30 is 6.

Find the LCM of 6 and 15.

List the multiples of each number.

Multiples of 6: 6, 12, 18, 24, 30, 36, 42, 48, 54, 60

Multiples of 15: 15, 30, 45, 60,

Notice that 30 and 60 are common multiples.

The least common multiple of 6 and 15 is 30.

PRACTICE

Find the GCF of each set of numbers.

1. 6, 12

1. _____

2. 28, 42

2. _____

3. 44, 55

3. _____

4. 35, 20, 15

4. _____

Find the LCM of each set of numbers.

5. 5, 6

5. _____

6. 6, 8

6. _____

7. 4, 10

7. _____

8. 15, 12

8. _____

9. ANALYZE TABLES A store is organizing toys into bins. The toys must be put into bins so that each bin contains the same number of toys without mixing the toys.

- a. What is the greatest number of toys that can be put in a bin?

- b. How many bins are needed for each type of toy?

Toys to Place in Bins	
Toy	Number of Toys
Anemones	12
Limpets	14
Snails	18

Decimals and Fractions:

To write a decimal as a fraction, follow these steps:

1. Identify the place value of the last decimal place.
2. Write the decimal as a fraction using the place value as the denominator, and simplify.

Examples:

Write 0.5 as a fraction in simplest form.

$$\begin{aligned} 0.5 &= \frac{5}{10} && 0.5 \text{ means five tenths.} \\ &= \frac{\cancel{5}^1}{\cancel{10}^2} && \text{Simplify. Divide the numerator and denominator by the GCF, 5.} \\ &= \frac{1}{2} && \text{So, in simplest form, 0.5 is } \frac{1}{2}. \end{aligned}$$

Write 0.35 as a fraction in simplest form.

$$\begin{aligned} 0.35 &= \frac{35}{100} && 0.35 \text{ means 35 hundredths.} \\ &= \frac{\cancel{35}^7}{\cancel{100}^{20}} && \text{Simplify. Divide the numerator and denominator by the GCF, 5.} \\ &= \frac{7}{20} && \text{So, in simplest form, 0.35 is } \frac{7}{20}. \end{aligned}$$

To write a fraction as a decimal, divide numerator by denominator:

Example:

Write $\frac{3}{5}$ as a decimal.

$$3 \div 5 = 0.6$$

Practice:

Write each decimal as a fraction or mixed number in simplest form.

1. 0.9 1. _____

2. 0.75 2. _____

3. 0.125 3. _____

4. 0.035 4. _____

Write each fraction or mixed number as a decimal.

5. $1\frac{3}{8}$ 5. _____

6. $3\frac{5}{16}$ 6. _____

7. $4\frac{9}{20}$ 7. _____

Percents and Fractions:

To write a percent as a fraction, write it as a fraction with a denominator of 100. Then simplify.

Example: Write 15% as a fraction in simplest form.

15% means *15 out of 100*.

$$15\% = \frac{15}{100} \quad \text{Definition of percent}$$

$$= \frac{\cancel{15}^3}{\cancel{100}_{20}} \text{ or } \frac{3}{20} \quad \text{Simplify. Divide the numerator and denominator by the GCF, 5.}$$

To write a fraction as a percent, follows these steps:

1. Convert fraction into a decimal. Divide numerator by denominator.
2. Multiply the decimal by 100.

Example: Write $\frac{1}{4}$ as a percent.

$$1 \div 4 = .25$$

$$.25 \times 100 = 25\%$$

PRACTICE:

Write each percent as a fraction in simplest form.

1. 20%

1. _____

2. 35%

2. _____

3. 70%

3. _____

4. 68%

4. _____

Write each fraction as a percent.

5. $\frac{3}{10}$

5. _____

6. $\frac{8}{25}$

6. _____

7. $\frac{1}{5}$

7. _____

8. $\frac{7}{20}$

8. _____

Compare and Order Fractions, Decimals, and Percents:

To compare or order two or more fractions.

- Find the *least common denominator (LCD)* of the fractions; that is, find the least common multiple of the denominators.
- Write an equivalent fraction for each fraction using the LCD.
- Compare the numerators.
- Order the numerators
- Answers should always be in original fractional form

Examples: Replace ● with <, >, or = to make $\frac{1}{3}$ ● $\frac{5}{12}$ true.

The LCM of 3 and 12 is 12. So, the LCD is 12.

Rewrite each fraction with a denominator of 12.

