Dear Rising Sixth Grade Students,
Congrats on completing elementary school and welcome to TH Rogers Middle School!!

Sixth grade is an important step in your education with more classes, a new environment, and more responsibilities. We understand that the last school year ended unexpectedly as teachers and students had to make a quick transition to virtual learning and perform to the best of our abilities. To help with the transition into middle school and prepare for the in-coming year, the core-subject teachers would like to provide you with the following activities for the summer.

We look forward to meeting you,

Mr. Ghorbanian
Mrs. Simmons
Dr. Cox
Ms. Babin
Mrs. Herrera

If you have any questions about the summer activities, please contact the teacher directly through email:

**Social Studies**- Mr. Ghorbanian sghorba1@houstonisd.org

**Math**- Ms. Simmons Victoria.Simmons@houstonisd.org

**Science**- Dr. Cox jcox@houstonisd.org

**English** - Ms. Babin: jennifer.babin@houstonisd.org

**Reading**- Ms. Herrera Georgia.Koepke@houstonisd.org
Directions: The following terms will be used throughout the year in social studies. These definitions **MUST be written, and the pictures drawn BY HAND** in order to help you memorize its meaning. This packet will be used as a part of reference section in our notebook. Please make sure these are done neatly. You may use the quizlet set of flashcards provided to help you complete this: [https://quizlet.com/_88nc1h?x=1qqt&i=1287ye](https://quizlet.com/_88nc1h?x=1qqt&i=1287ye)

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Freehand Map

Quick sketch a map of the world in the box below OR on a single sheet of paper (8.5” x 11”). There is no limit to effort or time or what you would like to put on this map. However, you must include the following with labels: 7 continents (tiny islands can be excluded), 5 oceans, equator, prime meridian, and compass. Color is encouraged but not required. You can orient or turn your map however you like in the box or on paper.
Welcome to the 6th grade Math class!

In this class, we follow the Scope and Sequence of HISD 6th grade Pre-AP Math. We will learn 6th and 7th-grade content. During the summer, I would like you to complete the attached assignment. Please read and study the lesson concepts and examples and answer all the exercises. Make sure to show your process of thinking on a separate notebook paper/s if needed. You can either print the assignment out and write your answers on it or use a spiral/composition notebook to write your answers. The assignment is due on the first day of school.

Dear parents, this assignment is to help students master the skills that we need to cope with the pace and content that we will learn in 2020-2021. You may explain the questions, but not solve the problems for them.

Feel free to email me at Victoria.Simmons@houstonisd.org if you have any questions.

Thank you.
Study Guide and Intervention

Rounding Decimals

To round a decimal, first underline the digit to be rounded. Then look at the digit to the right of the place being rounded.

- If the digit is 4 or less, the underlined digit remains the same.
- If the digit is 5 or greater, add 1 to the underlined digit.

Example 1

Round 6.58 to the nearest tenth.

<table>
<thead>
<tr>
<th>Underline the digit to be rounded.</th>
<th>Look at the digit to the right of the underlined digit.</th>
<th>Since the digit to the right is 8, add one to the underlined digit.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.58</td>
<td>6.58</td>
<td>6.6</td>
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</table>

To the nearest tenth, 6.58 rounds to 6.6.

Example 2

Round 86.943 to the nearest hundredth.

<table>
<thead>
<tr>
<th>Underline the digit to be rounded.</th>
<th>Look at the digit to the right of the underlined digit.</th>
<th>Since the digit is 3 and 3 &lt; 5, the digit 4 remains the same.</th>
</tr>
</thead>
<tbody>
<tr>
<td>86.943</td>
<td>86.94</td>
<td>86.94</td>
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</table>

To the nearest hundredth, 86.943 rounds to 86.94.

Exercises

Round each decimal to the indicated place-value position.

1. 3.21; tenths
2. 2.0505; thousandths

3. 6.5892; hundredths
4. 235.709; hundredths

5. 0.0914; thousandths
6. 34.35; tenths

7. 500.005; hundredths
8. 2.5134; tenths

9. 0.0052; thousandths
10. 0.0052; hundredths

11. 131.1555; thousandths
12. 232.88; tenths
Study Guide and Intervention
Comparing and Ordering Decimals

Example 1
Use > or < to compare 68.563 and 68.5603.

First, line up the decimal points. Then, starting at the left, find the first place the digits differ. Compare the digits. Since 3 > 0,

\[ 68.563 \]
\[ 68.5603 \]
\[ 3 > 0 \]
\[ 68.563 > 68.5603 \]

So, 68.563 is greater than 68.5603.

Example 2
Order 4.073, 4.73, 4.0073, and 4 from least to greatest.

First, line up the decimal points. Annex zeros so that each has the same number of decimal places. Use place value to compare and order the decimals.

\[ 4.073 \]
\[ 4.73 \]
\[ 4.0073 \]
\[ 4 \]
\[ 4.0730 \]
\[ 4.7300 \]
\[ 4.0000 \]

The order from least to greatest is 4, 4.0073, 4.073, and 4.73.

Exercises

Use >, <, or = to compare each pair of decimals.

1. 4.08 \( \bullet \) 4.080
2. 0.001 \( \bullet \) 0.01
3. 23.659 \( \bullet \) 22.659
4. 50.031 \( \bullet \) 50.030
5. 7 \( \bullet \) 7.0001
6. 18.01 \( \bullet \) 18.010

Order each set of decimals from least to greatest.

7. 0.006, 0.6, 0.060, 6
8. 456.73, 465.32, 456.37, 456.23

Order each set of decimals from greatest to least.

9. 3.01, 3.009, 3.09, 3.0001
10. 45.303, 45.333, 45.03, 45.0003, 45.003
4-3 Study Guide and Intervention

Mixed Numbers and Improper Fractions

The number $2\frac{2}{3}$ is a mixed number. A **mixed number** indicates the sum of a whole number and a fraction. The number $\frac{5}{3}$ is an improper fraction. **Improper fractions** have values that are greater than or equal to 1. Mixed numbers can be written as mixed numbers or as improper fractions.

