Directions:

**Daily Directions**

Read directions for the topic and follow the examples.

Students should complete approximately 1-2 sections per day

Contact Information:

**Teacher Contact Information**

**School Contact Information**
2.3 Rational Numbers as Decimals (DOK 1)

A rational number may be written as terminating or repeating decimal. A terminating decimal is a decimal that ends.

Examples: 0.4, 3.5, -1.2, 8.325

A repeating decimal is a decimal that has a pattern that repeats.

Examples: 0.333... = 0.\overline{3} , 1.242424... = 1.\overline{24}

Example 1: Change \( \frac{1}{8} \) to a decimal.

Step 1: To change a fraction to a decimal, divide the top number by the bottom number.
\[ 1 \div 8 = 0.125 \]

If there is a whole number with a fraction, write the whole number to the left of the decimal point. Then, change the fraction to a decimal.

Example 2: \( 4\frac{1}{10} = 4.1 \) \hspace{1cm} 16\frac{2}{3} = 16.\overline{6} \hspace{1cm} 12\frac{7}{8} = 12.875

In some problems, the number after the decimal point begins to repeat. Take, for example, the fraction \( \frac{4}{11} \). \( 4 \div 11 = 0.363636 \), and the 36 keeps repeating forever. To show that the 36 repeats, write a bar above the numbers that repeat, 0.\overline{36}.

Change the following fractions to decimals. (DOK 1)

1. \( \frac{4}{5} \)
2. \( \frac{2}{3} \)
3. \( \frac{1}{2} \)
4. \( \frac{5}{9} \)
5. \( \frac{1}{10} \)

6. \( \frac{5}{8} \)
7. \( \frac{5}{6} \)
8. \( \frac{1}{6} \)
9. \( \frac{3}{5} \)
10. \( \frac{7}{10} \)

11. \( \frac{2}{3} \)
12. \( \frac{5}{11} \)
13. \( 15\frac{3}{5} \)
14. \( 13\frac{2}{3} \)
15. \( 30\frac{1}{3} \)

16. \( \frac{1}{2} \)
17. \( 1\frac{7}{8} \)
18. \( 4\frac{9}{100} \)
19. \( 6\frac{4}{5} \)
20. \( 13\frac{1}{2} \)
2.4 Changing Decimals to Fractions (DOK 1)

Example 1: Change 0.25 to a fraction.

Step 1: Copy the decimal without the point. This will be the top number of the fraction. \( \frac{25}{100} \)

Step 2: The bottom number is a 1 with as many 0’s after it as there are digits in the top number. \( \frac{25}{100} \leftarrow \text{Two digits} \)

Step 3: You then need to simplify the fraction. \( \frac{25}{100} = \frac{1}{4} \)

Examples: \( 0.2 = \frac{2}{10} = \frac{1}{5} \) \( 0.65 = \frac{65}{100} = \frac{13}{20} \) \( 0.125 = \frac{125}{1000} = \frac{1}{8} \)

Example 2: Change 14.28 to a mixed number.

Step 1: Copy the portion of the number that is whole. \( 14 \)

Step 2: Change 0.28 to a fraction. \( \frac{14.28}{100} \)

Step 3: Simplify the fraction.

\( \frac{14.28}{100} = \frac{147}{25} \)

Change the following decimals to fractions. (DOK 1)

1. 0.55  5. 0.75  9. 7.125  13. 16.95
2. 0.6  6. 0.82  10. 99.5  14. 3.625
3. 0.12  7. 0.3  11. 2.13  15. 4.42
4. 0.9  8. 0.42  12. 5.1  16. 15.84

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2.5 Graphing Rational Numbers on a Number Line (DOK 2)

Improper fractions, decimal numbers, and all other rational numbers can be plotted on a number line. Study the examples below.

**Example 1:** Where would \( \frac{4}{3} \) fall on the number line below?

**Step 1:** Convert the improper fraction to a mixed number. \( \frac{4}{3} = 1 \frac{1}{3} \)

**Step 2:** \( 1 \frac{1}{3} \) is \( \frac{1}{3} \) of the distance between the numbers 1 and 2. Estimate this distance by dividing the distance between points 1 and 2 into thirds. Plot the point at the first division.

**Example 2:** Plot the value of \(-1.75\) on the number line below.

**Step 1:** Convert the value \(-1.75\) to a mixed number. \(-1.75 = -1 \frac{3}{4}\)

**Step 2:** \(-1 \frac{3}{4}\) is \( \frac{3}{4} \) of the distance between the numbers \(-1\) and \(-2\). Estimate this distance by dividing the distance between points \(-1\) and \(-2\) into fourths. Plot the point at the third division.

