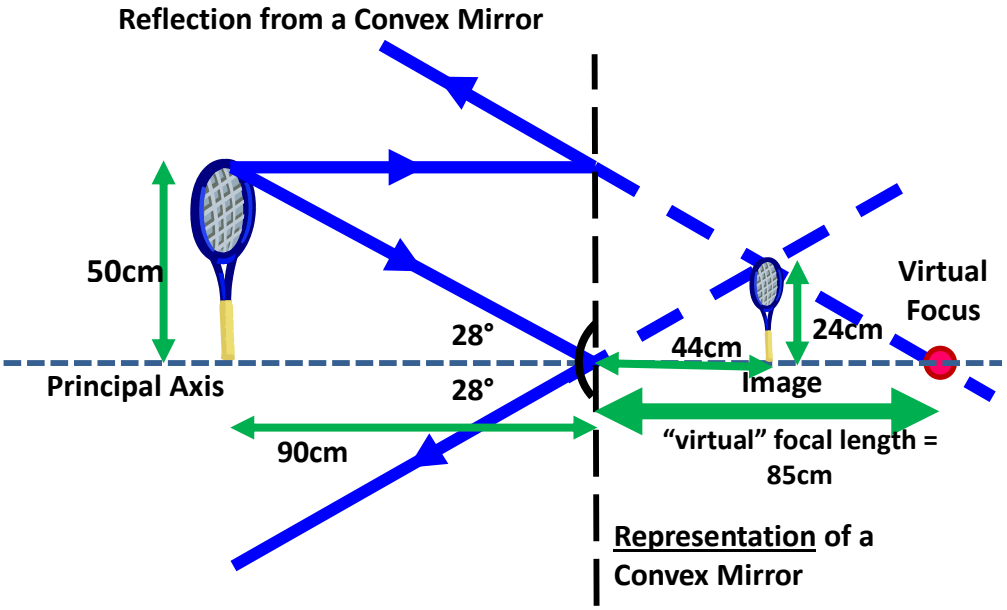
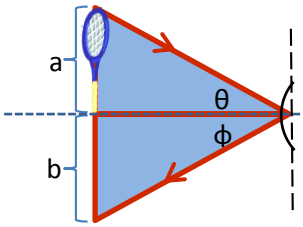
Shedding Light on Curved Mirrors Extension Worksheet Name: _____

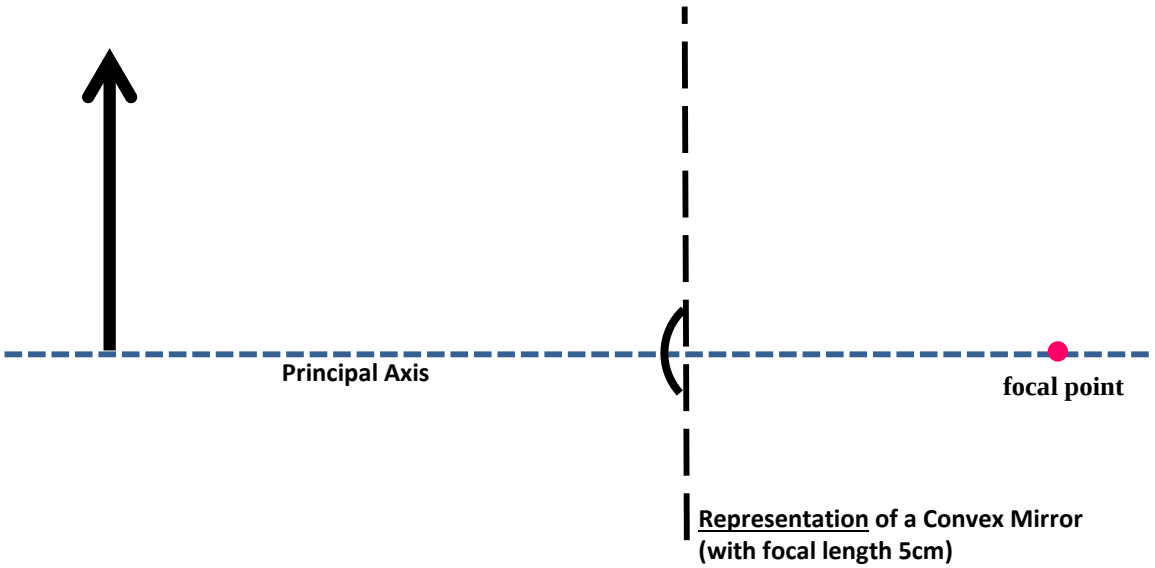


magnification = $\frac{height\ of\ image}{height\ of\ object} = \frac{24cm}{50cm} = 0.48$



Hint: you don't need a protractor to accurately draw the ray that reflects from the vertex of the mirror. Simply measure the height of the object, draw a dot the same distance below the principal axis, and then draw in the reflected ray from the vertex to the dot. In the diagram on the left, you can see that if the two lengths "a" and "b" are the same, then the two angles θ and ϕ are the same, too.

Question 1. A 4cm-tall arrow sits 7.5cm from a convex mirror of focal length 5cm. Using ray diagrams, determine the position and the height of the arrow's image in the mirror.