**Example 1** Write $2\frac{1}{3}$ as an improper fraction.

\[
2\frac{1}{3} \rightarrow 2 \times \frac{3}{3} + \frac{1}{3} = \frac{7}{3} \quad \text{Think: } 2 \times 3 = 6 \text{ and } 6 + 1 = 7
\]

Check: Use a model.

\[
\frac{7}{3} = 2 + \frac{1}{3} \text{ or } 2\frac{1}{3} \checkmark
\]

**Example 2** Write $\frac{9}{4}$ as a mixed number.

Divide 9 by 4. Use the remainder as the numerator of the fraction.

\[
\begin{array}{c|c}
4 & 9 \\
\hline
-8 & \\
\hline
1 & \\
\end{array}
\]

So, $\frac{9}{4}$ can be written as $2\frac{1}{4}$.

**Exercises**

Write each mixed number as an improper fraction.

1. $3\frac{1}{8}$
2. $2\frac{4}{5}$
3. $2\frac{1}{2}$
4. $1\frac{2}{3}$
5. $2\frac{1}{9}$
6. $3\frac{7}{10}$
7. $2\frac{3}{8}$
8. $1\frac{3}{4}$

Write each improper fraction as a mixed number or a whole number.

9. $\frac{7}{4}$
10. $\frac{5}{3}$
11. $\frac{3}{2}$
12. $\frac{11}{8}$
13. $\frac{22}{5}$
14. $2\frac{15}{15}$
15. $\frac{25}{4}$
16. $\frac{16}{3}$

*Chapter 4*
Fractions whose denominators are factors of 10, 100, or 1,000 can be written as decimals using equivalent fractions. Any fraction can also be written as a decimal by dividing the numerator by the denominator.

**Example 1**  Write \( \frac{3}{5} \) as a decimal.

Since 5 is a factor of 10, write an equivalent fraction with a denominator of 10.

\[
\begin{align*}
\left( \times 2 \right) \\
\frac{3}{5} &= \frac{6}{10} \\
\left( \times 2 \right) \\
\end{align*}
\]

\[= 0.6\]

Therefore, \( \frac{3}{5} = 0.6 \).

**Example 2**  Write \( \frac{3}{8} \) as a decimal.

Divide.

\[
\begin{array}{c}
0.375 \\
\hline 3.000 \\
-2.4 \\
\hline 60 \\
-56 \\
\hline 40 \\
-40 \\
\hline 0
\end{array}
\]

Therefore, \( \frac{3}{8} = 0.375 \).

**Exercises**

Write each fraction or mixed number as a decimal.

1. \( \frac{3}{10} \)
2. \( \frac{3}{4} \)
3. \( \frac{1}{4} \)
4. \( \frac{3}{5} \)
5. \( \frac{1}{8} \)
6. \( 2\frac{1}{4} \)
7. \( \frac{6}{20} \)
8. \( \frac{9}{25} \)
9. \( 1\frac{3}{8} \)
10. \( 1\frac{5}{8} \)
11. \( 3\frac{5}{16} \)
12. \( 4\frac{9}{20} \)
Decimals like 0.58, 0.12, and 0.08 can be written as fractions.

To write a decimal as a fraction, you can 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.

**Example 1**

Write 0.5 as a fraction in simplest form.

\[ 0.5 = \frac{5}{10} \]

0.5 means five tenths.

\[ = \frac{\cancel{5}}{\cancel{10}^2} \]

Simplify. Divide the numerator and denominator by the GCF, 5.

\[ = \frac{1}{2} \]

So, in simplest form, 0.5 is \( \frac{1}{2} \).

**Example 2**

Write 0.35 as a fraction in simplest form.

\[ 0.35 = \frac{35}{100} \]

0.35 means 35 hundredths.

\[ = \frac{35}{100} \]

Simplify. Divide the numerator and denominator by the GCF, 5.

\[ = \frac{\cancel{35}}{\cancel{100}^{20}} \]

\[ = \frac{7}{20} \]

So, in simplest form, 0.35 is \( \frac{7}{20} \).

**Example 3**

Write 4.375 as a mixed number in simplest form.

\[ 4.375 = 4 \frac{375}{1000} \]

0.375 means 375 thousandths.

\[ = 4 \frac{375}{1000} \]

Simplify. Divide by the GCF, 125.

\[ = 4 \frac{\cancel{375}}{\cancel{1000}^{8}} \]

\[ = 4 \frac{3}{8} \]

**Exercises**

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

1. 0.9
2. 0.8
3. 0.27
4. 0.75

5. 0.34
6. 0.125
7. 0.035
8. 0.008

9. 1.4
10. 3.6
11. 6.28
12. 2.65

13. 12.05
14. 4.004
15. 23.205
16. 51.724
To compare two 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.

**Example 1** Replace ◯ with <, >, or = to make $\frac{1}{3} \circ \frac{5}{12}$ true.

- The LCM of 3 and 12 is 12. So, the LCD is 12.
- Rewrite each fraction with a denominator of 12.

\[
\begin{align*}
\left(\times \frac{4}{4}\right) & \quad 1 = \frac{\circ}{12}, \quad \text{so} \quad \frac{1}{3} = \frac{4}{12}.
\left(\times \frac{4}{4}\right) & \quad 5 = \frac{\circ}{12}, \quad \text{so} \quad \frac{5}{12} = \frac{5}{12}
\end{align*}
\]

- 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.

\[
\begin{align*}
\left(\times \frac{4}{4}\right) & \quad \frac{1}{6} = \frac{\circ}{24}, \quad \text{so} \quad \frac{1}{6} = \frac{4}{24}.
\left(\times \frac{8}{8}\right) & \quad \frac{2}{3} = \frac{\circ}{24}, \quad \text{so} \quad \frac{2}{3} = \frac{16}{24}.
\left(\times \frac{6}{6}\right) & \quad \frac{1}{4} = \frac{\circ}{24}, \quad \text{so} \quad \frac{1}{4} = \frac{6}{24}.
\left(\times \frac{3}{3}\right) & \quad \frac{3}{8} = \frac{\circ}{24}, \quad \text{so} \quad \frac{3}{8} = \frac{9}{24}.
\end{align*}
\]

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

**Exercises**

Replace each ◯ with <, >, or = to make a true sentence.

