**MARKING SCHEME**

**GATUNDU EVALUATION 2019 EXAMINATION PHYSICS PAPER 232/2**

**232/2**

**PHYSICS**

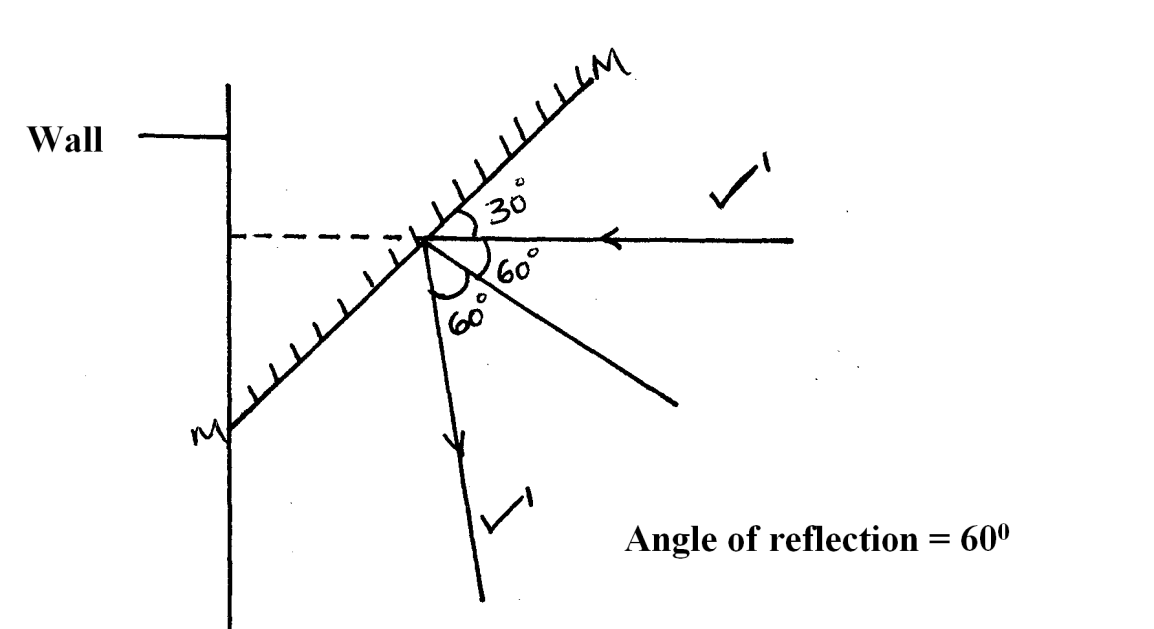
**PAPER 2**

**JULY / AUGUST, 2019**

**2 HOURS**

**SECTION A (25MARKS)**

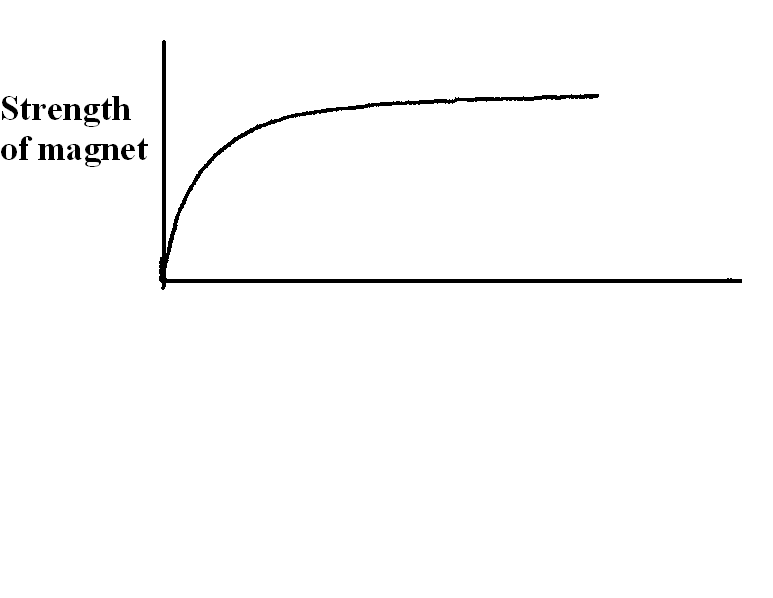
1. a)



b) When moon covers the sun it obstructs both the light and heat since both move with same velocity.✔

1. A is **positively** charge while B is **negatively** charged
2. **Circuit A, internal resistance in** **circuit** A is less than in circuit B and **same current flow** **through bulbs in A** while current divide in B through the bulbs.
3. (i) South

(ii)



No of stroke

1. 

1. Arsenic shares 4 of its 5 electrons with germanium ✓ and the extra electron is free for conduction. ✓
2. r =beta particle, c=206 d= 82
3. a) - Galvanometer shows defection ✔1

Reason; When UV radiation energy falls on a metal surface, some electrons absorb this energy and are dislodged from the surface. ✔1 deflection shows current flow.

