Prealgebra

Problem Set 15

Answers

1. Use words to write the number 210 201 021.

   two hundred ten million, two hundred one thousand, twenty-one.

2. The number 200 413 001 040 is written in standard form. Write it in expanded form.

   $$2 \cdot 100\,000\,000\,000 + 4 \cdot 100\,000\,000 + 1 \cdot 10\,000\,000 + 3 \cdot 1000\,000 + 1 \cdot 1000 + 4 \cdot 10$$

3. Rounding.

   (a) Round 12 730 295 to the nearest hundred. 12 730 300

   (b) Round 12 730 295 to the nearest hundred thousand. 12 700 000

4. The sides of a rectangle are 20 ft and 20 ft long.

   (a) Find the perimeter of the rectangle. Include units in your answer. $P = 80$ ft

   (b) Find the area of the rectangle. Include units in your answer. $A = 400$ ft^2

5. Consider the numbers 630, 901, 625, 4008, and 107 107 107.

   (a) Find all numbers from the list that are divisible by 5. 630, 625

   (b) Find all numbers from the list that are divisible by 3. 630, 4008, 107107107

   (c) Use part a) and b) to find all numbers from the list that are divisible by 15. 630

6. List all the prime numbers between 30 and 45. 31, 37, 41, 43

7. List all the factors of 100. 1, 2, 4, 5, 10, 20, 25, 50, 100

8. Use the prime factorization method to find the least common multiple of 120 and 45. 360

9. Perform the indicated operations. Show all steps.

   (a) $21 - \left(2^4 - (7-5) - 2 \cdot \left(2^2 + 1\right)\right) + 2^3 \cdot \left(6 - 2^2\right) = 33$

   (b) $18 \div 3 + 7 - (12 - 8 \div 4) + \dfrac{6^2 - 3}{3^2 + 2} = 6$

   (c) $2\left((7-5)^2 + \left(3 \cdot 7 - \left(4^2 + 2\right)\right)^2\right) - 10 = 16$

10. Let $x = 7$, $y = 3$, and $z = 2$. Evaluate each of the following expressions.

    (a) $2x - 3y + y^3 - (z + 2) = 28$

    (b) $xyz - (x + 1)(y + z) = 2$

11. Insert a $<$ or a $>$ sign between each pair of numbers to make a true statement.

    (a) $-2 \quad > \quad -8$

    (b) $-1001 \quad < \quad -13$

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12. Find the opposite of each of the following numbers:

    (a) The opposite of -7 is 7

    (b) The opposite of 31 is -31

    (c) The opposite of 0 is 0

    (d) The opposite of -9 is 9

13. Is the number 2 a solution of the equation $\frac{11x-2}{5} = 3x - 1$? no

14. Is the number 3 a solution of the equation $2x + 10 = 8(x - 1)$? yes

15. Is the number 4 a solution of the equation $2x^2 - 3x + 7 = 2(x - 1)^2$? no