1. $\frac{5}{12} \circ \frac{3}{8}$
2. $\frac{6}{8} \circ \frac{3}{4}$
3. $\frac{2}{7} \circ \frac{1}{6}$

Order the fractions from least to greatest.

4. $\frac{3}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{1}{4}$
5. $\frac{2}{3}$, $\frac{1}{6}$, $\frac{5}{18}$, $\frac{7}{9}$
6. $\frac{1}{2}$, $\frac{5}{6}$, $\frac{5}{8}$, $\frac{5}{12}$
5-5 Study Guide and Intervention

Adding and Subtracting Fractions with Unlike Denominators

To find the sum or difference of two fractions with unlike denominators, rename the fractions using the least common denominator (LCD). Then add or subtract and simplify.

Example 1  Find \( \frac{1}{3} + \frac{5}{6} \).

The LCD of \( \frac{1}{3} \) and \( \frac{5}{6} \) is 6.

Write the problem.  Rename using the LCD, 6.  Add the fractions.

\[
\begin{align*}
\frac{1}{3} + \frac{5}{6} & \rightarrow \frac{1 \times 2}{3 \times 2} + \frac{5 \times 1}{6 \times 1} \rightarrow \frac{2}{6} + \frac{5}{6} \\
& \rightarrow \frac{7}{6} \text{ or } 1 \frac{1}{6}
\end{align*}
\]

Example 2  Find \( \frac{2}{3} - \frac{1}{4} \).

The LCD of \( \frac{2}{3} \) and \( \frac{1}{4} \) is 12.

Write the problem.  Rename using the LCD, 12.  Subtract the fractions.

\[
\begin{align*}
\frac{2}{3} - \frac{1}{4} & \rightarrow \frac{2 \times 4}{3 \times 4} - \frac{1 \times 3}{4 \times 3} \rightarrow \frac{8}{12} - \frac{3}{12} \\
& \rightarrow \frac{5}{12}
\end{align*}
\]

Example 3  Evaluate \( x - y \) if \( x = \frac{1}{2} \) and \( y = \frac{2}{5} \).

\[
x - y = \frac{1}{2} - \frac{2}{5} = \frac{1 \times 5}{2 \times 5} - \frac{2 \times 2}{5 \times 2} = \frac{5}{10} - \frac{4}{10} = \frac{1}{10}
\]

Exercises

Add or subtract. Write in simplest form.

1. \( \frac{1}{6} + \frac{1}{2} \)
2. \( \frac{2}{3} - \frac{1}{2} \)
3. \( \frac{1}{4} + \frac{7}{8} \)
4. \( \frac{9}{10} - \frac{3}{5} \)
5. \( \frac{2}{7} + \frac{1}{2} \)
6. \( \frac{5}{6} - \frac{1}{12} \)
7. \( \frac{7}{10} + \frac{1}{2} \)
8. \( \frac{4}{9} - \frac{1}{3} \)

9. Evaluate \( x + y \) if \( x = \frac{1}{12} \) and \( y = \frac{1}{6} \).
10. Evaluate \( a + b \) if \( a = \frac{1}{2} \) and \( b = \frac{3}{4} \).
5-7 Study Guide and Intervention

Subtracting Mixed Numbers with Renaming

Sometimes it is necessary to rename the fraction part of a mixed number as an improper fraction before you can subtract.

**Example 1**

Find \(5 - 2\frac{1}{4}\).

Write the problem. Rename \(5\) as \(4\frac{4}{4}\).

\[
\begin{align*}
5 & \rightarrow 4\frac{4}{4} \rightarrow \frac{4}{4} \\
-2\frac{1}{4} & \rightarrow -2\frac{1}{4} \rightarrow -\frac{1}{4}
\end{align*}
\]

Subtract: \(\frac{4}{4} - \frac{1}{4} = \frac{3}{4}\).

Then cross out \(2\frac{1}{4}\).

So, \(5 - 2\frac{1}{4} = 2\frac{3}{4}\).

**Example 2**

Find \(6\frac{1}{2} - 2\frac{3}{4}\).

Write the problem. Rename \(\frac{1}{2}\) and \(\frac{3}{4}\) using their LCD, 4.

\[
\begin{align*}
6\frac{1}{2} & \rightarrow 6\frac{2}{4} \rightarrow 5\frac{3}{4} \rightarrow \frac{5}{4} \\
-2\frac{3}{4} & \rightarrow -2\frac{3}{4} \rightarrow -2\frac{3}{4} \rightarrow \frac{3}{4}
\end{align*}
\]

Since \(\frac{3}{4}\) is greater than \(\frac{2}{4}\), rename \(6\frac{2}{4}\) as \(5\frac{6}{4}\).

Subtract: \(\frac{5}{4} - \frac{3}{4} = \frac{2}{4}\).

So, \(6\frac{1}{2} - 2\frac{3}{4} = 3\frac{3}{4}\).

**Exercises**

Subtract. Write in simplest form.

