Family Guide to CPM CHAPTER 3

In this chapter, you will learn how to:

- Use a powerful new tool for finding equivalent fractions.
- Use percents, decimals, and fractions to describe a portion of a whole.
- Represent portions as percents, decimals, and fractions with pictures, symbols, and words.

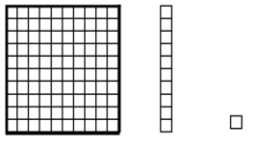
Chapter 3 Main Ideas

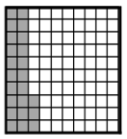
Section 3.1
In the first section, students will develop a useful tool for finding equivalent fractions and verifying that they are equivalent. They will also represent portions of wholes as percents, decimals, and fractions. Lastly, they will work to find efficient ways to move between equivalent representations of the portions

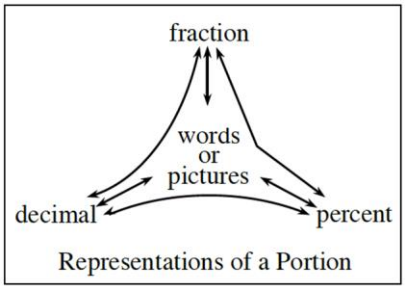
Section 3.2 In this section, students will describe motion on a number line using integers. Students will learn how addition can help you predict the starting or ending point of a series of moves. Then they will relate this movement to finding distance. Finally, they will connect their understanding of movement along a number line to distance on a coordinate graph.

Important Models in this Chapter

$\frac{2}{3} \cdot \boxed{\frac{2}{2}} = \frac{4}{6}$

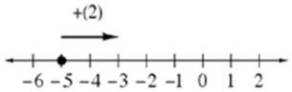






Representations of a Portion

Example 1:
$-5 + (2) = -3$



Example 2:
$-6 + (-2) = -8$

Key Words

absolute value- The absolute value of a number is the distance of the number from zero. Since the absolute value represents a distance, without regard to direction, absolute value is always non-negative. Thus, the absolute value of a negative number is its opposite, while the absolute value of a non-negative number is just the number itself. The absolute value of x is usually written "$|x|$."
integers- The set of numbers {…, –3, –2, –1, 0, 1, 2, 3, …}
least common multiple-(LCM) The smallest common multiple of a set of two or more integers
multiplicative identity- The Multiplicative Identity Property states that multiplying any expression by 1 leaves the expression unchanged.
origin- The point on a coordinate plane where the *x*-axis and *y*-axis intersect is called the origin. This point has coordinates (0, 0). The point assigned to zero on a number line is also called the origin.

percent-(%) A ratio that compares a number to 100. Percents are often written using the "%" symbol. For example, 0.75 is equal to $\frac{75}{100}$ or 75%
prime factor- A factor that is a prime number.
quadrants- The coordinate plane is divided by its axes into four quadrants. The quadrants are numbered as shown in the first diagram at right. When graphing data that has no negative values, sometimes a graph that shows only the first quadrant is used.

ratio- A ratio compares two quantities by division. A ratio may be written using a colon, but is more often written as a fraction. For example, the comparison may be made of the ratio of female students in a particular school to the total number of students in the school. This ratio could be written as 1521 : 2906 or as the fraction shown below. $\frac{1521 \text{ female students}}{2906 \text{ total students}}$
sample- A subset (group) of a given population with the same characteristics as the whole population
x-coordinate- In an ordered pair, (*x, y*), that represents a point in the coordinate plane, *x* is the value of the *x*-coordinate of the point. That is, the horizontal distance from the *y*-axis that is needed to plot the point
y-coordinate- In an ordered pair, (*x, y*) , that represents a point in the coordinate plane, *y* is the value of the *y*-coordinate. That is, it represents the distance and direction of the point from the *x*-axis.

On the Chapter 3 assessment, students will be expected to show their understanding of the following:

6.RP3c Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent
6.NS.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation
6.NS.6 (a & b)
a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., –(–3) = 3, and that 0 is its own opposite
c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
6.NS.7 (a-d)
a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram
b. Write, interpret, and explain statements of order for rational numbers in real-world contexts.
c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation
d. Distinguish comparisons of absolute value from statements about order.
6.NS.8 Distinguish comparisons of absolute value from statements about order.
6.G.3 Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.

Where These Topics Are Revisited

Operations with portions are in Chapters 5-7
Equivalent fractions will be essential in Chapter 4
In Chapter 7, this leads to the representations of and comparing of rates. Chapter 9, students will look specifically at several applications of percents, such as computing simple interest, finding a discount, and calculating the amount of a tip.
Addition with integers and rational numbers are fundamental skills that will be practiced through homework and applied throughout this course in preparation for learning additional operations in future courses.

What's Coming Up in the Next Chapter

Students will look at Variables and Ratios in Chapter 4.

How You Can Help at Home

Discuss positive and negative number in real life: temperature, money, on a number line.

Look at percents together and discuss how it could be represented as a decimal or fraction as well.
Consider asking questions when looking at math:
"Is there another way to see it?"
"How can you visualize it?"
"How is it the same or different?"

Sample Problems in this Chapter

Suzie's cousin, Antwon, was impressed with her scale drawing and cost estimate. He wanted her help to figure out a problem.
a. Antwon lived in a different state, so he called Suzie and gave her the coordinates to the scale drawing he made for his room. The points
were $A(-4, 6)$, $B(6, 6)$, $C(6, -10)$, $D(2, -10)$, $E(2, -2)$, and $F(-4, -2)$. Sketch Antwon's room.
b. Is there a way to find the length of the sides using just the coordinates and without actually plotting the diagram? For example, can you determine the length of the side from point D to point E using the points (2, −10) and (2, −2)?
c. Without looking at your graph, use your reasoning from part (b) to find the length of the remaining sides. Then, check your work using your graph.