

Math 085 - Test 4a
April 24, 2013

Name key _____
Score _____

Part I - Solve each problem. Show all work to receive full credit. Supply explanations where necessary. Each problem is worth 2 points. **CALCULATORS ARE ALLOWED ON THIS PORTION OF THE TEST.**

1. Solve the equation. Write your answer as a fraction in lowest terms.

$$\frac{3}{4}x + \frac{7}{9} = \frac{5}{12} \Rightarrow x = \frac{\left(\frac{5}{12} - \frac{7}{9}\right)}{\left(\frac{3}{4}\right)} = \boxed{-\frac{13}{27}}$$

2. Which is greater $\left(\frac{12}{169} + \frac{53}{103}\right)$ or $\frac{10192}{17407}$?

$$\frac{10193}{17407} > \frac{10192}{17407}$$

3. Compute and simplify. Write your answer as a fraction in lowest terms.

$$\left(\frac{5}{6}\right)^2 + \left(\frac{3}{4}\right)^2 = \boxed{\frac{181}{144} = 1\frac{37}{144}}$$

4. Write as a mixed number in lowest terms:

$$\frac{128,236}{541} = \boxed{237\frac{19}{541}}$$

5. Compute and simplify. Write your answer as a mixed number in lowest terms.

$$-5\frac{7}{8} - \left(-8\frac{3}{32}\right) = \boxed{2\frac{7}{32}}$$

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Part II - Solve each problem. Show all work to receive full credit. Supply explanations where necessary. **CALCULATORS ARE NOT ALLOWED ON THIS PORTION OF THE TEST.**

1. (2 points) Solve for t . Write your answer as a mixed number in lowest terms.

$$\frac{4}{3}t = -\frac{5}{2}$$
$$t = \left(-\frac{5}{2}\right)\left(\frac{3}{4}\right) = -\frac{15}{8} = \boxed{-1\frac{7}{8}}$$

2. (2 points) Solve for x : $5x - 2x = \frac{12}{5}$

$$3x = \frac{12}{5} \Rightarrow \frac{3}{1}x = \frac{12}{5} \Rightarrow x = \frac{12}{5} \left(\frac{1}{3}\right) = \boxed{\frac{4}{5}}$$

3. (2 points) Find the LCM of 24 and 32.

32, 64, $\boxed{96}$
↑
 4×24

4. (2 points) The prime factorizations of 90 and 84 are $90 = 2 \cdot 3^2 \cdot 5$ and $84 = 2^2 \cdot 3 \cdot 7$. Find the LCM of 90 and 84.

$$\boxed{\text{LCM} = 2^2 \cdot 3^2 \cdot 5 \cdot 7}$$

5. (2 points) If you were to compute $\frac{11}{36} + \frac{13}{48}$, what number would you use for the least common denominator?

LCM (36, 48) ?

48, 96, $\boxed{144}$
↑
 4×36

6. (3 points) Add and simplify.

$$(a) -\frac{7}{15} + \frac{4}{15} = \frac{-7+4}{15} = -\frac{3}{15} = \boxed{-\frac{1}{5}}$$

$$(b) \frac{2}{9} + \frac{5}{6} = \frac{4}{18} + \frac{15}{18} = \boxed{\frac{19}{18} = 1\frac{1}{18}}$$

$$(c) -\frac{2}{x} + \left(-\frac{7}{x}\right) = \frac{-2+(-7)}{x} = \boxed{-\frac{9}{x}}$$

7. (2 points) Insert $>$ or $<$ to make a true statement.

$$(a) \frac{11}{18} > \frac{5}{9} = \frac{10}{18}$$

$$(b) \frac{-7}{12} < \frac{-9}{16}$$
$$-\frac{28}{48} < -\frac{27}{48}$$

8. (2 points) An athlete runs $\frac{7}{8}$ mi, canoes $\frac{1}{3}$ mi, and swims $\frac{1}{6}$ mi. How many miles does the athlete cover in total?

$$\frac{7}{8} + \frac{1}{3} + \frac{1}{6} = \frac{21}{24} + \frac{8}{24} + \frac{4}{24} = \frac{33}{24} = \boxed{\frac{11}{8} = 1\frac{3}{8} \text{ mi}}$$

