

BRONX COMMUNITY COLLEGE
of the City University of New York

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

MATH 05
Nikos Apostolakis

Exam 1
July 11, 2016

ANSWERS

Directions: Write your answers in the provided space. To get full credit you *must* show all your work. Simplify your answers whenever possible. Be certain to indicate your final answer clearly.

1. Which of the following is larger?

(a) $\frac{5}{12}$ $\frac{7}{12}$

A. The first. **B. The second.** C. They are equal.

(b) $\frac{5}{12}$ $\frac{4}{9}$

$\frac{5}{12} = \frac{15}{36}$ $\frac{4}{9} = \frac{16}{36}$

A. The first. **B. The second.** C. They are equal.

(c) $\frac{5}{12}$ $\frac{5}{9}$

$\frac{5}{12} = \frac{15}{36}$ $\frac{5}{9} = \frac{20}{36}$

A. The first. **B. The second.** C. They are equal.

(d) $\frac{5}{7}$ $\frac{10}{14}$

$\frac{5}{7} = \frac{5 \cdot 2}{7 \cdot 2} = \frac{10}{14}$

A. The first. B. The second. **C. They are equal.**

(e) $-\frac{5}{12}$ $-\frac{7}{12}$

$\frac{5}{12} < \frac{7}{12} \Rightarrow -\frac{5}{12} > -\frac{7}{12}$

A. The first. B. The second. C. They are equal.

(f) $\left|-\frac{2}{3}\right|$ $\left|-\frac{1}{2}\right|$

$\left|-\frac{2}{3}\right| = \frac{2}{3} = \frac{4}{6}$ $\left|-\frac{1}{2}\right| = \frac{1}{2} = \frac{3}{6}$

A. The first. B. The second. C. They are equal.

2. Perform the following operations. Simplify your answers as much as possible:

$$(a) \frac{1}{8} + \frac{3}{8} = \frac{4}{8} = \frac{1}{2}$$

$$(b) \frac{5}{9} - \frac{8}{9} = \frac{-3}{9} = -\frac{1}{3}$$

$$(c) \frac{5}{6} - \frac{2}{3} = \frac{5}{6} - \frac{4}{6} = \frac{1}{6}$$

$$(d) \frac{3}{5} + \frac{7}{4} = \frac{12}{20} + \frac{35}{20} = \frac{47}{20}$$

$$(e) \left(-\frac{3}{5}\right) + \frac{7}{4} = -\frac{12}{20} + \frac{35}{20} = \frac{23}{20}$$

3. Perform the following operations. Simplify your answers as much as possible:

$$(a) \frac{8}{8} = \frac{3}{4}$$

$$(b) \frac{3}{4} \div \frac{15}{8} = \frac{3}{4} \cdot \frac{8}{15} = \frac{2}{5}$$

$$(c) \frac{4}{5} \cdot \frac{10}{7} = \frac{8}{7}$$

4. Perform the following operations. Simplify your answers as much as possible:

$$(a) -2 + 7 = 5$$

$$(b) -2 + (-7) = -9$$

$$(c) -2 - 7 = -9$$

$$(d) -2 - (-7) = -2 + 7 = 5$$

$$(e) 2 - 7 = -5$$

$$(f) 2(-7) = -14$$

$$(g) (-2)(-7) = 14$$

$$(h) \frac{-24}{-36} = \frac{24}{36} = \frac{2}{3}$$

→
reduce by 12

$$(i) \frac{-24}{8} = -3$$

$$(j) (-3)^2 = 9$$

$$(k) -3^2 = -9$$

$$(l) (-1)^{2016} = 1, \text{ because } 2016 \text{ is } \underline{\text{even}}$$

5. Evaluate: $5 - 3(4 - 3) - 2^3 \div 8 \cdot 4 = 5 - 3(1) - 2^3 \div 8 \cdot 4$
 $= 5 - 3(1) - 8 \div 8 \cdot 4$

$$= 5 - 3 - 1 \cdot 4$$

$$= 5 - 3 - 4$$

$$= 2 - 4 = -2$$

6. Evaluate:

$$\frac{-16}{9} \cdot \frac{18}{-25} \cdot \left(\frac{-10}{6}\right) \cdot \frac{-5}{-4} = \frac{2}{1} = 2$$

4 - so result
is positive

7. Evaluate:

$$\frac{-2^2 + 3(6 - 4)}{12 - (3 - 7)^2} = \frac{-4 + 3(2)}{12 - (-4)^2}$$

$$= \frac{-4 + 6}{12 - 16}$$

$$= \frac{2}{-4}$$

$$= -\frac{1}{2}$$