

Section 10.R.4 Decimal Numbers and Fractions

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Changing Decimal Numbers to Fractions

To Change from Decimal Numbers to Fractions

A decimal number less than 1 (digits are to the right of the decimal point) can be written in fraction form by writing a fraction with:

1. A **numerator** that consists of the whole number formed by _____

2. A **denominator** that is the power of _____

(For example, a denominator of 100 corresponds to _____.)

▣ Example 2 Changing Decimal Numbers to Fractions

Change each decimal number to a fraction in lowest terms.

a. 0.131

b. 0.075

Solution

Exercises

Change each decimal number to a fraction or mixed number in lowest terms.

1. 0.2

4. 0.225

2. 0.8

5. 0.455

3. 0.36

6. 6.25

Changing Fractions to Decimal Numbers

_____ numbers can be **repeating** or **nonrepeating**. A **repeating decimal** has a repeating pattern to its digits.

Every fraction with a whole number numerator and nonzero denominator is _____
_____. Such numbers are called _____.

▣ Example 5 Changing Fractions to Decimal Numbers

Change $\frac{5}{4}$ to a decimal number.

Solution

Exercises

Change each fraction to a decimal number. If the decimal number is nonterminating, write it using a bar over the repeating pattern of digits.

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

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

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

10. $\frac{5}{18}$

Change each fraction to a decimal number rounded to the nearest hundredth.

11. $\frac{16}{33}$

13. $\frac{30}{21}$

12. $\frac{1}{32}$

14. $\frac{16}{13}$

Simplifying Expressions with Both Fractions and Decimal Numbers

We can perform operations and comparisons with both fractions and decimal numbers by _____

▮ Example 8 Simplifying Expressions with Decimals and Fractions

Find the sum $10\frac{1}{2} + 7.32 + 5\frac{3}{5}$ in decimal form.

Solution

Exercises

Simplify each expression by writing all of the numbers in decimal form and performing the indicated operations. Round to the nearest hundredth, if necessary.

15. $\frac{3}{4} + \frac{1}{10} + 3.55$

16. $36.2 - 23\frac{1}{5}$

17. $\left(1\frac{3}{4}\right)\left(2\frac{1}{2}\right)(5.35)$

18. $\frac{1}{7} + 0.355 + \frac{2}{3}$

For each pair of decimal numbers, determine which number is larger and by how much it is larger. (If the difference is nonterminating, write it using a bar over the repeating pattern of digits.)

19. $0.28, \frac{3}{11}$

20. $3.5, 3\frac{2}{3}$

Arrange each set of numbers in order from smallest to largest.

21. $0.63, \frac{5}{8}, 0.64$

22. $0.083, \frac{41}{500}, \frac{2}{25}$