Science 8

Review: Lenses & Mirrors

Name:
Date:
Block:

1. Determine whether the following objects are transparent, translucent or opaque:

a) pencil: Opaque

b) smoke: Translucent

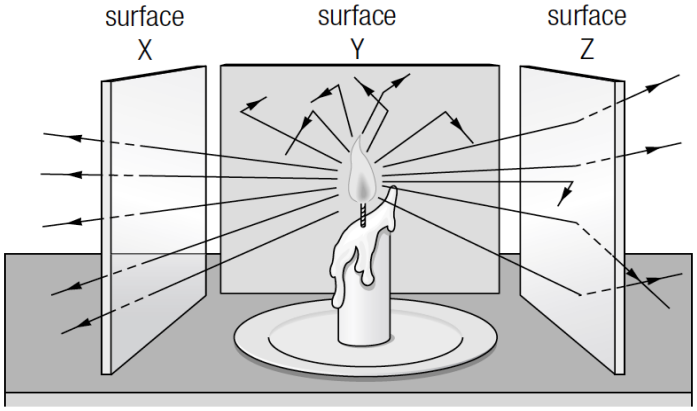
c) mirror: Opaque

d) wax paper: Translucent

e) car window: Transparent

f) contact lenses: Transparent

2. Looking at the picture below, describe how the light behaves for each of the surfaces in the diagram above:



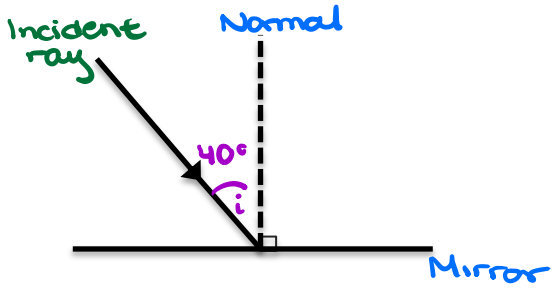
Surface:	Answers:	Descriptors:
X	B F G	A. Absorbs light B. Allows all light to pass through C. Scatters light D. Opaque E. Translucent F. Transparent G. Objects seen clearly on other side H. Objects not seen distinctly on other side I. Objects not viewable on other side
Y	A D I	
Z	C E H	

3. In the space below, state the Law of Reflection:

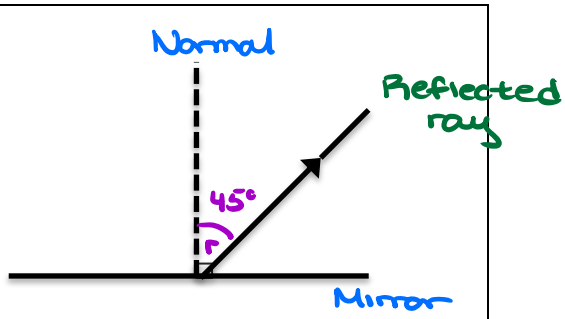
The angle of incidence equals the angle of reflection

4. Label the following diagrams with:
    - Normal
    - Mirror
    - Incident ray or reflected ray
    - Angle of incidence or angle of reflection
    - Measurement of angle of incidence or angle of reflection.

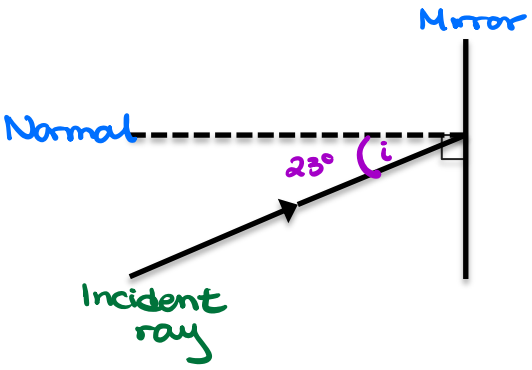
A.



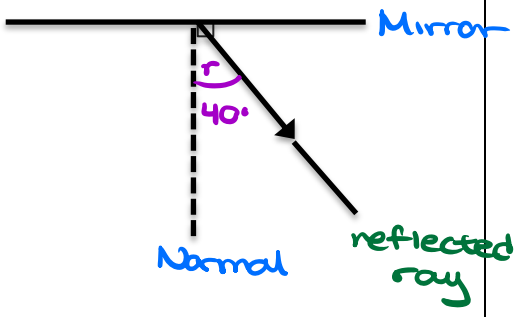
B.



