<table>
<thead>
<tr>
<th>absolute value equation</th>
<th>conjecture</th>
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<td>Chapter 1 (p. 3)</td>
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<table>
<thead>
<tr>
<th>equation</th>
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<td>Chapter 1 (p. 4)</td>
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</tr>
<tr>
<td>--------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>An unproven statement about a general mathematical concept</strong></td>
<td></td>
</tr>
<tr>
<td>The product of an even and an odd number is always an even number.</td>
<td></td>
</tr>
<tr>
<td><strong>An equation that contains an absolute value expression</strong></td>
<td></td>
</tr>
</tbody>
</table>
| \(|x| = 2\)  
\(|x + 1| = 5\)  
\(3|2x + 1| = 6\) |
| **Equations that have the same solution(s)** |
| **A statement that two expressions are equal** |
| \(2x - 8 = 0\) and \(2x = 8\) |
| \(4x = 16\)  
\(a + 7 = 21\) |
| **A literal equation that shows how one variable is related to one or more other variables** |
| **An apparent solution that must be rejected because it does not satisfy the original equation** |
| \(A = lw\)  
\(I = Prt\)  
\(d = rt\) |
| When you square each side of \(x = \sqrt{x + 2}\), the resulting equation has two solutions, \(x = -1\) and \(x = 2\). However, \(x = -1\) is an extraneous solution because it does not satisfy the original equation. |
| **Two operations that undo each other, such as addition and subtraction** |
| **An equation that is true for all values of the variable** |
| Multiplication and division are inverse operations. |
| \(2(x + 1) = 2x + 2\)  
\(-3(2x + 3) = -6x - 9\) |
<table>
<thead>
<tr>
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<tr>
<td><strong>linear equation in one</strong></td>
<td><strong>literal equation</strong></td>
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<td>variable</td>
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<td></td>
<td>Chapter 1 (p. 36)</td>
</tr>
<tr>
<td><strong>rule</strong></td>
<td><strong>solution of an equation</strong></td>
</tr>
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<td></td>
<td>Chapter 1 (p. 3)</td>
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<tr>
<td></td>
<td>Chapter 1 (p. 4)</td>
</tr>
<tr>
<td><strong>theorem</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chapter 1 (p. 3)</td>
</tr>
<tr>
<td>An equation that has two or more variables</td>
<td>An equation that can be written in the form $ax + b = 0$, where $a$ and $b$ are constants and $a \neq 0$</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>$2y + 6x = 12$</td>
<td></td>
</tr>
<tr>
<td>$5x + 6 = 0$</td>
<td>$3x = 8$</td>
</tr>
<tr>
<td>A value that makes an equation true</td>
<td>A proven statement about a general mathematical concept; also known as a theorem</td>
</tr>
<tr>
<td>The solution of the equation $x - 4 = 2$ is 6.</td>
<td>The Pythagorean Theorem</td>
</tr>
<tr>
<td>A proven statement about a general mathematical concept</td>
<td>The Pythagorean Theorem</td>
</tr>
<tr>
<td>The Pythagorean Theorem</td>
<td></td>
</tr>
<tr>
<td>absolute deviation</td>
<td>absolute value inequality</td>
</tr>
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<td>--------------------------</td>
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<td>Chapter 2 (p. 90)</td>
<td>Chapter 2 (p. 88)</td>
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<table>
<thead>
<tr>
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<th>equivalent inequalities</th>
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<td>Chapter 2 (p. 62)</td>
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<th>inequality</th>
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<thead>
<tr>
<th>solution of an inequality</th>
<th>solution set</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Chapter 2 (p. 55)</td>
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<tr>
<td><strong>Vocabulary Flash Cards</strong></td>
<td></td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>An inequality that contains an absolute value expression</td>
<td>The absolute value of the difference of a number ( x ) and a given value</td>
</tr>
<tr>
<td>[</td>
<td>x</td>
</tr>
<tr>
<td>Inequalities that have the same solutions</td>
<td>An inequality formed by joining two inequalities with the word “and” or the word “or”</td>
</tr>
<tr>
<td>( 3x + 5 &gt; 0 ) and ( 3x &gt; 5 )</td>
<td>( x \geq 2 ) and ( x &lt; 5 ) ( y \leq -2 ) or ( y &gt; 1 ) ( 4 &lt; x - 1 &lt; 7 )</td>
</tr>
<tr>
<td>A mathematical sentence that compares expressions</td>
<td>A graph that shows the solution set of an inequality on a number line</td>
</tr>
<tr>
<td>( x - 4 &lt; -14 ) ( x + 5 \geq -67 )</td>
<td>( x &gt; -2 )</td>
</tr>
<tr>
<td>The set of all solutions of an inequality</td>
<td>A value that makes an inequality true</td>
</tr>
<tr>
<td>5 is in the solution set of ( x &gt; 1 ) ( 3 ) is not in the solution set of ( x \leq 1 )</td>
<td>A solution of the inequality ( x + 3 &gt; -9 ) is ( x = 2 ).</td>
</tr>
<tr>
<td>absolute value function</td>
<td>constant function</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Chapter 3 (p. 156)</td>
<td>Chapter 3 (p. 138)</td>
</tr>
<tr>
<td>continuous domain</td>
<td>dependent variable</td>
</tr>
<tr>
<td>Chapter 3 (p. 114)</td>
<td>Chapter 3 (p. 107)</td>
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<tr>
<td>discrete domain</td>
<td>domain</td>
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<tr>
<td>Chapter 3 (p. 114)</td>
<td>Chapter 3 (p. 106)</td>
</tr>
<tr>
<td>family of functions</td>
<td>function</td>
</tr>
<tr>
<td>Chapter 3 (p. 146)</td>
<td>Chapter 3 (p. 104)</td>
</tr>
</tbody>
</table>
### Vocabulary Flash Cards