↖ ×4 ↗

$$\frac{1}{3} = \frac{\square}{12}, \text{ so } \frac{1}{3} = \frac{4}{12}, \quad \frac{5}{12} = \frac{5}{12}$$

Now compare. Since $4 < 5$, $\frac{4}{12} < \frac{5}{12}$. So, $\frac{1}{3} < \frac{5}{12}$.

Example 2: Order $\frac{1}{6}$, $\frac{2}{3}$, $\frac{1}{4}$, and $\frac{3}{8}$ from least to greatest.

The LCD of the fractions is 24. So, rewrite each fraction with a denominator of 24.

↖ ×4 ↗

$$\frac{1}{6} = \frac{\square}{24}, \text{ so } \frac{1}{6} = \frac{4}{24}$$

↖ ×8 ↗

$$\frac{1}{6} = \frac{\square}{24}, \text{ so } \frac{2}{3} = \frac{16}{24}$$

↖ ×6 ↗

$$\frac{1}{4} = \frac{\square}{24}, \text{ so } \frac{1}{4} = \frac{6}{24}$$

↖ ×3 ↗

$$\frac{1}{4} = \frac{\square}{24}, \text{ so } \frac{3}{8} = \frac{9}{24}$$

The order of the fractions from least to greatest is $\frac{1}{6}, \frac{1}{4}, \frac{3}{8}, \frac{2}{3}$.

PRACTICE:

Replace ● each with <, >, or = to make a true statement.

1. $\frac{5}{12}$ ● $\frac{3}{8}$

1. _____

2. $3\frac{2}{7}$ ● $3\frac{1}{6}$

2. _____

Order the fractions from least to greatest.

3. $\frac{3}{4}, \frac{3}{8}, \frac{1}{2}, \frac{1}{4}$

3. _____

4. $1\frac{1}{2}, 1\frac{5}{6}, 1\frac{5}{8}, 1\frac{5}{12}$

4. _____

Practice:

1. What is the least common multiple of 6 and 8? 1. _____
2. What is the least common multiple of 4, 7, and 8? 2. _____
3. What is the greatest common factor of 36 and 42? 3. _____
4. What is the greatest common factor of 18, 30, and 66? 4. _____

Write each decimal as a fraction or mixed number in simplest form.

5. 0.45 5. _____
6. 0.125 6. _____
7. 6.04 7. _____

Write each fraction or mixed number as a decimal.

8. $\frac{7}{8}$ 8. _____
9. $\frac{7}{15}$ 9. _____
10. $4\frac{3}{25}$ 10. _____

Write each percent as a fraction in simplest form.

11. 12% 11. _____
12. 48% 12. _____
13. 75% 13. _____

Write each fraction as a percent.

14. $\frac{7}{20}$ 14. _____
15. $\frac{3}{5}$ 15. _____
16. $\frac{7}{16}$ 16. _____

Write each decimal as a percent.

17. 0.35 17. _____
18. 0.812 18. _____
19. 0.068 19. _____
20. Order the following from least to greatest
 75% , $\frac{1}{2}$, 0.375 , and $\frac{5}{8}$ 20. _____

Operations with Fractions:

Like fractions are fractions that have the same denominator. To add or subtract like fractions, add or subtract the numerators and write the result over the denominator.

Simplify if necessary.

Examples:

Find $\frac{3}{4} + \frac{1}{4}$. Write in simplest form.

$$\begin{aligned} \frac{3}{4} + \frac{1}{4} &= \frac{3+1}{4} && \text{Add the numerators} \\ &= \frac{4}{4} && \text{Write the sum over} \\ &= 1 && \text{Simplify.} \end{aligned}$$

Find $\frac{2}{3} - \frac{1}{3}$. Write in simplest form.

$$\begin{aligned} \frac{2}{3} - \frac{1}{3} &= \frac{2-1}{3} && \text{Subtract the numerators.} \\ &= \frac{1}{3} && \text{Write the difference over} \\ &&& \text{denominator} \end{aligned}$$

To add or subtract fractions with different denominators,

- Rename the fractions using the least common denominator (LCD).
- Add or subtract as with like fractions.
- If necessary, simplify the sum or difference.

Example: Find $\frac{2}{3} + \frac{1}{4}$

$$\begin{aligned} \frac{2}{3} + \frac{1}{4} &= \frac{2}{3} \cdot \frac{4}{4} + \frac{1}{4} \cdot \frac{3}{3} \\ &= \frac{8}{12} + \frac{3}{12} \text{ or } \frac{11}{12} \end{aligned}$$

Rename using the LCD, 12.

