MAT0024   Test 1   Name_____ Key_____

D. Howard (3-16)

Show all work for credit.

1. Simplify. $\frac{24}{42} = \frac{\cancel{6}\cdot 4}{\cancel{6}\cdot 7} = \boxed{\frac{4}{7}}$

2. Simplify. $\frac{12}{6}\cdot\frac{-3}{4} = \frac{\cancel{4}\cdot\cancel{3}\cdot -3}{2\cdot\cancel{3}\cdot\cancel{4}} = \boxed{\frac{-3}{2}}$

3. Simplify. $\frac{5}{3}\div\frac{25}{9} = \frac{5}{3}\cdot\frac{9}{25} = \frac{\cancel{5}\cdot\cancel{3}\cdot 3}{\cancel{3}\cdot\cancel{3}\cdot 5} = \boxed{\frac{3}{5}}$

4. Simplify. $\frac{1}{4}-\frac{3}{10} = \frac{1\cdot 5}{4\cdot 5} - \frac{3\cdot 2}{10\cdot 2} = \frac{5-6}{20} = \boxed{-\frac{1}{20}}$

    $Lcm = 20$

5. Simplify. $\left(-\frac{2}{3}\right)^3 = \left(-\frac{2}{3}\right)\left(-\frac{2}{3}\right)\left(-\frac{2}{3}\right) = \boxed{-\frac{8}{27}}$

6. Simplify. $\frac{5}{8}+\frac{1}{4} = \frac{5}{8} + \frac{1\cdot 2}{4\cdot 2} = \frac{5+2}{8} = \boxed{\frac{7}{8}}$

    $Lcm = 8$

7. Simplify $2^3 - 9\cdot 3 - (16 + 5\cdot 2) =$

    PEMDAS $2^3 - 9\cdot 3 - (16+10) =$

    $2^3 - 9\cdot 3 - 26 =$

    $8 - 9\cdot 3 - 26 =$

    $8 - 27 - 26 =$

    $8 - 53 =$

    $\boxed{-45}$

8. Simplify $\qquad |-1| - 3 + |12| =$

PEMDAS

$$1 - 3 + 12 =$$

$$-3 + 13 = \boxed{10}$$

9. Write the fraction $\frac{4}{5}$ as a decimal and as a percent.

$$5 \overline{\smash{\big)}\ 4.0} \quad \begin{array}{r} .8 \\ \underline{-40} \\ 0 \end{array}$$

$$\boxed{.8} = \frac{80}{100} \quad \boxed{80\%}$$

10. Solve $10y - 1.23 = -0.02$ **(Write your answer as a decimal.)**

$$\begin{array}{r} +1.23 \quad +1.23 \end{array}$$

$$\frac{10y}{10} = \frac{1.21}{10}$$

$$\boxed{y = 0.121}$$

$$\begin{array}{r} 1.23 \\ -.02 \\ \hline 1.21 \end{array}$$

$$10 \overline{\smash{\big)}\ 1.210} \quad \begin{array}{r} 0.121 \\ \underline{-10} \\ 21 \\ \underline{-20} \\ 10 \\ \underline{-10} \\ 0 \end{array}$$

11. Solve $\frac{2}{3}x - 4 = \frac{1}{2}$ **(Write your answer as a fraction.)**

Lcm = 6

$$6\left(\frac{2}{3}x\right) - 6(4) = 6\left(\frac{1}{2}\right)$$

$$\begin{array}{r} 4x - 24 = 3 \\ +24 \quad +24 \end{array}$$

$$\frac{4x}{4} = \frac{27}{4}$$

$$\boxed{x = \frac{27}{4} = 6\tfrac{1}{4}}$$

12. Solve $2(3z - 4) + 1 = 3(z + 1)$ **(Write your answer as a fraction.)**

$$6z - 8 + 1 = 3z + 3$$

$$\begin{array}{r} 6z - 7 = 3z + 3 \\ -3z \quad +7 \quad -3z \quad +7 \end{array}$$

$$\frac{3z}{3} = \frac{10}{3}$$

$$\boxed{z = \frac{10}{3} = 3\tfrac{1}{3}}$$

13. During the 2003-2004 academic year, tuition and fees at public colleges and universities were $4694, on average, and increased by 5% during the next year. Find the average cost of tuition and fees during the 2004-2005 academic year. Round to two decimal places.

$$4694\ (.05) = \text{increase} = \$\ 234.70$$

$$\text{tuition} = 4694 + 234.70 = \boxed{\$4928.70}$$

$$\begin{array}{r} \overset{3}{4}\overset{4}{6}\overset{2}{9}4 \\ \times\ .05 \\ \hline 234\ 70 \\ +\ 0000 \\ \hline 234.70 \end{array}$$

$$\begin{array}{r} 4694.00 \\ +\ \ \ 234.70 \\ \hline 4928.70 \end{array}$$

14. A 30-ounce solution contains 4% salt. How much pure water (0% salt) should be added to dilute the solution to 1.5% concentration? Write an equation where x represents how much pure water is added. **You need not solve.**

$$\boxed{4\%} \quad + \quad \boxed{0\%} \quad = \quad \boxed{1.5\%}$$
$$\ \ \ 30 \qquad\qquad\ \ x \qquad\qquad 30+x$$

$$\boxed{.04\ (30) + 0\ (x) = .015\ (30+x)}$$

15. The sum of three consecutive integers is −123. Write an equation where x represents the first integer. **You need not solve.**

$$\boxed{\underset{\text{1st \#}}{X} + \underset{\text{2nd \#}}{X+1} + \underset{\text{3rd \#}}{X+2} = -123}$$