<table>
<thead>
<tr>
<th><strong>A linear equation written in the form</strong> ( y = mx + b ), or ( y = b )</th>
<th><strong>A function that contains an absolute value expression</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>( y = 0x + 5 ), or ( y = 5 )</td>
<td><img src="image" alt="Absolute Value Function" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>The variable that represents output values of a function</strong></th>
<th><strong>A set of input values that consist of all numbers in an interval</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>In the function ( y = 2x - 3 ), ( y ) is the dependent variable.</td>
<td>All numbers from 1 to 5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>The set of all possible input values of a function</strong></th>
<th><strong>A set of input values that consists of only certain numbers in an interval</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>For the ordered pairs ((0, 6), (1, 7), (2, 8), ) and ((3, 9)), the domain is 0, 1, 2, and 3.</td>
<td>Integers from 1 to 5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>A relation that pairs each input with exactly one output</strong></th>
<th><strong>A group of functions with similar characteristics</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>The ordered pairs ((0, 1), (1, 2), (2, 4), ) and ((3, 6)) represent a function.</td>
<td>Linear functions and absolute value functions are families of functions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Ordered Pairs</strong></th>
<th><strong>Input</strong></th>
<th><strong>Output</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>((0, 1))</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>((1, 2))</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>((2, 4))</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>((3, 6))</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Vocabulary Flash Cards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>function notation</strong></td>
<td><strong>horizontal shrink</strong></td>
<td></td>
</tr>
<tr>
<td>Chapter 3 (p. 122)</td>
<td>Chapter 3 (p. 148)</td>
<td></td>
</tr>
<tr>
<td><strong>horizontal stretch</strong></td>
<td><strong>independent variable</strong></td>
<td></td>
</tr>
<tr>
<td>Chapter 3 (p. 148)</td>
<td>Chapter 3 (p. 107)</td>
<td></td>
</tr>
<tr>
<td><strong>linear equation in two variables</strong></td>
<td><strong>linear function</strong></td>
<td></td>
</tr>
<tr>
<td>Chapter 3 (p. 112)</td>
<td>Chapter 3 (p. 112)</td>
<td></td>
</tr>
<tr>
<td><strong>nonlinear function</strong></td>
<td><strong>parent function</strong></td>
<td></td>
</tr>
<tr>
<td>Chapter 3 (p. 112)</td>
<td>Chapter 3 (p. 146)</td>
<td></td>
</tr>
<tr>
<td>Vocabulary Flash Cards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A transformation that causes the graph of a function to shrink toward the ( y )-axis when all the ( x )-coordinates are multiplied by a factor ( a ), where ( a &gt; 1 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The graph of ( g ) is a horizontal shrink of the graph of ( f ) by a factor of ( \frac{1}{4} ).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Another name for ( y ) denoted as ( f(x) ) and read as “the value of ( f ) at ( x )” or “( f ) of ( x )”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( y = 5x + 2 ) can be written in function notation as ( f(x) = 5x + 2 ).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The variable that represents the input values of a function</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In the function ( y = 5x - 8 ), ( x ) is the independent variable.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A transformation that causes the graph of a function to stretch away from the ( y )-axis when all the ( x )-coordinates are multiplied by a factor ( a ), where ( 0 &lt; a &lt; 1 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The graph of ( g ) is a horizontal stretch of the graph of ( f ) by a factor of ( 1 + \frac{1}{3} = 3 ).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A function whose graph is a nonvertical line</td>
<td></td>
<td></td>
</tr>
<tr>
<td>An equation that can be written in the form ( y = mx + b ), where ( m ) and ( b ) are constants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( y = 4x + 3 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( 6x + 2y = 0 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The most basic function in a family of functions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For linear functions, the parent function is ( f(x) = x ).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A function that does not have a constant rate of change and whose graph is not a line</td>
<td></td>
<td></td>
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<table>
<thead>
<tr>
<th>range of a function</th>
<th>reflection</th>
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<td>Chapter 3 (p. 106)</td>
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<td>Chapter 3 (p. 136)</td>
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<td>run</td>
<td>slope</td>
</tr>
<tr>
<td>Chapter 3 (p. 136)</td>
<td>Chapter 3 (p. 136)</td>
</tr>
<tr>
<td>slope-intercept form</td>
<td>solution of a linear equation in two variables</td>
</tr>
<tr>
<td>Chapter 3 (p. 138)</td>
<td>Chapter 3 (p. 114)</td>
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</table>
A transformation that flips a graph over a line called the **line of reflection**

<table>
<thead>
<tr>
<th>Reflection in the x-axis</th>
<th>Reflection in the y-axis</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Reflection x-axis" /></td>
<td><img src="image2" alt="Reflection y-axis" /></td>
</tr>
</tbody>
</table>

The set of all possible output values of a function

For the ordered pairs (0, 6), (1, 7), (2, 8), and (3, 9), the range is 6, 7, 8, and 9.

The change in \( y \) between any two points on a line

The change in \( x \) between any two points on a line

An ordered pair \((x, y)\) that makes an equation true

A linear equation written in the form \( y = mx + b \)

A solution of \( x + 2y = -6 \) is \((2, -4)\).

The slope is 1 and the \( y \)-intercept is 2.
<table>
<thead>
<tr>
<th>standard form of a linear equation</th>
<th>transformation</th>
</tr>
</thead>
<tbody>
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<td>Chapter 3 (p. 146)</td>
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</tbody>
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<table>
<thead>
<tr>
<th>translation</th>
<th>vertex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 3 (p. 146)</td>
<td>Chapter 3 (p. 156)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>vertex form of an absolute value function</th>
<th>vertical shrink</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 3 (p. 158)</td>
<td>Chapter 3 (p. 148)</td>
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<table>
<thead>
<tr>
<th>vertical stretch</th>
<th>x-intercept</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 3 (p. 148)</td>
<td>Chapter 3 (p. 131)</td>
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</table>
### Vocabulary Flash Cards

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>A change in the size, shape, position, or orientation of a graph</td>
<td>See translation, reflection, horizontal shrink, horizontal stretch, vertical shrink, and vertical stretch.</td>
</tr>
<tr>
<td>A linear equation written in the form $Ax + By = C$</td>
<td>where $A$, $B$, and $C$ are real numbers and $A$ and $B$ are not both zero.</td>
</tr>
<tr>
<td>$-2x + 3y = -6$</td>
<td></td>
</tr>
<tr>
<td>The point where a graph changes direction</td>
<td>A transformation that shifts a graph horizontally and/or vertically but does not change the size, shape, or orientation of the graph.</td>
</tr>
<tr>
<td>A transformation that causes the graph of a function to shrink toward the $x$-axis when all the $y$-coordinates are multiplied by a factor $a$, where $0 &lt; a &lt; 1$</td>
<td>An absolute value function written in the form $f(x) = a</td>
</tr>
<tr>
<td>The graph of $h$ is a vertical shrink of a graph of $f$ by a factor of $\frac{1}{4}$.</td>
<td>$f(x) =</td>
</tr>
<tr>
<td>The $x$-coordinate of a point where the graph crosses the $x$-axis</td>
<td>A transformation that causes the graph of a function to stretch away from the $x$-axis when all the $y$-coordinates are multiplied by a factor $a$, where $a &gt; 1$.</td>
</tr>
<tr>
<td></td>
<td>The graph of $h$ is a vertical stretch of the graph of $f$ by a factor of 3.</td>
</tr>
</tbody>
</table>
y-intercept

