28/12/2025

Code-G

Aakash
Medical | IIT-JEE | Foundations

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Udyog Vihar, Gurugram, Haryana - 122015, ***Ph.***+91-1244168300

MM : 120 CBSE AIATS-SP Class-X (2025-26) T02G **Time : 180 Min.**

PHYSICS

1. (2)
2. (3)
3. (2)
4. (1)
5. (4)
6. (2)
7. (3)
8. (3)
9. (1)
10. (4)
11. (2)
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17. (1)
18. (1)
19. (3)
20. (2)
21. (3)
22. (1)
23. (4)
24. (3)
25. (1)

CHEMISTRY

26. (1)
27. (3)
28. (3)
29. (3)
30. (4)
31. (1)
32. (3)
33. (3)
34. (3)
35. (2)
36. (1)
39. (4)
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45. (2)
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48. (3)
49. (4)

37. (1)
38. (2)
50. (2)

BIOLOGY

51. (4)
52. (2)
53. (4)
54. (1)
55. (3)
56. (1)
57. (3)
58. (3)
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73. (4)
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MATHEMATICS

76. (4)
77. (2)
78. (4)
79. (2)
80. (3)
81. (2)
82. (4)
83. (3)
84. (2)
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89. (3)
90. (1)
91. (1)
92. (2)
93. (4)
94. (1)
95. (2)
96. (3)
97. (3)
98. (3)
99. (4)
100. (1)

MENTAL ABILITY

101. (4)
102. (2)
103. (2)
104. (4)
105. (1)
106. (3)
107. (4)
108. (2)
109. (1)
110. (4)
111. (1)
112. (4)
113. (4)
114. (3)
115. (4)
116. (3)
117. (2)
118. (2)
119. (4)
120. (1)

Hints and Solutions

PHYSICS

(1) **Answer :** (2)

(2) **Answer :** (3)
Solution:
The magnetic field will be perpendicular to the plane of circle.

(3) **Answer :** (2)
Solution:
Use Fleming's left hand rule.

(4) **Answer :** (1)

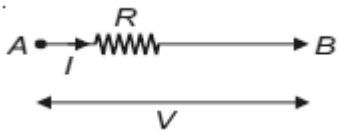
(5) **Answer :** (4)

(6) **Answer :** (2)

(7) **Answer :** (3)

(8) **Answer :** (3)

(9) **Answer :** (1)
Solution:
Current in any one of the resistors = $\frac{V}{R}$
As we know that in parallel combination potential difference will be same across each resistor and here, all resistors are similar.
Hence, by taking one resistor
$V = IR \Rightarrow I = \frac{V}{R}$



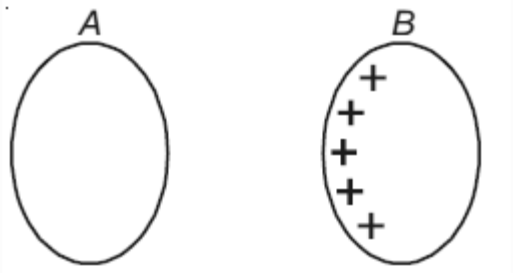
(10) **Answer :** (4)

(11) **Answer :** (2)

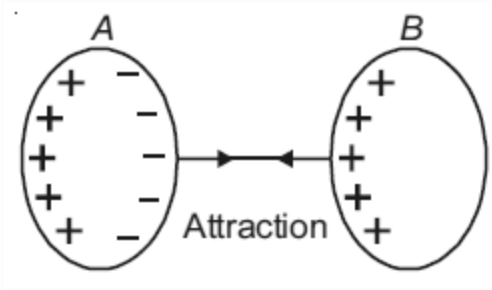
(12) **Answer :** (4)

(13) **Answer :** (4)
Solution:
As the bulb *B* burns out, the net resistance of the circuit increases which decreases the current, so brightness of bulb *C* and *D* will decrease while that of *A* will increase.

(14) **Answer :** (2)
Solution:
Repulsion is a sure test of electricity. *i.e.* if a body is charged or not we cannot determine by attraction. It can be understood by following illustration.
Let there be two bodies *A* and *B*. *A* is neutral and *B* is positively charged as shown in the figure below.



