Test 2A - MTH 2010

Dr. Graham-Squire, Fall 2014

Name: _____

I pledge that I have neither given nor received any unauthorized assistance on this exam.

_____

(*signature*)

DIRECTIONS

1. Show all of your work and use correct notation. A correct answer with insufficient work or incorrect notation will lose points.
2. Clearly indicate your answer by putting a box around it.
3. Calculators, cell phones and computers are <u>not</u> allowed on this test.
4. Make sure you sign the pledge.
5. Number of questions = 14. Total Points = 65.

1. (4 points)

   (a) Add:

$$26 + 43 + 57 + 74 + 18 =$$

   (b) Calculate:

$$591.6 - 37.146 =$$

   (c) Calculate:

$$\frac{9}{12} - \frac{4}{18} =$$

   (d) Calculate

$$-58 - (-49) =$$

2. (3 points)

(a) Multiply

$$48.93 \times 1000 =$$

(b) Multiply

$$241 \times 88 =$$

(c) Compute the product and express the answer in lowest terms:

$$\frac{3}{7} \times \frac{15}{20} =$$

3. (3 points)

(a) Multiply

$$0.45 \times 4.05 =$$

(b) Write 0.00000503 in Scientific Notation.

(c) Do the division and get an exact decimal answer: $37 \div 8$

4. (5 points) Below are several expressions:

I. $\frac{1}{2}+\frac{1}{3}$ II. 0.400000 III. $\frac{1}{5}+\frac{1}{5}$

IV. 40% V. 0.25 VI. $\frac{14}{35}$

Which of the lists below includes all of the above expressions that are equivalent to $\frac{2}{5}$?

(a) I, III, V, VI

(b) III, VI

(c) II, III, VI

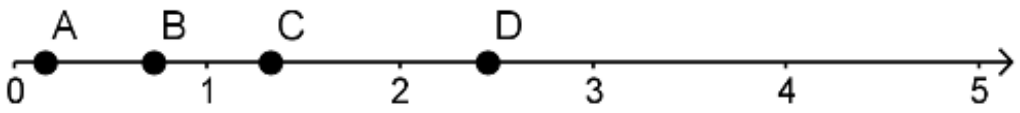
(d) II, III, IV, VI

5. (5 points) Can the following problems be solved by subtracting $\frac{3}{4} - \frac{1}{2}$? If so, explain why. If not, explain why not. Solve the problems if they can be solved.

   (a) A bird feeder was filled with $\frac{3}{4}$ of a full bag of bird seed. The birds ate $\frac{1}{2}$ of what was in the bird feeder. What fraction of a full bag of bird seed did the birds eat?

   (b) A bird feeder was filled with $\frac{3}{4}$ of a full bag of bird seed. The birds ate $\frac{1}{2}$. What fraction of bird seed did the birds eat?

6. (5 points) Which of the following points is closest to $\frac{34}{135} \times \frac{53}{86}$?



(a) A

(b) B

(c) C

(d) D

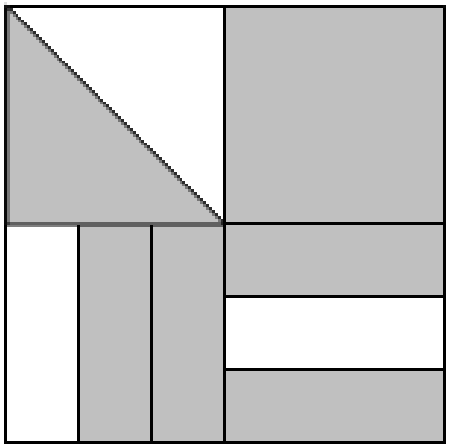
7. (5 points) The Browns need new carpet for a rectangular floor that is 35 feet wide and 43 feet long. The carpet comes on a large roll that is 9 feet wide. The carpet store will cut any length of carpet the Browns want, but they must buy the full 9 feet in width.

   (a) Draw clear, detailed pictures showing two different ways the Browns could lay their carpet.