**Example 3:** Plot the value of \(3.5 \div 2\) on the number line below.

**Step 1:** Figure the value of \(3.5 \div 2\). \(3.5 \div 2 = 1.75\) or \(1 \frac{3}{4}\).

**Step 2:** Plot 1.75.

Plot and label the following values on the number lines given below. (DOK 2)

1. \( A = \frac{5}{4} \) \hspace{2cm} \( B = \frac{12}{5} \) \hspace{2cm} \( C = \frac{2}{3} \) \hspace{2cm} \( D = -\frac{3}{2} \)

2. \( E = 1.4 \) \hspace{2cm} \( F = -2.25 \) \hspace{2cm} \( G = -0.6 \) \hspace{2cm} \( H = 0.625 \)

3. \( I = 0.25 \) \hspace{2cm} \( J = 0.9 \) \hspace{2cm} \( K = 1.9 \) \hspace{2cm} \( L = 2.6 \)
Match the correct value for each point on the number line below. (DOK 2)

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
</tr>
</thead>
<tbody>
<tr>
<td>-3</td>
<td>-2</td>
<td>-1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>[\frac{5}{2}]</td>
<td>[\frac{6}{5}]</td>
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</tbody>
</table>

4. \(1.8 = \_\_\_\_\_\_
5. \(\frac{7}{3} = \_\_\_\_\_\_
6. \(1 \frac{1}{3} = \_\_\_\_\_
7. \(-\frac{5}{2} = \_\_\_\_\_\_
8. \(-2.75 = \_\_\_\_\_\_
9. \(-\frac{4}{3} = \_\_\_\_\_

<table>
<thead>
<tr>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>P</th>
<th>Q</th>
<th>R</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2</td>
<td>-1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>[\frac{19}{6}]</td>
<td>[\frac{1}{3}]</td>
</tr>
</tbody>
</table>

13. \(\frac{19}{6} = \_\_\_\_\_\_
14. \(-0.5 = \_\_\_\_\_\_
15. \(\frac{5}{4} = \_\_\_\_\_
16. \frac{1}{3} = \_\_\_\_\_\_
17. 1.5 = \_\_\_\_\_\_
18. \(-0.3 = \_\_\_\_\_\_
19. \frac{-6}{5} = \_\_\_\_\_\_
20. \frac{3\frac{1}{2}}{} = \_\_\_\_\_\_
21. 2.9 = \_\_\_\_\_\_

2.6 Comparing Rational Numbers (DOK 2)

When comparing numbers, use the greater than (>), less than (<), and the equal to (=) signs. The simplest way to compare numbers that are in different notations, like percent, decimals, and fractions, is to change all of them to one notation. **Decimals are the easiest to compare.**

**Example 1:** Which is larger: \(1 \frac{1}{4}\) or 1.3?

**Answer:** Change \(\frac{1}{4}\) to a decimal. \(\frac{1}{4} = 0.25\), so \(1 \frac{1}{4} = 1.25\), which is smaller than 1.3.

**Example 2:** Which is smaller: 0.6 or \(\frac{2}{3}\)?

Change \(\frac{2}{3}\) to a decimal.

\[
\frac{2}{3} = 0.6\overline{6}
\]

0.6 is smaller than 0.6\overline{6}, so \(0.6 < \frac{2}{3}\)
Chapter 2 Rational Numbers

Fill in each box with the correct sign. (DOK 2)

1. $23.4 \bigcirc 23\frac{1}{2}$

2. $\frac{17}{100} \bigcirc -0.17$

3. $\frac{3}{8} \bigcirc 0.38$

4. $0.25 \bigcirc \frac{2}{10}$

5. $23.4 \bigcirc 23\frac{1}{4}$

6. $-\frac{1}{7} \bigcirc 0.14$

7. $13.95 \bigcirc 13\frac{8}{9}$

8. $\frac{4}{5} \bigcirc -0.4$

9. $1.25 \bigcirc \frac{3}{2}$

10. $\frac{12}{4} \bigcirc -3$

11. $0.06 \bigcirc \frac{1}{16}$

12. $-1.33 \bigcirc -\frac{4}{3}$

13. Will this inequality below be true when $x = \frac{2}{5}$?
   
   $0.23 \leq x < 0.4$

14. Will this inequality below be true when $n = 0.15$?
   
   $\frac{1}{7} \leq n \leq \frac{1}{6}$
Fill in the blanks with the equivalent fraction or decimal. (DOK 2)

