1.

1, principle axis

2. Center of curvature

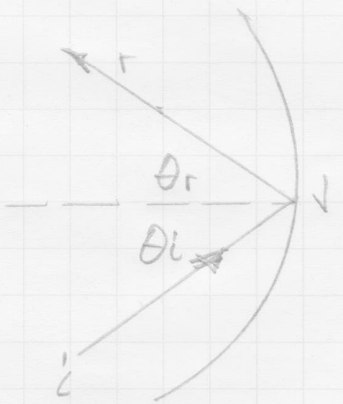
3. Focal point

4, Vertex

5, Spherical mirror

2. Spoon contains a concave mirror and a convex mirror.

3.



Since the ray hits the vertex the angle between the incident & reflected rays is twice the incident angle

$\boxed{2\theta_i}$

4. A distant object implies parallel incident rays. Parallel rays focus at the focal point 20cm from the vertex. $R = 2f = 2(20\text{cm})$

$$\boxed{R = 40\text{cm} = 0.40\text{m}}$$

5. Parabolical mirrors focus all parallel rays to a common focal point even those far off axis with a large angle of incidence. Spherical mirrors on the other hand do not focus all rays to a common focal point. Rays far off axis with a wide angle of incidence will focus closer to the vertex than central rays. This is called spherical aberration.

6. $R = 30\text{cm}$ The rays will cross the principle axis at the focal point, f.

$$f = \frac{R}{2} = \frac{30\text{cm}}{2} = 15\text{cm}$$

$$\boxed{f = 15\text{cm} = 0.15\text{m}}$$

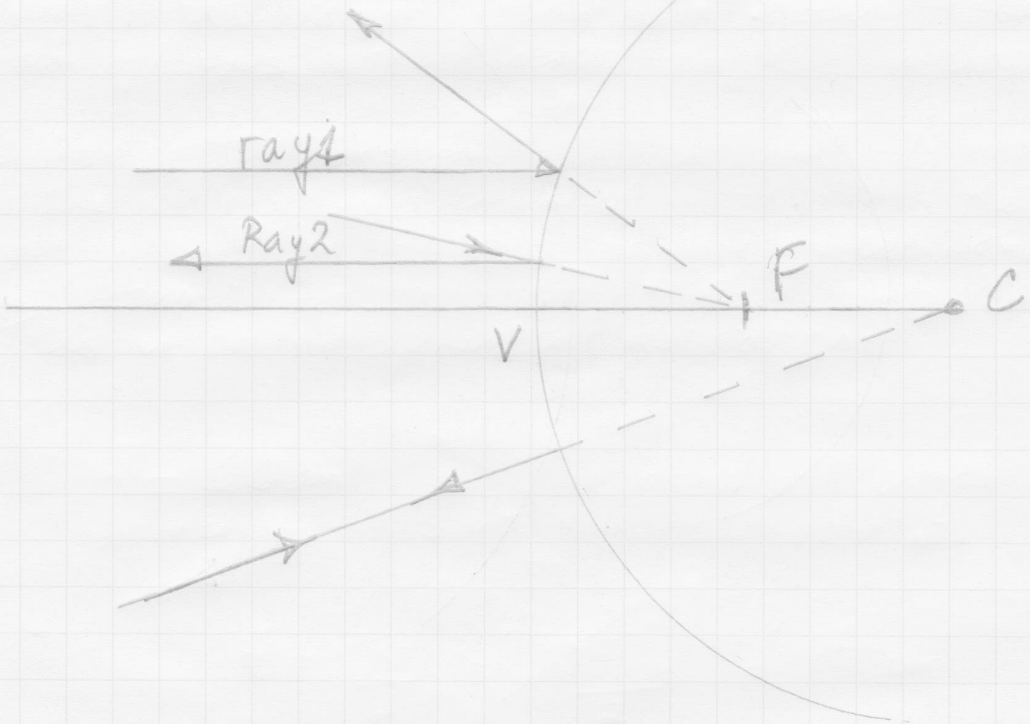
7 A. The ray returns back through C.

B. The ray reflects and passes through F.

C. The ray reflects and leaves parallel to the principle axis.

D. The ray reflects & passes through F.

8.



C - center of curvature

F - focal point

V - vertex

9.

A. Reflected ray returns parallel to principle axis.

B. Reflects on a line between the focal point F and the point where the ray hits the mirror.

C. Reflects back on itself along a line between C and the point where the ray hits the mirror

D. Reflects on a line between the focal point F and the point where the ray hits the mirror.