Chapter 3 (p. 131)
The y-coordinate of a point where the graph crosses the y-axis

\[ y \text{-intercept} = b \]

\[(0, b)\]
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<tr>
<th>Vocabulary Flash Cards</th>
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</thead>
<tbody>
<tr>
<td>arithmetic sequence</td>
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<tr>
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</tr>
<tr>
<td>common difference</td>
</tr>
<tr>
<td>Chapter 4 (p. 210)</td>
</tr>
<tr>
<td>correlation coefficient</td>
</tr>
<tr>
<td>Chapter 4 (p. 203)</td>
</tr>
<tr>
<td>interpolation</td>
</tr>
<tr>
<td>Chapter 4 (p. 205)</td>
</tr>
</tbody>
</table>
### Vocabulary Flash Cards

<table>
<thead>
<tr>
<th>When a change in one variable causes a change in another variable</th>
<th>An ordered list of numbers in which the difference between each pair of consecutive terms is the same</th>
</tr>
</thead>
</table>
| time spent exercising and the number of calories burned |Terms of an arithmetic sequence
3, \(\frac{5}{2}\), \(\frac{7}{2}\), \(\frac{9}{2}\), … |

<table>
<thead>
<tr>
<th>A relationship between data sets</th>
<th>The difference between each pair of consecutive terms in an arithmetic sequence</th>
</tr>
</thead>
</table>
| |Terms of an arithmetic sequence
3, \(\frac{5}{2}\), \(\frac{7}{2}\), \(\frac{9}{2}\), … |

<table>
<thead>
<tr>
<th>To predict a value outside the range of known values using a graph or its equation</th>
<th>A number (r) from –1 to 1 that tells how closely the equation of the line of best fit models the data</th>
</tr>
</thead>
<tbody>
<tr>
<td>You have a model relating age and average number of hours of sleep based on a data set where ages range from 6 to 55. Using the model to predict the average number of hours of sleep for a 5-year-old or a 57-year-old is an example of extrapolation.</td>
<td>(r = -1) Strong negative correlation (r = 0) No correlation (r = 1) Strong positive correlation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A line that best models a set of data</th>
<th>To approximate a value between two known values using a graph or its equation</th>
</tr>
</thead>
</table>
| |You have a model relating age and average number of hours of sleep based on a data set where ages range from 6 to 55. Using the model to predict the average number of hours of sleep for a 47-year-old is an example of interpolation.
<table>
<thead>
<tr>
<th>Vocabulary Flash Cards</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>line of fit</strong></td>
</tr>
<tr>
<td>Chapter 4 (p. 198)</td>
</tr>
<tr>
<td><strong>linear regression</strong></td>
</tr>
<tr>
<td>Chapter 4 (p. 203)</td>
</tr>
<tr>
<td><strong>perpendicular lines</strong></td>
</tr>
<tr>
<td>Chapter 4 (p. 189)</td>
</tr>
<tr>
<td><strong>point-slope form</strong></td>
</tr>
<tr>
<td>Chapter 4 (p. 182)</td>
</tr>
</tbody>
</table>
A linear function that models a real-life situation

The function \( y = 0.8x + 16 \) models a company’s annual profits \( y \) (in millions) after \( x \) years.

A line drawn on a scatter plot that is close to most of the data points

Two lines in the same plane that never intersect

A method that graphing calculators use to find a precise line of fit that models a set of data

A function defined by two or more equations

\[
 f(x) = \begin{cases} 
 x - 2, & \text{if } x \leq 0 \\ 
 2x + 1, & \text{if } x > 0 
\end{cases}
\]

Two lines in the same plane that intersect to form right angles

The difference of the \( y \)-value of a data point and the corresponding \( y \)-value found using the line of fit

A linear equation written in the form \( y - y_i = m(x - x_i) \)

\[
y - 1 = \frac{2}{3}(x + 6)
\]
<table>
<thead>
<tr>
<th>scatter plot</th>
<th>sequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 4 (p. 196)</td>
<td>Chapter 4 (p. 210)</td>
</tr>
<tr>
<td>step function</td>
<td>terms of a sequence</td>
</tr>
<tr>
<td>Chapter 4 (p. 220)</td>
<td>Chapter 4 (p. 210)</td>
</tr>
</tbody>
</table>
### Vocabulary Flash Cards

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>An ordered list of numbers</td>
<td>5, 10, 15, 20, ..., $a_n$, ...</td>
</tr>
<tr>
<td>2, 4, 8, 16, ..., $a_n$, ...</td>
<td></td>
</tr>
<tr>
<td>A graph that shows the relationship between two data sets</td>
<td><img src="image.png" alt="Graph" /></td>
</tr>
<tr>
<td>Each number in a sequence</td>
<td>5, 10, 15, 20, ..., $a_n$, ...</td>
</tr>
<tr>
<td>1st position, 3rd position, $n$th position</td>
<td></td>
</tr>
</tbody>
</table>
| A piecewise function defined by a constant value over each part of its domain | \[ f(x) = \begin{cases} 
 50, & \text{if } 0 < x \leq 1 \\
 75, & \text{if } 1 < x \leq 2 \\
 100, & \text{if } 2 < x \leq 3 \\
 125, & \text{if } 3 < x \leq 4 \\
 150, & \text{if } 4 < x \leq 5 
\end{cases} \] |
<table>
<thead>
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<th>Vocabulary Flash Cards</th>
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<tr>
<td><strong>graph of a linear inequality</strong></td>
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<td>Chapter 5 (p. 268)</td>
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<tr>
<td><strong>half-planes</strong></td>
</tr>
<tr>
<td>Chapter 5 (p. 268)</td>
</tr>
<tr>
<td><strong>solution of a linear inequality in two variables</strong></td>
</tr>
<tr>
<td>Chapter 5 (p. 268)</td>
</tr>
<tr>
<td><strong>solution of a system of linear inequalities</strong></td>
</tr>
<tr>
<td>Chapter 5 (p. 274)</td>
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</table>
### Vocabulary Flash Cards

