

Instructions:

- Write all your responses to the following on separate paper.
- Show your work for credit.
- Take as much space as you need. Do not crowd into corners.
- Do not use an electronic calculator.

1. For each sentence below, write an equivalent expression in symbols:
  - a. The quotient of  $x$  and 11 is equal to the sum of  $x$  and 4.
  - b. The difference of  $x$  and 2 is equal to the product of 5 and the difference of  $x$  and 1.
2. Use the order of operations to simplify the expression as much as possible.
  - a.  $15 - 2(4 - 6 \cdot 3)$
  - b.  $\frac{18-6}{9-3} \cdot \left(\frac{3-2}{2-3}\right)^2$
3. Expand and multiply  $\left(\frac{3}{6}\right)^3$
4. A rectangular paper which is  $3\frac{1}{2}$  inches wide and 11 inches in length.
  - a. Find the perimeter of the rectangular sheet in inches.
  - b. Find the area of the rectangular sheet in square inches.
5. Apply the distributive property to simplify each of the following:
  - a.  $6\left(\frac{1}{2} + \frac{1}{3}\right)$
  - b.  $12\left(\frac{1}{3}x + \frac{1}{4}y\right)$
6. Simplify as much as possible:  $\frac{8^2 - 5^2}{8^2 + 5^2}$
7. Factor 714 as a product of primes.
8. Simplify the expression  $3 \cdot 8 + 3 \cdot 14 + 3 \cdot 22$  and then factor the result as a product of primes.