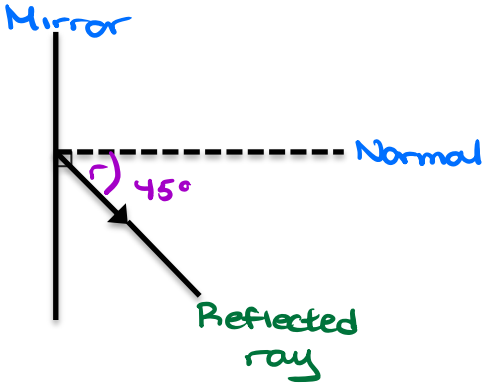
C.



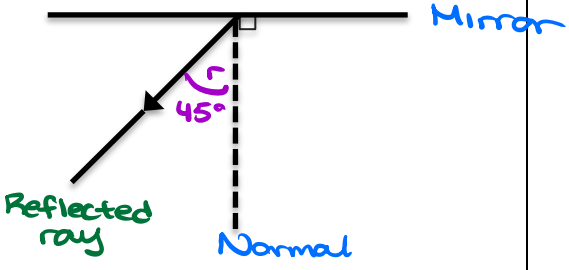
D.



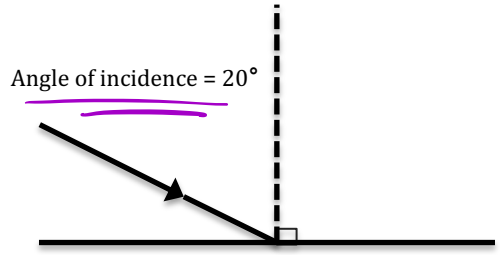
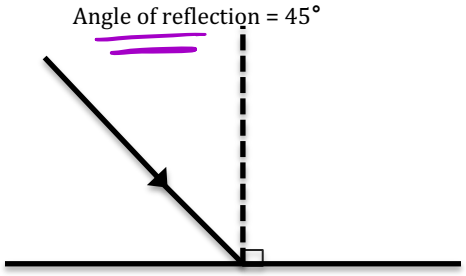
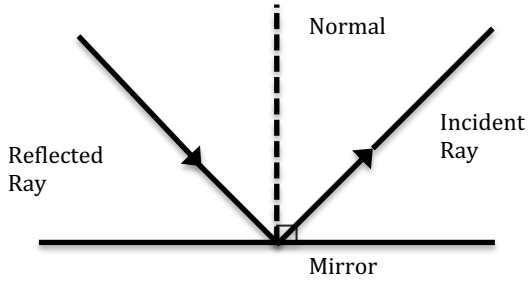
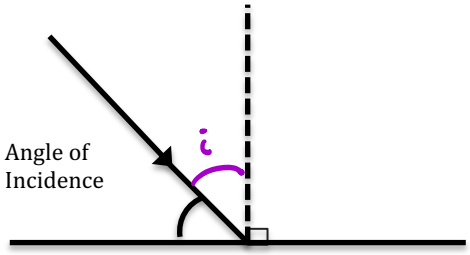
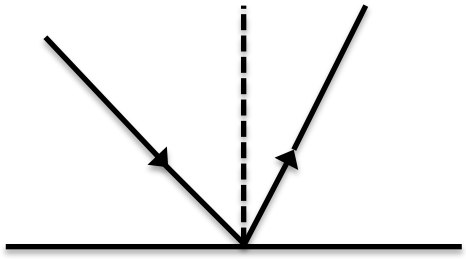
E.



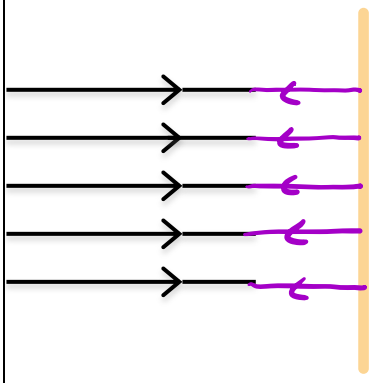
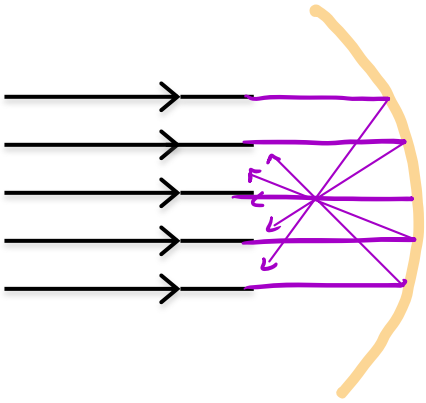
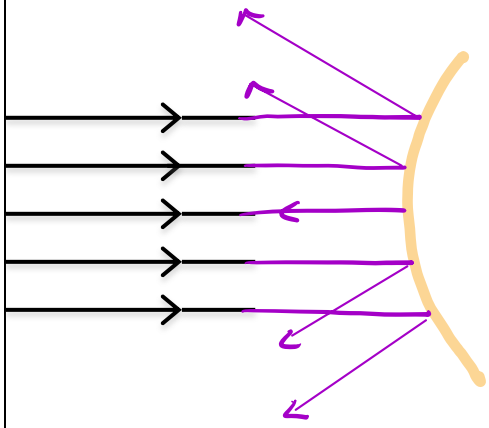
F.