Due to presence of positively charged body near a neutral body, the electrons of the neutral body will try to come closer to the side where +vely charged body is placed as shown below.



So, even if one body is neutral another charged body can attract it. So, we cannot determine the type of electrification of the body *A*. Whether it is neutral or negatively charged. But in case of repulsion, we can surely detect the types of electrification on one body if the charge of nearby body is known.

(15) **Answer :** (1)
Solution:

$R_P = \frac{(220)^2}{110}$; $R_Q = \frac{(220)^2}{55}$

$R_{net} = R_P + R_Q = (220)^2 \left[\frac{1}{110} + \frac{1}{55}\right]$

$R_{net} = \frac{3}{110} \times (220)^2$

$I = \frac{110 \times 110}{3 \times (220)^2} = \frac{1}{12}$ A

$V_P = \frac{(220)^2}{110} \times \frac{1}{12} = \frac{110}{3}$ V

$V_Q = \frac{(220)^2}{55} \times \frac{1}{12} = \frac{220}{3}$ V

(16) **Answer :** (4)

(17) **Answer :** (1)

(18) **Answer :** (1)

(19) **Answer :** (3)

(20) **Answer :** (2)
Solution:

$H = \frac{V^2 t}{R}$

$R = \frac{\rho l}{\pi r^2}$

$\Rightarrow H = \left(\frac{\pi V^2 t}{\rho}\right) \frac{r^2}{l}$

(21) **Answer :** (3)
Solution:

Maximum current that can flow through bulb = $\frac{120}{40} = 3$ A

Voltage to be drop across resistance = 120 – 40 = 80 V

Resistance of resistor = $\frac{80}{3}\ \Omega$

(22) **Answer :** (1)
Solution:

Area $A = \pi\left[2^2 - 1^2\right] = 3\pi$ mm^2

$R = \rho\frac{I}{A} = \frac{2 \times 10^{-8} \times 1}{3 \times \pi \times 10^{-6}} = 2.1 \times 10^{-3}\Omega$

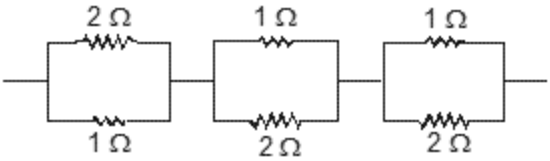
(23) **Answer :** (4)
Solution:

Total power consumed when bulbs are connected in series

$\frac{1}{P} = \frac{1}{12} + \frac{1}{12} + \ldots . 10 \text{ times}$

$\Rightarrow P = 1.2$ W

(24) **Answer :** (3)
Solution:



Net resistance

$R = 3 \times \left(\frac{2 \times 1}{2+1}\right) = 2\ \Omega$

Total current, $I = \frac{V}{R} = \frac{6}{2} = 3\ \text{A}$

$I' = \left(\frac{2}{1+2}\right) \times 3 = 2\ \text{A}$

(25) **Answer :** (1)
Solution:
$\because V = IR$
Case-I when only S_1 is closed
$V_1 = \frac{E}{4R} \times 3R = \frac{3E}{4}$
Case-II when only S_2 is closed
$V_2 = \frac{E}{7R} \times 6R = \frac{6E}{7}$
Case-III when both S_1 and S_2 are closed
$V_3 = \frac{E}{3R} \times 2R = \frac{2E}{3}$
Hence, $V_2 > V_1 > V_3$

CHEMISTRY

(26) **Answer :** (1)

(27) **Answer :** (3)

(28) **Answer :** (3)

(29) **Answer :** (3)

(30) **Answer :** (4)

(31) **Answer :** (1)

(32) **Answer :** (3)

(33) **Answer :** (3)

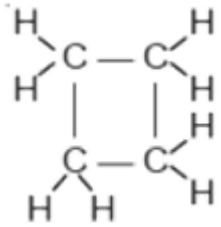
(34) **Answer :** (3)

(35) **Answer :** (2)

(36) **Answer :** (1)

(37) **Answer :** (1)

(38) **Answer :** (2)
Solution:



(39) **Answer :** (4)

Solution:
Aluminium does not react with cold water

(40) **Answer :** (2)

(41) **Answer :** (3)

(42) **Answer :** (2)

(43) **Answer :** (3)

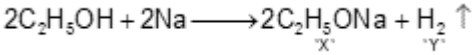
(44) **Answer :** (4)
Solution:
More reactive metal displaces the less reactive metal from its salt solution.

