

*For the programming task you have to use C++
For questions and help refer to the course's [discord server](#)
Or the course's e-mail:
raytracingcourse@chaos.com*

Slides: [CRT 04 Triangle 01](#)

Task 1.

Add a triangle representation to your C++ projects. It should consist of 3 vertices, each of which can be represented by a 3D vector. The order of the vertices matters.

Task 2.

- Calculate the cross product ($A \times B$) between two vectors:
 - $A = (3.5, 0, 0)$ and $B = (1.75, 3.5, 0)$
- Calculate the cross product ($A \times B$) between two vectors:
 - $A = (3, -3, 1)$ and $B = (4, 9, 3)$
- Calculate the area of the parallelogram formed by vectors:
 - $A = (3, -3, 1)$ and $B = (4, 9, 3)$
- Calculate the area of the parallelogram formed by vectors:
 - $A = (3, -3, 1)$ and $B = (-12, 12, -4)$

Task 3.

- Find the normal vector for a triangle with the following vertices:
 - $A = (-1.75, -1.75, -3)$
 - $B = (1.75, -1.75, -3)$
 - $C = (0, 1.75, -3)$

Answer: (0.0, 0.0, 1.0)

- Find the normal vector for a triangle with the following vertices:
 - $A = (0, 0, -1)$
 - $B = (1, 0, 1)$
 - $C = (-1, 0, 1)$

Answer: (0.0, -1.0, 0.0)

- Find the normal vector for a triangle with the following vertices:
 - $A = (0.56, 1.11, 1.23)$
 - $B = (0.44, -2.368, -0.54)$
 - $C = (-1.56, 0.15, -1.92)$

Answer: (0.756420, 0.275748, -0.593120)

- Calculate the areas of these triangles.