

# Algebra Unit 1 Review

Name: Key

<p>1. Ramon drives his car 150 miles in 3 hours. What is the unit rate?</p> <p style="text-align: center;"><b>50 mph</b></p>	<p>2. Solve the Proportion</p> $\frac{3}{k} = \frac{45}{18}$ <p style="text-align: center;"><b><math>k = \frac{6}{5} = 1.2</math></b></p>
<p>3. A cyclist travels 45 miles in 4 hours. What is her speed in feet per second?</p> <p style="text-align: center;"><b>16.5 fps</b></p>	<p>4. In a test, a hybrid car drove 4952 yards on 1 cup of gasoline. What is this rate in miles per gallon?</p> <p style="text-align: center;"><b>45 mpg</b></p>
<p>5. One day, the exchange rate was 60 U.S. dollars for 50 euro. At this rate, about how many U.S. dollars would be equivalent to 70 euro?</p> <p style="text-align: center;"><b>84</b></p>	<p>6. Isabel reads 15 books from the library each month for <math>y</math> months in a row. Write an expression that shows how many books Isabel read in <math>y</math> months.</p> <p style="text-align: center;"><b><math>15 \cdot y</math></b></p>
<p>7. Solve for <math>x</math>.</p> $Ax + by = C$ <p style="text-align: center;"><b><math>x = \frac{C - by}{A}</math></b></p>	<p>8. Solve for <math>h</math>.</p> $V = \pi r^2 h$ <p style="text-align: center;"><b><math>h = \frac{V}{\pi r^2}</math></b></p>
<p>9. Write as an algebraic expression: <b>Five times the difference of the cube of <math>y</math> and the square of <math>x</math></b></p> <p style="text-align: center;"><b><math>5(y^3 - x^2)</math></b></p>	<p>10. Write as an algebraic expression: <b>twice the sum of <math>x</math> and <math>y</math> decreased by 23</b></p> <p style="text-align: center;"><b><math>2(x + y - 23)</math></b></p>
<p>11. Write as an algebraic expression: <b>Add 5 to the product of 4 and <math>n</math>, then divide by 8</b></p> <p style="text-align: center;"><b><math>\frac{4n + 5}{8}</math></b></p>	<p>12. Write as an algebraic expression: <b>Add 8 to <math>n</math> then multiply your answer by 7</b></p> <p style="text-align: center;"><b><math>7(8 + n)</math></b></p>

13. Solve for m.  
 $mx + 4y = 3t$

$$m = \frac{3t - 4y}{x}$$

14. Give a written explanation of the steps used to solve this expression and solve it.

$-2(2x + 5) - 8$	Original
$-4x - 10 - 8$	dist. Property
$-4x - 18$	combine like terms

15. Simplify the expression, then name the terms, coefficients, constants, and factors

$$6(x + 1) + x(5 - 8x) + 10$$

Expression	$-8x^2 + 11x + 16$		
Terms	$-8x^2$	$11x$	$16$
Factors	$-8 \cdot x^2$	$11 \cdot x$	
Coefficients	$-8$	$11$	
Constants			$16$

16. Simplify the expression, then name the terms, coefficients, constants, and factors

$$11x^2 + 7x - 4$$

Expression	$11x^2 + 7x - 4$		
Terms	$11x^2$	$7x$	$-4$
Factors	$11 \cdot x^2$	$7 \cdot x$	
Coefficients	$11$	$7$	
Constants			$-4$

17. Simplify and show work:  
 $(6x^2 - x - 4) + (2x^2 + 5x - 5)$

$$8x^2 + 4x - 9$$

18. Simplify and show work:  
 $(2x^2 - 3x + 7) - (5x^2 + 3x + 6)$

$$-3x^2 - 6x + 1$$

19. Simplify and show work:  
 $(x + 4)(x + 11)$

$$x^2 + 15x + 44$$

20. Simplify and show work:  
 $(a + 7)^2$

$$a^2 + 14a + 49$$

21. Simplify the expression  
 $17\sqrt{7} - 4\sqrt{7}$

$$13\sqrt{7}$$

22. Simplify the expression  
 $\sqrt{72} + \sqrt{2}$

$$7\sqrt{2}$$

23. Simplify the expression  
 $\sqrt{45}$

$$3\sqrt{5}$$

24. Simplify the expression  
 $\sqrt{8} \cdot \sqrt{2}$

$$4$$

<p>25. Simplify</p> $\frac{\sqrt{45}}{\sqrt{5}}$ <p style="text-align: center; font-size: 2em; color: green;">9</p>	<p>26. Simplify</p> $2(\sqrt{5} - \sqrt{3}) + 3(\sqrt{3} - \sqrt{5})$ $-\sqrt{5} + \sqrt{3}$
<p>27. Which expression has a value that is a rational number?</p> <p>A. <math>\sqrt{9} + \sqrt{4}</math>  B. <math>\sqrt{10} + 16</math>  C. <math>2(\sqrt{5} + \sqrt{7})</math>  D. <math>\sqrt{3} + 0</math></p>	<p>28. Rational or Irrational? Detailed reason why.</p> <p style="text-align: center;"><math>\sqrt{5}</math></p> <p style="text-align: center; color: green; font-size: 1.5em;">non terminating decimal</p>
<p>29. Rational or Irrational? Detailed reason why.</p> <p style="text-align: center;"><math>5.\overline{75}</math></p> <p style="text-align: center; color: green; font-size: 1.5em;">Repeating decimal</p>	<p>30. Rational or Irrational? Detailed reason why.</p> $(5 + \sqrt{5})(5 - \sqrt{5}) = 20$ <p style="text-align: center; color: green; font-size: 1.5em;">20 is an integer</p>
<p>31. Complete the conjecture that describes the given expression.</p> $5 + \sqrt{7}$ <p>The sum of a (rational, irrational) number and a (rational, irrational) number is (rational, irrational).</p>	<p>32. Complete the conjecture that describes the given expression.</p> $\sqrt{5}(\sqrt{15})$ <p>The product of a (rational, irrational) number and a (rational, irrational) number is (rational, irrational).</p>
<p>33. Agree or disagree and why?</p> <p>Hank says, "And because it goes on forever, that proves <math>0.\overline{57}</math> has got to be <del>irrational.</del>"</p> <p style="text-align: center; color: green; font-size: 1.5em;">repeating decimal</p>	<p>34. Agree or disagree and why?</p> <p>Arlo says, "<math>0.\overline{57}</math> is an <del>irrational</del> number."</p> <p style="text-align: center; color: green; font-size: 1.5em;">rational repeating decimal</p>