Add the fractions.

To multiply fractions, multiply the numerators and multiply the denominators.

To multiply mixed numbers, rename each mixed number as an improper fraction. Then multiply the fractions.

Examples:

Find $\frac{2}{3} \times \frac{4}{5}$. Write in simplest form.

$$\begin{aligned} \frac{2}{3} \times \frac{4}{5} &= \frac{2 \times 4}{3 \times 5} \\ &= \frac{8}{15} && \text{Simplify} \end{aligned}$$

Find $\frac{1}{3} \times 2\frac{1}{2}$. Write in simplest form.

$$\begin{aligned} \frac{1}{3} \times 2\frac{1}{2} &= \frac{1}{3} \times \frac{5}{2} && \text{Rename } 2\frac{1}{2} \text{ as an improper fraction, } \frac{5}{2} \\ &= \frac{1 \times 5}{3 \times 2} && \text{Multiply} \\ &= \frac{5}{6} && \text{Simplify} \end{aligned}$$

To divide by a fraction, multiply by its multiplicative inverse or reciprocal.

To divide by a mixed number, rename the mixed number as an improper fraction.

Example: Find $3\frac{1}{3} \div \frac{2}{9}$. Write in simplest form.

$$\begin{aligned} 3\frac{1}{3} \div \frac{2}{9} &= \frac{10}{3} \div \frac{2}{9} \\ &= \frac{10}{3} \cdot \frac{9}{2} \\ &= \frac{\cancel{10}^5}{\cancel{3}_1} \cdot \frac{\cancel{9}^3}{\cancel{2}_1} \\ &= 15 \end{aligned}$$

Rename $3\frac{1}{3}$ as an improper fraction.

Multiply by the reciprocal of $\frac{2}{9}$, which is $\frac{9}{2}$.

Divide out common factors.

Multiply.

PRACTICE:

Add or subtract. Write in simplest form.

1. $\frac{5}{8} + \frac{1}{8}$

1. _____

2. $\frac{7}{9} - \frac{2}{9}$

2. _____

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

3. _____

4. $\frac{5}{9} + \frac{5}{9}$

4. _____

5. $\frac{1}{2} + \frac{3}{4}$

5. _____

6. $\frac{1}{2} - \frac{3}{8}$

6. _____

7. $\frac{7}{9} - \frac{1}{2}$

7. _____

8. $\frac{7}{8} + \frac{1}{3}$

8. _____

Multiply. Write in simplest form.

9. $\frac{1}{2} \times \frac{7}{8}$

9. _____

10. $\frac{1}{3} \times \frac{3}{5}$

10. _____

11. $1\frac{2}{3} \times \frac{3}{5}$

11. _____

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

12. _____

Divide. Write in simplest form.

13. $\frac{2}{3} \div \frac{1}{4}$

13. _____

14. $5 \div \frac{1}{2}$

14. _____

15. $\frac{5}{8} \div 10$

15. _____

16. $6\frac{2}{3} \div 3\frac{1}{9}$

16. _____

Post Test

Write each fraction as a decimal.

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

1. _____

2. $\frac{2}{11}$

2. _____

Add, subtract, multiply, or divide. Write in simplest form.

3. $\frac{7}{10} - \frac{1}{10}$

3. _____

4. $\frac{3}{5} + \frac{1}{2}$

4. _____

5. $2\frac{3}{8} + 1\frac{1}{8}$

5. _____

6. $5\frac{2}{5} - 3\frac{7}{10}$

6. _____

7. $5\frac{1}{2} \times \frac{3}{11}$

7. _____

8. $\frac{5}{6} \div \frac{1}{3}$

8. _____

9. Replace ● with <, >, or = to make $-2\frac{1}{6}$ ● $-2\frac{5}{6}$ a true sentence.

9. _____

Write in simplest form.

10. $\frac{6}{24}$

10. _____

11. $\frac{44}{66}$

11. _____

12. $\frac{63}{70}$

12. _____

13. Paul hit the ball $\frac{1}{10}$ of the length of the field, and Mark hit the ball $\frac{3}{8}$ of the length of the field. Together, what fraction of the length of the field did they hit the ball?

13. _____

14. Hanna spent $3\frac{1}{4}$ hours on homework yesterday while Sam spent $2\frac{5}{6}$ hours on homework. How much more time did Hanna spend on homework than Sam?

14. _____

15. A recipe calls for $2\frac{1}{4}$ teaspoons of baking soda. If the recipe is tripled, how much baking soda is needed?

15. _____