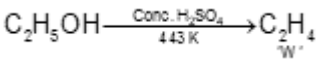
(45) **Answer :** (2)

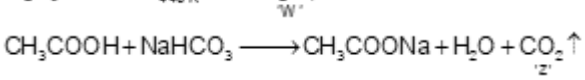
(46) **Answer :** (3)

(47) **Answer :** (3)

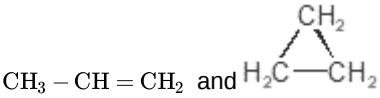
(48) **Answer :** (3)
Solution:
Answer (3)

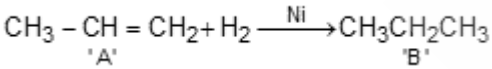


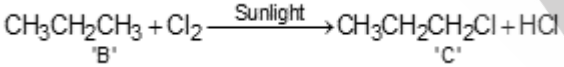




(49) **Answer :** (4)
Solution:
Answer (4)
A is C_3H_6 since it is given that two structural isomers are possible for A.







(50) **Answer :** (2)
Solution:
$4\ Al + 3\ O_2 \rightarrow 2\ Al_2O_3$
$Al_2O_3 + 2\ NaOH \rightarrow 2\ NaAlO_2 + H_2O$

BIOLOGY

(51) **Answer :** (4)

(52) **Answer :** (2)

(53) **Answer :** (4)
Solution:
A disturbance in food chain is difficult to overcome.

(54) **Answer :** (1)

(55) **Answer :** (3)

(56) **Answer :** (1)

(57) **Answer :** (3)

(58) **Answer :** (3)

(59) **Answer :** (1)

(60) **Answer :** (3)

(61) **Answer :** (4)

(62) **Answer :** (4)

(63) **Answer :** (1)

(64) **Answer :** (2)
Solution:
Constricted pod, terminal flower, green seed, yellow pod, wrinkled seed are recessive traits of pea plant.

(65) **Answer :** (4)

(66) **Answer :** (2)

(67) **Answer :** (1)

(68) **Answer :** (1)

(69) **Answer :** (4)

(70) **Answer :** (3)

(71) **Answer :** (3)

(72) **Answer :** (3)

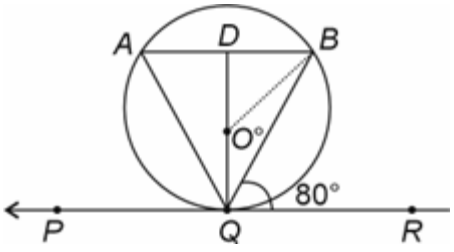
(73) **Answer :** (4)

(74) **Answer :** (2)
Solution:
A food chain is a list of organisms depicting 'who eats whom' in a biotic community.

(75) **Answer :** (2)

MATHEMATICS

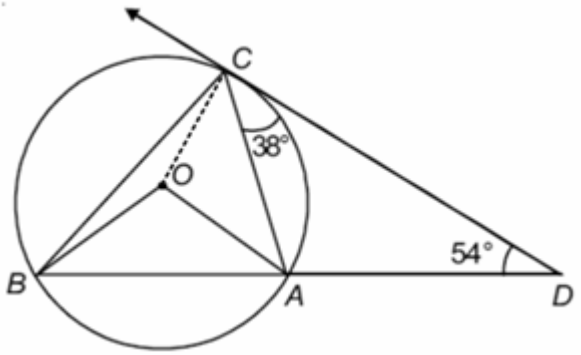
(76) **Answer :** (4)
Solution:



