Autumn 2018

Form C

Name: _____

Signature: _____

OSU name.#: _____

Lecturer: _____

Recitation Instructor: _____

Recitation Time: _____

MATH 1075 Midterm Exam 2

Instructions:

- Show ALL work to receive full credit. Answers with insufficient supporting work will receive little or no credit.

- Write clearly and legibly. Illegible answers and ambiguous markings will not receive credit.

- Completely simplify all answers.

- Please CIRCLE your answers.

Page:	2	3	4	5	6	7	Total
Points:	13	20	11	20	16	20	100
Score:							

1. (4 points) In the expression $\dfrac{18}{x^2 + 10x - 24}$, identify all restricted values. Circle your final answers.

2. (4 points) Let a, b, and c be positive numbers. Which of the following statements are **always <u>true</u>**? Select all that apply.

☐ $\dfrac{a+b}{a+c} = \dfrac{b}{c}$

☐ $\dfrac{a+b}{c} = \dfrac{a}{c} + \dfrac{b}{c}$

☐ $\dfrac{a}{b+c} = \dfrac{a}{b} + \dfrac{a}{c}$

☐ $\dfrac{a-b}{c} = \dfrac{a}{c} - \dfrac{b}{c}$

3. (5 points) Simplify as much as possible: $\qquad \dfrac{20y^2 x^4}{6y^3 + 10xy}$

4. (10 points) Multiply. Simplify your answer as much as possible.

$$\frac{8VZ^4}{14xV^3} \cdot \frac{35Z^2}{10x^2Z}$$

5. (10 points) Divide. Simplify your answer as much as possible.

$$\frac{3c^2 + 3c - 60}{4 - c} \div \frac{24c^2 + 120c}{c}$$

6. Consider the rectangle given below. Vertically, the rectangle is $\frac{8}{3d}$ inches long. Horizontally, the rectangle is $\frac{7}{2d}$ inches long.

(a) (2 points) In the picture, label the length of each side of the rectangle. Check this box when you have done this: □

(b) (7 points) Write an expression for the **perimeter** of the rectangle. Simplify your answer as much as possible. (As a reminder: perimeter is the length of the boundary around the rectangle.)

(c) (2 points) Suppose $d = 2$. Use your answer to part (b) to find the perimeter of the rectangle.

7. (10 points) Subtract. Simplify your answer as much as possible.

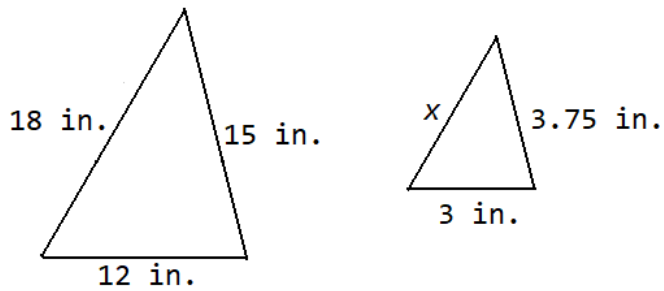$$\frac{Z+6}{Z+7} - \frac{Z-3}{Z}$$

8. (10 points) Simplify the complex fraction as much as possible.

$$\frac{\dfrac{1}{5} - \dfrac{1}{y}}{\dfrac{7}{10} + \dfrac{1}{y^2}}$$

9. (10 points) Solve for x. If there is more than one solution, separate your solutions with commas. If there is no solution, write "No solution."

$$\frac{20}{x^2 - 8x + 15} = \frac{2x}{x - 5}$$

10. (6 points) The two triangles in the figure below are similar. Find the missing side length.

11. (8 points) Jaime can sweep the cafeteria in 11 minutes. Steve can sweep the cafeteria in 14 minutes. How long will it take them to sweep the cafeteria if they work together?

12. The amount of simple interest, I, earned in an account varies jointly as the principle amount, P, and the amount of time, T, that the money is invested.

   (a) (4 points) Write an equation that expresses the relationship stated above. Use k as the constant of variation.

   (b) (4 points) Suppose a principle of $2500 earns $500 in interest after 4 years. Find k.

   (c) (4 points) How much interest will be earned on a principle of $7000 invested for 10 years?