Mth 096 – Beginning Algebra – **Practice Exam 1 Solutions**

1. A prime number does not have factors besides 1 and itself. Some examples are 2, 3, 5, 7, 11, 13, and 17.

2. The factors of 30 are 1, 2, 3, 5, 6, 10, 15, and 30. Any 3 will do.

3. $60 = 6 \cdot 10 = 2 \cdot 3 \cdot 2 \cdot 5 = 2 \cdot 2 \cdot 3 \cdot 5$

4. Rational numbers are fractions, so any number that is a fraction with a denominator other than 1 will do. Some examples: $\frac{2}{3}$, $\frac{10}{7}$, etc.

5.
   a. $\frac{2}{3}$ is a rational number, since it is a fraction, and it is also a real number
   b. π is irrational and real (remember, any number on the number line is real)
   c. 8 is a member of most of the sets: *N*, *W*, *Z*, *Q*, and *R*

6.
   a. $-3 \boxed{>} -5$
   b. $-|-3| \boxed{<} -(-3)$
   c. $-2 \boxed{<} -1$

7. $\frac{3}{4} \cdot \frac{\quad}{\quad} = \frac{\quad}{20} \quad \Rightarrow \quad \frac{3}{4} \cdot \frac{5}{5} = \frac{15}{20}$

8.
   a. $x - 3$
   b. $x + 6$
   c. $2x + 5$

9. $\frac{5}{3} \cdot \frac{9}{10} = \frac{5}{3} \cdot \frac{3 \cdot 3}{5 \cdot 2} = \frac{\cancel{5}}{\cancel{3}} \cdot \frac{\cancel{3} \cdot 3}{\cancel{5} \cdot 2} = \frac{3}{2}$

10. $5 \div \frac{2}{7} = \frac{5}{1} \cdot \frac{7}{2} = \frac{35}{2}$

11. $\frac{3}{5} + \frac{2}{3} = \frac{9}{15} + \frac{10}{15} = \frac{19}{15}$

    $\frac{3}{5} \cdot \left[\frac{\quad}{\quad}\right] = \frac{\quad}{15} \quad \Rightarrow \quad \frac{3}{5} \cdot \frac{3}{3} = \frac{9}{15}$

    $\frac{2}{3} \cdot \left[\frac{\quad}{\quad}\right] = \frac{\quad}{15} \quad \Rightarrow \quad \frac{2}{3} \cdot \frac{5}{5} = \frac{10}{15}$

12. $3-\frac{1}{4} = \frac{12}{4}-\frac{1}{4}=\frac{11}{4}$

$3=\frac{3}{1}\cdot\left[\frac{\quad}{\quad}\right]=\frac{\quad}{4} \quad \Rightarrow \quad \frac{3}{1}\cdot\frac{4}{4}=\frac{12}{4}$

13. $|10|-|-6|=10-6=4$

14. $6-3\cdot 4=6-12=-6$

15. $(6+4)3+1=(10)3+1=30+1=31$

16. $\frac{22+3\cdot 5-1}{25-10\cdot 2+4}=\frac{22+15-1}{25-20+4}=\frac{37-1}{5+4}=\frac{36}{9}=4$

17. $22+(-3)+(-14)+5=19+(-14)+5=5+5=10$

18. $-8-(-8)=-8+8=0$

19. $\frac{6(-7)}{5-2}=\frac{-42}{3}=-14$

20. $3+6(2-4)=3+6(-2)=3+(-12)=-9$

21. $5(-2.3)=-11.5$

22. $0.414-0.618=-0.204$

23. $-4(-5)(-2)=-40$

24. $-11-6+3=-17+3=-14$

25. remember, the exponent only effects the symbol directly to its left, so only the 5 is squared:
$-5^2=-|5^2=-5\cdot 5=-25$

26.
   a. $5(7+8y)=5\cdot 7+5\cdot 8y=35+40y$
   b. $-(3-2x)=-1(3-2x)=-3+2x$

27.
   a. $25x+25y=25(x+y)$
   b. $5x+20=5x+5\cdot 4=5(x+4)$

28.
   a. With no study time, $h = 0$, so the score would be 50.
   b. When $h = 2$, the score would be 70.
   c. No – it increases faster from 0 to 2 hours than from 6 to 8 hours.
   d. No – based on part c, it does not always increase by the same amount for an additional 2 hours.