WMS Math Challenge
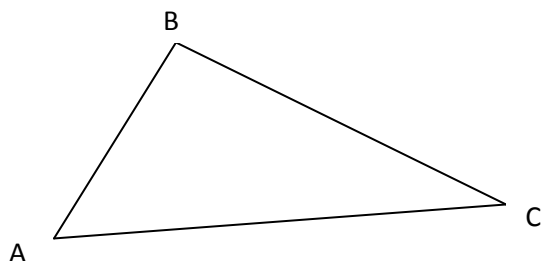
The Triangle Inequality

If ABC is a triangle, then the **triangle inequality** says that

$$|AB| + |BC| \geq |AC|.$$

This says that if an ant wants to get from *A* to *C*, then the path from *A* to *C* is shorter than taking a detour from *A* to *B*, and then proceeding from *B* to *C*.

Question 1: Can you construct a triangle whose side lengths are 18, 18, and 35? How about a triangle whose side lengths are 17, 18, and 35? How about 16, 18, and 35?

Question 2: In a triangle, two sides are 3.14 and 0.67. If the length of the third side is an integer, what are the possible lengths of the third side?

Question 3: Jimmy the ant sits at the bottom left corner of a wooden cube. He wants to travel to the opposite corner of the cube (the upper right corner) for a leftover piece of food. What is the shortest route that Jimmy can take to get to the food?
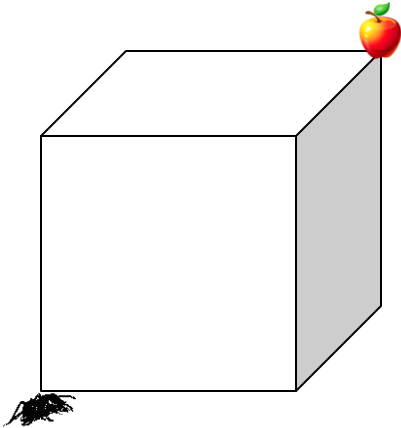
Question 4: A camper has set up his campsite along the bank of a river. Starting from his tent, he needs to go down to the river to gather some water, and then over to his camp fire. How does he minimize the distance he needs to walk?

RIVER