1. \(6 - 1\frac{1}{3}\)
2. \(5 - 3\frac{2}{9}\)
3. \(6\frac{1}{3} - 2\frac{2}{3}\)
4. \(4\frac{1}{6} - 1\frac{1}{6}\)
5. \(5\frac{1}{3} - 3\frac{2}{3}\)
6. \(8\frac{3}{8} - 3\frac{5}{8}\)
7. \(12 - 1\frac{2}{5}\)
8. \(7\frac{1}{2} - 3\frac{5}{6}\)
9. \(5\frac{1}{6} - 1\frac{5}{6}\)
10. \(9\frac{1}{2} - 4\frac{3}{4}\)
11. \(8\frac{1}{2} - 7\frac{7}{8}\)
12. \(8\frac{1}{3} - 6\frac{5}{6}\)

Chapter 5

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Glencoe MAC1
Study Guide and Intervention

Multiplying Fractions and Mixed Numbers

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

\[
\frac{5}{6} \times \frac{3}{5} = \frac{5 \times 3}{6 \times 5} = \frac{15}{30} = \frac{1}{2}
\]

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

\[
\frac{2\frac{2}{3}}{\times} \frac{1\frac{1}{4}}{\times} \frac{8}{3} \times \frac{5}{4} = \frac{40}{12} = 3\frac{1}{3}
\]

Example 1
Find \(\frac{2}{3} \times \frac{4}{5}\). Write in simplest form.

\[
\frac{2}{3} \times \frac{4}{5} = \frac{2 \times 4}{3 \times 5} \quad \leftarrow \text{Multiply the numerators.}
\]

\[
= \frac{8}{15} \quad \leftarrow \text{Multiply the denominators.}
\]

Simplify.

Example 2
Find \(\frac{1}{3} \times 2\frac{1}{2}\). Write in simplest form.

\[
\frac{1}{3} \times 2\frac{1}{2} = \frac{1}{3} \times \frac{5}{2} \quad \text{Rename } 2\frac{1}{2} \text{ as an improper fraction, } \frac{5}{2}.
\]

\[
= \frac{1 \times 5}{3 \times 2} \quad \text{Multiply.}
\]

\[
= \frac{5}{6} \quad \text{Simplify.}
\]

Exercises

Multiply. Write in simplest form.

1. \(\frac{2}{3} \times \frac{2}{3}\)

2. \(\frac{1}{2} \times \frac{7}{8}\)

3. \(\frac{1}{3} \times \frac{3}{5}\)

4. \(\frac{5}{9} \times 4\)

5. \(1\frac{2}{3} \times \frac{3}{5}\)

6. \(3\frac{3}{4} \times 1\frac{1}{8}\)

7. \(\frac{3}{4} \times 1\frac{2}{3}\)

8. \(3\frac{1}{3} \times 2\frac{1}{2}\)

9. \(4\frac{1}{5} \times \frac{1}{7}\)

10. \(\frac{7}{5} \times 8\)

11. \(2\frac{1}{3} \times \frac{4}{6}\)

12. \(\frac{1}{8} \times \frac{23}{4}\)
Study Guide and Intervention
Dividing Fractions and Mixed Numbers

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 1
Find \(3\frac{1}{3} \div \frac{2}{9}\). Write in simplest form.

\[
3\frac{1}{3} \div \frac{2}{9} = \frac{10}{3} \div \frac{2}{9} \quad \text{Rename } 3\frac{1}{3} \text{ as an improper fraction.}
\]

\[
= \frac{10}{3} \cdot \frac{9}{2} \quad \text{Multiply by the reciprocal of } \frac{2}{9}, \text{ which is } \frac{9}{2}.
\]

\[
= \frac{10}{3} \cdot \frac{3}{2} \quad \text{Divide out common factors.}
\]

\[
= 15 \quad \text{Multiply.}
\]

Exercises
Divide. Write in simplest form.

1. \(\frac{2}{3} \div \frac{1}{4}\)
2. \(\frac{2}{5} \div \frac{5}{6}\)
3. \(\frac{1}{2} \div \frac{1}{5}\)
4. \(5 \div \frac{1}{2}\)
5. \(\frac{5}{8} \div 10\)
6. \(7\frac{1}{3} \div 2\)
7. \(\frac{5}{6} \div 3\frac{1}{2}\)
8. \(36 \div 1\frac{1}{2}\)
9. \(2\frac{1}{2} \div 10\)
10. \(5\frac{2}{3} \div 1\frac{4}{5}\)
11. \(6\frac{2}{3} \div 3\frac{1}{9}\)
12. \(4\frac{2}{3} \div \frac{3}{8}\)
13. \(4\frac{6}{7} \div 2\frac{3}{7}\)
14. \(12 \div 2\frac{1}{2}\)
15. \(4\frac{1}{6} \div 3\frac{1}{6}\)
Order of Operations

1. Simplify the expressions inside grouping symbols, like parentheses.
2. Find the value of all powers.
3. Multiply and divide in order from left to right.
4. Add and subtract in order from left to right.

Example 1

Find the value of $48 \div (3 + 3) - 2^2$.

$48 \div (3 + 3) - 2^2 = 48 \div 6 - 2^2$

Simplify the expression inside the parentheses.

$= 48 \div 6 - 4$

Find $2^2$.

$= 8 - 4$

Divide 48 by 6.

$= 4$

Subtract 4 from 8.

Example 2

Write and solve an expression to find the total cost of planting flowers in the garden.

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost Per Item</th>
<th>Number of Items Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>pack of flowers</td>
<td>$4</td>
<td>5</td>
</tr>
<tr>
<td>bag of dirt</td>
<td>$3</td>
<td>1</td>
</tr>
<tr>
<td>bottle of fertilizer</td>
<td>$4</td>
<td>1</td>
</tr>
</tbody>
</table>

Words: cost of 5 flower packs  plus  cost of dirt  plus  cost of fertilizer

Expression: $5 \times $4 + $3 + $4 = $20 + $3 + $4$

$= $23 + $4$

$= $27

The total cost of planting flowers in the garden is $27.

Exercises

Find the value of each expression.

1. $7 + 2 \times 3$
2. $12 \div 3 + 5$
3. $16 - (4 + 5)$
4. $8 \times 8 \div 4$
5. $10 + 1 \div 2$
6. $3 \times 3 + 2 \times 4$
7. $80 - 8 \times 3^2$
8. $11 \times (6 - 2^2)$
9. $25 \div 5 + 6 \times (12 - 4)$

10. Gardening Refer to Example 2. Suppose that the gardener did not buy enough flowers and goes back to the store to purchase four more packs. She also purchases a hoe for $16. Write an expression that shows the total amount she spent to plant flowers in her garden.
12-1 Study Guide and Intervention

Ordering Integers

The inequality symbol ‘>’ means is greater than.
The inequality symbol ‘<’ means is less than.

