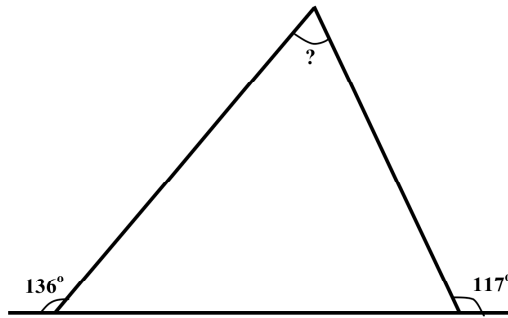## Student Name: _____

1. Determine the angle in the diagram marked by "?".

    Answer: _____

2. Consider the largest square that can fit into a circle of radius 1. What is the area of this square?

    Answer: _____

3. 3 apples weigh the same as an orange, but 2 pears weigh less than an apple. A banana and 4 pears together weigh more than 2 oranges, but a banana weighs less than the sum of the weights of one orange, one apple and one pear. What is the heaviest fruit?

    Answer: _____

4. Find the largest number that is a factor of both 1014 and 1027.

    Answer: _____

5. Kate tosses one coin and Larry tosses two coins. What is the probability that Kate and Larry get the same number of heads?

    Answer: _____

6. A number is said to be a palindrome if, when read from right to left, it is the same as when it is read from left to right (e.g. 101, 999). How many palindromes are there between 100 and 1000?
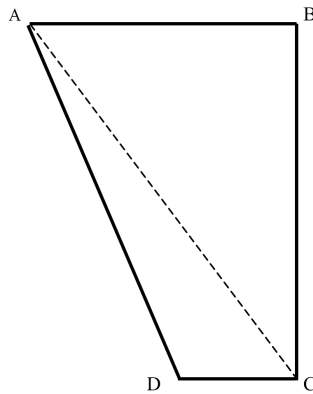
    Answer: _____

Student Name: _____

7.   Mary and Nicholas are waiting to take different buses home. Their bus stops are on the same street, 2.1km apart. Mary walks at 50 metres per minute, and Nicholas walks at 150 metres per minute. Nicholas's bus comes 10 minutes later than Mary's bus. They want to separate at a point on the street such that they can stay together for as long as possible and still both catch their buses. How many minutes are there from the time they leave each other to the time Mary steps on her bus?

                    Answer: _____

8.   ABCD is a trapezoid with right angles at B and at C. If |AB|=9, |CD|=4, and |AD|=13, find |AC|. (Note: |AB| is the length of the line segment AB).

              Answer: _____