<table>
<thead>
<tr>
<th>Fraction</th>
<th>Decimal</th>
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</thead>
<tbody>
<tr>
<td>15. ( \frac{6}{15} )</td>
<td></td>
</tr>
<tr>
<td>16. ( \frac{4}{10} )</td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>0.36</td>
</tr>
<tr>
<td>18.</td>
<td>0.6</td>
</tr>
<tr>
<td>19. ( \frac{8}{20} )</td>
<td></td>
</tr>
<tr>
<td>20.</td>
<td>0.66</td>
</tr>
<tr>
<td>21. ( -\frac{3}{4} )</td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>1.25</td>
</tr>
<tr>
<td>23. ( 1\frac{2}{3} )</td>
<td></td>
</tr>
<tr>
<td>24.</td>
<td>5.0</td>
</tr>
</tbody>
</table>

25. \(-4 + _____ = 0\)  
26. \(-3.9 + _____ = 0\)  
27. \(-\frac{1}{7} - _____ = 0\)  
28. \(-\frac{2}{3} - _____ = 0\)  
29. \(-2.3 - _____ = 0\)  
30. \(-\left(\frac{-1}{2}\right) - _____ = 0\)  
31. \(0.25 - _____ = 0\)  
32. \(0.1 - _____ = 0\)  
33. \(-2.5 - _____ = 0\)  

34. Billy got a piggy bank with $0.25 in it for a present. The next day, he took a quarter out of his bank. How much does he have in the bank now?

35. The cold morning started at \(-14^\circ\)F in Hibbing, MN. By afternoon, it warmed up \(14^\circ\). What is the temperature now?
Chapter 3
Adding and Subtracting Rational Numbers

Standard(s) covered: 7.NS.A.1, 7.NS.A.3, LEAP.II.7.1, LEAP.II.7.2, LEAP.II.7.3, LEAP.II.7.7

3.1 Simplifying Improper Fractions (DOK 1)

Example 1: Simplify \( \frac{21}{4} = 21 \div 4 = 5 \text{ remainder } 1 \)

   The quotient, 5, becomes the whole number portion of the mixed number.
   \[ \downarrow \]
   \[ \frac{21}{4} = 5 \frac{1}{4} \]
   \[ \uparrow \uparrow \]
   The remainder, 1, becomes the numerator of the fraction.

Example 2: Simplify \( \frac{11}{6} \).

   Step 1: \( \frac{11}{6} \) is the same as \( 11 \div 6 = 1 \) with a remainder of 5.
   Rewrite as a whole number with a fraction. \( 1 \frac{5}{6} \)

Simplify the following improper fractions by changing them to a whole number with a fraction. (DOK 1)

1. \( \frac{13}{5} = \) _____
   6. \( \frac{16}{7} = \) _____
   11. \( \frac{15}{2} = \) _____
   16. \( \frac{3}{2} = \) _____
2. \( \frac{11}{3} = \) _____
   7. \( \frac{13}{8} = \) _____
   12. \( \frac{22}{9} = \) _____
   17. \( \frac{7}{4} = \) _____
3. \( \frac{24}{6} = \) _____
   8. \( \frac{9}{5} = \) _____
   13. \( \frac{17}{9} = \) _____
   18. \( \frac{21}{10} = \) _____
4. \( \frac{7}{6} = \) _____
   9. \( \frac{22}{3} = \) _____
   14. \( \frac{27}{8} = \) _____
   19. \( \frac{82}{9} = \) _____
5. \( \frac{19}{6} = \) _____
   10. \( \frac{13}{4} = \) _____
   15. \( \frac{32}{7} = \) _____
   20. \( \frac{44}{6} = \) _____
Chapter 3 Adding and Subtracting Rational Numbers

3.2 Adding Fractions (DOK 1)

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

Step 1: Write the problem vertically and find the common denominator. The lowest common denominator for 2 and 3 is 6.