$\angle DQR = 90°$
$\angle OQB = \angle DQR - \angle BQR$
$\angle OQB = 90° - 80° = 10°$
In ΔOQB
$\angle OQB = \angle OBQ = 10°$ (as $OQ = OB$ radius)
$\angle QOB = 180° - 10° - 10° = 160°$
$\angle QAB = \frac{1}{2}\angle QOB = 80°$
$\angle AQP = \angle QAB$ (as $PR \parallel AB$)
Since PQR is a straight line
$\angle AQP + \angle AQB + \angle BQR = 180°$
$80° + \angle AQB + 80° = 180°$
$\Rightarrow \angle AQB = 20°$

(77) **Answer :** (2)

Solution:
In ΔACD,
$\angle ACD + \angle ADC + \angle CAD = 180^\circ$ [By angle sum property of a triangle]

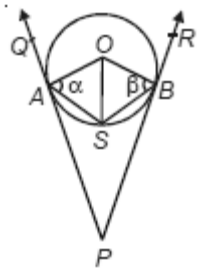


$\angle CAB = \angle ACD + \angle ADC$ [Exterior angle property of a triangle]
= 38° + 54°
= 92°
Also, $\angle OCA = \angle OAC = 90^\circ - 38^\circ = 52^\circ$
$\therefore \angle AOC = 180^\circ - 2 \times 52^\circ = 76^\circ$
$\therefore \angle ABC = 38^\circ \left[\angle ABC = \frac{1}{2} \angle AOC\right]$
In ΔABC,
$\angle ABC + \angle ACB + \angle BAC = 180^\circ$
$\Rightarrow \angle ACB = 180^\circ - (38^\circ + 92^\circ)$ = 50°
Now, $\angle AOB = 2\angle ACB$
[$\because$ Angle subtended by an arc at the centre is double the angle subtended by it in the remaining part of the circle]
$\therefore \angle AOB = 50^\circ \times 2 = 100^\circ$

(78) Answer : (4)
Solution:
$\angle POQ$ =180° – $\angle PTQ$ = 180° – 38° = 142°

(79) Answer : (2)

(80) Answer : (3)
Solution:



Let *O* be the centre of the circle.
Join *OA*, *OS* and *OB*.
Here, *OA* $\perp$ *PQ* and *OB* $\perp$ *PR*
[A tangent to a circle is perpendicular to the radius through the point of contact]
OA = *OS* = *OB* [Radius of the circle]
Let $\angle OAS$ be α and $\angle OBS$ be β
$\angle OAS = \angle OSA = \alpha$ [$\because$ Angles opposite to equal sides are equal]
Similarly,
$\angle OBS = \angle OSB = \beta$
$\because \angle ASB$ = 110° [Given]
$\Rightarrow \angle OSA + \angle OSB$ = 110°
$\Rightarrow \alpha + \beta$= 110° ...(i)
$\because \angle SAP$ = 90° – α [$\because$ *OA* $\perp$ *PQ*]
and $\angle SBP$ = 90° – β [$\because$ *OB* $\perp$ *PR*]
So, $\angle SAP + \angle SBP$ = 90° – α + 90° – β
= 180° – ($\alpha + \beta$)

= 180° – 110° [From (i)]
= 70°

(81) Answer : (2)

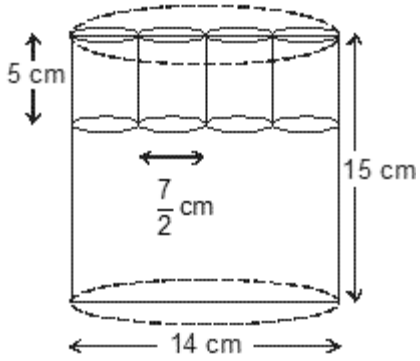
(82) Answer : (4)
Solution:
Perimeter of semi-circle
= $\pi r + 2r$
= $r(\pi + 2)$
= $\frac{7}{2}(\pi + 2)$ cm

(83) Answer : (3)

(84) Answer : (2)

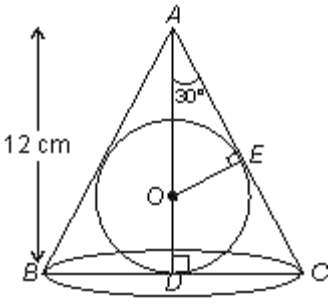
(85) Answer : (3)

