Math 2303 – Practice Diagnostic Test Key

Take this practice test in 50 minutes. Then check the answers and get tips on practicing more problems like the ones you missed on your instructor's website.

Part I.: Operations with fractions

1. $\frac{5}{4}+\frac{3}{7}$ Least Common Multiple: 28

$$\frac{7(5)}{7(4)}+\frac{4(3)}{4(7)}=\frac{35+12}{28}=\frac{47}{28}=1\frac{19}{28}$$

2. $4\frac{1}{3}-1\frac{3}{5}$ Least Common Multiple: 15

Rewrite the mixed numbers as improper fractions to begin

$$\frac{13}{3}-\frac{8}{5}=\frac{5(13)}{5(3)}-\frac{3(8)}{3(5)}=\frac{65-24}{15}=\frac{41}{15}=2\frac{11}{15}$$

3. $\frac{5}{12}\cdot\frac{2}{7}=\frac{5(2)}{2(6)(7)}=\frac{5}{42}$ Cancelling common factors

4. $2\frac{2}{5}\div1\frac{5}{7}$ Rewrite the mixed numbers as improper fractions

Invert and multiply, cancel common factors

$$\frac{12}{5}\div\frac{12}{7}=\frac{12}{5}\times\frac{7}{12}=\frac{7}{5}=1\frac{2}{5}$$

5. $\frac{1}{3}\left(\frac{3}{5}-\frac{1}{7}\right) = \frac{1}{3}\left(\frac{7(3)}{7(5)}-\frac{5(1)}{5(7)}\right)=\frac{1}{3}\left(\frac{16}{35}\right)=\frac{16}{105}$

Part II: Operation with decimals

6. $1.962 + 11.3 + 0.1162 = 13.3782$

7. $8 - 3.378 = 4.622$

8. $6.05 \times 13.5 = 81.675$

9. Find the quotient to three decimal places: $35.01 \div 2.5 = 14.004$

10. $10.75(19.5 - 2.3) = 10.75(17.2) = 184.9$

Part III: Operations with integers

11. $-7 - (-3) = -7 + 3 = -4$

12. $35 + (-40) = -5$

13. $-19 \times 3 = -57$

14. $-8 \div (-2) = 4$

15. $\dfrac{5-10}{-4-5} = \dfrac{-5}{-9} = \dfrac{5}{9}$

Part IV: Comparing Numbers

For questions 16 – 19, insert one of these symbols to make each statement true:
$<, \leq, >, \geq$.

16. $-23 > -24$ draw it on a number line

17. $3.6 < 3\frac{2}{3}$ 3.60 is less than $3.6\overline{6}$

18. $\sqrt{24} < 5$ $5 = \sqrt{25}$

19. $\frac{8}{7} > 1$ $\frac{8}{7} = 1\frac{1}{8}$

20. Classify each of these as True or False:

a. $\frac{1}{10} > \frac{1}{11}$ true $.1 > \overline{.09}$

b. $\frac{16}{9} \leq 2.2$ true $\frac{16}{9} = 1.\overline{7}$

c. $-1 > 0$ false draw it on a number line

d. $0.0777 \leq 0.108$ true

Part V: Exponents

Simply each of these. Leave no negative exponents in your answers.

21. $6^3 = 216$

22. $-7^2 = (-1)(7)(7) = -49$

23. $9x^0 = 9(1) = 0$

24. $x^5 \cdot x^4 = x^9$

25. $\frac{x^5}{x^{13}} = \frac{1}{x^8} = x^{-8}$

Resources:

Combining Fractions:

http://www.helpwithfractions.com/

http://www.math.com/homeworkhelp/PreAlgebra.html

Good explanations and examples of working with fractions:

http://www.themathpage.com/ARITH/add-fractions-subtract-fractions-1.htm

Decimals:

http://www.321know.com/dec.htm

http://www.helpwithfractions.com/

Exponents:

http://www.algebrahelp.com/lessons

http://www.algebrahelp.com/worksheets

Operations with Integers:

http://www.math.com/homeworkhelp/BasicMath

Comparing Numbers:

http://www.webmath.com/k8cf.html

http://www.aaastudy.com/cmp43cx2.htm