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

Add $\frac{3}{6}$

$$+ 2\frac{2}{3} = 2\frac{4}{6}$$

Step 2: Add both the whole numbers and fractions, then simplify.

$$3\frac{3}{6}$$

$$+ 2\frac{4}{6}$$

$$5\frac{7}{6} = 6\frac{1}{6}$$

Answer: $6\frac{1}{6}$

Add and simplify the answers. (DOK 1)

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

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

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

4. $3\frac{1}{7}$

$+ 1\frac{1}{2}$

$$+ 1\frac{1}{2}$$

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

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

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

10. $1\frac{5}{8}$

$+ \frac{3}{4}$

$$+ \frac{3}{4}$$

13. $2\frac{1}{9}$

$+ 3\frac{3}{4}$

$$+ 3\frac{3}{4}$$

16. $4\frac{4}{5}$

$+ 4\frac{3}{7}$

$$+ 4\frac{3}{7}$$

19. $6\frac{9}{10}$

$+ 2\frac{7}{10}$

$$+ 2\frac{7}{10}$$

2. $2\frac{3}{4}$

$+ \frac{7}{8}$

$$+ \frac{7}{8}$$

5. $10\frac{2}{3}$

$+ 1\frac{1}{2}$

$$+ 1\frac{1}{2}$$

8. $4\frac{7}{8}$

$+ 3\frac{1}{9}$

$$+ 3\frac{1}{9}$$

11. $2\frac{5}{12}$

$+ 1\frac{4}{9}$

$$+ 1\frac{4}{9}$$

14. $1\frac{7}{8}$

$+ 3\frac{3}{12}$

$$+ 3\frac{3}{12}$$

17. $7\frac{7}{12}$

$+ 4\frac{2}{3}$

$$+ 4\frac{2}{3}$$

20. $1\frac{1}{9}$

$+ 7\frac{3}{4}$

$$+ 7\frac{3}{4}$$

3. $2\frac{2}{7}$

$+ \frac{4}{5}$

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

6. $9\frac{1}{8}$

$+ \frac{2}{6}$

$$+ \frac{2}{6}$$

9. $8\frac{5}{6}$

$+ 3\frac{7}{10}$

$$+ 3\frac{7}{10}$$

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

$+ 2\frac{5}{5}$

$$+ 2\frac{5}{5}$$

15. $7\frac{1}{4}$

$+ 3\frac{2}{3}$

$$+ 3\frac{2}{3}$$

18. $5\frac{7}{8}$

$+ 1\frac{1}{9}$

$$+ 1\frac{1}{9}$$

21. $2\frac{1}{2}$

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3.3 Subtracting Mixed Numbers from Whole Numbers (DOK 1)

Example: Subtract: $15 - 3\frac{3}{4}$

Step 1: Rewrite the problem vertically.

\[
\begin{array}{c}
15 \\
\hline
3 - \frac{3}{4} \\
\end{array}
\]

Step 2: Since 15 does not have a fraction with it, you cannot subtract three-fourths from nothing. You must borrow 1 from 15. Put the 1 in the fraction form, $\frac{4}{4}$.

\[
\begin{array}{c}
15 \frac{4}{4} \\
\hline
- 3\frac{3}{4} \\
\end{array}
\]

\[
\begin{array}{c}
11\frac{1}{4}
\end{array}
\]

Subtract. (DOK 1)

1. $7 - 2\frac{3}{5}$
2. $24 - 12\frac{1}{2}$
3. $13 - 11\frac{2}{3}$
4. $28 - 21\frac{5}{8}$
5. $12 - 6\frac{1}{8}$

6. $8 - 6\frac{3}{4}$
7. $22 - 9\frac{1}{2}$
8. $14 - 7\frac{1}{5}$
9. $15 - 12\frac{2}{9}$
10. $35 - 22\frac{7}{9}$

11. $18 - 7\frac{5}{6}$
12. $40 - 36\frac{11}{13}$
13. $3 - 1\frac{1}{3}$
14. $12 - 4\frac{3}{8}$
15. $5 - 2\frac{1}{8}$
16. $15 - 11\frac{1}{9}$
17. $2 - 24\frac{2}{7}$
18. $37 - 7\frac{1}{8}$
19. $9 - 3\frac{4}{7}$
20. $37 - 2\frac{1}{8}$
21. $2 - 2\frac{1}{8}$
22. $4 - 2\frac{1}{8}$
23. $6 - 5\frac{1}{9}$
24. $12 - 11\frac{1}{9}$
25. $9 - 7\frac{1}{8}$

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2.3 Rational Numbers as Decimals workspace

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Homeroom: __________________

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2.4 Changing Decimals to Fractions workspace

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### 3.1 Simplifying Improper Fractions workspace

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## 3.2 Adding Fractions workspace

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### 3.3 Subtracting Mixed Numbers from Whole Numbers workspace

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### Subtracting Mixed Numbers from Whole Numbers workspace

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<td>21.</td>
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<td>22.</td>
<td>23.</td>
<td>24.</td>
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<tr>
<td>25.</td>
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Homeroom: ________________