

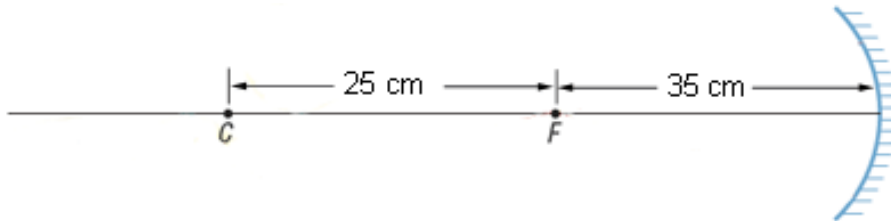


**Part 1: Knowledge and Understanding. Circle the correct answer.**

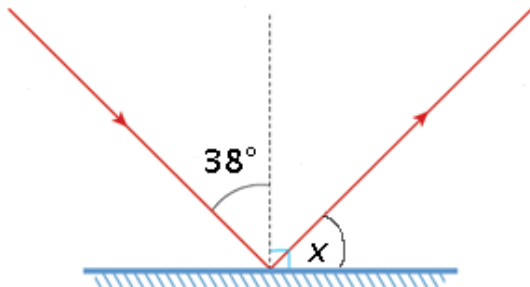
**Multiple Choice(1 mark each)**

*Identify the letter of the choice that best completes the statement or answers the question.*

1. The focus of a concave mirror is 35 cm from the vertex, and its centre is 60 cm from the vertex. Where would you place an object in order to have the mirror reflect a virtual image rather than a real image?



- a. 30 cm from the vertex  
b. 45 cm from the vertex  
c. 60 cm from the vertex  
d. 75 cm from the vertex
2. You are holding a flashlight so the beam strikes a plane mirror at an incident angle of  $38^\circ$ . What is the measure of angle  $x$  between the reflected light ray and the mirror?

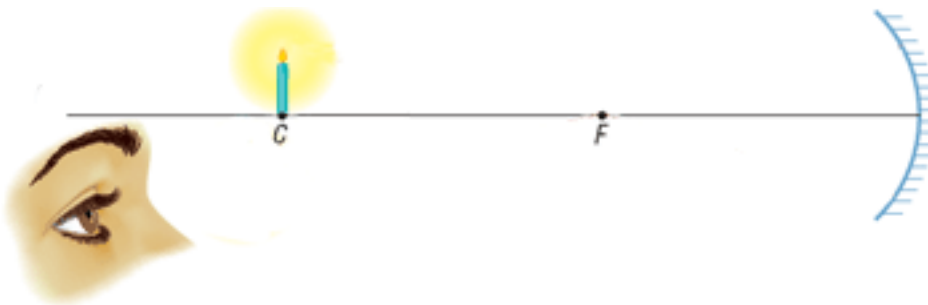


- a.  $38^\circ$   
b.  $52^\circ$   
c.  $90^\circ$   
d.  $155^\circ$
3. Where will the image of this object be located?



- a. at  $F$   
b. between  $F$  and  $C$   
c. between  $F$  and  $V$   
d. at  $C$
4. Which kind of mirror would you put at the end of your driveway in order to let you see as wide a view of the street as possible?

- a. converging mirror
  - b. diverging mirror
  - c. plane mirror
  - d. combination of mirrors
5. A company wants to make glow-in-the-dark toys. They coated the toys with a fluorescent material. They are very bright in daylight, but do not glow in the dark. What should the company do?
- a. Leave the toys in sunlight longer.
  - b. Keep the toys away from sunlight.
  - c. Coat the toys with phosphorescent material.
  - d. Coat the toys with material that gets incandescent when heated.
6. Which of the following is associated with heat?
- a. triboluminescence
  - b. fluorescence
  - c. phosphorescence
  - d. incandescence
7. Which of the following is luminous?
- a. a tree
  - b. the Moon
  - c. a book
  - d. a fire
8. An object is placed at C. What kind of image will this situation produce?



- a. real, upright, same size as the original
  - b. real, inverted, smaller the original
  - c. real, inverted, same size as the original
  - d. virtual, upright, same size as the original
9. What is a *normal* line?
- a. A line that is perpendicular to the angle of incidence,
  - b. A line that is perpendicular to the angle of reflection.
  - c. A line that is perpendicular to the reflecting surface.
  - d. A line that is parallel to the angle of incidence.
10. A convex mirror has a wider field of view than a plane mirror because the reflected image
- a. is virtual
  - b. appears to be behind the mirror
  - c. is not inverted, as images in concave mirrors are
  - d. is reduced, which allows more of it to fit into the mirror



3. Draw the image as it would appear in a plane mirror and complete the **SALT** (size, attitude, location and type) image below (5 marks):



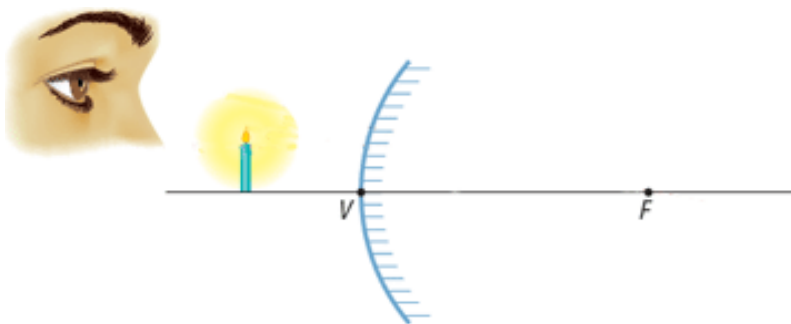
Size:

Attitude:

Location:

Type:

4. Draw the image that would result from this reflection in a diverging mirror. (3 marks)



### Part 3: Application

*For the following questions, write the most appropriate answer in the space provided.*

1. **Provide** and **describe** 1 application (uses) for **convex** mirrors. (2 marks)
  
  
  
  
  
  
  
  
  
  
2. **Provide** and **Describe** 2 applications that make use of **total internal reflection** of light (3 marks)

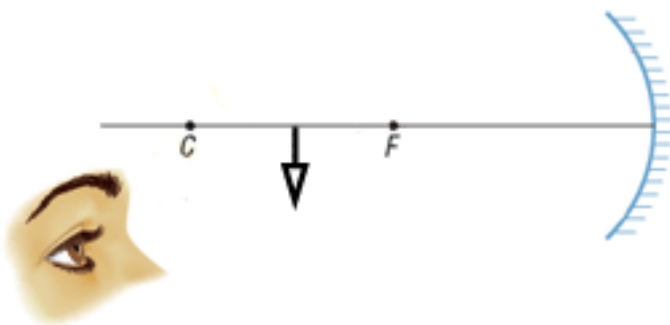
3. How would you explain to a friend why a soda straw in a container of water looks bent? Include a diagram in your explanation. (4 marks)

**Part 4: Communication**

*For the following questions, write the most appropriate answer in the space provided.*

1. How is an image in a plane mirror different from an image in a concave mirror? (2 marks)

2. The **image** of an arrow-shaped object is shown. Is the arrow-shaped object that created this image pointing up or down? How do you know? (2 marks)



3. Complete the table for an object placed in a concave mirror. (8 marks)

<b>OBJECT</b>	<b>IMAGE</b>			
<b>Location</b>	<b>Size</b>	<b>Attitude</b>	<b>Location</b>	<b>Type</b>
beyond $C$				
at $C$				
between $C$ and $F$				
inside $F$				