

### The Circumcenter of a Triangle

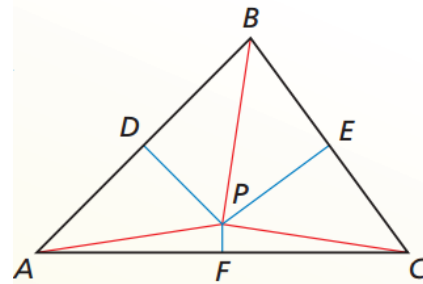
When three or more lines, rays, or segments intersect in the same point they are called \_\_\_\_\_.

The point of intersection of the lines, rays or segments is called the \_\_\_\_\_.

In a triangle, the three \_\_\_\_\_ are concurrent. The point of concurrency is the \_\_\_\_\_ of the triangle.

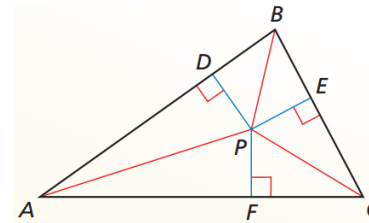
### Circumcenter Theorem

The \_\_\_\_\_ of a triangle is \_\_\_\_\_ from the \_\_\_\_\_ of the triangle.



### Incenter of a Triangle

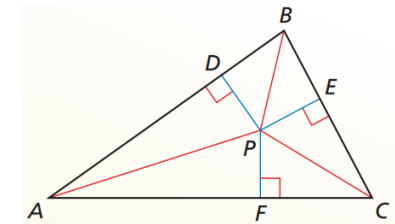
The \_\_\_\_\_ of a triangle are \_\_\_\_\_. Their point of \_\_\_\_\_ is the \_\_\_\_\_ of the triangle. The \_\_\_\_\_ always lies \_\_\_\_\_ the triangle.



### Incenter Theorem

The \_\_\_\_\_ of a triangle is \_\_\_\_\_ from the \_\_\_\_\_ of the triangle.

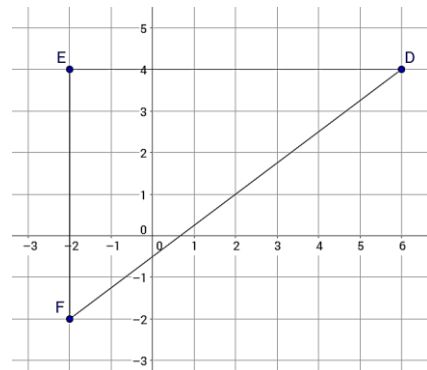
If  $\overline{AP}$ ,  $\overline{BP}$ , and  $\overline{CP}$  are angle bisectors of  $\triangle ABC$  then  $PD = PE = PF$ .



If the Omaha Zoo wanted to place a beverage cart equidistant from the Skyfari Landing, the Future Elephant Family Quarters and the Future Elephant Amphitheater, where should it be located?

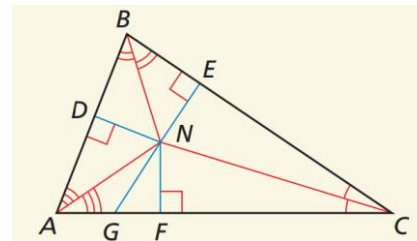


Find the coordinates of the circumcenter of  $\triangle DEF$  with vertices  $D(6, 4)$ ,  $E(-2, 4)$ , and  $F(-2, -2)$ .



In the figure shown,  $NE = 6x + 1$  and  $NF = 4x + 15$ .

- Find  $ND$ .
- Can  $NB = 40$ ? Explain your reasoning.



A school has fenced in an area in the shape of a scalene triangle to use for a new playground. The school wants to place a swing set where it will be the same distance from all three fences. Should the swing set be placed at the circumcenter or the incenter of the triangular playground? Explain.

Circumcenter  
of a Triangle

Incenter of a  
Triangle

Circumcenter  
Examples

Incenter  
Examples