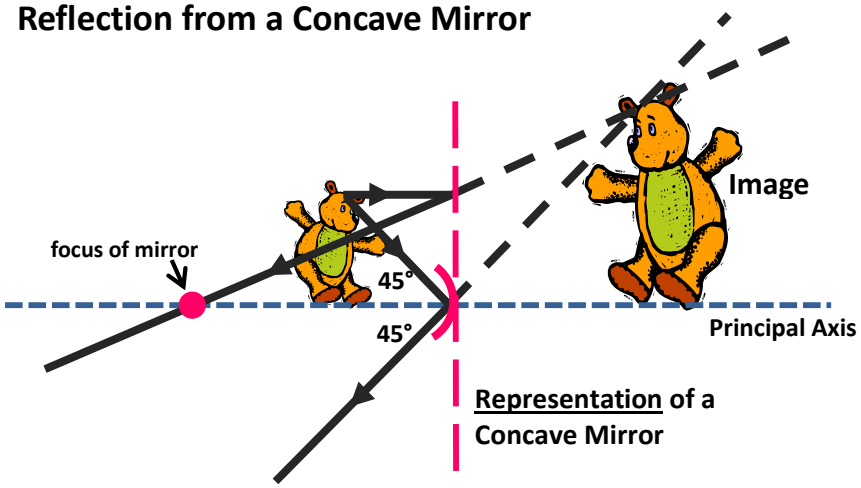
(a) Height of arrow's image: _____

(b) Distance of arrow's image behind mirror: _____

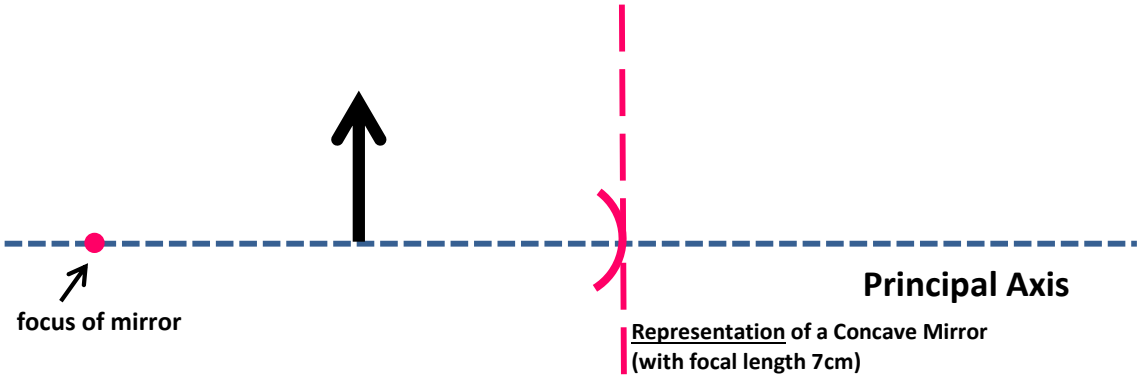
(c) Magnification ($\frac{height\ of\ image}{height\ of\ object}$) = _____ =

The word "magnification" in everyday use refers to something being enlarged. However, in scientific language, "magnification" can mean any change in size. A magnification of more than one means the object appears larger, a magnification of between 0 and 1 (like 0.5, for example) means the object appears smaller, or diminished.

Reflection from a Concave Mirror



Question 2: A 2cm-tall arrow sits 3.5cm from a concave mirror of focal length 7cm. Using ray diagrams, determine where the image of the arrow will appear in the mirror, its height, and the magnification.



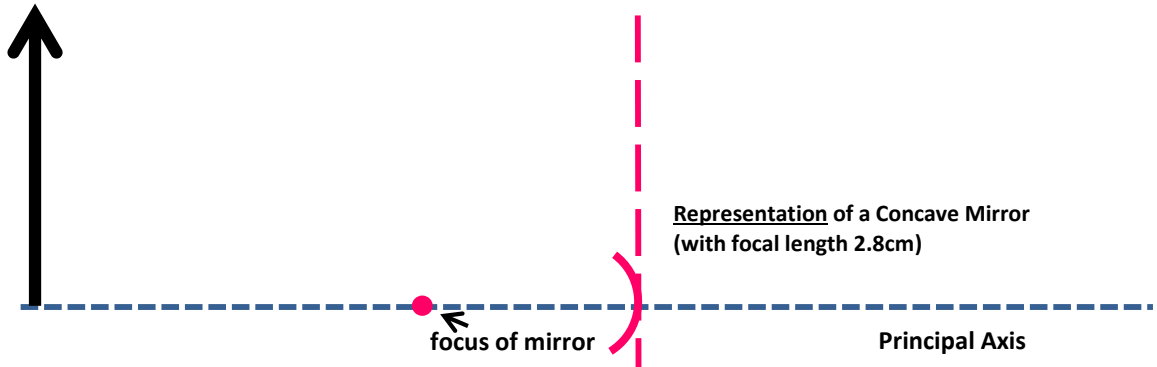
(a) Height of arrow's image: _____

(b) Distance of arrow's image behind mirror: _____

(c) Magnification ($\frac{height\ of\ image}{height\ of\ object}$) = _____ =

Question 3: (In this question, the mirror will form a different type of image to the example above.)

A 4cm-tall arrow sits 8cm from a concave mirror of focal length 2.8cm. Using ray diagrams, determine where the image of the arrow will appear, its height, and the magnification.



(a) Height of arrow's image: _____

(b) Distance of arrow's image from mirror: _____

(c) Magnification ($\frac{height\ of\ image}{height\ of\ object}$) = _____ =