   (b) For each way of laying the carpet, find how much carpet the Browns will need to buy from the carpet store. Which way is less expensive for the Browns?

8. (5 points) Working on the problem 11×24, Jim says he can take one from the 11 and put it with the 24, and that the new multiplication problem 10×25 will give the same answer as 11×24. Is Jim right? If he is not, use an array or some mathematical expressions to explain to him why he is wrong. It is NOT enough just to calculate the two products and show him that they are not equal.

9. (5 points) What fraction of the area of the picture below is shaded?



(a) $\frac{17}{24}$

(b) $\frac{3}{4}$

(c) $\frac{2}{3}$

(d) $\frac{17}{6}$

10. (5 points) Jen says that

$$2\frac{1}{3} \times 4\frac{2}{5} = 2 \times 4 + \frac{1}{3} \times \frac{2}{5}$$

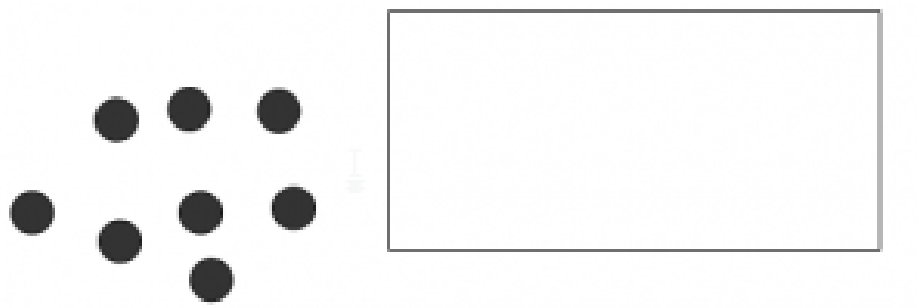
Explain to Jen that while she has made a good attempt, her answer is not correct. Explain how to modify the work that Jen has already done in order to get the correct result–it is not enough just to start from scratch and show her how to do the problem, you must take what she already has and make it mathematically correct. What property of arithmetic is relevant to correcting Jen's work? (It is okay if you don't know the name as long as you show how it is relevant in your explanation.)

11. (5 points) Simplify the expression

$$\frac{(4 \times 10^3) \times (6 \times 10^5)}{12 \times 10^6}$$

as much as possible.

12. (5 points) The picture below shows identical circles drawn on a piece of paper. The rectangle represents an index card that is blocking your view of $\frac{3}{5}$ of the circles on the paper. How many circles are covered by the rectangle?



(a) 4

(b) 5

(c) 8

(d) 12

13. (5 points) For each problem below, write the corresponding numerical division problem and solve the problem. Determine the best form (or forms) of the answer: a mixed number, a decimal, a whole number with remainder, or a whole number that is not equal to the solution from the division problem.

(a) You need to buy 57 candies to bribe your students to do well on their standardized tests. At the store, the candy only comes in bags of 15 candies to a bag. How many bags must you buy?

(b) Adam has to divide a 30 foot long piece of string equally between his 7 children. How long of a piece of string will each child get?

(c) Annie has 14 porcelain chinese hand-waving cat statues that she wants to give to her 4 friends. Her friends will be angry if they find out that any one of them got more statues than anyone else. How many statues should she give to each friend?

14. (5 points) Steve and Sarah went out to dinner and had a meal that cost \$52.36. With a 4% tax of \$2.09, the total came to \$54.45. They want to leave a tip of approximately 15% of the cost of the meal (before the tax). Describe a way that Steve and Sarah can mentally figure the tip.

Extra Credit(2 points) Here is a mental math strategy for computing 26×16:

Step 1: $100 \times 16 = 1600$

Step 2: $25 \times 16 = 1600 \div 4 = 400$

Step 3: $26 \times 16 = 400 + 16 = 416$

Which property of multiplication best justifies Step 3 in this strategy? You should explain your answer by showing how the property is applied in Step 3. (Even if you don't know the name of the property, you will get full points as long as you show how it is applied in Step 3.)