

Note The scores added to  
 20, not 25.  
Fix: Multiply by  $25/20$   
 round up.

# MTH 202 - Quiz 4

2 October 2015

Name: Solutions

No calculators or other electronic devices are allowed on this quiz. If you need more space to solve a problem, use the back of the paper.

1. (5 points) Consider the following statement:

All rhombuses are squares.

Write this as an "if... then" statement, and determine whether it is true. Then write the converse and determine whether the converse is true.

Statement: If something is a rhombus, then it is a square.  
False.

Converse: If something is a square, then it is a rhombus.  
True.

2. (5 points) A polygon has  $m$  sides. One of its interior angles is  $60^\circ$ , and every other interior angle is  $140^\circ$ . How many sides does the polygon have?

Look for multiples of 180,  
 since the sum of interior  
 angles is  $180(m-2)$ .

60 No

$60 + 140 = 200$  No

$+ 140 = 340$  No

$+ 140 = 480$  No

$+ 140 = 620$  No

$+ 140 = 760$  No

$+ 140 = 900$  Yes!

$180 = 180(7-2)$

Algebraic solution:

$$180(m-2) = 60 + 140(m-1)$$

$$180m - 360 = 140m - 80$$

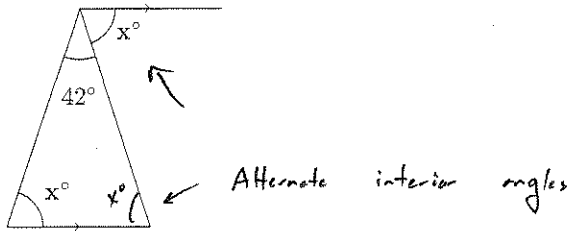
$$40m = 280$$

$$m = 7.$$

7 sides

3. (5+5=10 points) For the following problems, justify every step. Note, in each picture, the pair of parallel lines.

(a) Find an equation for  $x$  and solve it.



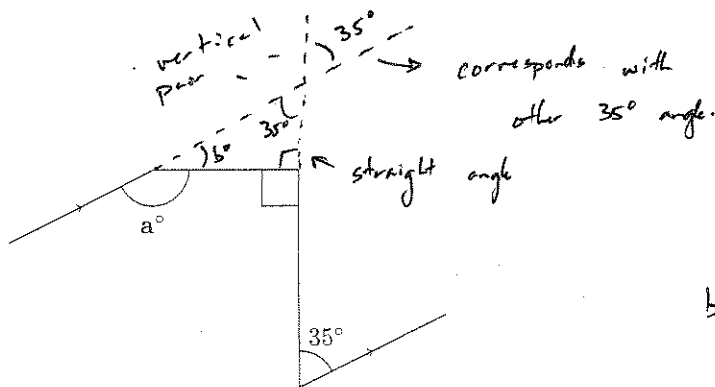
$$\therefore 42 + x + x = 180$$

$$2x = 138$$

$$x = 69$$

sum of interior angles  
in triangle

(b) Find  $a$ . *Hint:* You may find it helpful to extend the vertical line until it's a transversal of some other lines.



$$b + 35 + 90 = 180$$

sum of int.  $\angle$ s  
in  $\Delta$

$$\therefore b = 55$$

$$a + b = 180$$

straight line

$$a = 125$$