(86) Answer : (1)
Solution:



Radius of smaller cylinder $r = \frac{7}{2} \times \frac{1}{2} = \frac{7}{4}$ cm
Height of smaller cylinder = h = 5 cm
Radius of larger cylinder = R = 7 cm
Height of larger cylinder = H = 15 cm
Total surface area of figure =
Total surface area of larger cylinder + 4 × curved surface area of smaller cylinder
= 2 πR (H + R) + 4 × 2 πrh
$= 2 \times \frac{22}{7} \times 7(15 + 7) + 4 \times 2 \times \frac{22}{7} \times \frac{7}{4} \times 5$ = 1188 cm^2

(87) Answer : (4)
Solution:



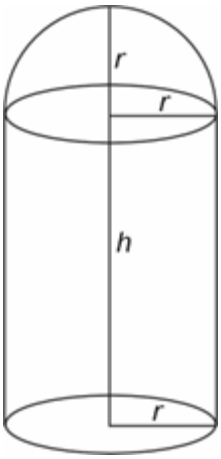
Let radius of cone be R
and radius of sphere be r,
∴ In ΔOEA, $\sin 30^\circ = \frac{OE}{OA} = \frac{r}{12 - r}$
$\frac{1}{2} = \frac{r}{12 - r}$
⇒ 12 – r = 2r
⇒ 12 = 3r or $\boxed{r = 4\ cm}$
Now, In ΔADC,
$\tan 30^\circ = \frac{DC}{AD} = \frac{R}{12}$
$\frac{1}{\sqrt{3}} = \frac{R}{12}$

$\Rightarrow\ R = \frac{12}{\sqrt{3}} = 4\sqrt{3}$ cm

$\therefore\ \frac{\text{Volume of sphere}}{\text{Volume of cone}} = \frac{\frac{4}{3}\pi\times4\times4\times4}{\frac{1}{3}\pi\times4\sqrt{3}\times4\sqrt{3}\times12}$

$= \frac{4}{9}$

(88) Answer : (1)
Solution:



r = 3 cm h = 7 cm

Volume of solid = $\frac{2}{3}\pi r^3 + \pi r^2 h$

= $\pi r^2\left[\frac{2}{3}r + h\right]$

= $\pi\times3\times3\left[\frac{2}{3}\times3+7\right]$

= 9 π × 9 = 81 π cm^3

(89) Answer : (3)

(90) Answer : (1)
Solution:
$f_1 + f_2 = 120 - (20 + 15 + 35) = 50$

Mode = $60 + \frac{35-f_1}{70-f_1-f_2}\times20$

Mode = 60 + 35 – f_1

For f_1 = 14, mode = 81 which is not possible.

(91) Answer : (1)
Solution:
3 median = mode + 2 mean

(92) Answer : (2)

(93) Answer : (4)

(94) Answer : (1)

(95) Answer : (2)

(96) Answer : (3)
Solution:
Total number of honour cards = 16
Total number of red honour cards = 8
Total possible outcomes = 52
$\therefore$ Required probability = $\frac{8}{52} = \frac{2}{13}$

(97) Answer : (3)
Solution:
Total number of cases = 52
E = favourable cases = {1, 8, 27}
Number of favourable cases = 3

$\therefore$ Probability of selecting a card which bears a perfect cube number $= \frac{3}{52}$

(98) Answer : (3)

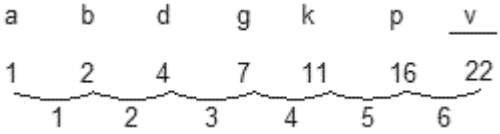
(99) Answer : (4)

(100) Answer : (1)

MENTAL ABILITY

(101) Answer : (4)

Solution:



(102) Answer : (2)

Solution:

2 3 1 = 14

$2^2 + 3^2 + 1^2 = 14$

791 =

$7^2 + 9^2 + 1^2 = 131$

(103) Answer : (2)

Solution:

Number of legs: Animal/Bird

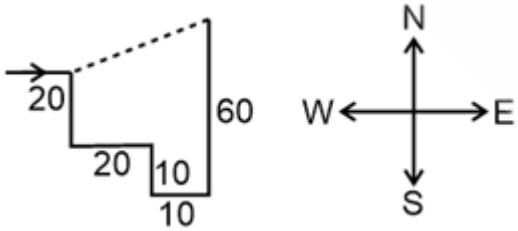
(104) Answer : (4)

Solution:

All are grown under soil except tomato.

