Prealgebra **Problem Set 13** Answers

1. Use words to write the number 628 201 030.
   six hundred twenty-eight million, two hundred one thousand, thirty
2. The following number is written in standard form. Write it in expanded form. 6061 601
   $$6 \cdot 1000\,000 + 6 \cdot 10\,000 + 1 \cdot 1000 + 6 \cdot 100 + 1 \cdot 1$$
3. Rounding.
   (a) Round 293 375 to the nearest hundred. 293 400
   (b) Round 293 375 to the nearest thousand. 293 000
4. The sides of a rectangle are 20 cm and 30 cm long.
   (a) Find the perimeter of the rectangle. Include units in your answer. $P = 100$ cm
   (b) Find the area of the rectangle. Include units in your answer. $A = 600$ cm^2
5. Consider the following numbers: 2529, 685, 4190, 7170, 48 011.
   (a) Use the rule of divisibility by 2 to find all numbers from the list that are divisible by 2. 4190, 7170
   (b) Use the rule of divisibility by 3 to find all numbers from the list that are divisible by 3. 2529, 7170
   (c) Use part a) and b) to find all numbers from the list that are divisible by 6. 7170
6. Find the product of the four smallest prime numbers. $2 \cdot 3 \cdot 5 \cdot 7 = 210$
7. List all the factors of 75. 1, 3, 5, 15, 25, 75
8. The following numbers are all primes except for one. Which number listed is NOT a prime? 7, 71, 91, 109, 211 $91 = 7 \cdot 13$
9. Find the prime factorization for 960. $960 = 2^6 \cdot 3 \cdot 5$
10. Use the prime factorization method to find the least common multiple of 42 and 96. 672
11. Perform the following operations. Show all steps.
    (a) $\left(\dfrac{(2 \cdot 3 - 4)^3 + 2\left(3^3 - 3 \cdot 7\right)}{5} \right)^3 =$ 64
    (b) $7^2 - 4^2 + (7 - 4)^2 =$ 42
    (c) $(2 - 1)(2^2 - 1^2)(2^3 - 1^3)(2^4 - 1^4) =$ 315
    (d) $19^2 - 4^2 - (19 - 4)(19 + 4) =$ 0
12. Let $x = 5$, $y = 3$, and $z = 2$. Evaluate each of the following expressions.
    (a) $2x + 3y =$ 24

(b) $3x + y - 2zy =$ 6

(c) $3x^z + y^y - 2x =$ 38

(d) $xyz - xy + 2xz - 3yz =$ 17

(e) $(x - y)^2 + (z + 1)^3 =$ 31