9. (2 points) Subtract and simplify.

$$(a) \frac{3}{4} - \frac{1}{16} = \frac{12}{16} - \frac{1}{16} = \boxed{\frac{11}{16}}$$

$$(b) \frac{2}{9} - \frac{7}{12} = \frac{8}{36} - \frac{21}{36} = \boxed{\frac{-13}{36}}$$

10. (1 point) Write as an improper fraction in lowest terms: $8\frac{8}{12} = 8\frac{2}{3} = \boxed{\frac{26}{3}}$

11. (8 points) Compute each of the following. Write your answers as mixed numbers in lowest terms.

(a) $15\frac{5}{8} + 11\frac{3}{4}$

$$\begin{array}{r} 15\frac{5}{8} \\ 11\frac{6}{8} \\ \hline 26\frac{11}{8} = \boxed{27\frac{3}{8}} \end{array}$$

(b) $25\frac{1}{9} - 13\frac{5}{6}$

$$\begin{array}{r} 25\frac{2}{18} \\ 13\frac{15}{18} \\ \hline 11\frac{5}{18} \end{array}$$

(c) $-1\frac{3}{5} \div \left(-3\frac{1}{3}\right) = \frac{8}{5} \div \frac{10}{3} = \frac{8^4}{5} \times \frac{3}{10^5} = \boxed{\frac{12}{25}}$

(d) $3\frac{1}{2} \cdot 4\frac{2}{3} = \frac{7}{2} \times \frac{14}{3} = \frac{49}{3} = \boxed{16\frac{1}{3}}$

12. (2 points) Cecilia hired an artist to paint a mural on the wall of her son's bedroom. The dimensions of the mural are $6\frac{2}{3}$ ft by $9\frac{3}{8}$ ft. What is the area of the mural?

$$\begin{aligned} 6\frac{2}{3} \times 9\frac{3}{8} &= \frac{20}{3} \times \frac{75}{8} = \frac{125}{2} \\ &= \boxed{62\frac{1}{2} \text{ FT}^2} \end{aligned}$$

Part III - Circle the best answer for each problem. Each problem is worth 2 points.
CALCULATORS ARE NOT ALLOWED ON THIS PORTION OF THE TEST.

1. Solve for x : $x - \frac{4}{9} = \frac{3}{9}$

(a) $x = 7/9$

(b) $x = 1/9$

(c) $x = -1/9$

(d) $x = 3/4$

$$x = \frac{3}{9} + \frac{4}{9} = \frac{7}{9}$$

2. Write as a mixed number in lowest terms: $\frac{39}{9} = 4\frac{3}{9} = 4\frac{1}{3}$

(a) $3\frac{12}{9}$

(b) $5\frac{1}{9}$

(c) 4

(d) $4\frac{1}{3}$

3. What is the reciprocal of $5\frac{2}{7}$? $5\frac{2}{7} = \frac{37}{7}$

(a) $\frac{37}{7}$

(b) $-\frac{37}{7}$

(c) $\frac{7}{37}$

(d) 0

4. The space shuttle orbits the earth once every $1\frac{1}{2}$ hr. How many orbits are made in 24 hr?

$$24 \div 1\frac{1}{2}$$

$$24 \div \frac{3}{2}$$

$$24 \times \frac{2}{3} = 16$$

(a) 16

(b) 36

(c) 20

(d) $12\frac{1}{2}$

5. Combine like terms: $\frac{3}{4}x + \frac{1}{2}y + \frac{2}{3}y - \frac{1}{4}x$

(a) $\frac{1}{2}x + \frac{7}{6}y$

(b) $\frac{3}{4}x + \frac{5}{6}y$

(c) $\frac{1}{4}x - \frac{7}{6}y$

(d) $\frac{1}{2}x + \frac{5}{6}y$

$$x: \frac{3}{4} - \frac{1}{4} = \frac{2}{4} = \frac{1}{2}$$

$$y: \frac{1}{2} + \frac{2}{3} = \frac{3}{6} + \frac{4}{6} = \frac{7}{6}$$