<table>
<thead>
<tr>
<th><strong>The graph of all the solutions of the system of linear inequalities</strong></th>
<th><strong>The graph in two variables that shows all the solutions of the inequality in a coordinate plane</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Graph of inequalities" /></td>
<td><img src="image2.png" alt="Graph of inequality" /></td>
</tr>
<tr>
<td><strong>The graph of</strong> ( y &lt; x - 3 ) <strong>is the shaded half-plane.</strong></td>
<td><strong>Two regions of the coordinate plane divided by a boundary line</strong></td>
</tr>
<tr>
<td><img src="image3.png" alt="Graph of system" /></td>
<td><img src="image4.png" alt="Graph of boundary" /></td>
</tr>
<tr>
<td><strong>An inequality written in the form</strong> ( ax + by &lt; c, ) ( ax + by \leq c, ) ( ax + by &gt; c, ) <strong>or</strong> ( ax + by \geq c, ) <strong>where</strong> ( a, b, ) <strong>and</strong> ( c ) <strong>are real numbers</strong></td>
<td><strong>An ordered pair</strong> ((x, y)) <strong>that makes an inequality true</strong></td>
</tr>
<tr>
<td>( 2x + y &lt; -3 ) ( x - 3y \geq 8 )</td>
<td><strong>A set of two or more linear equations in the same variable</strong></td>
</tr>
<tr>
<td><img src="image5.png" alt="Graph of inequalities" /></td>
<td><img src="image6.png" alt="Graph of system" /></td>
</tr>
<tr>
<td><strong>An ordered pair that is a solution of each equation in the system</strong></td>
<td><strong>The solution of the following system of linear inequalities is</strong> ((2, 5)).</td>
</tr>
<tr>
<td><strong>The solution of the following system of linear equations is</strong> ((1, -3)).</td>
<td><img src="image7.png" alt="Graph of system" /></td>
</tr>
<tr>
<td>( 4x - y = 7 ) <strong>Equation 1</strong> ( 2x + 3y = -7 ) <strong>Equation 2</strong></td>
<td><img src="image8.png" alt="Graph of system" /></td>
</tr>
<tr>
<td><img src="image9.png" alt="Graph of system" /></td>
<td><strong>An ordered pair that is a solution of each inequality in the system.</strong></td>
</tr>
<tr>
<td><strong>A set of two or more linear equations in the same variable</strong></td>
<td><strong>The solution of the following system of linear inequalities is</strong> ((-2, 5)).</td>
</tr>
<tr>
<td>( y = x + 1 ) <strong>Equation 1</strong> ( y = 2x - 7 ) <strong>Equation 2</strong></td>
<td><img src="image10.png" alt="Graph of system" /></td>
</tr>
<tr>
<td><img src="image11.png" alt="Graph of system" /></td>
<td><img src="image12.png" alt="Graph of system" /></td>
</tr>
<tr>
<td><strong>An ordered pair that is a solution of each inequality in the system.</strong></td>
<td><strong>An ordered pair that is a solution of each inequality in the system.</strong></td>
</tr>
<tr>
<td><strong>The solution of the following system of linear inequalities is</strong> ((-2, 5)).</td>
<td><img src="image13.png" alt="Graph of system" /></td>
</tr>
<tr>
<td>( x - y &lt; 4 ) <strong>Inequality 1</strong> ( 2x - y \geq -9 ) <strong>Inequality 2</strong></td>
<td><img src="image14.png" alt="Graph of system" /></td>
</tr>
</tbody>
</table>
system of linear inequalities

Chapter 5 (p. 274)
A set of two or more linear inequalities in the same variables

\begin{align*}
    y &< x + 2 \quad \text{Inequality 1} \\
    y &\geq 2x - 1 \quad \text{Inequality 2}
\end{align*}
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<thead>
<tr>
<th>common ratio</th>
<th>compound interest</th>
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<td>Chapter 6 (p. 317)</td>
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<td></td>
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<tr>
<td>explicit rule</td>
<td>exponential decay</td>
</tr>
<tr>
<td>Chapter 6 (p. 340)</td>
<td>Chapter 6 (p. 315)</td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>exponential decay function</td>
<td>exponential equation</td>
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<tr>
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<td>Chapter 6 (p. 326)</td>
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<td></td>
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<tr>
<td>exponential function</td>
<td>exponential growth</td>
</tr>
<tr>
<td>Chapter 6 (p. 306)</td>
<td>Chapter 6 (p. 314)</td>
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</table>
## Vocabulary Flash Cards

| The interest earned on the principle and on previously earned interest | The ratio between each pair of consecutive terms in a geometric sequence |
| The balance \( y \) of an account earning compound interest is \( y = P \left(1 + \frac{r}{n}\right)^{nt} \), where \( P \) is the principle (initial amount), \( r \) is the annual interest rate (in decimal form), \( t \) is the time (in years), and \( n \) is the number of times interest is compounded per year. | 1, 4, 16, 64, \ldots Terms of a geometric sequence |
| \[ \frac{1}{4} \times 4 = 1 \] \[ \frac{1}{4} \times 4 = 1 \] \[ \frac{1}{4} \times 4 = 1 \] | common ratio |

| When a quantity decreases by the same factor over equal intervals of time | A rule to define arithmetic and geometric sequences that gives \( a_n \) as a function of the term’s position number \( n \) in the sequence |
| See exponential decay function. | An explicit rule for the arithmetic sequence 1, 7, 13, 19, \ldots is \( a_n = 1 + 6(n - 1) \), or \( a_n = 6n - 5 \). |

| An equation in which variable expressions occur as exponents | A function of the form \( y = a(1 - r)^t \), where \( a > 0 \) and \( 0 < r < 1 \) |
| \( 2^{x+1} = 2^5 \) \[ y = 20(0.15)^t \] \[ y = 500 \left(\frac{7}{8}\right)^t \] | See exponential decay. |

<p>| When a quantity increases by the same factor over equal intervals of time | A nonlinear function of the form ( y = ab^x ), where ( a \neq 0, b \neq 1, ) and ( b &gt; 0 ) |
| See exponential growth function. | ( y = -2(5)^x ) [ y = 2(0.5)^x ] |</p>
<table>
<thead>
<tr>
<th><strong>exponential growth function</strong></th>
<th><strong>geometric sequence</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 6 (p. 314)</td>
<td>Chapter 6 (p. 332)</td>
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<table>
<thead>
<tr>
<th><strong>index of a radical</strong></th>
<th><strong>nth root of a</strong></th>
</tr>
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<tbody>
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<td>Chapter 6 (p. 300)</td>
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<table>
<thead>
<tr>
<th><strong>radical</strong></th>
<th><strong>recursive rule</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 6 (p. 300)</td>
<td>Chapter 6 (p. 340)</td>
</tr>
<tr>
<td>An ordered list of numbers in which the ratio between each pair of consecutive terms is the same</td>
<td>Terms of a geometric sequence</td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>$1, \ 4, \ 16, \ 64, \ldots$</td>
<td>$\times 4 \quad \times 4 \quad \times 4$</td>
</tr>
</tbody>
</table>

A function of the form $y = a(1 + r)^t$, where $a > 0$ and $r > 0$

$y = 20(1.15)^t$

$y = 500 \left( \frac{7}{5} \right)^t$

See exponential growth.

