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Date: \_\_\_\_\_  
8A

### Order of Operations and Evaluating Algebraic Expressions Algebra 1 Homework

#### Skills

1. Compute each of the following without using a calculator.

(a)  $-3(\sqrt{16}-\sqrt{9})$   
 $-3(4-3)$   
 $-3(1) = \boxed{-3}$

(b)  $10-2 \times 3$   
 $10-6$   
 $\boxed{4}$

(c)  $\sqrt{13^2-12^2}$   
 $\sqrt{169-144}$   
 $\sqrt{25} = \boxed{5}$

(d)  $\frac{4+\sqrt{36}}{2(-1)} = \frac{4+6}{2(-1)} = \frac{10}{-2}$   
 $\boxed{-5}$

(e)  $(15-2 \cdot 6)^3$   
 $(15-12)^3 = 3^3 = \boxed{27}$

(f)  $\frac{4+\sqrt{64}}{4-\sqrt{64}} = \frac{4+8}{4-8} = \frac{12}{-4}$   
 $\boxed{-3}$

2. If  $x=5$ , then find the value of each of the following algebraic expressions.

(a)  $6x+2$   
 $6(5)+2$   
 $30+2$   
 $\boxed{32}$

(b)  $-2x^2-x+6$   
 $-2(5)^2-(5)+6$   
 $-2(25)-(5)+6$   
 $-50-5+6$   
 $\boxed{-49}$

3. If  $x=-2$ , then find the value of each of the following algebraic expressions.

(a)  $4-3x$   
 $4-3(-2)$   
 $4+6$   
 $\boxed{10}$

(b)  $2x-x^2$   
 $2(-2)-(-2)^2$   
 $2(-2)-4$   
 $-4-4$   
 $\boxed{-8}$

4. If  $P=2l+2w$ , then find the value of  $P$  if  $l=16$  and  $w=35$ .

$P=2(16)+2(35)$      $P=32+70$      $\boxed{P=102}$

5. If  $S=2(\pi r^2+\pi rh)$ , then determine the value of  $S$ , to the nearest tenth, if  $r=4$  and  $h=5$ .

$S=2(\pi \cdot 4^2 + \pi \cdot 4 \cdot 5)$   
 $S=2(\pi \cdot 16 + \pi \cdot 4 \cdot 5)$   
 $S=2(50.26548246... + 62.83185307...)$      $\boxed{S=226.2}$   
 $S=2(113.0973355...)$   
 $S=226.1946711...$

## Applications

6. A concession stand operator is going to purchase  $x$  cases of soda for \$5.99 each and  $y$  bags of chips for \$0.69 each. If  $C$  represents the total cost, in dollars, for the operator to purchase  $x$  cases of soda and  $y$  bags of chips, then  $C = 5.99x + 0.69y$ . Find the total cost if the operator purchases 11 cases of soda and 125 bags of chips.

$$C = 5.99x + 0.69y$$

$$C = 5.99(11) + 0.69(125)$$

$$C = 65.89 + 86.25$$

$$C = 152.14$$

**\$152.14**

7. In order to calculate the base radius of a right circular cone, the formula  $r = \sqrt{\frac{3V}{\pi h}}$  can be used, where  $V$  represents the volume of the cone and  $h$  represents the height of the cone. Find the value of  $r$  if  $V = 75$  and  $h = 4$ . Give your answer to the nearest hundredth.

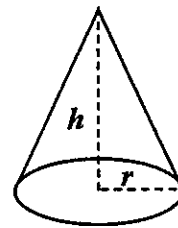
$$r = \sqrt{\frac{3(75)}{\pi(4)}}$$

$$r = \sqrt{\frac{225}{12.56637061}}$$

$$r = \sqrt{17.9049311}$$

$$r = 4.231421877$$

**$r = 4.23$**

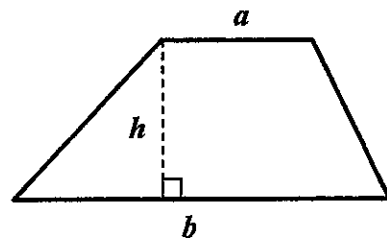


8. The area of a trapezoid is given by the formula  $A = \frac{1}{2}h(a+b)$ , where  $a$  and  $b$  represent the lengths of the parallel bases and  $h$  represents the height. Determine the area of a trapezoid whose height is 4.2 meters and whose bases have lengths 12.6 meters and 9.3 meters, respectively. Give your answer to the nearest tenth of a square meter.

$$A = \frac{1}{2}(4.2)(12.6 + 9.3)$$

$$A = \frac{1}{2}(4.2)(21.9)$$

**$A = 46.0 \text{ m}^2$**



## Reasoning

9. Use the numbers 3, 4, 5, and 6 (each exactly once) together with the operations  $+$ ,  $\cdot$ , and  $\div$  to create a numerical expression whose value is 22.

$$6 \div 3 + 4 \cdot 5$$

$$2 + 4 \cdot 5$$

$$2 + 20 = \mathbf{22}$$

10. If  $x = 12$ , then which expression is larger?  $2x^2 - 18x$  or  $5x + 14$

By how much?

**$5x + 14$  is larger by 2.**

$$\left. \begin{array}{l} 2(12)^2 - 18(12) \\ 2(144) - 18(12) \\ 288 - 216 \\ 72 \end{array} \right\} \left. \begin{array}{l} 5(12) + 14 \\ 60 + 14 \\ 74 \end{array} \right\} \begin{array}{l} 74 \\ -72 \\ \hline 2 \end{array}$$