Math 085 - Test 3a

October 17, 2013

Name __key__

Score _____

Part I - Solve each problem. Show all work to receive full credit. Supply explanations where necessary. Each problem is worth 1 point. CALCULATORS ARE ALLOWED ON THIS PORTION OF THE TEST.

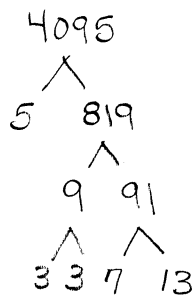
1. Use cross multiplying to find the missing number: $\dfrac{24}{33} = \dfrac{x}{88}$

    $33x = 24(88)$

    $x = \dfrac{2112}{33} = \boxed{64}$

2. Divide. Do not simplify your answer.

    $\dfrac{12}{13} \div \dfrac{22}{25} = \dfrac{12}{13} \times \dfrac{25}{22} = \boxed{\dfrac{300}{286}}$

3. Find the prime factorization of 4095.

    4095
    ∧
    5   819
        ∧
       9   91
      ∧   ∧
     3 3 7 13

    $4095 = 3^2 \cdot 5 \cdot 7 \cdot 13$

4. Determine four multiples of 379.

    $379, \ 758, \ 1137, \ 1516$

5. Determine whether these fractions are equal. Show work or explain.

    $\dfrac{74}{142} \qquad \dfrac{407}{813}$

    $74 \cdot 813 = 60162$

    $142 \cdot 407 = 57794$ } Not equal!

1

Math 085 - Test 3b

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Name ___key___

Score _____

1. (2 points) List all the positive factors of 18.
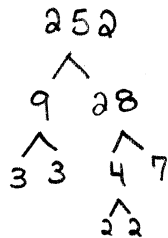
    1, 18
    2, 9
    3, 6

2. (3 points) Find the prime factorization of each number.

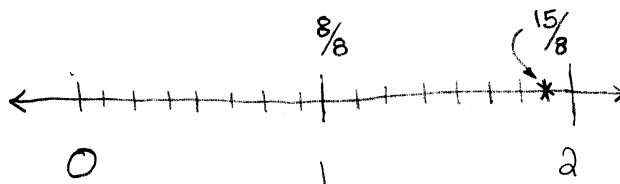   (a) 45
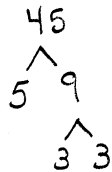
    $$45 = 3^2 \cdot 5$$

    (b) 252

    $$2^2 \cdot 3^2 \cdot 7 = 252$$

3. (2 points) There are 18 women in a office containing 27 people. What fraction represents the portion of people who are women? Write your fraction in lowest terms.

    $$\frac{18}{27} = \frac{2}{3}$$

4. (1 point) Draw a number line and show the location of $\frac{15}{8}$.

1

5. (6 points) **Use the divisibilty tests** for each of the following problems. Show work or explain you reasoning!

(a) Circle each number that is divisible by 2. ENDS WITH 0, 2, 4, 6, 8

240   · 5505   666   3693

(b) Circle each number that is divisible by 5. ENDS WITH 0 or 5

5761   8015   4086   70

(c) Circle each number that is divisible by 10. ENDS WITH 0

5640   862   700,002   553,390

(d) Circle each number that is divisible by 3. SUM OF DIGITS IS DIVISIBLE BY 3

89063   342   10101   3693

$8+9+6+3$ $3+4+2$ $1+1+1$ $3+6+9+3$

$= 26$ $= 9$ $=3$ $= 21$

(e) Circle each number that is divisible by 9. SUM OF DIGITS IS DIVISIBLE BY 9

222   396   80208   14,643

$2+2+2$ $3+9+6$ $8+2+8$ $1+4+6+4+3$

$= 6$ $= 18$ $= 18$ $= 18$

(f) Circle each number that is divisible by 6. DIVISBLE BY 2 AND 3

530   3333   162   5514

$5+3 = 8$ $1+6+2$ $5+5+1+4$

                  $= 9$ $= 15$

6. (4 points) Completely simplify each fraction.

