

Math 190  
Spring 2014  
Dr. Lily Yen

# Test 3

Show all your work

Name: \_\_\_\_\_

Score: \_\_\_\_/57

**Problem 1:** Compute each using any method. Show clear steps and use appropriate mathematical symbols to make your presentation coherent.

a.  $4\frac{3}{5} + (-\frac{23}{4})$

Score: /2

b.  $0.035 \times 17\frac{1}{5}$

Score: /2

c. Simplify the complex fraction to one simple fraction:  $\frac{2\frac{6}{7} - \frac{17}{9}}{\frac{5}{3} \div 1\frac{2}{7}}$

Score: /3

d. Find  $x$  and  $y$  in the following ratio:  $3 : 7 : y = x : 2 : 11$ .

Score: /2

e. Evaluate  $-12 + 3^2 \div 3 \times (-4) - 5 \times 2$

Score: /2

**Problem 2:** A student used the following diagram to illustrate his addition of  $\frac{3}{4} + \frac{2}{4} = \frac{5}{8}$ . Explain his misunderstanding.



**Problem 3:** Illustrate with diagrams how to perform the following fraction division. Directly from your drawings find the answer. Score: /2

$$2\frac{1}{2} \div \frac{1}{3}$$

**Problem 4:** Explain how to divide decimals in  $0.028 \div 0.0007$ . Score: /2

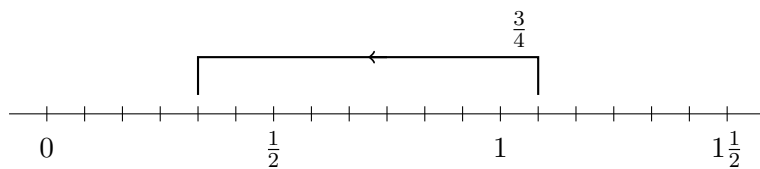
**Problem 5:** Use the number line to illustrate  $4 - (-3)$ . Score: /2

Score: /2

**Problem 6:** Find two fractions in lowest terms  $x$  and  $y$  such that  $x - y = \frac{5}{7}$ , and neither  $x$  nor  $y$  has 7 as its denominator.

Score: /2

**Problem 7:** The following number line illustrates an arithmetic problem involving two fractions. Propose an example of such an arithmetic problem.



Score: /3

**Problem 8:** Which is a stronger orange juice: 3 cups orange concentrate mixed with 5 cups water or 5 cups orange concentrate mixed with 8 cups water?

Score: /3

**Problem 9:** Abby, Beatrice, and Cathy want to rent a 3-bedroom apartment. Abby wants the corner bedroom, so she will pay 20% more of the rent than Beatrice will. Cathy wants the bedroom with a private bath and agrees to pay 50% more than Abby. Find the ratio of Abby's rent to Beatrice's rent to Cathy's rent.

Score: /4

**Problem 10:** In a CapU basketball game, team members, Allen scored  $\frac{1}{3}$  of his team's points, Bill scored 15% of the same points, and Charles scored  $\frac{1}{4}$  of the same points. The rest of the team scored 16 points. The team made 60% of its points in the second half.

a. How many points did the team score in the first half?

b. For what other quantities do you know values?

Score: /4

**Problem 11:** True or false. If true, provide a reason. If false, show a counter-example.

a. For all real numbers  $a$  and  $b$ ,  $|a - b| = |a| - |b|$ . True or False

b. Addition of real numbers is both commutative and associative. True or False

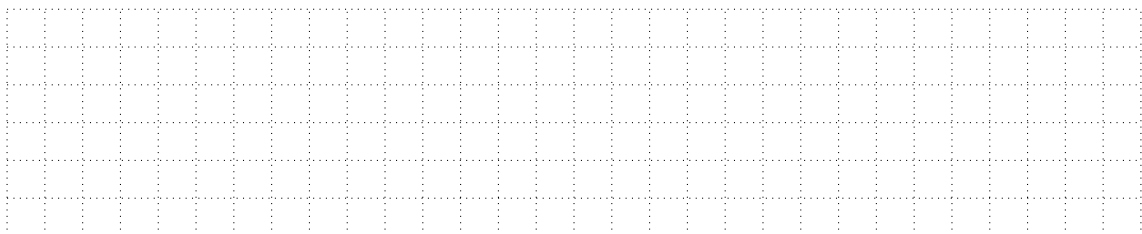
c. Division of fractions is associative. True or False