For an integer $n$ greater than 1, if $b^n = a$, then $b$ is an $n$th root of $a$.

$\sqrt[3]{64} = \sqrt[3]{4 \cdot 4 \cdot 4} = 4$

$\sqrt[3]{a} = n$th root of $a$

The value of $n$ in the radical $\sqrt[n]{a}$

The index of $\sqrt[3]{125}$ is 3.

A rule to define arithmetic and geometric sequences that gives the beginning term(s) of a sequence and a recursive equation that tells how $a_n$ is related to one or more preceding terms

$a_n = a_{n-1} + d$, where $d$ is the common difference

$a_1 = 2, \ a_n = a_{n-1} + 3$

$a_n = r \cdot a_{n-1}$, where $r$ is the common ratio

$a_1 = 1, \ a_n = 3a_{n-1}$

An expression of the form $\sqrt[n]{a}$

$\frac{\sqrt{20}}{}$

$\sqrt[3]{55}$
<table>
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<tr>
<td><strong>binomial</strong></td>
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<tr>
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<tr>
<td><strong>degree of a monomial</strong></td>
</tr>
<tr>
<td>Chapter 7 (p. 358)</td>
</tr>
<tr>
<td><strong>factored completely</strong></td>
</tr>
<tr>
<td>Chapter 7 (p. 404)</td>
</tr>
<tr>
<td><strong>factoring by grouping</strong></td>
</tr>
<tr>
<td>Chapter 7 (p. 404)</td>
</tr>
<tr>
<td><strong>When an operation performed on any two numbers in the set results in a number that is also in the set</strong></td>
</tr>
<tr>
<td>---</td>
</tr>
</tbody>
</table>
| The set of integers is closed under addition, subtraction, and multiplication, but not under division. | \[ x^2 + 3x \]
|  | \[ 2x - 1 \] |

<table>
<thead>
<tr>
<th><strong>The greatest degree of the terms in a polynomial</strong></th>
<th><strong>The sum of the exponents of the variables in the monomial</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>The degree of ( 6x^2 + x ) is 2. The degree of ( x^5 + x^2 - 8 ) is 5.</td>
<td>The degree of 5 is 0. The degree of ( x^2 ) is 2. The degree of ( 2xy^3 ) is ( 1 + 3 = 4 ).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>A polynomial that is written as a product of factors</strong></th>
<th><strong>A polynomial that is written as a product of unfactorable polynomials with integer coefficients</strong></th>
</tr>
</thead>
</table>
| \[ x^2 + 2x = x(x + 2) \]
| \[ x^2 + 5x - 24 = (x - 3)(x + 8) \] | \[ 3x^3 - 18x^2 + 24x = 3x(x^2 - 6x + 8) \]
|  | \[ = 3x(x - 2)(x - 4) \] |

