Lens Ray Diagrams

Calculate the image distance and size for each case. Enter these values in the data table.

Using unlined paper in landscape orientation, draw ray diagrams in order to find the image of each 2.0 cm object. Draw a double convex lens for the converging lenses and a double concave lens for the diverging lenses. Label the focus F on each side of the lens. Draw the three principal rays (rays through or toward focus refract parallel, parallel rays refract through or away from focus, and rays through optical center pass straight through) if possible. Measure the image size and distance. Record these values in the data table and compare with the calculated.

On your diagrams, classify each image as 1) **REAL** or **VIRTUAL**, 2) **UPRIGHT** or **INVERTED**, and 3) **REDUCED**, **ENLARGED**, or **SAME SIZE**.

Lens	Object Distance	Object size	Focal Length	Calculated		Measured	
				d_i	s_i	d_i	s_i
Converging	18.0 cm	2.0 cm	6.0 cm				
Converging	12.0 cm	2.0 cm	6.0 cm				
Converging	9.0 cm	2.0 cm	6.0 cm				
Converging	6.0 cm	2.0 cm	6.0 cm				
Converging	3.0 cm	2.0 cm	6.0 cm				
Diverging	15.0 cm	2.0 cm	-5.0 cm				
Diverging	10.0 cm	2.0 cm	-5.0 cm				
Diverging	7.0 cm	2.0 cm	-5.0 cm				
Diverging	4.0 cm	2.0 cm	-5.0 cm				
Diverging	1.0 cm	2.0 cm	-5.0 cm				

*** Notice that the focal length of a diverging lens is negative.***