# BRONX COMMUNITY COLLEGE

## of The City University of New York

### DEPARTMENT OF MATHEMATICS and COMPUTER SCIENCE

**MATH 05 Test 1 Review**

1. Simplify the fraction (reduce to lowest tetms) $\frac{70}{150}$

   Solution: $\frac{70}{150} = \frac{7}{15}$

   Perform the indicated operation and choose one answer for each from the list of given answers.

2. $(-3) - (-14)$

   **(a)** $-17$ **(•)** 11 **(c)**17 **(d)** 13

3. $\frac{1}{4} - \frac{5}{6}$

   **(a)** $\frac{4}{2}$ **(b)** $\frac{7}{12}$ **(•)**$-\frac{7}{12}$ **(d)** $-\frac{13}{24}$

4. $\frac{4}{9} \times \frac{27}{36}$

   **(•)** $\frac{1}{3}$ **(b)** $-\frac{1}{3}$ **(c)**$\frac{1}{27}$ **(d)** $\frac{107}{324}$

5. $8 - 2^2 \div (-2) \cdot 3$

   **(a)** 2 **(b)** $\frac{26}{3}$ **(c)**$-6$ **(•)** 14

6. Perform the indicated operation

   (a) $\left(-\frac{3}{8}\right) \times \left(-\frac{4}{5}\right)$

   Solution: $\left(-\frac{3}{8}\right) \times \left(-\frac{4}{5}\right) = \frac{3}{8} \times \frac{4}{5} = \frac{3}{2} \times \frac{1}{5} = \frac{3}{10}$

   (b) $(-9)(2)(-3)(1)$ Solution: $(-9)(2)(-3)(1) = (-18)(-3) = 54$

   (c) $11(-15+4)$ Solution: $11(-15+4) = 11 \cdot (-11) = -121$

   (d) $\frac{10}{27} \times \frac{9}{20}$ Solution: $\frac{10}{27} \times \frac{9}{20} = \frac{1}{3} \times \frac{1}{2} = \frac{1}{6}$

   (e) $\frac{5}{18} + \frac{7}{12}$ Solution: $\frac{5}{18} + \frac{7}{12} = \frac{10}{36} + \frac{21}{36} = \frac{31}{36}$

   (f) $-(-20)$ Solution: $-(-20) = 20$

(g) $|-5|$ Solution: $|-5| = 5$

(h) The opposite of the absolute value of $-9$ is ____ Answer: -9

(i) $25 - 3((-6)^2 \div 12 \times 2 - 12)$
Solution: $25 - 3((-6)^2 \div 12 \times 2 - 12) = 25 - 3(36 \div 12 \times 2 - 12) = 25 - 3(3 \times 2 - 12) = 25 - 3(6 - 12) = 25 - 3 \cdot (-6) = 25 + 18 = 43$

(j) $\dfrac{|-4-6^2|+100}{70 \times \sqrt{36}}$
Solution :
$\dfrac{|-4-6^2|+100}{70 \times \sqrt{36}} = \dfrac{|-4-36|+100}{70 \times 6} = \dfrac{40+100}{70 \times 6} = \dfrac{140}{70 \times 6} = \dfrac{140 \div 70}{(70 \div 70) \times 6} = \dfrac{2}{6} = \dfrac{1}{3}$

(k) $\dfrac{1}{6} - \left(\dfrac{2}{3} - \dfrac{4}{9}\right)$
Solution: $\dfrac{1}{6} - \left(\dfrac{2}{3} - \dfrac{4}{9}\right) = \dfrac{1}{6} - \dfrac{6-4}{9} = \dfrac{1}{6} - \dfrac{2}{9} = \dfrac{3}{18} - \dfrac{4}{18} = -\dfrac{1}{18}$

7. Evaluate expression

(a) $\dfrac{5z-4x}{2y+z}$, if $x = -2$, $y = 3$, and $z = 5$.
Solution: $\dfrac{25+8}{6+5} = \dfrac{33}{11} = 3$

(b) $\dfrac{y(x-w)^2}{x^2-2xw+w^2}$, if $y = 6$, $x = -3$, $w = 2$.

*look for the solution in Test1-reviewPics_1.jpg*

8. Translate each English statement into an algebraic equation. Let $x$ represent the number in each case.

(a) 5 times the product of $m$ and $n$.

(b) 3 more that the product of 17 and $x$.

(c) the product of 6 more that a number and 6 less than the same number.

(d) the product of a number and 3 more than twice the same number.

(e) the quotient when 5 less than a number is divided by 17.
*look for the solutions in Test1-reviewPics_1.jpg*

9. Solve the following equations.

**(a)** $12x - 3 = 11x + 5$

Solutions:

$$\begin{array}{r} -11x \quad -11x \\ x - 3 = 5 \\ +3 \quad +3 \\ x = 8 \end{array}$$

**(b)** $4(x-1) - 2(x-5) = 14$

$$\begin{array}{r} 4x - 4 - 2x + 10 = 14 \\ 2x + 6 = 14 \\ -6 \quad -6 \\ 2x = 8 \\ x = 4 \end{array}$$

**(c)** $\frac{1}{3}x - 2 = \frac{7}{3}x + 5$

Solution:

$$\begin{array}{r} -\frac{1}{3}x \qquad -\frac{1}{3}x \\ -2 = 2x + 5 \\ -7 = 2x \\ x = -\frac{7}{2} \end{array}$$

10. Solve the literal equation $I = prt$ for the variable $r$ and choose the corresponding answer from the list of possible answers:

**(a)** $r = I - pt$ **(•)** $r = \frac{I}{pt}$ **(c)** $r = t\frac{I}{p}$

11. Solve the following inequalities, graph the solution sets.

**(a)** $7x + 5 \leq 4x - 7$

Solutions:

$$\begin{array}{r} -4x \quad -4x \\ 3x \leq -7 \\ x < -\frac{7}{3} \end{array}$$

**(b)** $5(x+3) > 6(x-1) + 2$

$$\begin{array}{r} 5x + 15 > 6x - 6 + 2 \\ -6x \quad -6x \\ -x + 15 > -4 \\ -x > -19 \text{ and finally } x < 19 \end{array}$$

graphs were shown in class

**Solve the following word problems. Show the algebraic solution.**

12. If 4 times a number, decreased by 7, is 45, find the number.

Solution: $4n - 7 = 45$, after solving it we will get $n = 13$

13. Melissa earns \$100 more per week than Julia. If their weekly salaries total \$720, how much do Melissa and Julia earn?

Solution: Let $x$ stand for Julia's salary, then we get $x + (x + 100) = 720$, and after solving it, $x = 310$ - Julia's salary, then $x + 100 = 410$ - Melissa's salary

14. One side of a triangle is 5 in. longer than the shortest side. The third side is twice the length of the shortest side. If the triangle perimeter is 37 in., find the length of each side.

    Solution: Let $a$ be the lenght of the smallest side, then the other two sides are $a + 5$ and $2a$. The perimeter $a + a + 5 + 2a = 37$, solving for $a$: $a = 8$in. - the smallest side.

    Then $a+5 = 13$in. - the next side's length, and $2a = 16$in. - the last side's length.

    **hint**: use $x$ for the shortest side, then express two other sides in terms of $x$. Perimeter of a triangle with sides $a$,$b$,$c$ is $P = a + b + c$.

    Don't forget to give the **full** answer.