<table>
<thead>
<tr>
<th><strong>A shortcut for multiplying two binomials by finding the sum of the products of the first terms, outer terms, inner terms, and last terms</strong></th>
<th><strong>To use the Distributive Property to factor a polynomial with four terms</strong></th>
</tr>
</thead>
</table>
| \( F \) \( (x + 1)(x + 2) \) ➡️ \( x(x) = x^2 \) | \( x^3 + 3x^2 + 2x + 6 = (x^3 + 3x^2) + (2x + 6) \)
| \( O \) \( (x + 1)(x + 2) \) ➡️ \( x(2) = 2x \) | \[ = x^2(x + 3) + 2(x + 3) \]
| \( I \) \( (x + 1)(x + 2) \) ➡️ \( 1(x) = x \) | \[ = (x + 3)(x^2 + 2) \]
<p>| ( L ) ( (x + 1)(x + 2) ) ➡️ ( 1(2) = 2 ) |  |</p>
<table>
<thead>
<tr>
<th><strong>leading coefficient</strong></th>
<th><strong>monomial</strong></th>
</tr>
</thead>
<tbody>
<tr>
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<td>Chapter 7 (p. 358)</td>
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<table>
<thead>
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<th><strong>polynomial</strong></th>
<th><strong>repeated roots</strong></th>
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<thead>
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<th><strong>roots</strong></th>
<th><strong>standard form of a polynomial</strong></th>
</tr>
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<td>Chapter 7 (p. 359)</td>
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<th><strong>trinomial</strong></th>
<th><strong>Zero-Product Property</strong></th>
</tr>
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<td>Chapter 7 (p. 378)</td>
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<tr>
<td>Vocabulary Flash Cards</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>A number, a variable, or a product of a number and one or more variables with whole</td>
<td></td>
</tr>
<tr>
<td>number exponents</td>
<td></td>
</tr>
<tr>
<td>The coefficient of the first term of the polynomial written in standard form</td>
<td></td>
</tr>
<tr>
<td>The leading coefficient of $3x^2 + 5x - 1$ is 3.</td>
<td></td>
</tr>
<tr>
<td>$-5$</td>
<td></td>
</tr>
<tr>
<td>$0.5y^2$</td>
<td></td>
</tr>
<tr>
<td>$4x^2y$</td>
<td></td>
</tr>
<tr>
<td>Two or more roots of an equation that are the same number</td>
<td></td>
</tr>
<tr>
<td>A monomial or a sum of monomials</td>
<td></td>
</tr>
<tr>
<td>The equation $(x + 2)^2 = 0$ has repeated roots of $x = -2$.</td>
<td></td>
</tr>
<tr>
<td>The solution of a polynomial equation</td>
<td></td>
</tr>
<tr>
<td>The roots of the equation $(x + 9)(x - 4) = 0$ are $x = -9$ and $x = 4$.</td>
<td></td>
</tr>
<tr>
<td>A polynomial in one variable written with the exponents of the terms decreasing form</td>
<td></td>
</tr>
<tr>
<td>left to right</td>
<td></td>
</tr>
<tr>
<td>The exponents of the terms decreasing from left to right</td>
<td></td>
</tr>
<tr>
<td>$2x^3 + x^2 - 5x + 12$</td>
<td></td>
</tr>
<tr>
<td>$-x^3 + 15x + 3$</td>
<td></td>
</tr>
<tr>
<td>A polynomial with three terms</td>
<td></td>
</tr>
<tr>
<td>$x^2 + 5x + 2$</td>
<td></td>
</tr>
<tr>
<td>If the product of two real numbers is 0, then at least one of the numbers is 0.</td>
<td></td>
</tr>
<tr>
<td>The roots of the equation $(x + 9)(x - 4) = 0$ are $x = -9$ and $x = 4$.</td>
<td></td>
</tr>
<tr>
<td><strong>average rate of change</strong></td>
<td><strong>axis of symmetry</strong></td>
</tr>
<tr>
<td>---------------------------</td>
<td>---------------------</td>
</tr>
<tr>
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<td>Chapter 8 (p. 420)</td>
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<thead>
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<th><strong>even function</strong></th>
<th><strong>intercept form</strong></th>
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<td>Chapter 8 (p. 450)</td>
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<table>
<thead>
<tr>
<th><strong>maximum value</strong></th>
<th><strong>minimum value</strong></th>
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<tbody>
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<td>Chapter 8 (p. 433)</td>
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<thead>
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<th><strong>odd function</strong></th>
<th><strong>parabola</strong></th>
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<td>Chapter 8 (p. 420)</td>
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<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tr>
<td>The vertical line that divides a parabola into two symmetric parts</td>
<td><img src="image1" alt="Vertical Line Diagram" /></td>
</tr>
<tr>
<td>The slope of the line through ((a, f(a))) and ((b, f(b))) of a function (y = f(x)) between (x = a) and (x = b)</td>
<td>[\text{average rate of change} = \frac{\text{change in } y}{\text{change in } x} = \frac{f(b) - f(a)}{b - a}]</td>
</tr>
</tbody>
</table>
| A quadratic function written in the form \(f(x) = a(x - p)(x - q)\), where \(a \neq 0\) | \(f(x) = 2(x - 3)(x - 1)\)  
\(f(x) = 3(x + 4)(x - 2)\) |
| A function \(y = f(x)\) is even when \(f(-x) = f(x)\) for each \(x\) in the domain of \(f\). | \(f(x) = x^2\)  
\(f(x) = 3x^4 - 2x^2\) |
| The \(y\)-coordinate of the vertex of the graph of \(f(x) = ax^2 + bx + c\) when \(a > 0\) | ![Vertex Diagram](image2) |
| The \(y\)-coordinate of the vertex of the graph of \(f(x) = ax^2 + bx + c\) when \(a < 0\) | ![Minimum and Maximum Diagram](image3) |
| The U-shaped graph of a quadratic function | ![Graph of a Quadratic Function](image4) |
| A function \(y = f(x)\) is odd when \(f(-x) = -f(x)\) for each \(x\) in the domain of \(f\). | \(f(x) = x^3\)  
\(f(x) = 2x^5 + x^3\) |
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<th>vertex form of a quadratic function</th>
<th>vertex of a parabola</th>
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<td>------------------------</td>
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<tr>
<td><strong>The lowest point on a parabola that opens up or the highest point on a parabola that opens down</strong></td>
</tr>
</tbody>
</table>
| ![Graph of a parabola](image) | \( y = (x - 2)^2 \)  
<p>| | ( y = -2(x + 4)^2 + 3 ) |
| <strong>An ( x )-value of a function ( f ) for which ( f(x) = 0 ); an ( x )-intercept of the graph of the function</strong> | <strong>The zero of ( f(x) = 2x - 6 ) is 3 because ( f(3) = 0 ) and 3 is the ( x )-intercept of the graph of the function.</strong> |
| |  |</p>
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<th>conjugates</th>
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<td><strong>Chapter 9 (p. 482)</strong></td>
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<th>discriminant</th>
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<td><strong>Chapter 9 (p. 518)</strong></td>
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<th>like radicals</th>
<th>quadratic equation</th>
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<td><strong>Chapter 9 (p. 490)</strong></td>
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<thead>
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<th>Quadratic Formula</th>
<th>quadratic function</th>
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<td><strong>Chapter 9 (p. 420)</strong></td>
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<tr>
<td>------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Binomials</strong> of the form $a\sqrt{b} + c\sqrt{d}$ and $a\sqrt{b} - c\sqrt{d}$, where $a, b, c,$ and $d$ are rational numbers</td>
<td></td>
</tr>
<tr>
<td>$6\sqrt{5} + 2\sqrt{3}$ and $6\sqrt{5} - 2\sqrt{3}$</td>
<td></td>
</tr>
<tr>
<td><strong>To add a constant $c$ to an expression of the form</strong> $x^2 + bx$ <strong>so that</strong> $x^2 + bx + c$ <strong>is a perfect square trinomial</strong></td>
<td></td>
</tr>
<tr>
<td>$x^2 + 6x + 9 = (x + 3)^2$</td>
<td></td>
</tr>
<tr>
<td>$x^2 + bx + \left(\frac{b}{2}\right)^2 = \left(x + \frac{b}{2}\right)^2$</td>
<td></td>
</tr>
<tr>
<td><strong>The expression under the radical symbol</strong>, $b^2 - 4ac$, in the Quadratic Formula</td>
<td></td>
</tr>
<tr>
<td><strong>The value of the discriminant of the equation</strong> $3x^2 - 2x - 7 = 0$ <strong>is</strong></td>
<td></td>
</tr>
<tr>
<td>$b^2 - 4ac = (-2)^2 - 4(3)(-7) = 88.$</td>
<td></td>
</tr>
<tr>
<td><strong>An example that proves that a general statement is not true</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Conjecture</strong>: Every whole number ending in 6 evenly divides 3.</td>
<td></td>
</tr>
<tr>
<td><strong>Counterexample</strong>: 16 does not evenly divide 3.</td>
<td></td>
</tr>
<tr>
<td><strong>A nonlinear equation</strong> that can be written in the standard form $ax^2 + bx + c = 0$, where $a \neq 0$</td>
<td></td>
</tr>
<tr>
<td>$x^2 + 4x = 12$</td>
<td></td>
</tr>
<tr>
<td>$-x^2 + 1 = 2x$</td>
<td></td>
</tr>
<tr>
<td><strong>Radicals with the same index and radicand</strong></td>
<td></td>
</tr>
<tr>
<td>$3\sqrt{11}$ and $5\sqrt{11}$</td>
<td></td>
</tr>
<tr>
<td>$4\sqrt{x}$ and $5\sqrt{x}$</td>
<td></td>
</tr>
<tr>
<td><strong>A nonlinear function</strong> that can be written in the standard form $y = ax^2 + bx + c$, where $a \neq 0$</td>
<td></td>
</tr>
<tr>
<td>$y = -16x^2 + 48x + 6$</td>
<td></td>
</tr>
<tr>
<td><strong>The real solutions of the quadratic equation</strong> $ax^2 + bx + c = 0$ <strong>are</strong> $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$, where $a \neq 0$ and $b^2 - 4ac \geq 0$.</td>
<td></td>
</tr>
<tr>
<td>To solve $2x^2 + 13x - 7 = 0$, substitute 2 for $a$, 13 for $b$, and $-7$ for $c$ in the Quadratic Formula.</td>
<td></td>
</tr>
<tr>
<td>$x = \frac{-13 \pm \sqrt{13^2 - 4(2)(-7)}}{2(2)} \Rightarrow x = \frac{1}{2}$ and $x = -7$</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td><strong>radical expression</strong></td>
<td><strong>rationalizing the denominator</strong></td>
</tr>
<tr>
<td>Chapter 9 (p. 480)</td>
<td>Chapter 9 (p. 482)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>simplest form</strong></td>
<td><strong>system of nonlinear equations</strong></td>
</tr>
<tr>
<td>Chapter 9 (p. 480)</td>
<td>Chapter 9 (p. 526)</td>
</tr>
<tr>
<td><strong>Vocabulary Flash Cards</strong></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>To eliminate a radical from the denominator of a fraction by multiplying by an appropriate form of 1</td>
<td>An expression that contains a radical</td>
</tr>
</tbody>
</table>
| \[
\frac{1}{\sqrt{10}} = \frac{1}{\sqrt{10}} \cdot \frac{\sqrt{10}}{\sqrt{10}} = \frac{\sqrt{10}}{\sqrt{100}} = \frac{\sqrt{10}}{10}
\] | \[
\sqrt{50} - 2
\] |
| \[
\frac{\sqrt{2}}{\sqrt{3n}} = \frac{\sqrt{2}}{\sqrt{3n}} \cdot \frac{\sqrt{3n}}{\sqrt{3n}} = \frac{\sqrt{6n}}{\sqrt{9n^2}} = \frac{\sqrt{6n}}{3n}
\] | \[
\sqrt{64x^3}
\] |
| A system in which at least one of the equations is nonlinear | A radical that has no radicands with perfect \(n\)th powers as factors other than 1, no radicands that contain fractions, and no radicals that appear in the denominator of a fraction |
| \[
y = 2x^2 + 5x - 1 \quad \text{Equation 1}
\]  
| \[
y = x - 3 \quad \text{Equation 2}
\] | \[
\sqrt{27} = 3\sqrt{3}
\]  
| \[
\frac{2}{\sqrt{5}} = \frac{2\sqrt{5}}{5}
\] |  |
<table>
<thead>
<tr>
<th><strong>Vocabulary Flash Cards</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>cube root function</td>
<td>inverse function</td>
</tr>
<tr>
<td>Chapter 10 (p. 552)</td>
<td>Chapter 10 (p. 569)</td>
</tr>
<tr>
<td>inverse relation</td>
<td>radical equation</td>
</tr>
<tr>
<td>Chapter 10 (p. 568)</td>
<td>Chapter 10 (p. 560)</td>
</tr>
<tr>
<td>radical function</td>
<td>square root function</td>
</tr>
<tr>
<td>Chapter 10 (p. 545)</td>
<td>Chapter 10 (p. 544)</td>
</tr>
</tbody>
</table>
### Vocabulary Flash Cards

