First name: _____ Last name: _____   Student ID: _____

Geometry 1 Homework

Basic problems

1. Complete. Show work!

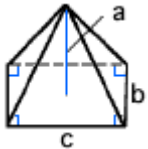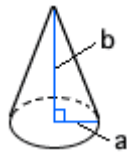|	
1. The area of a rectangle is 36 cm². The height is three less than three times the base. What is the height?	2. The perimeter of a rectangle is 88 mm. The base is four more than four times the height. What is the length of the base?

2. Complete. Show work!

1. What is the height of a triangle with base 23.4 mm and area 207.09 mm²?	2. What is the length of the base of a triangle with height 18 m and area 252 m²?

3. Find the missing measurement of each trapezoid. Show work!

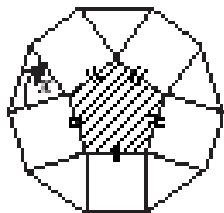|		
1. $height = 9$ mm $b_1 = $ _____ $b_2 = 19$ mm $area = 153$ mm²	2. $height = 22.7$ cm $b_1 = 10.5$ cm $b_2 = 23.9$ cm $area = $ _____	3. $height = 8$ mm $b_1 = 23$ mm $b_2 = $ _____ $area = 196$ mm²

4. Find the volume of each solid. Leave answers in exact values.

| 1.	2.	3.
a = 3 cm	a = 7 in b = 5 in c = 8 in	a = 5 m b = 8 m

Challenge problems:

1. A regular pentagon has all sides and angles equal. If the shaded pentagon is enclosed by squares and triangles, as shown, what is the size of angle *x*?

2. In the diagram, *AC*=*CB*=10 m, where *AC* and *CB* are each the diameter of the small equal semi-circles. The diameter of the larger semi-circle is *AB*. In travelling from *A* to *B*, it is possible to take one of two paths. One path goes along the semi-circular arc from *A* to *B*. A second path goes along the semi-circular arcs from *A* to *C* and then along the semi-circular arc from *C* to *B*. what is the difference in the lengths of these two paths?
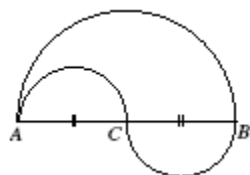
3. Four identical isosceles triangles border a square of side 6 cm, as shown. When the four triangles are folded up they meet at a point to form a pyramid with a square base. If the height of this pyramid is 4 cm, what is the total area of the four triangles and the square?
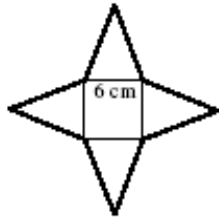
4. A square floor is tiled, as partially shown, with a large number of regular hexagonal tiles. The tiles are coloured blue or white. Each blue tile is surrounded by 6 white tiles and each white tile is surrounded by 3 white and 3 blue tiles. Ignoring part tiles, find the ratio of the number of blue tiles to the number of white tiles.
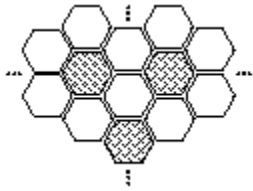
5. In equilateral triangle *ABC*, line segments are drawn from a point *P* to the vertices *A*, *B* and *C* to form three identical triangles. The points *D*, *E* and *F* are the midpoints of the three sides and they are joined as shown in the diagram. What fraction of △*ABC* is shaded?
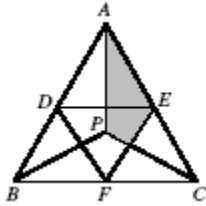
6. A rectangular sign that has dimensions 9 m by 16 m has a square advertisement painted on it. The border around the square is required to be at least 1.5 m wide. What is the area of the largest square advertisement that can be painted on the sign?

7. Lines *PS*, *QT* and *RU* intersect at a common point *O*, as shown. *P* is joined to *Q*, *R* to *S*, and *T* to *U*, to form triangles. What is the value of $\angle P + \angle Q + \angle R + \angle S + \angle T + \angle$
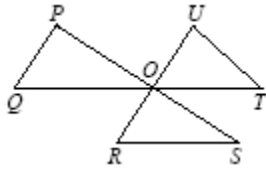

8. In the diagram, which of the following is the largest?
　　(A) *AE*　(B) *CD* + *CF*　　(C) *AC* + *CF*　(D) *FD*　(E) *AC* + *CE*
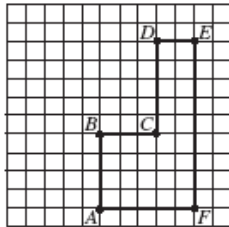
9. George and Phil were playing with their fish tank again. They had a difficult time keeping their fish alive. The fish tank is 100 cm long, 60 cm wide and 40 cm high. They tilted the tank, as shown, resting on a 60 cm edge, with the water level reaching the midpoint of the base. When they rest the tank down to a horizontal position, what is the depth of the water in cm?
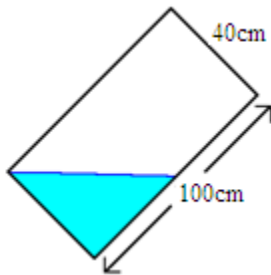
10. If ABCD is a square and ABE is an equilateral triangle, then what is the measure of $< BFC$?
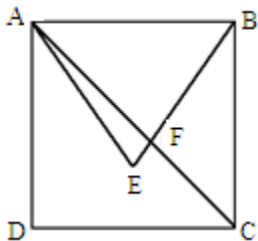
11. The Quinpool family decided to build a pool of the following shape. The sides of their 12 x 9 yard are trisected. What is the perimeter of the shaded pool?
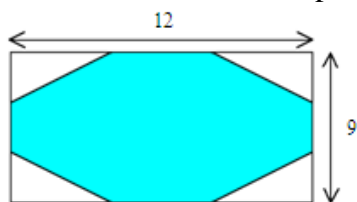
12. Joy, Noella and Holly were playing jump rope. Joy and Noella at points B and C were twirling the skipping rope waiting for Holly at point A to jump into the middle of the rope (at point D). The three girls formed a 90 degree angle. Holly was 1m away from Noella and 1m away from Joy. How far does she have to jump into the middle of the skipping rope? AD is perpendicular to BC.