The Art of Problem Solving Online Classes

Are You Ready for

Introduction to Algebra

If you've mastered arithmetic well enough to solve the problems below, you are ready for the Art of Problem Solving Online Class **Introduction to Algebra**. Answers to these problems are on the following page. **Do not use a calculator.**

1. **Order of operations**. Evaluate:
   (a) $15 + 6 \cdot 7$
   (b) $(3 - 4) - (-5 + 1)$
   (c) $3 \cdot (6 - 8)$

2. **Operations with radicals**. Simplify:
   (a) $\sqrt{72} - \sqrt{50}$
   (b) $\sqrt{20} \cdot \sqrt{45}$
   (c) $\frac{\sqrt{32}}{\sqrt{8}}$

3. **Solving linear equations**. Solve these equations:
   (a) $31x + 24 = 365$
   (b) $7n - 4 = 2n + 16$
   (c) $3(10 + y) = 81$

4. **Working with variables**.
   (a) Expand the product $9(3x + 7)$.
   (b) Simplify: $7a - 5b + 3(6a + b)$.
   (c) Simplify: $a - (-7a - 3)$.

5. **Fractions, decimals, and percents**.
   (a) Convert to a fraction: .6144
   (b) Convert to a decimal: 17/40
   (c) 17 is what percent of 20?
   (d) What is $\frac{9}{5} - \frac{4}{3}$?
   (e) What is $\frac{3/6}{2/5}$ in simplest form?

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The answers to Are You Ready for Introduction to Algebra are below. (The answers to problem sets and challenges given in the class will include full detailed solutions as opposed to the mere answers provided below.)

1.
   (a) 57
   (b) 3
   (c) -6

2.
   (a) $\sqrt{2}$
   (b) 30
   (c) 2

3.
   (a) $x = 11$
   (b) $n = 4$
   (c) $y = 17$

4.
   (a) $27x + 63$
   (b) $25a - 2b$
   (c) $8a + 3$

5.
   (a) 384/625
   (b) .425
   (c) 85%
   (d) 7/15
   (e) 5/4

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