Example 1 Replace • with < or > to make the statement 4 • −5 true.

Graph 4 and −5 on a number line. Then compare.

Since 4 is to the right of −5, 4 > −5 is a true statement.

Example 2 Order the integers 1, −2, and 8 from least to greatest.

Graph each integer on a number line. Then compare.

The order from least to greatest is −2, 1, and 3.

Exercises

Replace each • with < or > to make a true statement.

1. −2 • 0
2. 3 • −3
3. −9 • 8

4. −8 • −3
5. 11 • 3
6. −2 • 10

Order each set of integers from least to greatest.

7. −2, 3, 0, −1, 1
8. 3, −3, −2, 1, −1

9. 5, −7, −2, 1, 9
10. −2, 1, 5, −5, 0
2-7 Study Guide and Intervention
Median, Mode, and Range

The **median** is the middle number of the data put in order; or the mean of the middle two numbers. The **mode** is the number or numbers that occur most often.

**Example 1** The table shows the costs of seven different books. Find the mean, median, and mode of the data.

<table>
<thead>
<tr>
<th>Book Costs ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>22  13  11  16</td>
</tr>
<tr>
<td>14  13  16</td>
</tr>
</tbody>
</table>

mean: \( \frac{22 + 13 + 11 + 16 + 14 + 13 + 16}{7} = \frac{105}{7} \) or 15

To find the median, write the data in order from least to greatest.
median: 11, 13, 13, 14, 16, 16, 22

To find the mode, find the number or numbers that occur most often.
mode: 11, (13, 13), 14, (16, 16), 22

The mean is $15. The median is $14. There are two modes, $13 and $16.

Whereas the measures of central tendency describe the average of a set of data, the range of a set of data describes how the data vary.

**Example 2** Find the range of the data in the stem-and-leaf plot. Then write a sentence describing how the data vary.

<table>
<thead>
<tr>
<th>Stem</th>
<th>Leaf</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>0 5</td>
</tr>
<tr>
<td>6</td>
<td>0 3</td>
</tr>
</tbody>
</table>

The greatest value is 63. The least value is 32. So, the range is 63° - 32° or 31°. The range is large. It tells us that the data vary greatly in value.

**Exercises**

Find the mean, median, mode, and range of each set of data.

1. hours worked: 14, 13, 14, 16, 8

2. points scored by football team: 29, 31, 14, 21, 31, 22, 20

3. **Quiz Scores**

<table>
<thead>
<tr>
<th>Score</th>
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<tbody>
<tr>
<td>72</td>
</tr>
<tr>
<td>69</td>
</tr>
<tr>
<td>80</td>
</tr>
<tr>
<td>68</td>
</tr>
<tr>
<td>72</td>
</tr>
<tr>
<td>86</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
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<tbody>
<tr>
<td>coach</td>
</tr>
<tr>
<td>Brian</td>
</tr>
<tr>
<td>Leisha</td>
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<tr>
<td>Marcus</td>
</tr>
<tr>
<td>Ryan</td>
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<tr>
<td>Tanya</td>
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</table>

4. **Snowfall (inches)**

<table>
<thead>
<tr>
<th>Score</th>
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<tbody>
<tr>
<td>0</td>
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</table>
The mean is the most common measure of central tendency. It is an average, so it describes all of the data in a data set.

Example 1
The picture graph shows the number of members on four different swim teams. Find the mean number of members for the four different swim teams.

Simplify an expression.

\[
\text{mean} = \frac{9 + 11 + 6 + 10}{4} = \frac{36}{4} = 9
\]

A set of data may contain very high or very low values. These values are called outliers.

Example 2
Find the mean for the snowfall data with and without the outlier. Then tell how the outlier affects the mean of the data.

<table>
<thead>
<tr>
<th>Month</th>
<th>Snowfall (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nov.</td>
<td>20</td>
</tr>
<tr>
<td>Dec.</td>
<td>19</td>
</tr>
<tr>
<td>Jan.</td>
<td>20</td>
</tr>
<tr>
<td>Feb.</td>
<td>17</td>
</tr>
<tr>
<td>Mar.</td>
<td>4</td>
</tr>
</tbody>
</table>

Compared to the other values, 4 inches is low. So, it is an outlier.

\[
\text{mean with outlier} = \frac{20 + 19 + 20 + 17 + 4}{5} = \frac{80}{5} = 16
\]

\[
\text{mean without outlier} = \frac{20 + 19 + 20 + 17}{4} = \frac{76}{4} = 19
\]

With the outlier, the mean is less than the values of most of the data. Without the outlier, the mean is close in value to the data.

Exercises

SHOPPING For Exercises 1–3, use the bar graph at the right.

1. Find the mean of the data.

2. Which jacket price is an outlier?

3. Find the mean of the data if the outlier is not included.

4. How does the outlier affect the mean of the data?
Study Guide and Intervention

Algebra: Area Formulas

The area of a figure is the number of square units needed to cover a surface. You can use a formula to find the area of a rectangle. The formula for finding the area of a rectangle is $A = \ell \times w$. In this formula, $A$ represents area, $\ell$ represents the length of the rectangle, and $w$ represents the width of the rectangle.

**Example 1**

Find the area of a rectangle with length 8 feet and width 7 feet.

\[
A = \ell \times w \quad \text{Area of a rectangle}
\]
\[
A = 8 \times 7 \quad \text{Replace } \ell \text{ with 8 and } w \text{ with 7.}
\]
\[
A = 56
\]
The area is 56 square feet.

**Example 2**

Find the area of a square with side length 5 inches.

\[
A = s^2 \quad \text{Area of a square}
\]
\[
A = 5^2 \quad \text{Replace } s \text{ with 5.}
\]
\[
A = 25
\]
The area is 25 square inches.

**Exercises**

Find the area of each figure.

1. 

2. 

3. 

4. 

5. What is the area of a rectangle with a length of 10 meters and a width of 7 meters?

6. What is the area of a square with a side length of 15 inches?
The amount of space inside a three-dimensional figure is the **volume** of the figure. Volume is measured in **cubic units**. This tells you the number of cubes of a given size it will take to fill the prism.

