

**Group Members:**

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1. Draw as many different triangles as you can with the following properties. If there are infinitely many explain why. If not, explain why you cannot draw anymore. If you cannot draw any, explain why not.
  - (a) One angle equal to  $50^\circ$  and another angle equal to  $30^\circ$ .  
The length of the sides can vary while keeping the angles the same, so there are infinitely many triangles.
  - (b) One angle equal to  $50^\circ$ , another angle equal to  $30^\circ$  and one side equal to 2 cm.  
Now that we have specified the length of a side, the triangle cannot shrink or grow. The 2 cm side could be any of the three, so there are three possible triangles.
  - (c) One angle equal to  $50^\circ$ , another angle equal to  $30^\circ$  and the side opposite the  $30^\circ$  angle equal to 2 cm.  
Now we have specified which side is 2 cm, so there is only one possible triangle.
  - (d) One side is 2 cm and another side is 3 cm.  
The angle between the two sides can vary, so there are infinitely many triangles.
  - (e) The sides are 2cm, 3cm and 4 cm.  
Once we fix the third side the angles can no longer vary, so there is only one possible triangle.
  - (f) A right triangle with lengths 2 cm and 3 cm.  
These lengths could be the two legs or it could be a leg and the hypotenuse, so there are two possible triangles.
  
2. Draw as many different parallelograms as you can with the following properties. If there are infinitely many explain why. If not, explain why you cannot draw anymore.
  - (a) One angle equal to  $50^\circ$  and another angle equal to  $30^\circ$ .  
Since opposite angles are equal in a parallelogram, we know the four angles are  $50^\circ, 50^\circ, 30^\circ$  and  $30^\circ$  and these do not add up to  $360^\circ$ . So there is no parallelogram that satisfies the criteria.
  - (b) One angle equal to  $50^\circ$  and another angle equal to  $130^\circ$ .  
The length of the sides can vary while keeping the angles the same, so there are infinitely many parallelograms
  - (c) One angle equal to  $50^\circ$ , another angle equal to  $130^\circ$  and one of the sides equal to 2 cm.  
Though one side is 2 cm, the other side can vary while keeping angles the same, so there are infinitely many parallelograms.
  - (d) One side equal to 2 cm and another side equal to 3 cm.  
The angles can vary while keeping the two sides the same, so there are infinitely many parallelograms.