d. The set of even integers is **closed** under multiplication. True or False

e. All squares are rectangles. True or False

Score: /5

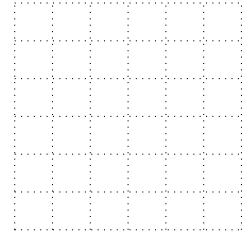
**Problem 12:** Take an entire string of 16 centimetres to enclose a rectangle of integer dimensions. Draw a rectangle with the smallest area and a rectangle with the largest area. Explain. (Consider the grid below a 1 cm square grid.)



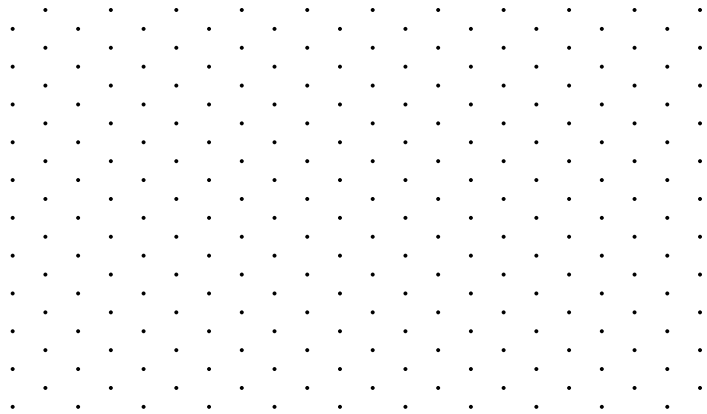
Score: /4

**Problem 13:** For each question, draw a corresponding shape to help you convert units.

a.  $12 \text{ cm}^2 = \boxed{\phantom{000000}} \text{ m}^2$

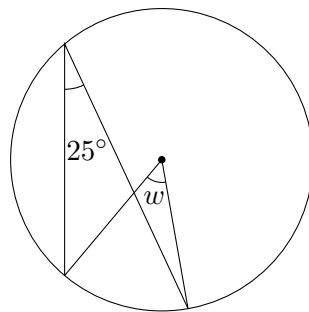
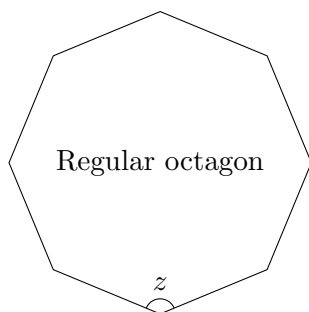
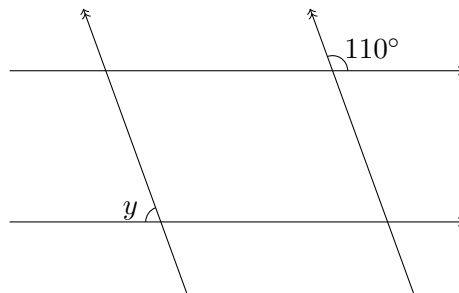
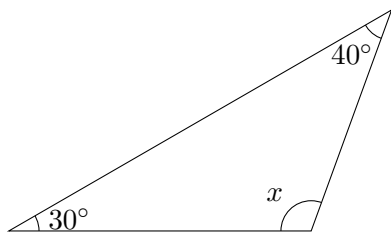


b.  $0.036 \text{ km}^3 = \boxed{\phantom{000000}} \text{ m}^3$



Score: /4

**Problem 14:** Find the missing angle in each of the following.



Score: /5