The volume \( V \) of a rectangular prism is the product of its length \( \ell \), width \( w \), and height \( h \).

**Symbols**  \[ V = \ell w h \]

You can also multiply the area of the base \( B \) by the height \( h \) to find the volume \( V \).

**Symbols**  \[ V = Bh \]

---

**Example**

Find the volume of the rectangular prism.

**Method 1** Use \( V = \ell w h \).

\[
\begin{align*}
V &= \ell w h \\
V &= 10 \times 5 \times 2 \\
V &= 100
\end{align*}
\]

The volume is **100 ft\(^3\)**.

**Method 2** Use \( V = Bh \).

\[
\begin{align*}
V &= Bh \\
B, \text{ the area of the base,} \\
V &= 50 \times 2 \\
V &= 100 \\
The \text{ volume is } 100 \text{ ft}^3.
\end{align*}
\]

---

**Exercises**

Find the volume of each prism.

1.  
   \[
   \begin{array}{c}
   \text{2 ft} \\
   \text{3 ft} \\
   \text{4 ft}
   \end{array}
   \]

2.  
   \[
   \begin{array}{c}
   \text{4 in.} \\
   \text{4 in.} \\
   \text{4 in.}
   \end{array}
   \]

3.  
   \[
   \begin{array}{c}
   \text{20 yd} \\
   \text{5 yd}
   \end{array}
   \]

4.  
   \[
   \begin{array}{c}
   \text{5 cm} \\
   \text{3 cm} \\
   \text{1 cm}
   \end{array}
   \]
1-5 Study Guide and Intervention

Algebra: Variables and Expressions

A variable is a symbol, usually a letter, used to represent a number.

Multiplication in algebra can be shown as $4n$, $4 \cdot n$, or $4 \times n$.

Algebraic expressions are combinations of variables, numbers, and at least one operation.

**Example 1** Evaluate $35 + x$ if $x = 6$.

$35 + x = 35 + 6$  
Replace $x$ with 6.

$= 41$  
Add 35 and 6.

**Example 2** Evaluate $y + x$ if $x = 21$ and $y = 35$.

$y + x = 35 + 21$  
Replace $x$ with 21 and $y$ with 35.

$= 56$  
Add 35 and 21.

**Example 3** Evaluate $4n + 3$ if $n = 2$.

$4n + 3 = 4 \times 2 + 3$  
Replace $n$ with 2.

$= 8 + 3$  
Find the product of 4 and 2.

$= 11$  
Add 8 and 3.

**Example 4** Evaluate $4n - 2$ if $n = 5$.

$4n - 2 = 4 \times 5 - 2$  
Replace $n$ with 5.

$= 20 - 2$  
Find the product of 4 and 5.

$= 18$  
Subtract 2 from 20.

**Exercises**

Evaluate each expression if $y = 4$.

1. $3 + y$  
2. $y + 8$  
3. $4 \times y$  

4. $9y$  
5. $15y$  
6. $300y$  

7. $y^2$  
8. $y^2 + 18$  
9. $y^2 + 3 \times 7$

Evaluate each expression if $m = 3$ and $k = 10$.

10. $16 + m$  
11. $4k$  
12. $m \times k$  

13. $m + k$  
14. $7m + k$  
15. $6k + m$  

16. $3k - 4m$  
17. $2mk$  
18. $5k - 6m$

19. $20m + k$  
20. $m^3 + 2k^2$  
21. $k^2 \div (2 + m)$
**Study Guide and Intervention**

**Algebra: Equations**

An **equation** is a sentence that contains an **equals sign**, =. Some equations contain variables. When you replace a variable with a value that results in a true sentence, you **solve** the equation. The value for the variable is the **solution** of the equation.

**Example 1**  
Solve \( m + 12 = 15 \) mentally.

\[
m + 12 = 15 \quad \text{Think: What number plus 12 equals 15?}
\]

\[
3 + 12 = 15 \quad \text{You know that 12 + 3 = 15.}
\]

\[
m = 3
\]

The solution is 3.

**Example 2**  
Solve \( 14 - p = 6 \) using guess and check.

Guess the value of \( p \), then check it out.

<table>
<thead>
<tr>
<th>Try</th>
<th>Try 6</th>
<th>Try 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 - ( p ) ( \neq 6 )</td>
<td>14 - ( p ) ( \neq 6 )</td>
<td>14 - ( p ) ( \neq 6 )</td>
</tr>
<tr>
<td>no</td>
<td>no</td>
<td>yes</td>
</tr>
</tbody>
</table>

The solution is 8 because replacing \( p \) with 8 results in a true sentence.

**Exercises**

Identify the solution of each equation from the list given.

1. \( k - 4 = 13; 16, 17, 18 \)

2. \( 31 + x = 42; 9, 10, 11 \)

3. \( 45 = 24 + k; 21, 22, 23 \)

4. \( m - 12 = 15; 27, 28, 29 \)

5. \( 88 = 41 + s; 46, 47, 48 \)

6. \( 34 - b = 17; 16, 17, 18 \)

7. \( 69 - j = 44; 25, 26, 27 \)

8. \( h + 19 = 56; 36, 37, 38 \)

Solve each equation mentally.

9. \( j + 3 = 9 \)

10. \( m - 5 = 11 \)

11. \( 23 + x = 29 \)

12. \( 31 - h = 24 \)

13. \( 18 = 5 + d \)

14. \( 35 - a = 25 \)

15. \( y - 26 = 3 \)

16. \( 14 + n = 19 \)

17. \( 100 = 75 + w \)
BECOMING FAMILIAR WITH THE PERIODIC TABLE OF ELEMENTS

Use the Periodic Table of Elements, internet, and other resources to answer the following questions.

