



Appendix E: Rules for Working with Decimals

To **add** decimal numbers, align the decimal points vertically.
Add whole numbers to whole numbers, tenths to tenths, hundredths to hundredths and so on.
(See Unit 2 Topic 1)

To **subtract** decimal numbers, align the decimal points.
Subtract whole numbers from whole numbers, tenths from tenths, hundredths from hundredths and so on. (See Unit 2 Topic 2)

To **multiply a decimal by 10**:
Move the decimal point one place to the right. (See Unit 3 Topic 1)

To **multiply a decimal by 0.1**:
Move the decimal point one place to the left. (See Unit 3 Topic 2)

To **divide a decimal by 10**:
Move the decimal point one place to the left. (See Unit 4 Topic 1)

To **divide a decimal by 0.1**:
Move the decimal point one place to the right. (See Unit 4 Topic 1)

To **multiply any decimal by any decimal**:
Count the total number of decimal places in the numbers being multiplied.
This will be the number of decimal places in the product. (See Unit 3 Topic 3)

To **divide any decimal by any decimal**:

- Step 1:** Change the divisor from a decimal to a whole number by moving the decimal point to the right.
- Step 2:** Move the decimal point in the dividend to the right the same number of places as it moved in Step 1.
- Step 3:** Put a decimal point in the quotient above the dividend decimal point.
- Step 4:** Divide as you would with whole numbers. (See Unit 4 Topic 3)

To change from **a percent to a decimal**:
Move the decimal point 2 places left. (See Unit 6 Topic 2)

To change from **a decimal to a percent**:
Move the decimal point 2 places right. (See Unit 6 Topic 2)

To change from **a fraction to a decimal**:
Divide the numerator by the denominator. (See Unit 1 Topic 6)

To change from **a decimal to a fraction**:



Write the decimal part as a fraction of tenths, hundredths, thousandths and so on.
(See Unit 1 Topic 2)

To change from **a fraction to a percent**:

Divide the numerator by the denominator to get a decimal. Then, move the decimal point 2 places right. (See Unit 6 Topic 3)

To change from **a percent to a fraction**:

Write the percent as a fraction with denominator 100. (See Unit 6 Topic 3)

To find a **percent of** or a **percentage of** some amount:

Write the percent as a decimal and multiply the amount. (See Unit 7 Topic 1)

To find **percent increase**:

Find the *amount* of increase as a fraction of the original amount. Write the fraction as a percent.
(See Unit 7 Topic 3)

To find **percent decrease**:

Find the *amount* of decrease as a fraction of the original amount. Write the fraction as a percent.
(See Unit 7 Topic 4)

Order of operations:

1. Work from left to right if you are only adding and subtracting.
2. Work from left to right if you are only multiplying and dividing.
3. Do \times and \div before $+$ and $-$
4. Do what is inside parentheses or brackets first. (See Unit 5 Topic 1)

To calculate the **area of a rectangle**: Multiply its length by its width. (See Unit 3 Topic 4)

To calculate the **total price** or cost: Multiply the number of items by the unit price.
(See Unit 3 Topic 4)

To calculate **distance traveled**: Multiply time by speed. (See Unit 5 Topic 2)