b) - Galvanometer shows no deflection ✔1mk

1. Daily consumption = 4 x 40 + 6 x100 x5

1000 1000

= (0.16 + 0.6) x5 = 3.8 KW✔

Monthly consumption = 3.8 x30

= 114KW or units✔

Monthly bill = 150 + 114 x 5.5

= 150 + 627 = sh. 777✔

1. Infrared ✔– Source of heat, used for photography✔
2. a) Frequency remains CONSTANT ***✔1***

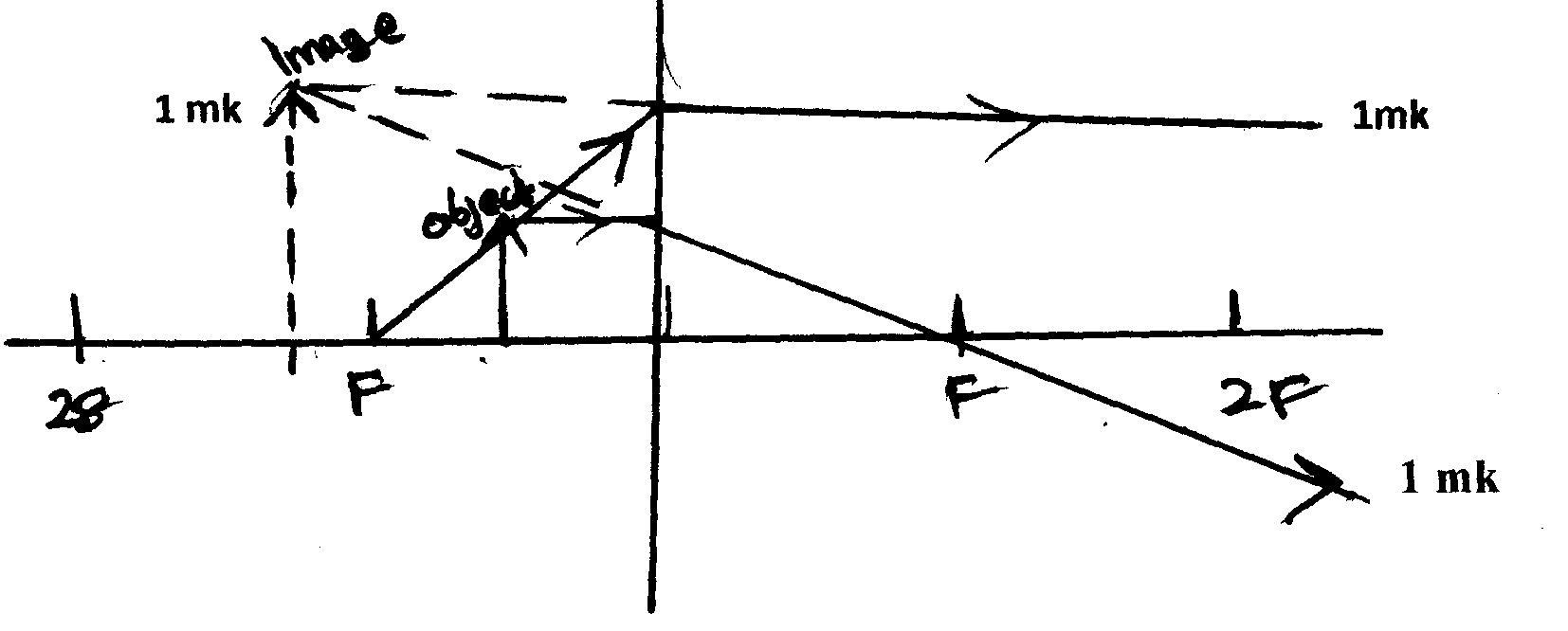
b) V = λf

24cm/s = f × 8cm ***✔1***

f = 3Hz ***✔1***

1. **Wider field of view, upright** disadvantage is that the image is smaller

**SECTION B (55 MARKS)**



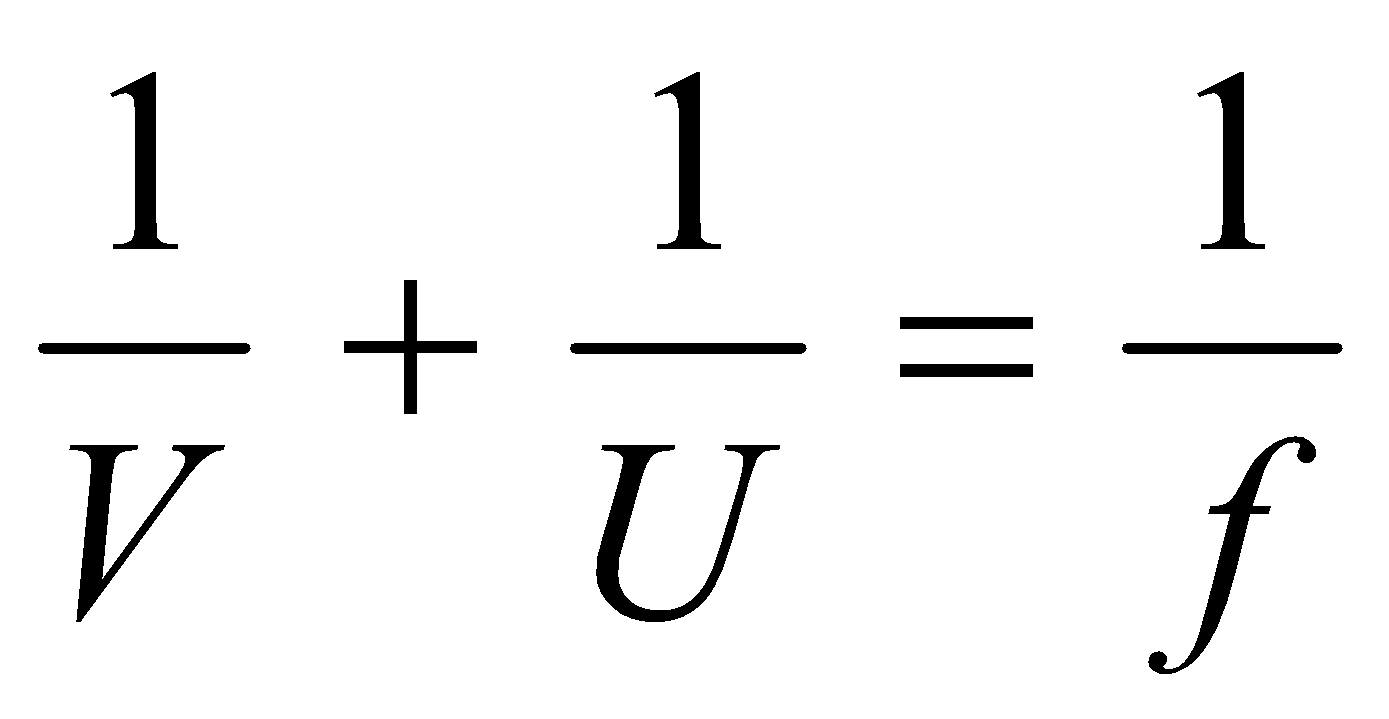
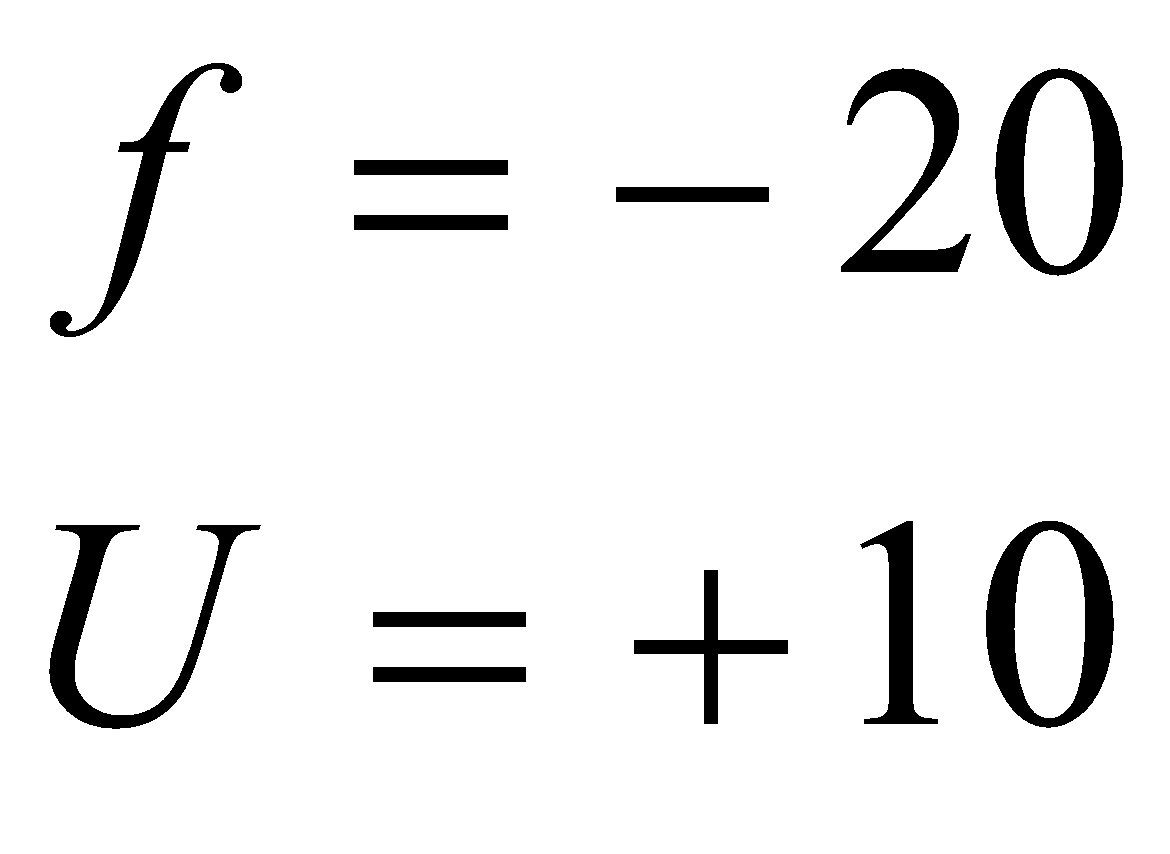
(a) Virtual, magnified and on the same side as object . Any two

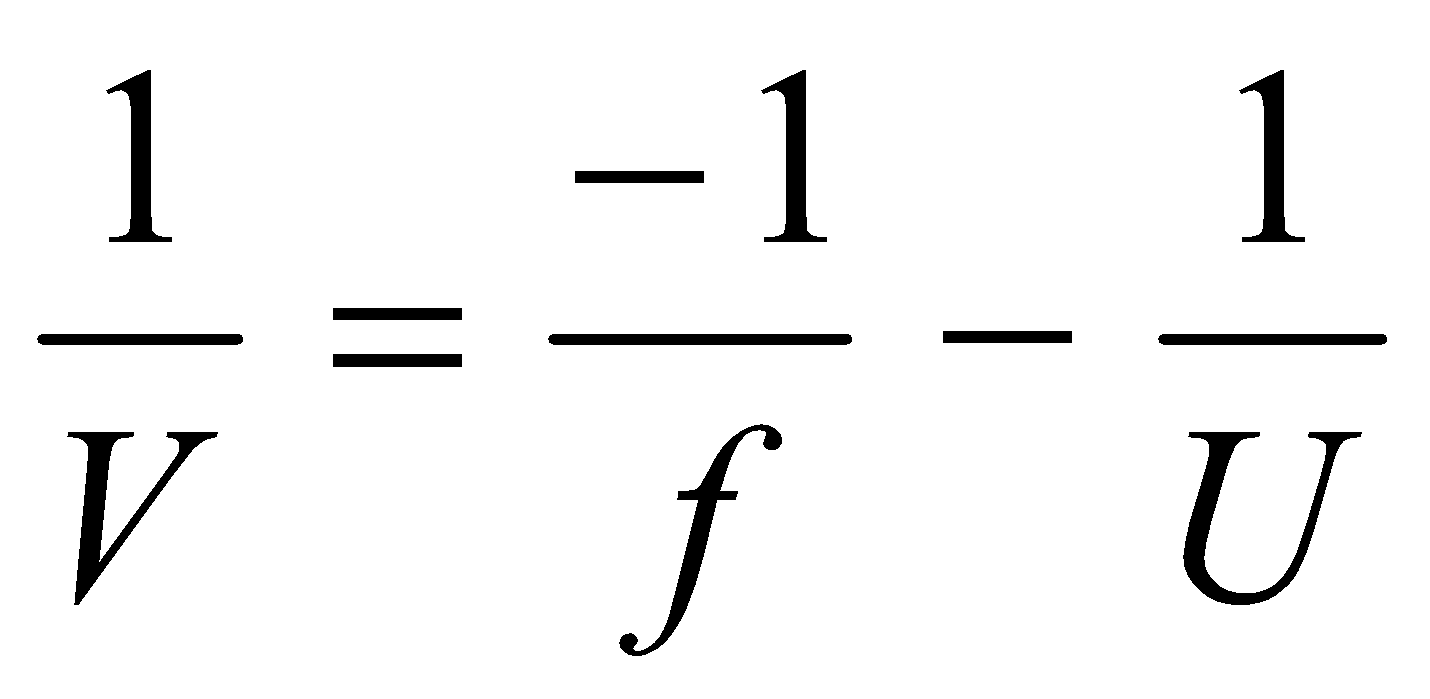
(b) (i) Reciprocal of the focal length power of the lens

