MTH/SLS 218–6816 Exam 2

March 28, 2011 Professor Ilya Kofman

NAME: _____

$1\,\text{in} = 2.54\,\text{cm}, \qquad 1\,\text{kg} = 2.2\,\text{lbs} \qquad 1\,\text{gal} = 3.79\,\ell$

Problem 1. A recipe that serves 6 calls for 2 Tbsp vegetable oil, 4 pints of stock, $\frac{2}{3}$ lbs of peas, and 5 eggs. Note that 16 Tbsp = 1 cup. If the cafeteria needs to serve 1000, it must buy:

(a) How many gallons of vegetable oil? _____

(b) How many liters of stock? _____

(c) How many kilograms of peas? _____

(d) How many dozens of eggs? _____

Problem 2. Standard copy paper is 8.5 inches by 11 inches.

(a) How many square millimeters (mm^2) is one sheet of copy paper?

(b) One acre is $43,560$ sq ft. How many pieces of copy paper will cover one acre?

Problem 3. **(a)** How many km is 72,531 mm?

(b) How many km is 5.4 miles?

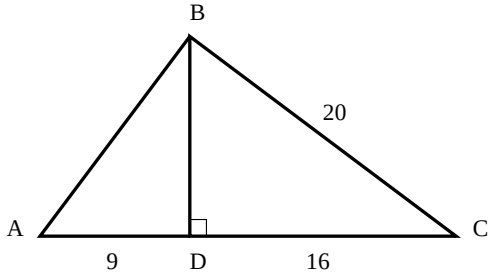
(c) How fast is 3 cm/sec in miles per hour?

(d) The current price of gasoline in France is 1.58 Euros per liter. Now, \$1 is 0.71 Euros. How much is gasoline in France in dollars per gallon?

Problem 4. Jack reports that a pail weighs 4.7 lbs. Jill can weigh things in pounds to three decimal places. If Jill weighs the pail, what weight range could she report?

Problem 5. In $\triangle ABC$, $\angle BDC$ is a right angle, but do <u>not</u> assume that $\angle ABC$ is a right angle.

(a) Find the area of $\triangle ABC$.



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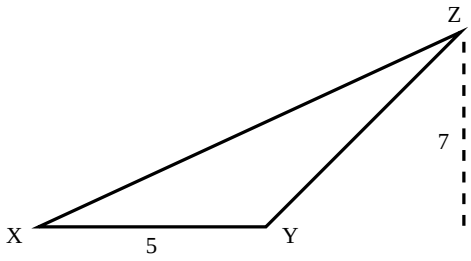
(b) Find the perimeter of $\triangle ABC$.

(c) Determine whether $\angle ABC$ is a right angle. Justify.

Problem 6. Justify $A = \frac{1}{2}bh$ for $\triangle XYZ$, using rectangles and/or right triangles.



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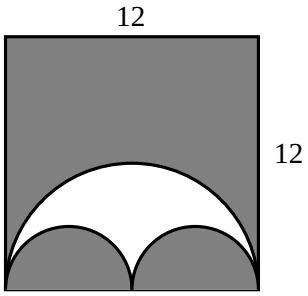
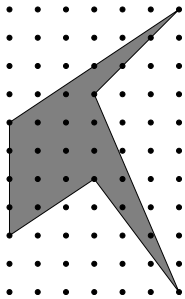
Problem 7. Find the area of the shaded region. (Leave π in your answer.)



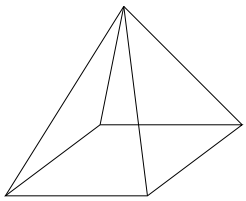
Problem 8. The dots below are spaced 1 cm apart. Determine the area of the shaded figure. Show work.



Problem 9. A construction company has dump trucks that hold 7 cubic yards. If the company digs a hole that is 12 feet deep, 17 feet wide, and 30 feet long, then how many dump trucks will they need to haul away the dirt dug from this hole?

Problem 10. A square with side length 6 cm is the base of a square pyramid, which has height 4 cm. Show work below, and use correct units.

(a) What is the slant height of the pyramid?



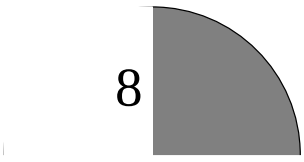
(b) Compute the surface area of the pyramid (including the base).

(c) Compute the volume of the pyramid.

(d) If a little cube with side length 5 mm is filled with water, how many such cubes will fill the pyramid?

Problem 11. (BONUS) A cone will be made from the quarter-disc shown.

(a) Find the surface area of the cone.



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(b) Find the radius r of the cone. (Hint: Use circumference.)

(c) Find the volume of the cone. (Hint: Find the height.)