ACES Math: Pre-Algebra - Placement Test

In 40 minutes, please try to work out as many problems as possible. This test is only used to help us place you in the right class that fits the level of your mathematical maturity.

Calculators are NOT allowed in this test. Cheating sheets are NOT allowed either. For each problem in the test, please try to write down every major step of your reasoning/calculation. Please try to keep your exam clean.

Problem 1. Find the greatest common factors of the following pairs of integers.

(a) 8 and 10:

(b) 6 and 22:

Problem 2. Work out the following problems that involves mixed operations.

$12 + 3 \times 4 =$ ☐ $\quad 16 - 4 \times 2 =$ ☐ $\quad 3 \times (3 + 2) =$ ☐

Problem 3. Work out the following problems that involves negative numbers.

$16 - 30 =$ ☐ $\quad 22 + (-8) =$ ☐ $\quad 2 \times (-3) =$ ☐

$(-5) \times (-2) =$ ☐ $\quad -8 + (-12) =$ ☐ $\quad -6 - 13 =$ ☐

Problem 4. Identify the quotient and the remainder in each of the following division operations.

(a) $8 \div 3$: quotient= ☐ remainder= ☐

(b) $9 \div 2$: quotient= ☐ remainder= ☐

Problem 5. Convert each of the mixed numbers into an improper fraction.

$1\frac{2}{3} = \frac{\square}{3}, \quad 1\frac{1}{2} = \frac{\square}{2}, \quad 2\frac{2}{5} = \frac{\square}{5}, \quad 1\frac{1}{6} = \frac{\square}{6}$

Problem 6. Find the least common multiples of the following pairs of integers.

(a) 4 and 9:

(b) 6 and 8:

Problem 7. Work out this following addition problems related to fractions carefully.

$$\frac{2}{3}+\frac{1}{5}=\frac{\square}{\square}, \quad \frac{1}{2}-\frac{1}{3}=\frac{\square}{\square}, \quad \frac{3}{4}+\frac{2}{6}=\frac{\square}{\square}, \quad \frac{4}{5}-\frac{3}{7}=\frac{\square}{\square}$$

Problem 8. Convert each of the improper fractions into a mixed number.

$$\frac{8}{3}=\square\ \frac{\square}{3}, \quad \frac{5}{2}=\square\ \frac{\square}{2}, \quad \frac{6}{5}=\square\ \frac{\square}{5}$$