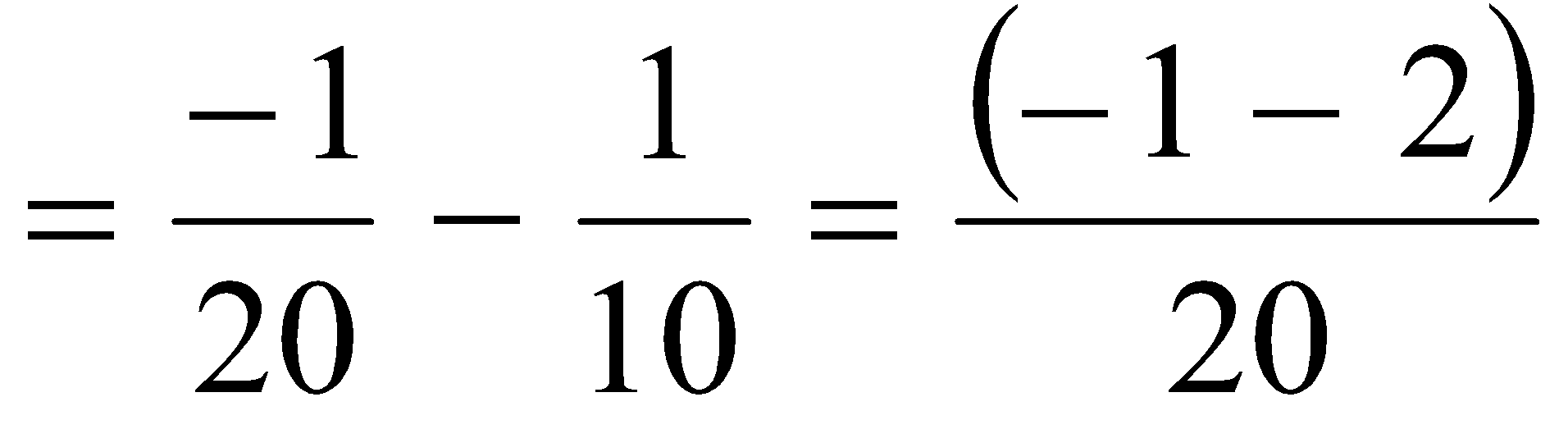
(ii) 1/f = gradient => f = 1/gradient

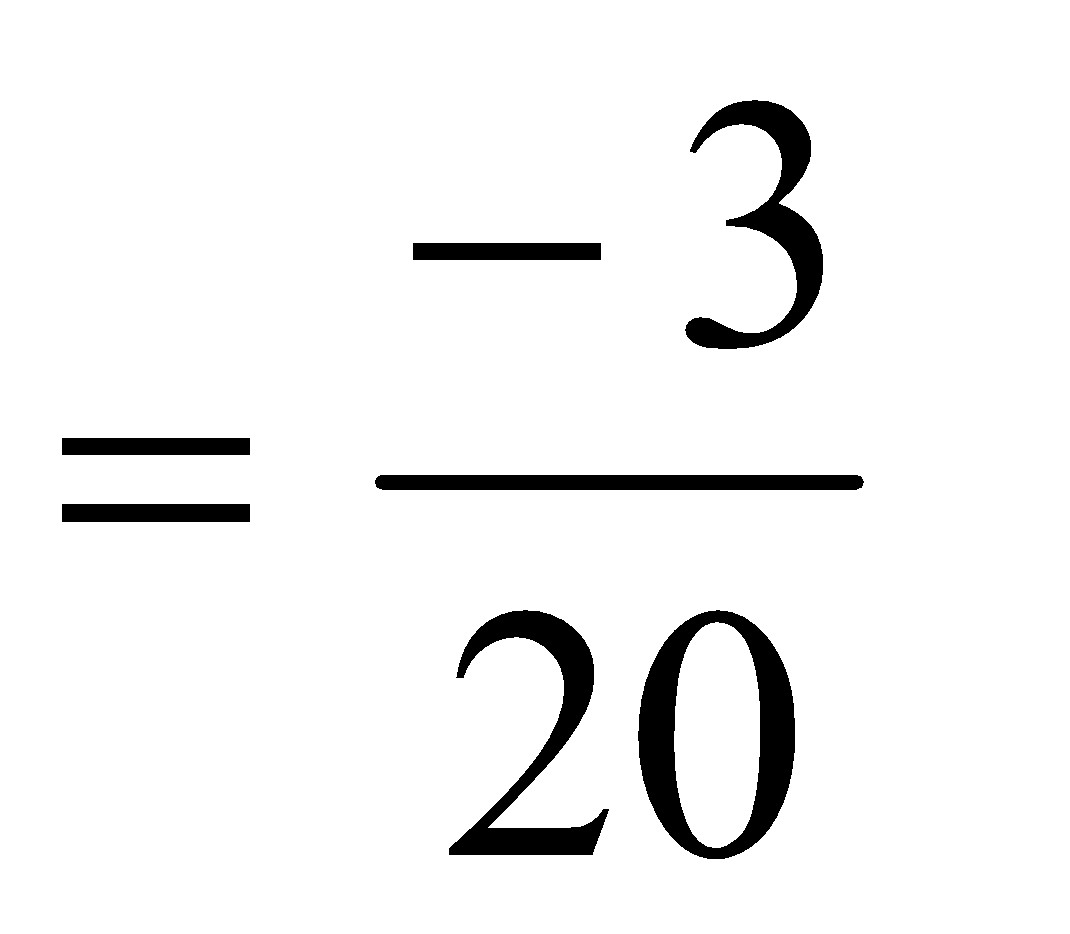
f= 13cm

iii v =u= 27cm

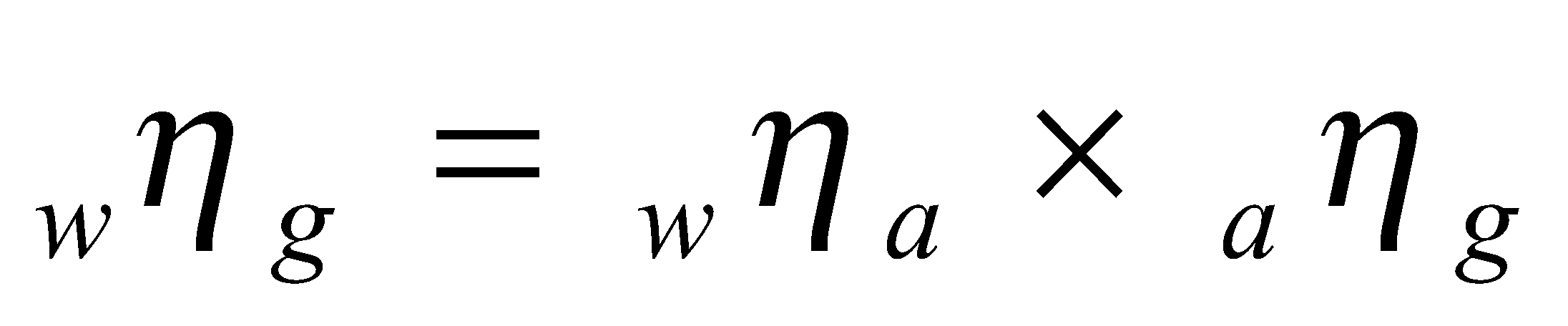
(c) 