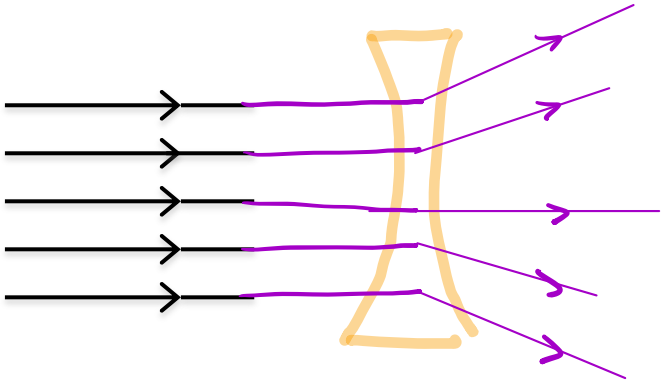
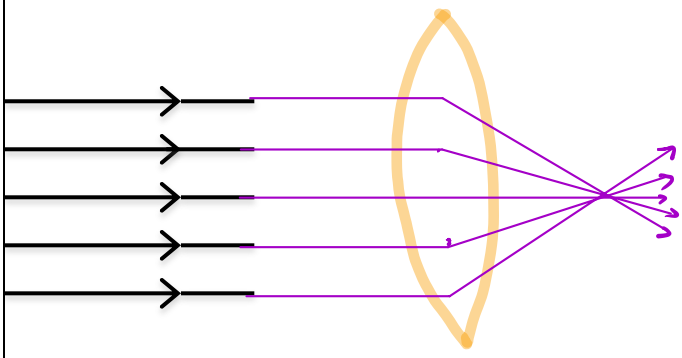
5. What is wrong with this diagram? In the right column, explain what the error is and provide a correction.

A.  	Angle measured incorrectly Angle = 63°
B.  	Angle of incidence NOT angle of reflection
C.  	Reflected and incident ray are switched
D.  	Angle should be measured between normal and incident ray
E. 	Angle of incidence does not equal angle of reflection

6. In the space below, sketch what happens when the light rays hit the following mirrors.

Plane mirror	**Concave mirror**	**Convex mirror**
		
Circle one of the following:		
Converge Diverge Neither	Converge Diverge Neither	Converge Diverge Neither
When object is **close**, the image looks:		
Upright Upside down	Smaller Larger No change	Upright Upside down	Smaller Larger No change	Upright Upside down	Smaller Larger No change
When object is **far**, the image looks:		
Upright Upside down	Smaller Larger No change	Upright Upside down	Smaller Larger No change	Upright Upside down	Smaller Larger No change

7. In the space below, sketch what happens when the light rays hit the following lenses.

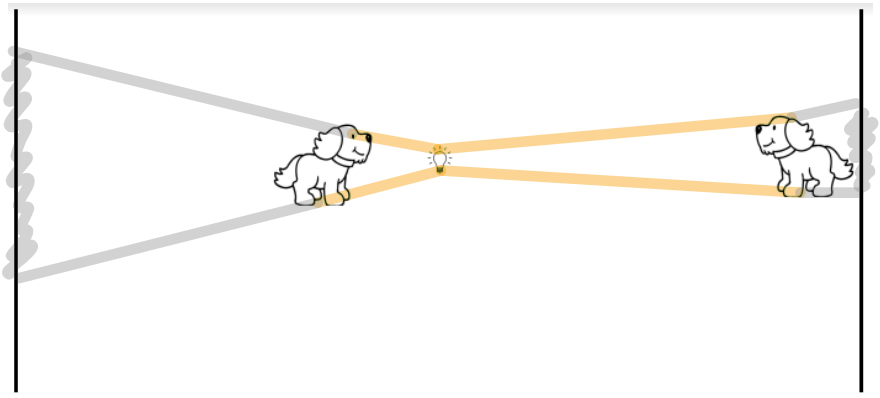
Concave lens	**Convex lens**
	
Circle one of the following:	
Converge Diverge Neither	Converge Diverge Neither

When object is **close**, the image looks:			
Upright Upside down	Smaller Larger No change	Upright Upside down	Smaller Larger No change
When object is far, the image looks:			
Upright Upside down	Smaller Larger No change	Upright Upside down	Smaller Larger No change

