

JAWAPAN

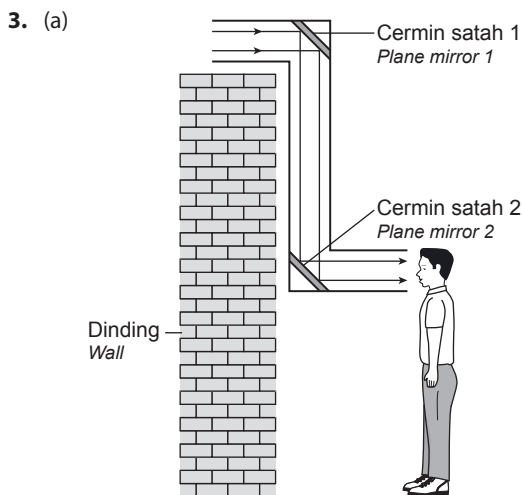
Bab 8 Cahaya dan Optik Light and Optics

8.1 Penggunaan Cermin The Use of Mirrors

- (a) S: Imej sah / Real image
T: Imej maya / Virtual image
- (b) Imej S / Image S:
(i) Sahih / Real
(ii) Songsang / Inverted
Imej T / Image T:
(i) Maya / Virtual
(ii) Tegak / Upright
- (c) (i)



- (ii) 4 cm
- (a) (i) Cermin cekung / Concave mirror
(ii) Cermin cembung / Convex mirror
(iii) Cermin satah / Plane mirror
(b) (i) Cermin satah, imej, luas
plane mirror, image, spacious
(ii) Cermin cembung, cermin keselamatan
convex mirror, security mirror
(iii) Cermin cekung, besar, dekat
concave mirror, bigger, closer



- (b) Cahaya, memantulkan, mata
light, reflects, eye

8.2 Sifat Cahaya Properties of Light

- (a) (i) lebih laju / faster
(ii) selepas / after

- (b) (i) lurus / straight line
(ii) Bayang-bayang, legap / Shadows, opaque
- (c) (i) dipantulkan / reflected
(ii) pantulan / reflection
- (d) (i) dibiaskan / refracted
(ii) bengkok / bent

8.3 Pantulan Cahaya Reflection of Light

- (a) Benar / True
(b) Palsu / False
(c) Benar / True
(d) Benar / True
2. **Hipotesis:** Sudut tuju, i adalah sama dengan sudut pantulan, r .

Hypothesis: The angle of incidence, i is the same as the angle of reflection, r .

Pemboleh ubah / Variables:

- (a) Sudut tuju, i / Angles of incidence, i
(b) Sudut pantulan, r / Angle of reflection, r

Bahan dan radas: Cermin satah, kotak sinar, kertas putih dan protractor

Materials and apparatus: Plane mirror, ray box, white paper and protractor

Keputusan / Results:

Sudut tuju, i (°) Angle of incidence, i (°)	Sudut pantulan, r (°) Angle of reflection, r (°)
10	10
30	30
50	50

Perbincangan / Discussion:

- dipantulkan / reflected
- (a) X: Sinar tuju / Incident ray
Y: Sinar pantulan / Reflected ray
(b) Sudut tuju / Angle of incidence, $i = 35^\circ$
Sudut pantulan / Angle of reflection, $i = 35^\circ$
- (a) sama / equal
(b) satah yang sama / the same plane

Kesimpulan / Conclusion:

- diterima / accepted
- sama / equal
- AMBULANS, songsang sisi / AMBULANCE, laterally inverted

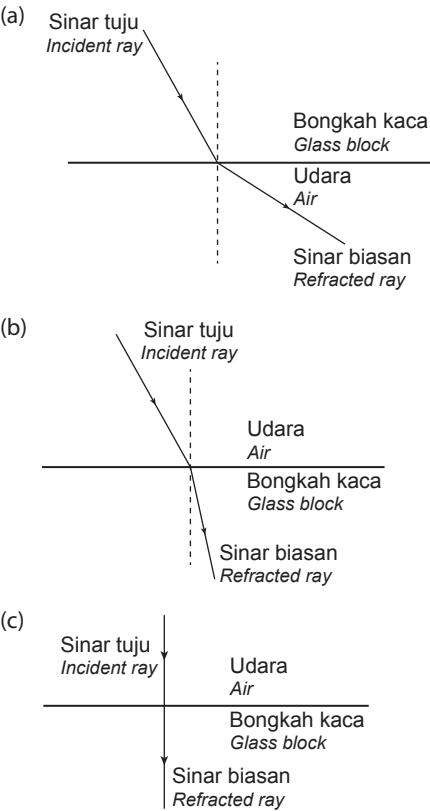
8.4 Pembiasan Cahaya Refraction of Light

- (a) berlainan / different
(b) mendekati / towards
(c) menjauhi / away from
(d) tidak terbias / not refracted

2. **Hipotesis:** bertambah
Hypothesis: increases
- Pemboleh ubah / Variables:**
- (a) Sudut tuju, *i* / Angles of incidence, *i*
 - (b) Sudut biasan, *r* / Angle of refraction, *r*
 - (c) Saiz bongkah kaca / Size of the glass block

Keputusan / Results:

Sudut tuju, <i>i</i> Angle of incidence, <i>i</i>	50°	40°	30°	20°	10°	0°
Sudut pantulan, <i>r</i> Angle of reflection, <i>r</i>	Jawapan murid / Student's answer					