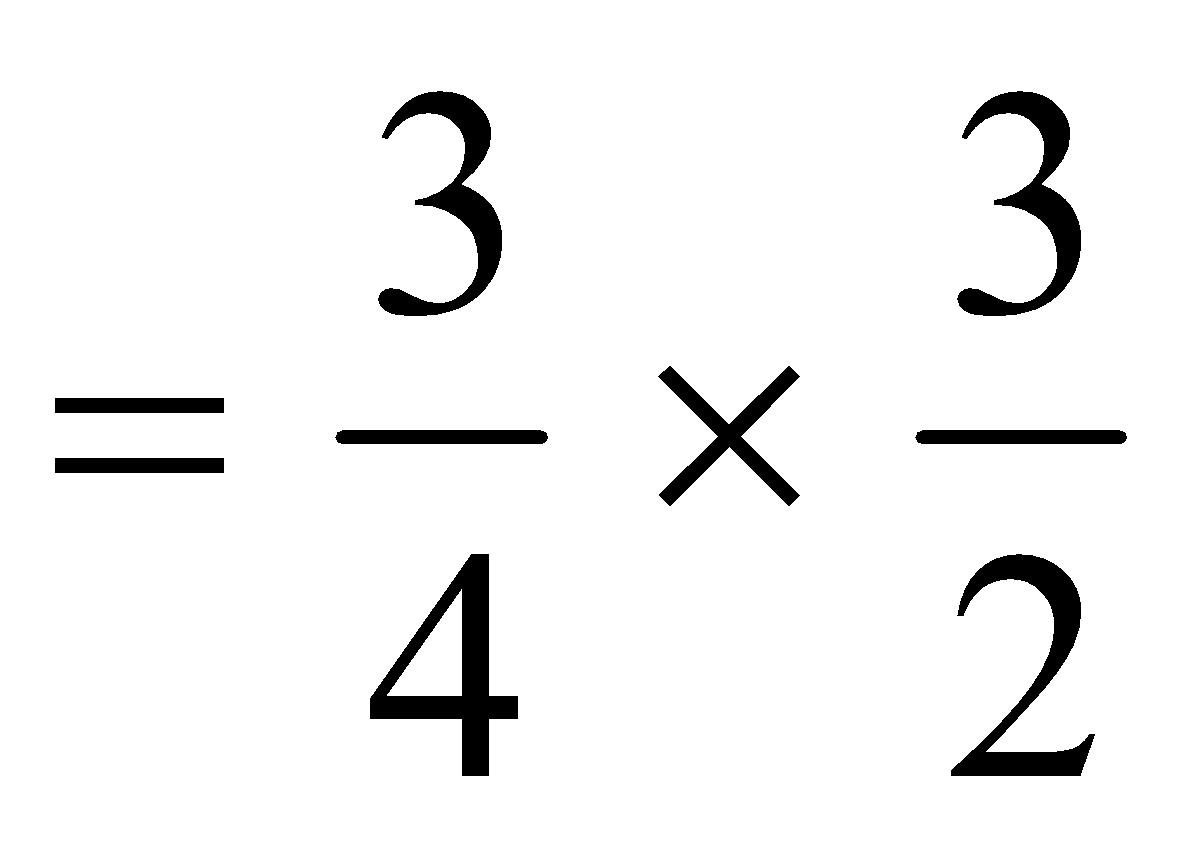
 ✓¹

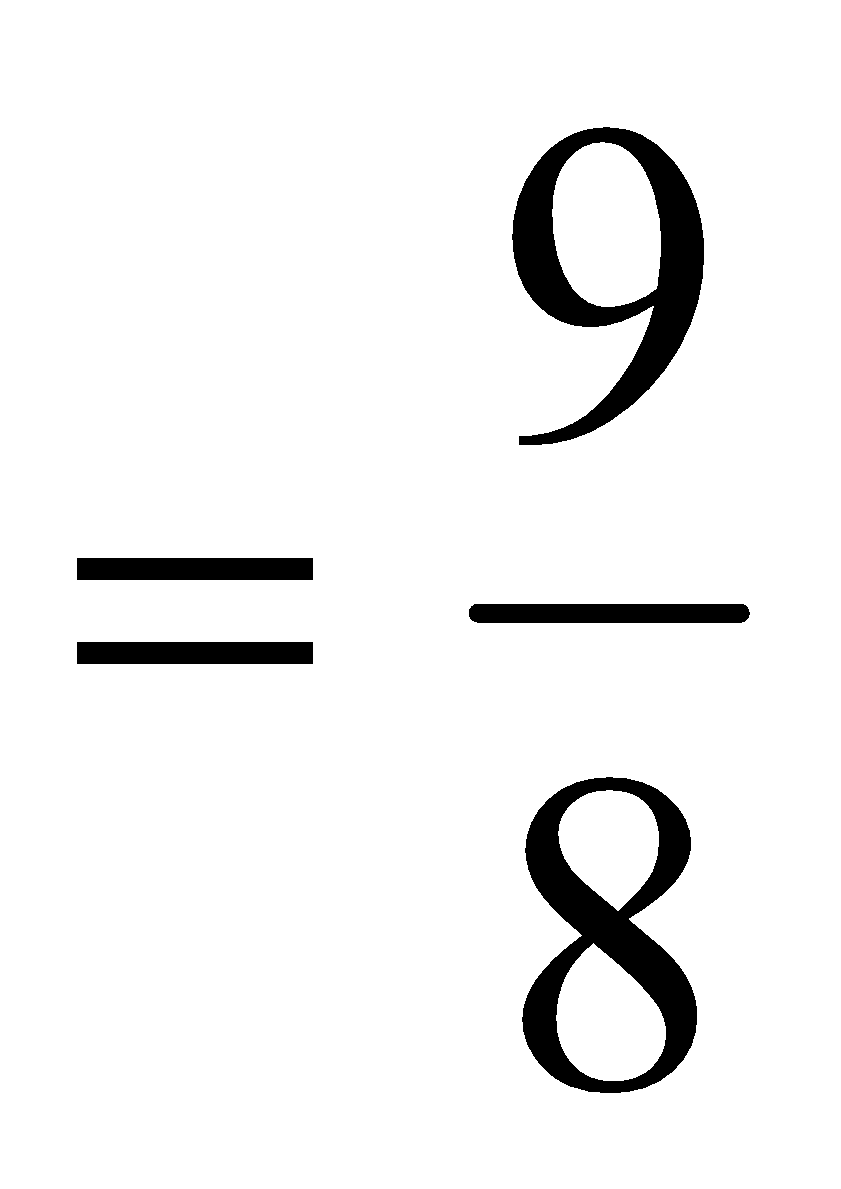




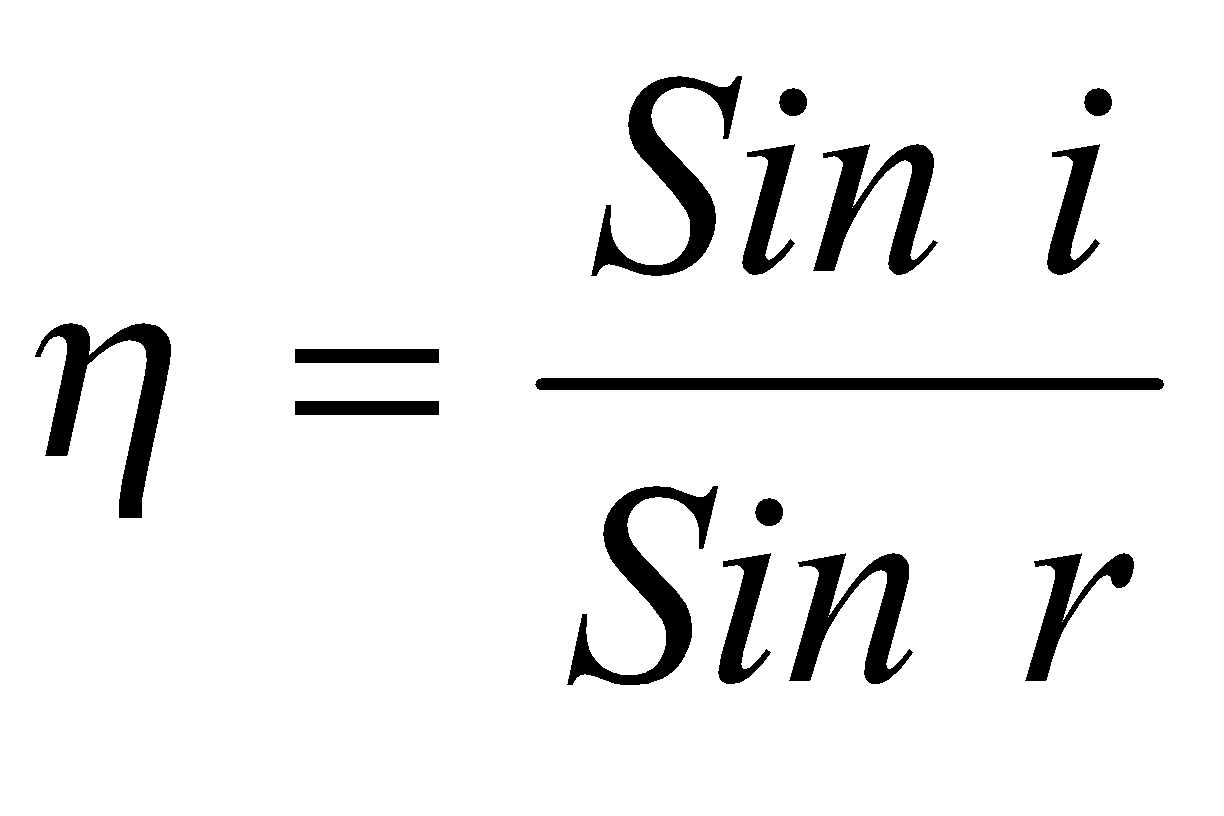
