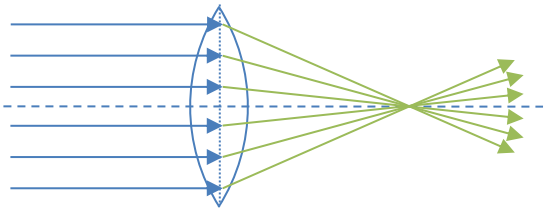
CONCEPT: RAY DIAGRAMS FOR CONVERGING LENSES

- When light strikes the surface of a mirror, it reflects – when light strikes the surface of a lens, it transmits
  - The transmitted light undergoes refraction

- CONVERGING LENSES, as the name implies, converges collimated light that passes through it



  - The point on the opposite side of the lens where the light converges is known as the _____
  - Because light can pass through either side of the lens, there is a focus on BOTH sides

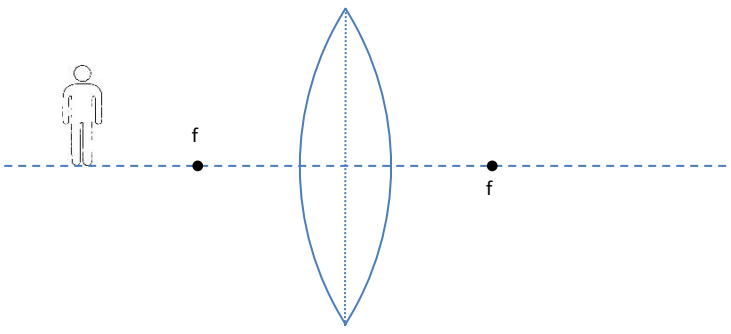
- The most common type of converging lens is the one shown above, known as a BICONVEX lens
  - Biconvex because it is a convex surface either way you look at it

- Just like with mirrors, RAY DIAGRAMS can be drawn to find information about images formed by lenses

- To draw RAY DIAGRAMS FOR CONVERGING LENSES, draw two of the following lines:

  1) A line parallel to the central axis, then through the lens towards _____
  2) A line through the near focus, then through the lens _____
  3) A line to the center of the lens that passes through _____

EXAMPLE: Draw the image location for the following converging lens. Is this image upright or inverted?

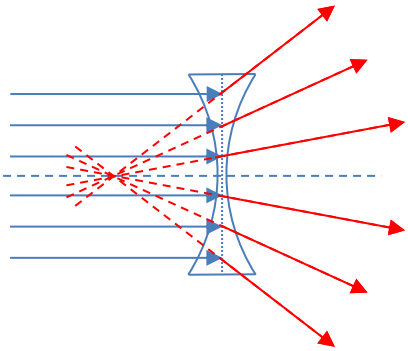


PRACTICE: IMAGE FORMATION WHEN OBJECT IS WITHIN FOCUS OF CONVERGING LENS

If an object is placed within the focus of a converging lens (it's at a distance of less than the focal length), will a real image form? If so, does it form at a distance less than or greater than the focal length?

CONCEPT: RAY DIAGRAMS FOR DIVERGING LENSES

● A diverging lens will never focus light, so it will only produce [REAL / VIRTUAL] images



● Remember! Light APPEARS to focus on a point, known as the _____

- Because light can pass through either side of the lens, one exists on both sides

● The most common type of diverging lens is the one shown above, known as a BICONCAVE lens

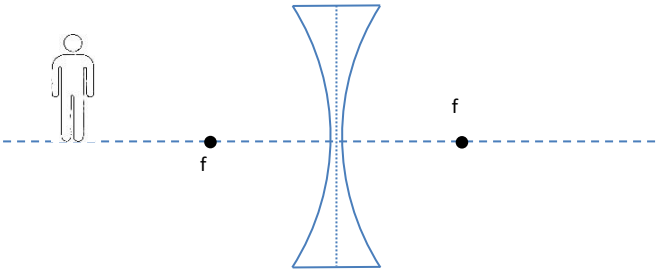
- Biconcave because it is a concave surface either way you look at it

● Just like with mirrors, RAY DIAGRAMS can be drawn to find information about images formed by lenses

● To draw RAY DIAGRAMS FOR DIVERGING LENSES, draw two of the following lines:

1) A line parallel to the central axis, then through the lens _____
2) A line towards the far focus, then through the lens and _____
3) A line to the center of the lens that passes through _____

EXAMPLE: Draw the image location for the converging lens. Is the image upright or inverted?



PRACTICE: IMAGE FORMATION WHEN OBJECT IS WITHIN FOCUS OF DIVERGING LENS

If an object is placed within the focus of a diverging lens (it's at a distance of less than the focal length), where will the image form? If so, does it form at a distance less than or greater than the focal length?