Kesimpulan / Conclusion:

- 1. diterima / accepted
 - 2. bertambah / increases
3. (a) pembiasan cahaya, halaju, ketumpatan
refraction of light, velocity, densities
- (b) (i) Kelipan bintang
Twinkling of stars
- (ii) Kolam renang kelihatan cetek daripada kedalaman sebenar
A swimming pool looks shallower than real

8.5 Penyebaran Cahaya
Dispersion of Light

1. (a) tujuh, kelajuan, kelajuan, penyebaran cahaya, kurang
seven, speed, speed, dispersion of light, least
- (b)
- | | | | | | | |
|---------------------|-------------------------|-------------------------|-----------------------|---------------------|-------------------------|-----------------------|
| Merah
<i>Red</i> | Jingga
<i>Orange</i> | Kuning
<i>Yellow</i> | Hijau
<i>Green</i> | Biru
<i>Blue</i> | Indigo
<i>Indigo</i> | Ungu
<i>Violet</i> |
|---------------------|-------------------------|-------------------------|-----------------------|---------------------|-------------------------|-----------------------|
- (c) (i) Pelangi / *Rainbow*
- (ii) prisma, dibias, disebarkan
prism, refracted, dispersed

8.6 Penyerakan Cahaya
Scattering of Light

- 1. (a), (b)
- 2. dihalang, dipantulkan / *blocked, reflected*
- 3. biru, berselerak, atmosfera
blue, scattering, atmosphere
- 4. biru, dipancarkan, tersebar
blue, radiated, scattered
- 5. mengufuk, merah, jingga, biru
horizontally, Red, orange, blue

8.7 Penambahan dan Penolakan Cahaya
Addition and Subtraction of Light

- 1. (a) asas / *basic*
- (b) P: Kuning / *Yellow*
Q: Magenta / *Magenta*
R: Sian / *Cyan*
- (c) Putih / *White*

2. (a)	Warna diserap <i>Absorbed colour</i>
	Semua warna kecuali biru <i>All colours except blue</i>
	Warna dipantul <i>Reflected colour</i>
	Biru <i>Blue</i>

biru / *blue*

(b)	Warna diserap <i>Absorbed colour</i>
	Semua warna kecuali magenta, merah dan biru <i>All colours except magenta, red and blue</i>
	Warna dipantul <i>Reflected colour</i>
	Magenta, merah dan biru <i>Magenta, red and blue</i>

magenta / *magenta*

(c)	Warna diserap <i>Absorbed colour</i>
	Tiada <i>None</i>
	Warna dipantul <i>Reflected colour</i>
	Semua warna <i>All colours</i>

putih / *white*

(d)

Warna diserap <i>Absorbed colour</i>
Semua warna <i>All colours</i>

Warna dipantul <i>Reflected colour</i>
Tiada <i>None</i>

hitam / black

3. (a) Merah / Red
(b) Sian / Cyan
(c) Hijau / Green

Power PT3

Bahagian A

1. C 2. D 3. C 4. B 5. B
6. A

Bahagian B

1. (a) Maya / Virtual
Tegak / Upright
(b)



Bahagian C

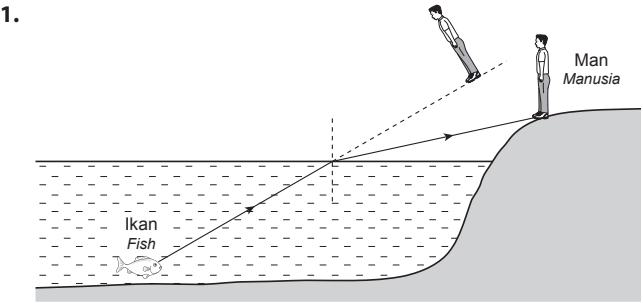
2. (a) (i) Penyebaran cahaya ialah proses penguraian cahaya putih kepada komponen warnanya melalui pembiasan cahaya.
Dispersion of light is the splitting of white light into its component colours.
(ii) Memisahkan cahaya kepada tujuh warna.
To separate the light into seven colours
(iii) Spektrum / Spectrum

- (iv) Pelangi mempunyai warna kerana penyebaran cahaya yang membentuk pelangi adalah bergantung kepada kelajuan cahaya yang dibiaskan.
A rainbow has colours as the dispersion of light that forms the rainbow is dependent on the speed of refracted light.
(b) (i) Semua warna cahaya diserap oleh baju kecuali cahaya merah, hijau dan kuning. Cahaya merah, hijau dan kuning dipantulkan. Pertindihan warna merah dan hijau menyebabkan baju berwarna kuning.
All light colours are absorbed by the shirt except red, green and yellow lights. Red, green and yellow lights are reflected. Overlapping of red and green colours causes the shirt to be yellow.
(ii) Semua warna cahaya dipantul. Semua warna ini bertindih menyebabkan baju berwarna putih.
All light colours are reflected. All these colours overlap causing the shirt to be white.

PRAKTIS TIMSS / PISA

1. Kilat adalah cahaya manakala guruh adalah bunyi. Cahaya bergerak lebih laju daripada bunyi.
Lightning is a light whereas thunder is a sound. Light travels much faster than sound.
2. Baju itu menyerap cahaya berwarna merah.
The shirt absorbs the red light.

Power KBAT



2. 0.50 m s⁻¹