V = 6.67cm ✓¹

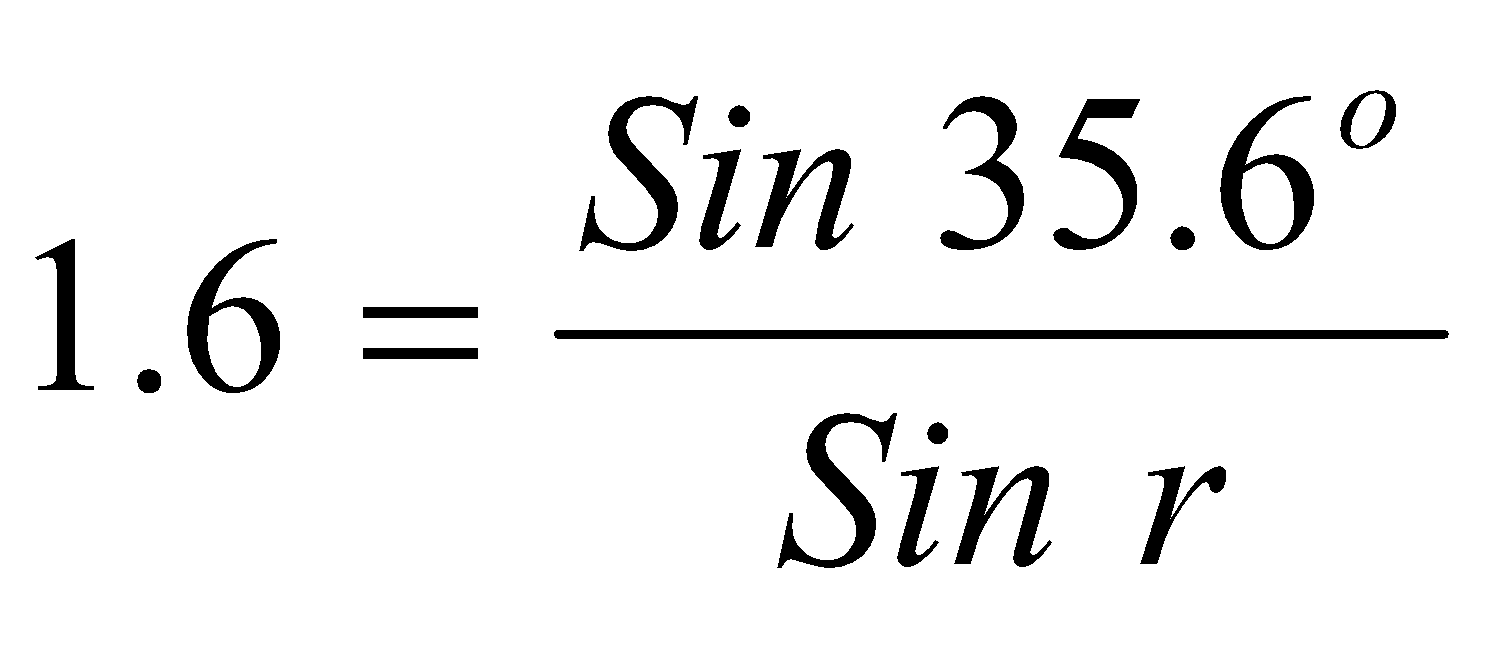
1. (a) 





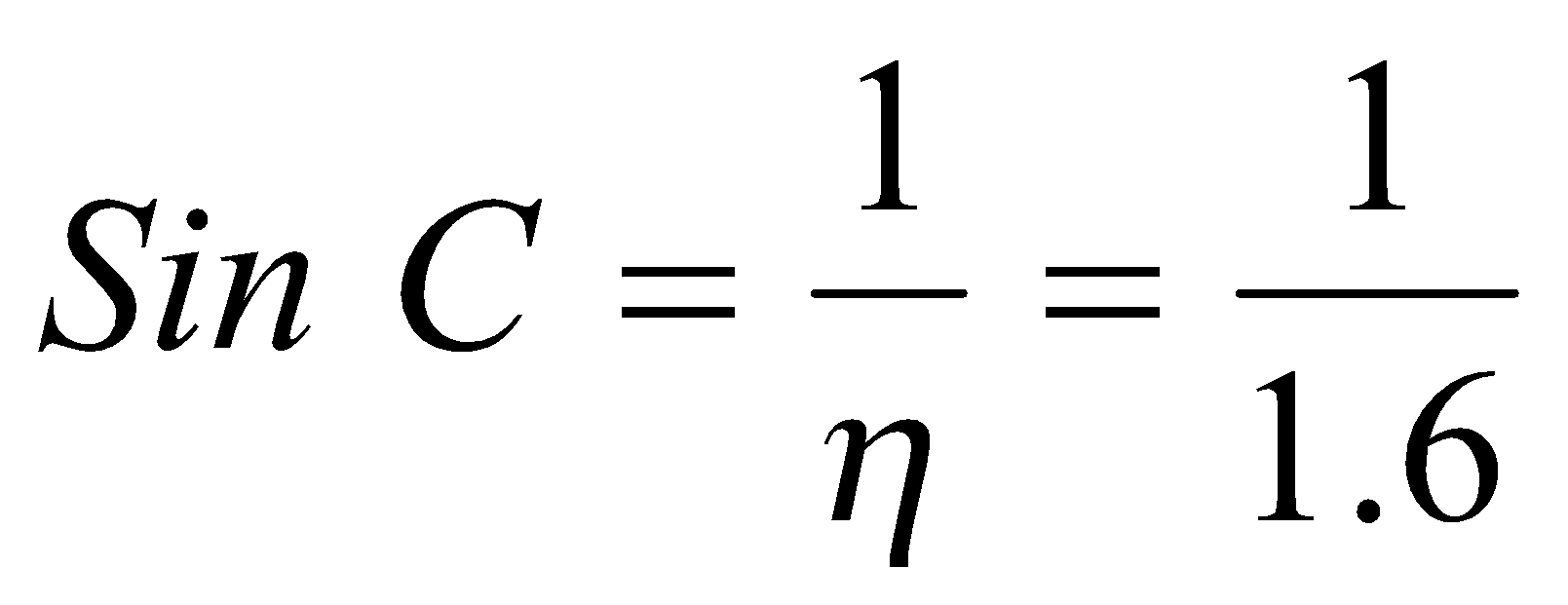
= 1.13

(b) (i) 