1. It is the lightest metal and is said to have a memory ________________.

2. The only metal that is liquid at room temperature ________________.

3. Another name for the Noble gases is the __________ gases. They are called this because ________________.

4. List four elements named after planets in the Solar System
   a. ____________________________
   b. ____________________________
   c. ____________________________
   d. ____________________________

5. Used in toothpaste to retard tooth decay ____________________________.

6. The metal used as the sparking agent in cigarette liters and is named after a large asteroid ________________.

7. This element is used in a device for prospecting for gold and silver and is named after one of the fifty states ________________.

8. Used an anti-microbial and anti-viral agent in drinking water and swimming pools __________.

9. This element is called “The Alien” ____________________. Why? ____________________.

10. Named after a mythological “sower of dragon’s teeth” ________________.

11. A mined radioactive metal used in nuclear reactors ____________________.

12. The only element that can form chemical bonds with itself to form long stable chains ________.

13. The Noble gas whose name means “The Hidden” ________________.

14. Known as “Jove’s metal” ________________.

15. Known as “the bringer of light” and used on the tips of matches ________________.

16. This metal is prevalent in the soil of the planet Mars ________________.

17. Metal known as the “Little Demon” and “Devil’s Copper “ ________ and is a component of a coin.

18. Used in the manufacture of mirrors and bronze ________________.

19. Named after the scientist who proposed the “Theory of Relativity” ________________.

20. Named after the Russian chemist who developed the Periodic Table ________________.
Welcome to T. H. Rogers! We’re very excited that you have qualified for and chosen to attend our middle school. In preparation for this August, you are required to read one book: My Dog Skip by Willie Morris.

Options for “My Dog Skip” Book

1. For a hard copy from the school, email: RKHALIL@houstonisd.org
2. EBook link to just view online: https://libro.eb20.net/Reader/rdr.aspx?b=407026
3. You are more than welcome to purchase your own book if you would like

The book is a memoir that recounts the author’s childhood.

- A memoir is written in first person from the author’s point of view.
- A memoir is narrative nonfiction. Memoirs may have some dialogue, but because it is difficult to remember exactly what has been said, many authors do not include dialogue in memoirs.
- A memoir usually covers specific events; it differs from biography in that it does not cover a person’s entire life. Rather we enjoy vignettes from one’s life.
- Memoirs usually have a focus. An author usually shows us how he/she was affected by experiences and how they shaped the way he sees the world.

Attached is a study guide for this book that includes questions/activities for chapters 1, 2, 5, 7, and 8. Please read the entire book over the summer and complete the study guide activities for those specific chapters. When you begin school, please bring the book and your study guide. Our first writing assignment will involve memoir writing, and you will need the completed study guide in order to participate. Don’t wait until you finish the book to write the chapter answers! Write while each chapter is fresh in your mind. I suggest that you begin the book in late July; don’t rush through the reading…enjoy the story and try to think of experiences you have had that might relate to the story.
Write your responses on notebook paper. Please use black or blue pen. Don’t write on the backs of your papers. Be sure to include details for each of the topics...details that will really paint a picture of the event.

Chapter 1: “A Faded Photograph”/Response: If you have a pet, bring a picture of that pet to school. If you don’t have a pet, find a family photo that brings back memories of an event, vacation, family gathering, or outing. Attach the picture to this study guide. Then write a brief description of a memory that the photo brings to you. If you have a pet, write about an experience with that pet.

Chapter 2: “Mutual Mischief”/Response: All of us have gotten into mischief as children. Write a brief (3-5 sentences) summary of a “mischief experience” you have had. Or...it might be fun to ask a parent or grandparent about a mischievous incident they remember from their childhood. Think elementary school!

Chapter 5: “Chinaberry Fights, a Girl, and a Little Kitten”/Response: Friendships are important in our lives. Think of a friend you had in elementary school and talk about the good and bad times you have had with your friend. If you have a picture of your friend, you may want to attach it to the essay.

Chapter 7: “Old Skip and Baseball”/Response: Sometimes we do things we regret - just as Willie regrets the way he treated Skip at the baseball game. Write about a time when you did or said something that you wish you hadn’t.

Chapter 8: “Christmases”/Response: Family gatherings are always fun - whether to celebrate a birthday, holiday, wedding, cultural festival, etc. Think of an occasion where your family gathered. Who was there? What was the occasion? What did you do? Write a brief summary of the occasion.
Welcome Rising Sixth Graders!

I am so excited to be on a Growing and Learning Reading Journey with you all starting in the Fall of 2020!

I know we all have genres that we tend to drift towards for one reason or another. (To be discussed further in the fall!) But, sometimes, there’s an entire genre of books out there that we don’t even know we love...yet!

One of my goals for you this summer is to have you try out at least TWO different genres - that are not your first pick!

Step One: Decide what your USUALLY PREFERRED genre of reading is!

<table>
<thead>
<tr>
<th>Fantasy</th>
<th>Adventure</th>
<th>Non-Fiction</th>
<th>Realistic Fiction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mystery</td>
<td>Historical Fiction</td>
<td>Auto/Biography</td>
<td>Poetry</td>
</tr>
<tr>
<td>Horror</td>
<td>Science Fiction</td>
<td>Graphic Novel</td>
<td>Dystopian</td>
</tr>
</tbody>
</table>

Step Two: Choose two titles (at least) that are outside your preferred type.

*NOTE: I realize this is a GINORMOUS list! I wanted to make it as diverse and accessible as possible for everyone while Summer Reading. I strongly encourage you to read one from EACH genre, \*NOTE 2: About half the titles could go into more than one category, but I’ve placed them in different genres for purposes of simplicity.*

**Fantasy**
- Red Wall by Brian Jacques
- A Wrinkle in Time by Madeline L’Engle
- Atherton: The House of Power by Patrick Carman

**Adventure**
- Alex Rider: Stormbreaker by Anthony Horowitz
- Chasing the Falconers by Gordon Korman
- Ashfall by Mike Mullin

**Mystery**
- Theodore Boone: Kid Lawyer by John Grisham
- Holes by Louis Sachar

**Non-Fiction**
- Boys of Steel: The Creators of Superman by Marc Tyler Nobleman
- Fairy Spell: How Two Girls Convinced the World that Fairies are Real by Marc Tyler Nobleman and Eliza Wheeler