(a) $\dfrac{-26}{-26} = \boxed{1}$

(b) $\dfrac{180}{240} = \dfrac{18}{24} = \dfrac{6}{8} = \boxed{\dfrac{3}{4}}$

(c) $\dfrac{0}{-9} = \boxed{0}$

(d) $\dfrac{27}{-36} = \boxed{-\dfrac{3}{4}}$

7. (2 points) A triangle has a base that measures $\dfrac{9}{2}$ m and its height is $\dfrac{4}{15}$ m. Find the area of the triangle.

$A = \dfrac{1}{2}\left(\dfrac{9}{2}\right)\left(\dfrac{4}{15}\right) = \dfrac{36}{60} = \dfrac{6}{10} = \boxed{\dfrac{3}{5}} \ \text{m}^2$

3

8. (2 points) What is $\frac{3}{5}$ of 65?

$$\frac{3}{\cancel{5}_1} \times \frac{\cancel{65}^{13}}{1} = \boxed{39}$$

9. (6 points) Multiply and simplify.

(a) $\frac{5}{\cancel{8}_4} \times \frac{\cancel{18}^9}{1} = \boxed{\frac{45}{4}}$

(b) $\frac{\cancel{8x}^2}{\cancel{10}_1} \cdot \frac{\cancel{100}^{10}}{\cancel{28x}_7} = \boxed{\frac{20}{7}}$

(c) $\frac{\cancel{3}^1}{5} \cdot \left(-\frac{11}{\cancel{24}_8}\right) = \boxed{-\frac{11}{40}}$

10. (2 points) Five-fourths of x is 10. Find x.

$$\frac{5}{4} \cdot x = 10$$

$$\frac{\cancel{4}}{\cancel{5}} \left(\frac{\cancel{5}}{\cancel{4}} x\right) = \frac{4}{\cancel{5}_1} \left(\frac{\cancel{10}^2}{1}\right)$$

4

$$\boxed{x = 8}$$

11. (6 points) Divide and simplify.

(a) $\dfrac{2}{4} \div \dfrac{3}{6} = \dfrac{2}{4} \times \dfrac{6}{3} = \dfrac{1}{2} \times \dfrac{2}{1} = \boxed{1}$

(b) $-12 \div \dfrac{2}{3} = -\dfrac{\overset{6}{\cancel{12}}}{1} \times \dfrac{3}{\cancel{2}_1} = \boxed{-18}$

(c) $-\dfrac{2}{9} \div \left(-\dfrac{10}{21}\right) = \dfrac{\overset{1}{\cancel{2}}}{\cancel{9}_3} \times \dfrac{\overset{7}{\cancel{21}}}{\cancel{10}_5} = \boxed{\dfrac{7}{15}}$

12. (4 points) Solve each equation. Write your answer in lowest terms.

(a) $\dfrac{7}{10} = \dfrac{-2}{5}y$

$-\dfrac{\overset{1}{\cancel{5}}}{2}\left(\dfrac{7}{\cancel{10}_2}\right) = y$

$\boxed{y = -\dfrac{7}{4}}$

(b) $-x = \dfrac{3}{-4}$

DIVIDE BY -1 $\Rightarrow$ $\boxed{x = \dfrac{3}{4}}$

5

1. Solve for x: $\dfrac{2}{4} = \dfrac{x}{18}$

   (a) $x = 2$

   (b) $x = 9$

   (c) $x = 36$

   (d) $x = 4$

$4x = 36$

$x = 9$

2. Which one of the these numbers is a composite number?

   (a) 1

   (b) 23

   (c) 17

   (d) 39 3×13

3. Which of these numbers is a multiple of 27?

   (a) 54 $2 \times 27 = 54$

   (b) 1

   (c) 9

   (d) 327

4. Which one of these numbers is prime?

   (a) 21 3×7

   (b) 99 9×11

   (c) 51 17×3

   (d) 31   prime

5. The height of a triangle is 4 ft. The length of its base is 12 ft. Find the area of the triangle.

   (a) 48 ft^2

   (b) 24 ft^2

   (c) 16 ft^2

   (d) 32 ft^2

$\dfrac{1}{2}(4)(12) = \dfrac{1}{2}(48) = 24$

6