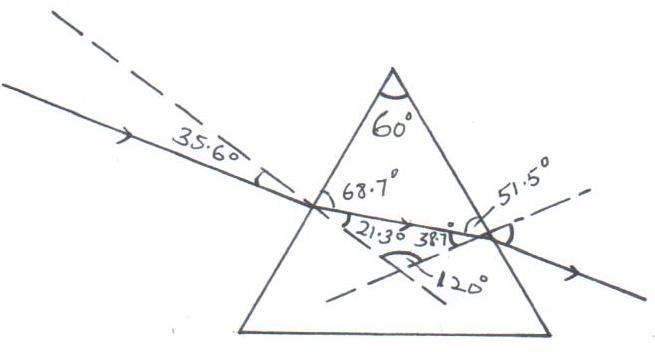


r = 21.3º

1. Angle of incidence = 38.7º (show working)



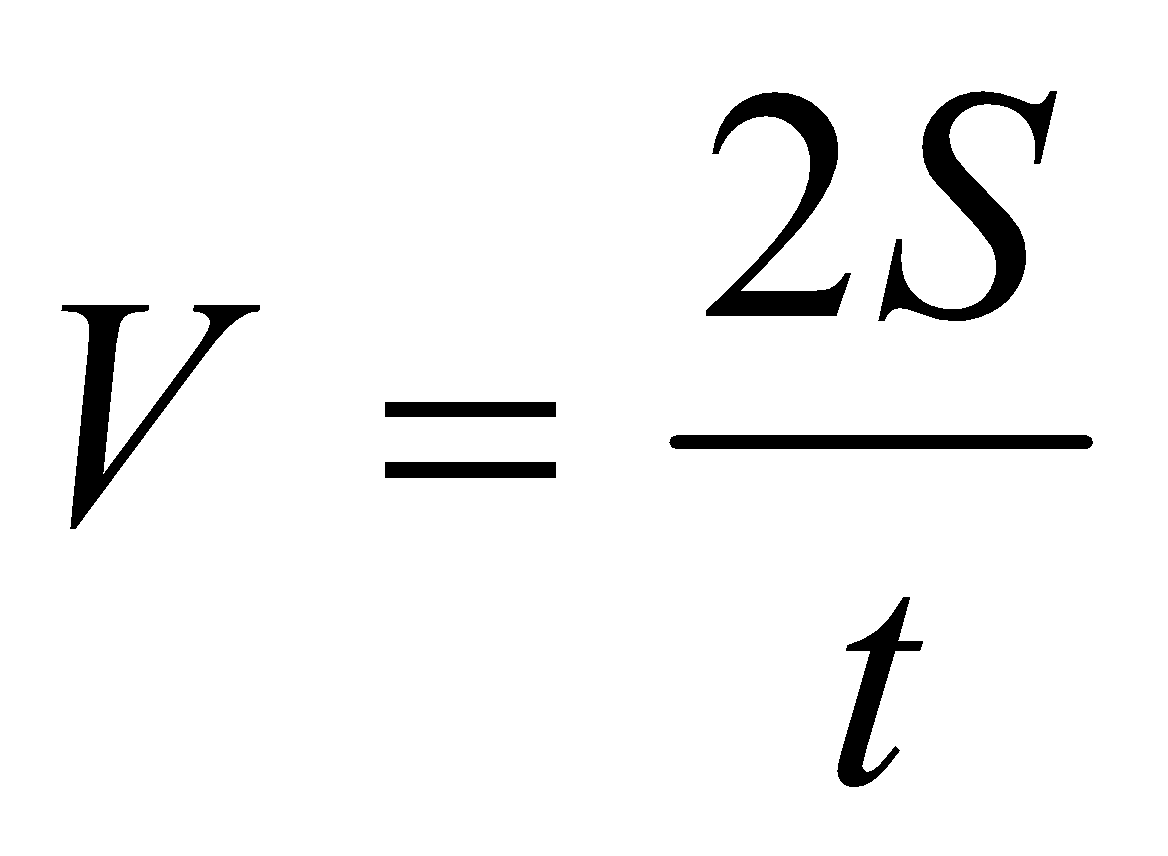
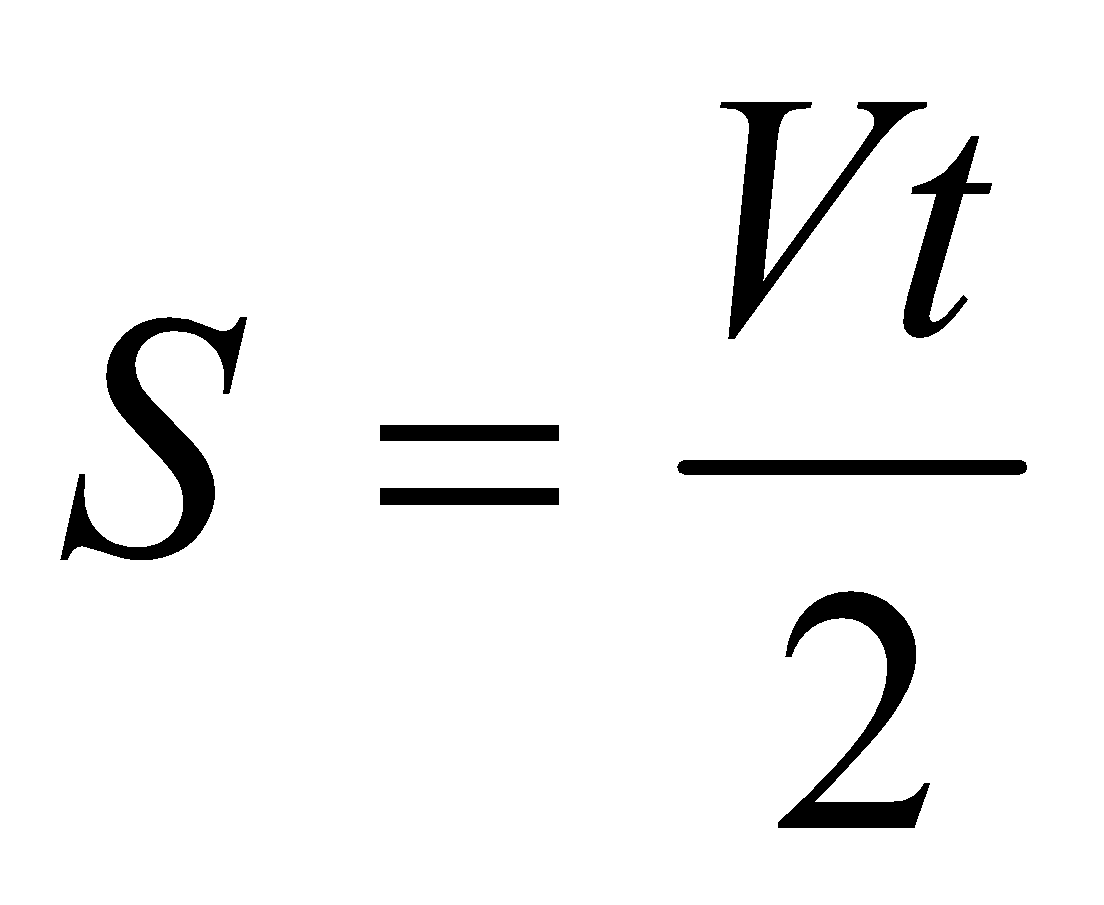
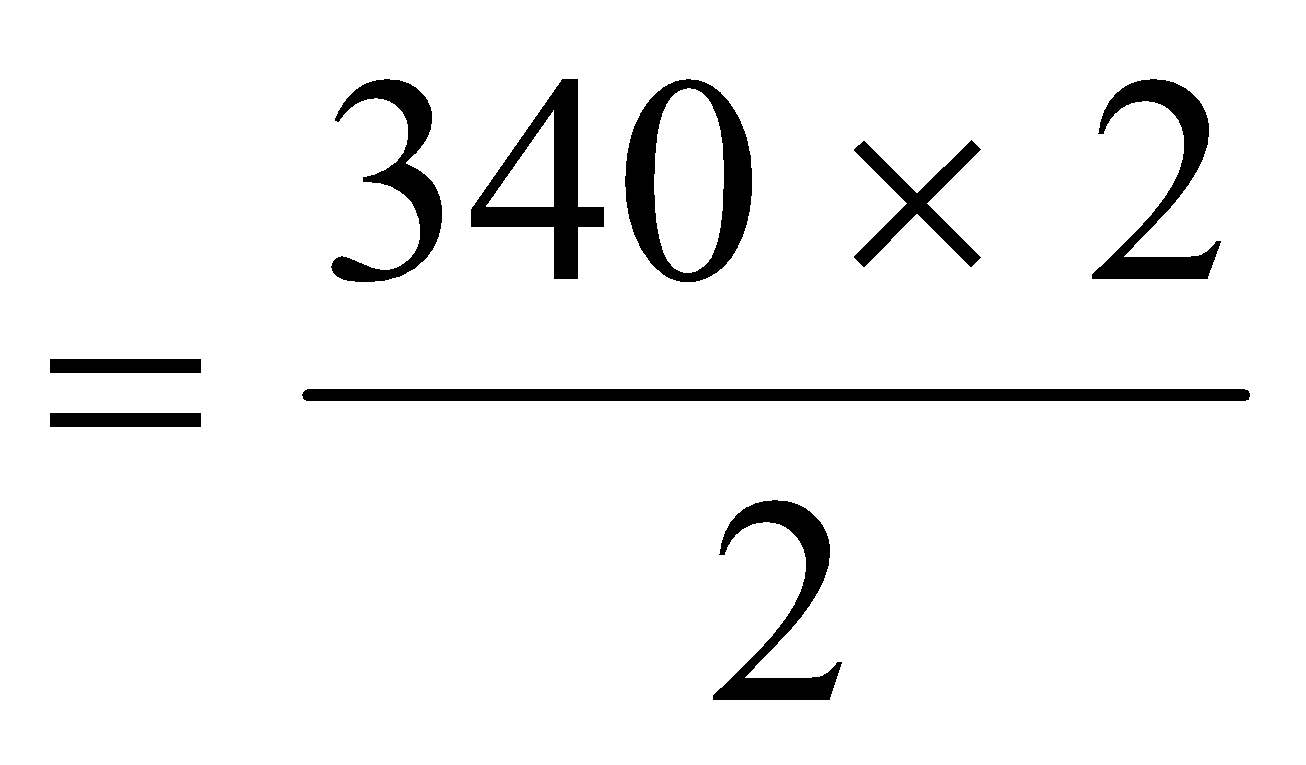
= 38.7º