<table>
<thead>
<tr>
<th>Functions that undo each other</th>
<th>A radical function with an index of 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>$f(x) = 2x - 5$ and $g(x) = \frac{1}{2}x + \frac{5}{2}$</td>
<td>$y = 5\sqrt[3]{x - 6}$</td>
</tr>
<tr>
<td></td>
<td>$y = -\sqrt[3]{x + 2} - 8$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>An equation that contains a radical expression with a variable in the radicand</th>
<th>When the input and output values of the original relation are switched</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\sqrt{x} + 6 = 12$</td>
<td>$(-4, 7), (-2, 4), (0, 1), (2, -2), (4, -5)$</td>
</tr>
<tr>
<td>$4 - 2\sqrt{x} = 0$</td>
<td>$(7, -4), (4, -2), (1, 0), (-2, 2), (-5, 4)$</td>
</tr>
<tr>
<td>$\sqrt{3x} - 1 = \sqrt{x + 4}$</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A function that contains a square root with the independent variable in the radicand</th>
<th>A function that contains a radical expression with the independent variable in the radicand</th>
</tr>
</thead>
<tbody>
<tr>
<td>$f(x) = 3\sqrt{x - 5}$</td>
<td>$g(x) = \sqrt{x - 5}$</td>
</tr>
<tr>
<td>$f(x) = -\sqrt{x + 1} + 2$</td>
<td>$h(x) = \sqrt{3x + 6}$</td>
</tr>
<tr>
<td>Vocabulary Flash Cards</td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td><strong>box-and-whisker plot</strong></td>
<td><strong>categorical data</strong></td>
</tr>
<tr>
<td></td>
<td>Chapter 11 (p. 594)</td>
</tr>
<tr>
<td></td>
<td>Chapter 11 (p. 618)</td>
</tr>
<tr>
<td><strong>conditional relative frequency</strong></td>
<td><strong>data transformation</strong></td>
</tr>
<tr>
<td></td>
<td>Chapter 11 (p. 612)</td>
</tr>
<tr>
<td></td>
<td>Chapter 11 (p. 589)</td>
</tr>
<tr>
<td><strong>five-number summary</strong></td>
<td><strong>interquartile range</strong></td>
</tr>
<tr>
<td></td>
<td>Chapter 11 (p. 594)</td>
</tr>
<tr>
<td></td>
<td>Chapter 11 (p. 595)</td>
</tr>
<tr>
<td><strong>joint frequency</strong></td>
<td><strong>joint relative frequency</strong></td>
</tr>
<tr>
<td></td>
<td>Chapter 11 (p. 610)</td>
</tr>
<tr>
<td></td>
<td>Chapter 11 (p. 611)</td>
</tr>
</tbody>
</table>
Data that consists of labels or nonnumerical entries that can be separated into different categories; also known as qualitative data

A graph that shows the variability of a data set along a number line using the least value, the greatest value, and the quartiles of the data

<table>
<thead>
<tr>
<th>Data Source</th>
<th>Qualitative Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>a student</td>
<td>What is your favorite subject? <strong>math</strong></td>
</tr>
<tr>
<td>a house</td>
<td>In what state is the house located? <strong>Wisconsin</strong></td>
</tr>
</tbody>
</table>

A procedure that uses a mathematical operation to change a data set into a different data set

Adding 5 to each value in the data set

\[-2, 0, 1, 4, 5, 16\]

transforms the data set into

\[3, 5, 6, 9, 10, 21.\]

The ratio of a joint relative frequency to the marginal relative frequency

Given that a student is not planning to major in a medical field, the conditional relative frequency that he or she is a junior is about 48%.

