**Math 111, Fall 2005**
Final Exam

Name (print): _____

Directions

1. Time limit: 1 hour 50 minutes.
2. To receive credit on any problem, you must show work that explains how you obtained your answer or you must explain how you obtained your answer.
3. Write your work *in pencil* in the provided spaces. Your work must be neat, organized, and legible. Draw a box around your answers.
4. You may use a calculator, but you may not use any notes, books, or other resources. You may not use a cell phone.
5. If a problem does not specify that an answer be written in fraction notation, mixed number notation, or decimal notation, then write the answer in the notation that you think is most appropriate for the problem. *All numerical fractions must be expressed in lowest terms.*
6. You are expected to do your own work. You are neither to receive nor to give any help on the exam.

I have read the directions.

Signature: _____ Student ID number: _____

1. Each of the following illustrates an addition or multiplication property. Identify the appropriate property in each case by filling in the blank with

   - **A** for associative law
   - **C** for commutative law
   - **Id** for identity property
   - **Inv** for inverse property
   - **D** for distributive law
   - **X** if none of the properties

   (a) _____ $2 + (7 + 3) = (2 + 7) + 3$

   (b) _____ $2(7 + 3) = 2(7) + 2(3)$

   (c) _____ $2 + (3 + 7) = 2 + (7 + 3)$

   (d) _____ $2 \cdot (7 \cdot 3) = (2 \cdot 7) \cdot 3$

2. Prime factorize the number 3240.

3. If the difference between seven times a number and five is subtracted from three, the result is 36. Find the number.

   Define the variable: Let _____ be a number.

   Write an equation: _____

   Solve the equation to find the number.

4. Find the area of the parallelogram with base $7\frac{3}{4}$ inches and height $4\frac{1}{2}$ inches. Draw a figure.

5. Simplify each expression.

(a) $\dfrac{3(3^2) - 5(9-2)}{8(6-9) \div (-3)}$

(c) $\dfrac{1}{6} + 4\left(\dfrac{2}{5} - \dfrac{7}{10}\right)$

(b) $\dfrac{2}{5} + 0.38(0.2)$

(d) $1.1^2 - 2.3(5.2) \div 3.2$

6. Simplify each expression.

(a) $8 + 8(4z + 5) - z$

(c) $(x^2 + x) - (3x^2 + 2x - 1)$

(b) $\dfrac{a^{-2}}{a^{-5}}$

(d) $(-5w^8)(9w^5)$

7. Solve the equations.

(a) $3(2x - 6) = 8x - 10$

(b) $0.8 = 0.2x + 3.4$

(c) $0.5x + 0.3 = 0.4(x - 10)$

(d) $\frac{4}{5} = \frac{3}{4}y + \frac{1}{5}$

(e) $\frac{3\frac{1}{4}}{2} = \frac{x}{8}$

(f) $\frac{0.06}{x} = \frac{0.3}{0.4}$

8. Grandma tells you that 8 pounds of ham will serve 20 people. At this rate, how many pounds of ham will be needed to serve 30 people?

9. Your current hourly wage is \$10.30. If you are to receive a 4% raise, what will be your new hourly wage?

10. A 154-in$^2$ rectangular photo has a width of 11 inches. Find its length.

11. Round the following numbers.

    (a) 8350 to the nearest hundred

    (b) $-8350$ to the nearest hundred

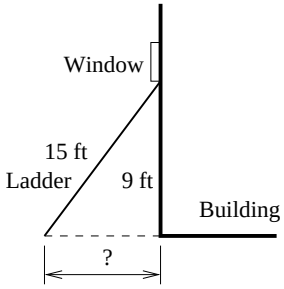
    (c) 0.835 to the nearest hundredth

    (d) $-0.835$ to the nearest hundredth

    (e) $\pi$ to the nearest one

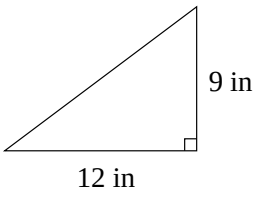
    (f) $\sqrt{2}$ to the nearest tenth

12. A 15-foot ladder is placed at the bottom of a window that is 9 feet high. How far from the building is the foot of the ladder?



13. How much did Dana pay for 3.5 yards of fabric that costs \$0.87 per yard?

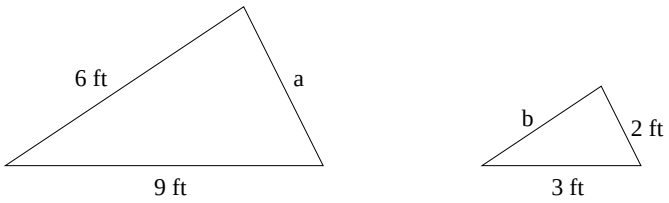
14. The following triangle is a right triangle. Find its perimeter and its area.




15. A container that is three-fourths full holds 9 gallons of liquid. What is the full capacity of the container?

16. A circular table top measures 54 inches in diameter. What is the area of the table top rounded to two decimal places?

17. The following triangles are similar. Find the perimeter of the larger triangle.




18. Draw a rectangular coordinate system and plot the points $(4, 3)$, $(2, 0)$, $(-1, -2)$, and $(2, -2)$.

19. For the equation $3x - y = 4$, complete the table below and then graph the equation in the rectangular coordinate system.

| $x$ | $y$ | $(x, y)$ |
|---|---|---|
| 0 | | |
| | $-1$ | |
| 2 | | |

20. Fill in the table so that the numbers across each row are equal.

| Fraction | Decimal | Percent |
|---|---|---|
| $\frac{3}{8}$ | | |
| | 0.65 | |
| | | 0.1% |

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End of the exam.