(iii)

(iv) - The critical angle must be exceeded. ✓¹

- Light must be travelling from a dense medium to a less dense medium. ✓¹

(c)

  ✓ = 340m ✓

1. a) Capacitors are used in

- rectification smoothing circuits

- tuning circuits

- camera flash

- reduction of sparking in induction coil contact

any one 1

  b) i) 2 x 8 = 16 = 1.6μF

2 + 8 10

1.6 + 3.2 = 4.8μF ✔

CT = 5 x 4.8 ✔ = 24 = 2.45 x 10-6F ✔

5 + 4.8 9.8

ii) Q = CV

= 2.45 x 10-6 x 12 = 2.94 x 10-5C ✔

charge on 3.2μF = 2/3 x 2.94 x 10-5

= 1.96 x 10-5C ✔

  iii) p.d on 5mF = Q = 2.94 x 10-5 = 5.88volts ✔

C 5 x 10-6

iv) energy = CV2 ✔

= ½ x 2 x 10-6 x 6.122

= 3.75 x 10-5J ✔

(c) (i) Capacitance will also increase

(ii) capacitance will decrease.

1. a) Lenz’s Law states that the direction of induced current is such that it opposes the charge producing it.✔

b) i) When switch S is closed, the magnetic field strength increases (magnetic flux) from zero to maximum ✔1/2 This changing magnetic flux (field) induces an e.m.f

in the secondary coil ✔1When the switch is opened, the magnetic field strength decreases (magnetic flux) from maximum to zero ✔1/2 This produces an induced current in the secondary coil

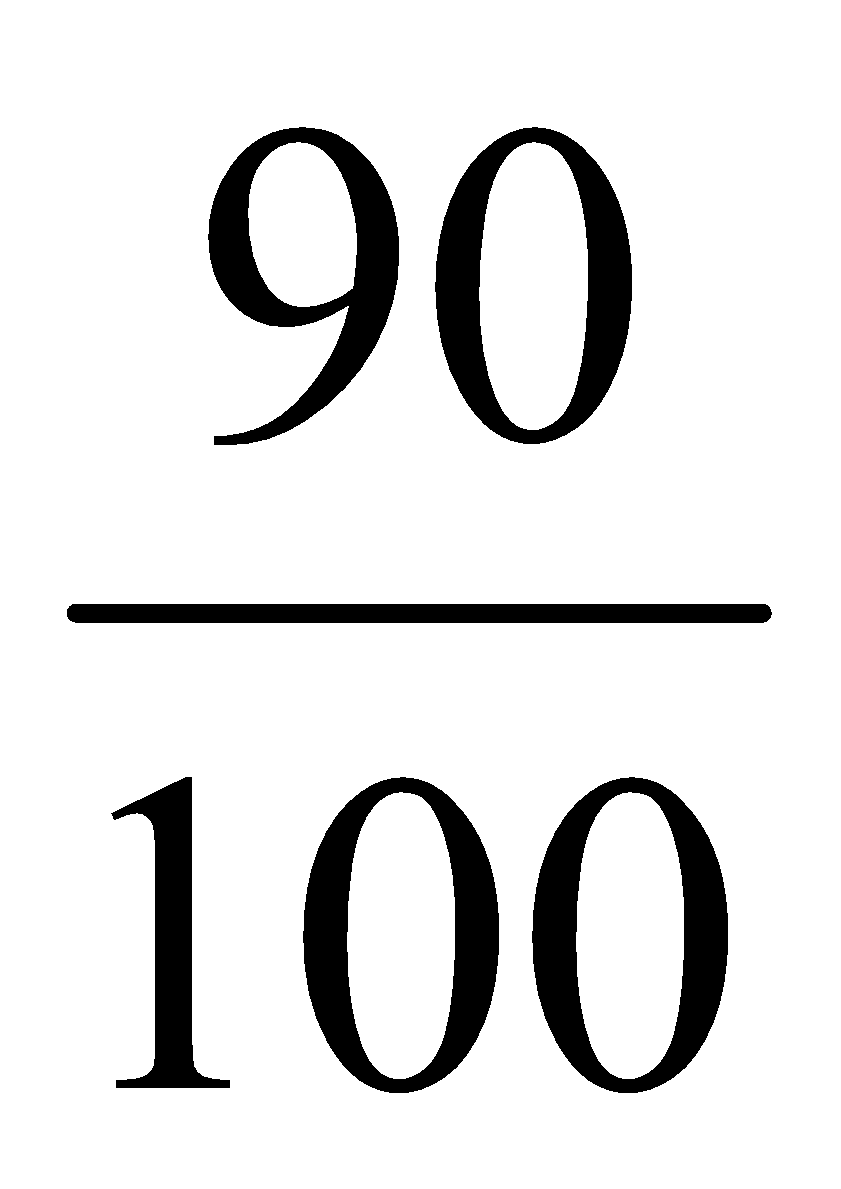
ii) Having more turns on the coil connected to the cell ✔