**Realistic Fiction**
- I Funny by James Patterson
- Out of My Mind by Sharon Draper

**Historical Fiction**
- Pirates! by Celia Rees
- Projekt 1065 by Allen Gratz

**Auto/Biography**
- New Kid by Jerry Craft
- They Called Us Enemy by George Takei
Poetry
- Brown Girl Dreaming by Jacqueline Woodson
- The Dreamer by Pam Munoz Ryan

Horror
- Something Wicked This Way Comes by Ray Bradbury
- Coraline by Neil Gaiman

Science Fiction
- The Maze Runner by James Dashner
- Ender’s Game by Orson Scott Card
- Sal and Gabi Break the Universe by Carlos Hernandez

Graphic Novel
- Primates: The Fearless Science of Jane Goodall, Dian Fossey and Birute Galdikas by Jim Ottaviani
- The Graveyard Book by Neil Gaiman
- New Kid by Jerry Craft
- They Called Us Enemy by George Takei

Dystopian
- Legend - Marie Lu
- Matched - Ally Condie

Step Three: Write a BRIEF review of the book.
Book Review
• Summary:
  Write a short summary of the book – ANSWER: the questions who, what, when, where, and how.

• Opinion:
  Write a couple sentences giving your opinion on the book.
  Use these guidelines
  - Write about why you like or dislike the book.
  - Tell how this book could be a genre you might enjoy.

• Recommendation: Explain whether you would recommend this book to student or not? Rate the book from 1 star to 5 stars, and give examples why you gave it the rating you did.

ABOVE AND BEYOND:
For additional interests and challenges:

#1
https://www.jkrowling.com/j-k-rowling-introduces-the-ickabog/

J.K. Rowling Introduces The Ickabog

About The Ickabog
The idea for *The Ickabog* came to me while I was still writing *Harry Potter*. I wrote most of a first draft in fits and starts between Potter books, intending to publish it after *Harry Potter and the Deathly Hallows*.

However, after the last Potter book I wanted to take a break from publishing, which ended up lasting five years. In that time I wrote *The Casual Vacancy* and Robert Galbraith wrote *The Cuckoo’s Calling*. After some dithering (and also after my long-suffering agent had trademarked The Ickabog – sorry, Neil) I decided I wanted to step away from children’s books for a while. At that point, the first draft of *The Ickabog* went up into the attic, where it’s remained for nearly a decade. Over time I came to think of it as a story that belonged to my two younger children, because I’d read it to them in the evenings when they were little, which has always been a happy family memory.

A few weeks ago at dinner, I tentatively mooted the idea of getting *The Ickabog* down from the attic and publishing it for free, for children in lockdown. My now teenagers were touchingly enthusiastic, so downstairs came the very dusty box, and for the last few weeks I’ve been immersed in a fictional world I thought I’d never enter again. As I worked to finish the book, I started reading chapters nightly to the family again. This was one of the most extraordinary experiences of my writing life, as *The Ickabog*’s first two readers told me what they remember from when they were tiny, and demanded the reinstatement of bits they’d particularly liked (I obeyed).

I think *The Ickabog* lends itself well to serialisation because it was written as a read-aloud book (unconsciously shaped, I think, by the way I read it to my own children), but it’s suitable for 7-9 year olds to read to themselves.

I’ll be posting a chapter (or two, or three) every weekday between 26th May and 10th July on *The Ickabog* website. We plan to publish some translations soon and will post further details on that website when they’re available.

*The Ickabog* is a story about truth and the abuse of power. To forestall one obvious question: the idea came to me well over a decade ago, so it isn’t intended to be read as a response to anything that’s happening in the world right now. The themes are timeless and could apply to any era or any country.

The Illustration Competition

Having decided to publish, I thought how wonderful it would be if children in lockdown, or otherwise needing distraction during the strange and difficult time we’re passing through, illustrated the story for me. There will be suggestions about the illustrations we might need for each chapter on *The Ickabog* website, but nobody should feel constrained by these ideas. I want to see imaginations run wild! Creativity, inventiveness and effort are the most important things: we aren’t necessarily looking for the most technical skill!

In November 2020, *The Ickabog* will be published in English in print, eBook and audiobook formats, shortly followed by other languages. The best drawings in each territory will be included in the finished books. As publishers in each territory will need to decide which pictures work best for their own editions, I won’t be personally judging the entries. However, if parents and guardians post their children’s drawing on Twitter using the hashtag #TheIckabog, I’ll be able to share and comment! To find out more about the Illustration Competition, go to *The Ickabog* website.

Covid-19 Donation

I’m pledging all author royalties from *The Ickabog*, when published, to help groups who’ve been particularly impacted by the pandemic. Further details will be available later in the year.
The 11th Annual New York Times Summer Reading Contest

By The Learning Network
Published Aug. 21, 2019 Updated May 26, 2020

Contest Dates: June 12-Aug. 21, 2020

Every year since 2010 The Learning Network has invited teenagers around the world to add The New York Times to their summer reading lists and, so far, over 60,000 have.

At a time when teachers are looking for ways to offer students more “voice and choice,” we hope our open-ended contest can help: Every week, we ask participants to choose something in The Times that has sparked their interest, then tell us why. At the end of the week, judges from the Times newsroom pick favorite responses, and we publish them. It’s as simple as that.

Though our goals include some on many educators’ lists — helping students become more aware of the world and their place in it, learning how to navigate sophisticated nonfiction, and practicing writing for a real audience — we also just hope that students will realize that reading the newspaper can be fun. As you’ll see in the guidelines below, they can choose literally anything they like that was published on NYTimes.com in 2019 or 2020. We don’t care what they write about; we just care about why they chose it.

The contest begins on June 12, and we’ll post the link to submit answers at the top of this post that day.

For now, however, you can find all our rules and an F.A.Q. below. You can also watch our on-demand webinar about the contest, take a look at the winning student responses from 2019, 2018 and 2017, or check out this edition of our Mentor Text series that explains how you, too, can write responses that sing.