

1. List all factors of 200. **1, 2, 4, 5, 10, 20, 40, 50, 100, 200**

2. Simplify each of the following expressions. Show all steps.

(a) $\frac{5^2 - 3^2}{(5 - 3)^2} = \mathbf{4}$

(b) $2^4 - (5^2 - 2 \cdot 3^2) - (7 - 6 + 1)^3 + 10 \div 5 \cdot 2 = \mathbf{5}$

(c) $\frac{2 \cdot 3^2 - (3^3 - (8 - 6 \div 2)^2)}{2 \cdot 5^2 - 2^4 \cdot 3} - \frac{7^2 - 5^2}{(7 - 5)^2} = \mathbf{2}$

(d) $\left(\left((7 - 4)^2 - 2 \cdot 1^3 \right)^2 - 3^3 \right) - 9 = \mathbf{13}$

(e) $\frac{5 \cdot 2^2 - 2^3}{2 \cdot 5 - 3^2 - 1} = \mathbf{\text{undefined}}$

(f) $62 - 2(5^2 - 3(2(3^2 - 2^3) - 1)) = \mathbf{18}$

3. Evaluate $\frac{3ab + 2a^2 - 2b^2}{2a - b} = \mathbf{a + 2b}$ if

(a) $a = 3$ and $b = 0$ **3**

(b) $a = 1$ and $b = 2$ **undefined**

(c) $a = 5$ and $b = 3$ **11**

(d) $a = 4$ and $b = 2$ **8**

4. Consider the equation $2(x^2 + x + 8) = (x + 4)(x + 3)$. In each case, determine whether the number given is a solution of the equation or not.

(a) $x = 0$ **$16 \neq 12$ no**

(b) $x = 1$ **$20 = 20$ yes**

(c) $x = 2$ **$28 \neq 30$ no**

(d) $x = 3$ **$40 \neq 42$ no**

(e) $x = 4$ **$56 = 56$ yes**

(f) $x = 5$ **$76 \neq 72$ no**

5. Consider the equation $y - 2x = 5(x - 1)$. For each of the pair of numbers given, determine whether they are a solution of the equation or not.

(a) $x = 6$ and $y = 15$ **$3 \neq 25$ no**

(b) $x = 2$ and $y = 5$ **$1 \neq 5$ no**

(c) $x = 2$ and $y = 9$ **$5 = 5$ yes**

(d) $x = 1$ and $y = 5$ **$3 \neq 0$ no**

(e) $x = 1$ and $y = 2$ **$0 = 0$ yes**

6. We went on the top of a 640 ft tall building and threw an object upward. We measured how high the object is at times. Exactly t seconds after we threw it, the height of the object, (measured in feet) is

$$h_t = 640 + 96t - 16t^2$$

- (a) Where is the object 1 seconds after we threw it? **720 ft**
- (b) Where is the object 6 seconds after we threw it? **640 ft**
- (c) Where is the object 8 seconds after we threw it? **384 ft**
- (d) Where is the object 10 seconds after we threw it? **0 ft (hits the ground)**