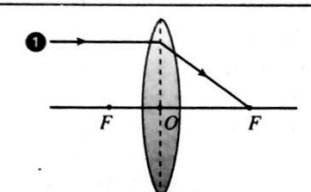
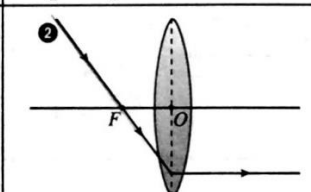
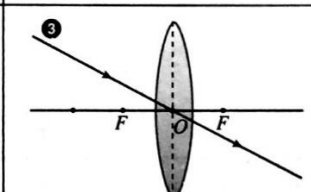


Signature:

Name:

Marks:

Ray Diagrams for Lenses Worksheet

Concave lens			
Ray	Ray ①	Ray ②	Ray ③
Incident ray	A ray moves in parallel to the principal axis.	A ray passes through F .	A ray passes through O .
Refracted ray	The ray is refracted inwards to converge at F .	The ray is refracted parallel to the principal axis	The ray is not refracted.
Ray diagram			

Draw the image formed from the object and state the image characteristics (Length of axis is 15 cm)

[You'll need a ruler and pencil]

Signature: Name: Marks:

Position of object	Ray diagram	Characteristics and position of image	Application
<ul style="list-style-type: none"> Between F and P $u < f$ 		<ul style="list-style-type: none"> Image is behind the object and on the same side of the lens ($v > f$). Virtual Upright Magnified On the same side as the object 	Magnifying lens
<ul style="list-style-type: none"> Object, is at F $u = f$ 		<ul style="list-style-type: none"> Image is at infinity ($v = \infty$). Virtual Upright Magnified On the same side as the object 	Eyepiece of telescope
<ul style="list-style-type: none"> Between F and $2F$ $f < u < 2f$ 		<ul style="list-style-type: none"> Image is beyond $2F$ ($v > 2f$). Real Inverted Magnified Opposite side of the object 	Objective lens of microscope
<ul style="list-style-type: none"> Object is at $2F$ $u = 2f$ 		<ul style="list-style-type: none"> Image is formed at $2F$ ($v = 2f$). Real Inverted Same size Opposite side of the lens at $2F$ ($v = 2f$). 	Photocopying machine
<ul style="list-style-type: none"> Object is beyond $2F$ $u > 2f$ 		<ul style="list-style-type: none"> Image is between F and $2F$ ($f < v < 2f$). Real Inverted Diminished in size Opposite side of the lens) 	Lens of camera
<ul style="list-style-type: none"> Object is at infinity $u = \infty$ 		<ul style="list-style-type: none"> Image is at F ($v = f$). Real Inverted Diminished Opposite side of the lens 	Objective lens of telescope