A measure of variation for a data set, which is the difference of the third quartile and the first quartile

The interquartile range of the data set is

\[42 - 18 = 24.\]

The five numbers that make up a box-and-whisker plot (least value, first quartile, median, third quartile, and greatest value)

\[14, 16, 16, 17, 18, 18, 21\]

See box-and-whisker plot.

The ratio of a frequency that is not in the “total” row or the “total” column to the number of values or observations

Each entry in a two-way table

<table>
<thead>
<tr>
<th>Major in Medical Field</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junior</td>
<td>124</td>
<td>219</td>
<td>0.50</td>
</tr>
<tr>
<td>Senior</td>
<td>101</td>
<td>236</td>
<td>0.50</td>
</tr>
<tr>
<td>Total</td>
<td>0.33</td>
<td>0.67</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Student</th>
<th>Studied</th>
<th>Did Not Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>Passed</td>
<td>Failed</td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>

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Big Ideas Math Algebra 1
<table>
<thead>
<tr>
<th>Vocabulary Flash Cards</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>marginal frequency</strong></td>
</tr>
<tr>
<td>Chapter 11 (p. 610)</td>
</tr>
<tr>
<td><strong>mean</strong></td>
</tr>
<tr>
<td>Chapter 11 (p. 586)</td>
</tr>
<tr>
<td><strong>measure of variation</strong></td>
</tr>
<tr>
<td>Chapter 11 (p. 587)</td>
</tr>
<tr>
<td><strong>misleading graph</strong></td>
</tr>
<tr>
<td>Chapter 11 (p. 620)</td>
</tr>
</tbody>
</table>
### Vocabulary Flash Cards

**The sum of the joint relative frequencies in a row or a column**

<table>
<thead>
<tr>
<th>Class</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Junior</td>
<td>$\frac{124}{680} \approx 0.18$</td>
<td>$\frac{219}{680} \approx 0.32$</td>
<td>0.50</td>
</tr>
<tr>
<td>Senior</td>
<td>$\frac{101}{680} \approx 0.15$</td>
<td>$\frac{236}{680} \approx 0.35$</td>
<td>0.50</td>
</tr>
<tr>
<td>Total</td>
<td>0.33</td>
<td>0.67</td>
<td>1</td>
</tr>
</tbody>
</table>

**The sums of the rows and columns in a two-way table**

<table>
<thead>
<tr>
<th>Age</th>
<th>12–13</th>
<th>14–15</th>
<th>16–17</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ride Bus</td>
<td>24</td>
<td>12</td>
<td>14</td>
<td>50</td>
</tr>
<tr>
<td>Does Not Ride Bus</td>
<td>16</td>
<td>13</td>
<td>21</td>
<td>50</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>25</td>
<td>35</td>
<td>100</td>
</tr>
</tbody>
</table>

**A measure that represents the center, or typical value, of a data set**

The mean, median, and mode are measures of center.

**The sum of a numerical data set divided by the number of data values**

The mean of the values 7, 4, 8, and 9 is $\frac{7 + 4 + 8 + 9}{4} = \frac{28}{4} = 7$.

**The middle number of a numerical data set when the values are written in numerical order**

The median of the data set 24, 25, 29, 33, 38 is 29.

**A measure that describes the spread, or distribution, of a data set**

The range and standard deviation are measures of variation.

**The value or values that occur most often in a data set**

The mode of the data set 3, 4, 4, 7, 7, 9, 12 are 4 and 7.

### Tuition, Room, and Board at All Colleges and Universities

<table>
<thead>
<tr>
<th>Academic year</th>
<th>Average cost (dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007–2008</td>
<td>16,000</td>
</tr>
<tr>
<td>2008–2009</td>
<td>16,500</td>
</tr>
<tr>
<td>2009–2010</td>
<td>17,000</td>
</tr>
<tr>
<td>2010–2011</td>
<td>18,000</td>
</tr>
<tr>
<td><strong>Vocabulary Flash Cards</strong></td>
<td></td>
</tr>
<tr>
<td>----------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>outlier</strong></td>
<td><strong>qualitative data</strong></td>
</tr>
<tr>
<td></td>
<td>Chapter 11 (p. 587)</td>
</tr>
<tr>
<td></td>
<td>Chapter 11 (p. 618)</td>
</tr>
<tr>
<td></td>
<td><strong>quantitative data</strong></td>
</tr>
<tr>
<td></td>
<td>Chapter 11 (p. 618)</td>
</tr>
<tr>
<td></td>
<td><strong>range of a data set</strong></td>
</tr>
<tr>
<td></td>
<td>Chapter 11 (p. 587)</td>
</tr>
<tr>
<td></td>
<td><strong>two-way table</strong></td>
</tr>
<tr>
<td></td>
<td>Chapter 11 (p. 610)</td>
</tr>
</tbody>
</table>
Data that consists of labels or nonnumerical entries that can be separated into different categories

A data value that is much greater than or much less than the other values in a data set

In the data set 2, 4, 4, 5, 6, 64, the data value 64 is an outlier.

<table>
<thead>
<tr>
<th>Data Source</th>
<th>Qualitative Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>a student</td>
<td>What is your favorite subject? math</td>
</tr>
<tr>
<td>a house</td>
<td>In what state is the house located? Wisconsin</td>
</tr>
</tbody>
</table>

Values of a box-and-whisker plot that divide a data set into four equal parts

Data that consist of numbers that represent counts or measurements

<table>
<thead>
<tr>
<th>Data Source</th>
<th>Quantitative Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>a student</td>
<td>What is your age? 15</td>
</tr>
<tr>
<td>a house</td>
<td>How many bedrooms? 3</td>
</tr>
</tbody>
</table>

A measure of how much a typical value in a numerical data set differs from the mean

The standard deviation is given by

$$\sigma = \sqrt{\frac{\sum(x_i - \bar{x})^2}{n}}$$

where $n$ is the number of values in the data set.

The difference of the greatest value and the least value of a data set

The range of the data set 12, 16, 18, 22, 27, 35 is $35 - 12 = 23$.

A frequency table that displays data collected from one source that belong to two different categories

<table>
<thead>
<tr>
<th>Fundraiser</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>22</td>
<td>51</td>
</tr>
<tr>
<td>Male</td>
<td>30</td>
<td>29</td>
</tr>
</tbody>
</table>
Vocabulary Flash Cards