8. Match the term with the descriptor. Each descriptor can only be used once.

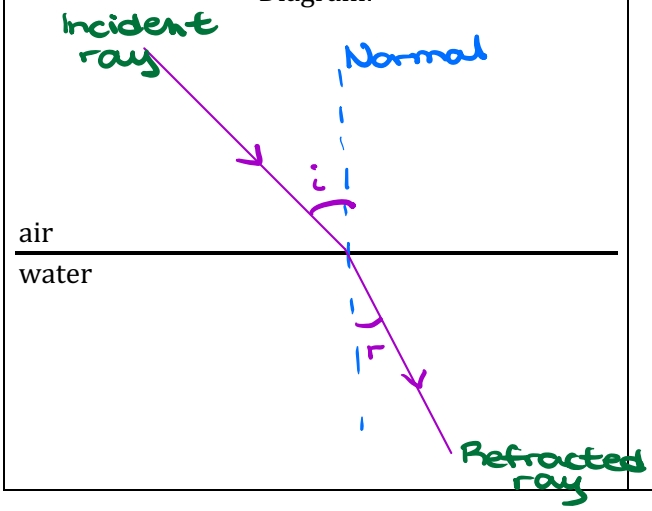
Term	Descriptor
B lens	A. Equal to angle of reflection for a plane mirror
E focal length	B. A piece of transparent material that bends light
F convex lens	C. Light rays spreading apart
Q concave lens	D. Material that scatters light
C diverging	E. The distance between the lens and the focal point
O converging	F. A lens that is thicker in the middle than at the edge
K upright	G. How an image appears when looking at a faraway object through a convex lens
G upside down	H. Material that curves inwards and reflects light
H concave mirror	I. Point where the converging light rays meet
T convex mirror	J. Material that is flat and smooth and reflects light
J plane mirror	K. How an image appears when looking through a concave lens
S opaque	L. Measured between the refracted ray and the normal
N transparent	M. A material that reflects light
D translucent	N. Material that allows all light rays to pass through
I focal point	O. Light rays coming together
P normal	P. An imaginary line that passes through the materials at a right angle
L angle of refraction	Q. A lens that is thinner in the middle than at the edge
R angle of reflection	R. Angle between reflected ray and the normal
A angle of incidence	S. Material that absorbs or reflects light
U ray model of light	T. Material that curves outwards and reflects light
M mirror	U. A representation of how light travels when it hits different material

9. Do shadows increase or decrease when an object is closer to a source of light? Use a ray diagram to confirm your answer below.



10. Draw what happens when light moves from **air to water** and answer the questions.
    - **Label** the incident ray, refracted ray, angle of incidence, angle of refraction and normal line. **Include arrows** to show direction

Diagram:



a) Circle the material that is more dense:

Air *Water*

b) As light moves from air to water it:

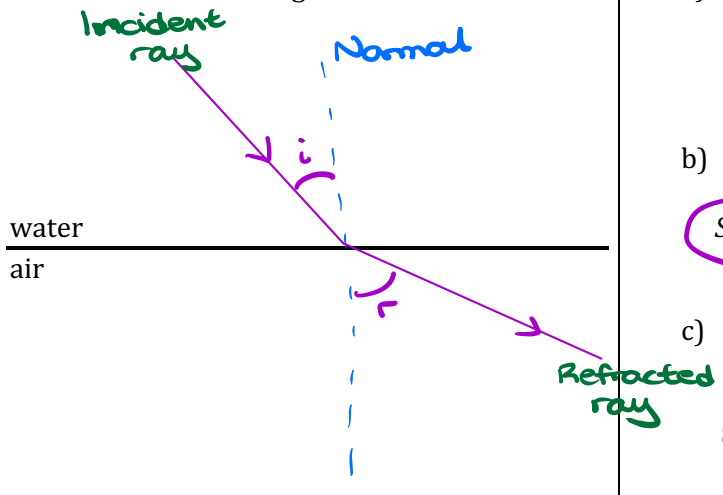
Speeds up *Slows down*

c) As light moves from air to water it bends _____ the normal:

towards *away from*

11. Draw what happens when light moves from **water to air.**
    - **Label** the incident ray, refracted ray, angle of incidence, angle of refraction and normal line. **Include arrows** to show direction

Diagram:



a) Circle the material that is more dense:

Air *Water*

b) As light moves from water to air it:

Speeds up *Slows down*

c) As light moves from water to air it bends _____ the normal:

towards *away from*

Lenses and Mirrors Quiz /28

- 13 Multiple Choice.
- 7 Written

Optics III
- Transparent
- Translucent
- Opaque.

Optics IV
- Law of Reflection
- Measuring angles.

Optics V
- Plane mirrors
- Concave mirrors
- Convex mirrors.

Optics VI
- Concave / Convex lenses
- Law of Refraction.