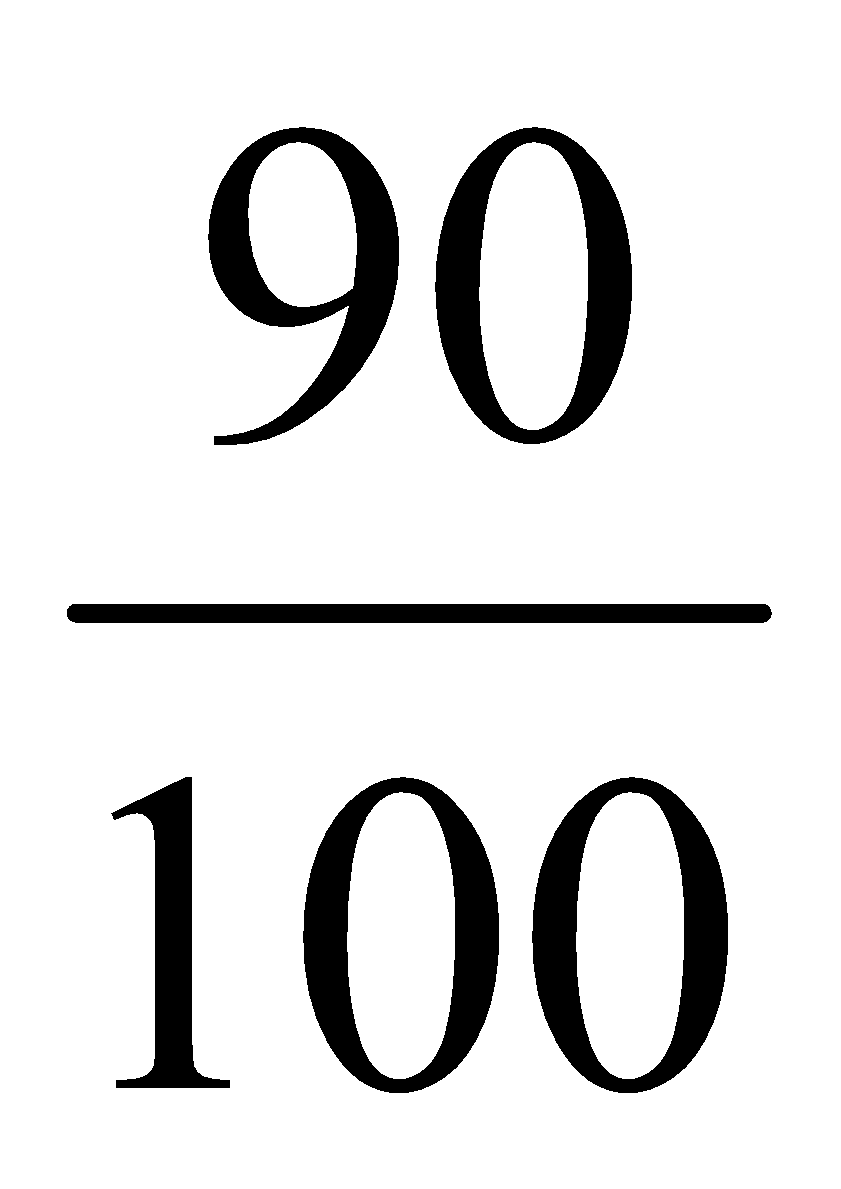
c) i) - Hysterisis

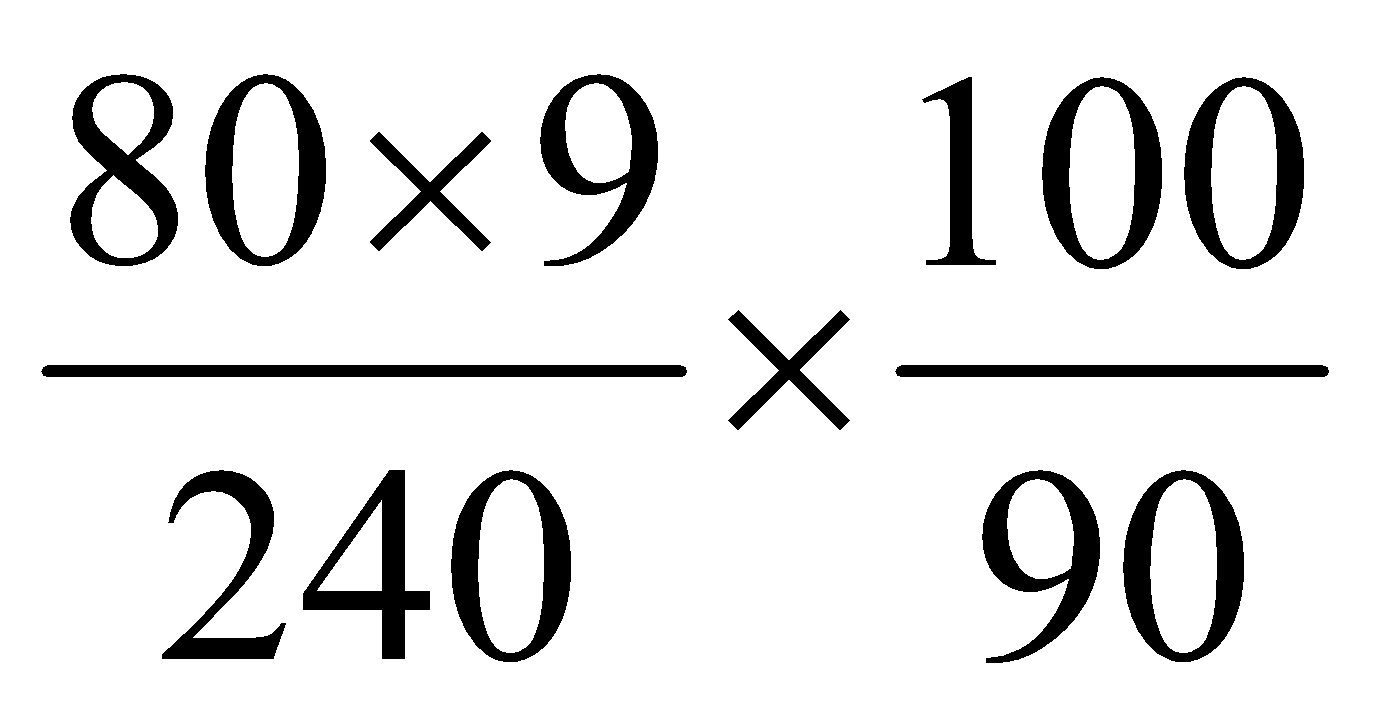
- Eddy currents

- Resistance of wire

- Loss of magnetic flux linkage

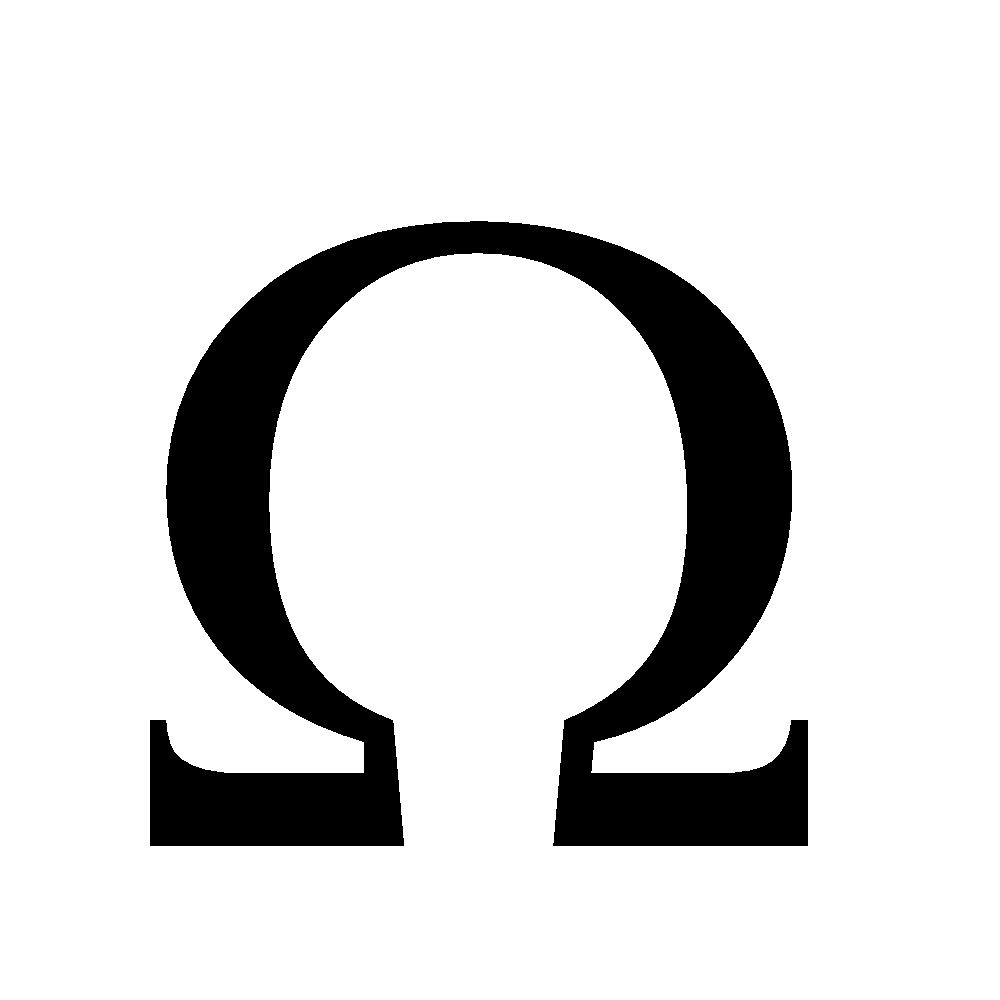
ii) Power Primary x = VsIs ✔1

240 x IP x = 80 x 9

IP = ✔1 = 3.33A ✔1

d) (i) Emf of the battery equal to v intercept 9.2V

(ii) internal resistance = gradient of the graph .

r = 2.5 3

1. a) Most of the Kinetic Energy of the electrons is converted into Heat Energy

b) High density

c) E = QV = hf ✔

1.6 x 1019 x 1,200 = 6.63 x 1034 x f ✔

f = 2.9 x 1018 Hz ✔

d) Hard X-Rays ✔ – They have high penetrating power. ✔

e) i) 4x5x2 = 40 V✔

ii) T = 8x10 ✔

= 8x10-2 s

iii) f = ✔

= = 12.5 Hz ✔