

**1.2 Order of Operations and  
Variable Expressions**

Name \_\_\_\_\_

Rewrite the following using exponential notation.	
1. $2 \cdot 2 \cdot 2$	2. $7 \cdot 7$
3. $\frac{3}{4} \cdot \frac{3}{4} \cdot \frac{3}{4} \cdot \frac{3}{4} \cdot \frac{3}{4}$	4. $\frac{2}{3} \cdot \frac{2}{3} \cdot \frac{2}{3}$
Calculate the value of the exponential expressions.	
5. $5^3$	6. $3^7$
7. $\left(\frac{2}{3}\right)^4$	8. $\left(\frac{3}{4}\right)^3$
Calculate each square root. Round to four decimal places if necessary.	
9. $\sqrt{25}$	10. $\sqrt{49}$
11. $\sqrt{0}$	12. $\sqrt{1}$
13. $\sqrt{17}$	14. $\sqrt{361}$
Calculate each square root. Write your answer as a fraction.	
15. $\sqrt{\frac{1}{16}}$	16. $\sqrt{\frac{25}{64}}$
Answers: 1. $2^3$ ; 3. $\left(\frac{3}{4}\right)^5$ ; 5. 125; 7. $\frac{16}{81}$ ; 9. 5; 11. 0; 13. 4.1231; 15. $\frac{1}{4}$	

Simplify each expression using the order of operations.	
<b>17.</b> $15 - 2 \cdot 3$	<b>18.</b> $45 - 10 \cdot 2 + 13$
<b>19.</b> $4\sqrt{25} - 28 \div 7$	<b>20.</b> $(20 - \sqrt{81})^2$
<b>21.</b> $\frac{17 - 3^2}{5 - 1}$	<b>22.</b> $\frac{5(7) - 2(4)}{18 - 3^2}$
<b>23.</b> $\frac{11}{12} - \frac{1}{2} \cdot \frac{5}{6}$	<b>24.</b> $\frac{3}{8} \div \frac{2}{3} \cdot \frac{5}{9}$
Use the formula to calculate the requested value. Round decimal answers to two decimal places if necessary.	
<b>25.</b> Fahrenheit to Celsius temperature conversion $C = \frac{5}{9}(F - 32)$ <p>a) <math>F = 68</math></p> <p>b) <math>F = 212</math></p> <p>c) <math>F = 95</math></p>	<b>26.</b> Simple Interest $I = Prt$ <p>a) <math>P = 10,000</math>   <math>r = 0.04</math>   <math>t = 15</math></p> <p>b) <math>P = 25,000</math>   <math>r = 0.025</math>   <math>t = 10</math></p>
Answers: <b>17.</b> 9; <b>19.</b> 16; <b>21.</b> 2; <b>23.</b> $\frac{1}{2}$ ; <b>25.</b> a) 20, b) 100, c) 35	

Evaluate the expression for the given values of the variable/s. Give exact answers.	
<b>27.</b> $5x - 2$ <b>a)</b> $x = 7$ <b>b)</b> $x = 1.8$	<b>28.</b> $x^2 + 2x$ <b>a)</b> $x = 3$ <b>b)</b> $x = 1.8$
<b>29.</b> $\frac{x-y}{2y}$ <b>a)</b> $x = 17$ $y = 5$ <b>b)</b> $x = 7.8$ $y = 1.5$	<b>30.</b> $\frac{3y^2 - 2x}{5(x-y)}$ <b>a)</b> $x = 6$ $y = 5$ <b>b)</b> $x = 1.1$ $y = 1$
Translate each to an algebraic expression, using $x$ to represent the unknown number.	
<b>31.</b> The sum of a number and twelve	<b>32.</b> The product of a number and seven
<b>33.</b> Four less than twice a number	<b>34.</b> Three less than five times a number
<b>35.</b> Ten more than the square of a number	<b>36.</b> Five more than the cube of a number
<b>37.</b> 7 times a number increased by 11	<b>38.</b> The product of a number and 9, decreased by 12
Answers: <b>27. a)</b> 33, <b>b)</b> 7; <b>29. a)</b> $\frac{6}{5}$ , <b>b)</b> 2.1; <b>31.</b> $x + 12$ ; <b>33.</b> $2x - 4$ ; <b>35.</b> $x^2 + 10$ ; <b>37.</b> $7x + 11$	