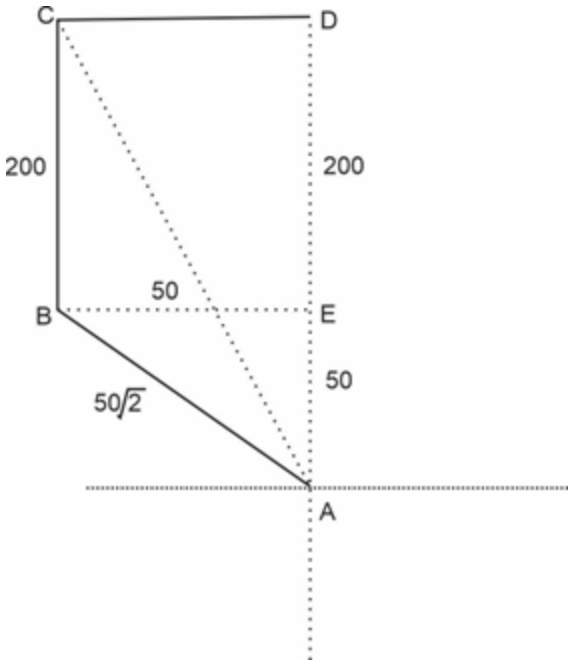
(105) Answer : (1)

Solution:



(106) Answer : (3)

Solution:



$AC = \sqrt{(250)^2 + (50)^2}$

$AC = 50\sqrt{26}$ m

(107) Answer : (4)

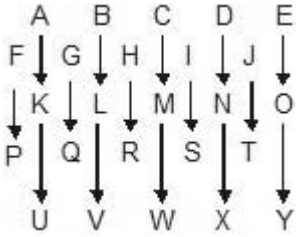
Solution:

578 : 7 + 8 | 5 + 7, 1512

496 : 9 + 6 | 4 + 9, 1513

(108) Answer : (2)

Solution:

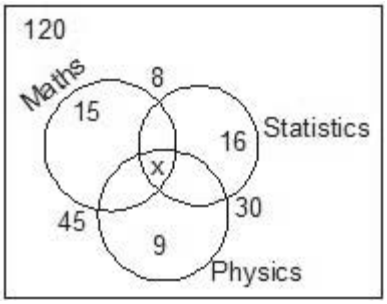


(109) Answer : (1)

Solution:

(110) Answer : (4)

Solution:



A.T.Q
(45 – x) + (30 – x) + x + 9 = 80
x = 4

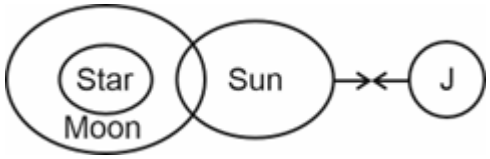
(111) Answer : (1)
Solution:
$3 \rightarrow 1 + 1^2 + 1^3 = 3$
$14 \rightarrow 2 + 2^2 + 2^3 = 14$
$= (155) \rightarrow 5 + 5^2 + 5^3$

(112) Answer : (4)
Solution:

4	10	23	51	109	229
× 2 + 2	× 2 + 3	× 2 + 5	× 2 + 7	× 2 + 11	

(113) Answer : (4)
Solution:
a **b** b a **b** b **a** b **b** a **b** b

(114) Answer : (3)
Solution:



(115) Answer : (4)
Solution:

a ☆ b = $\frac{a \times b}{2}$

(116) Answer : (3)
Solution:
Total = 10 + 43 – 1 ⇒ 52
Mita's rank from top = 52 – 32 + 1 = 21

(117) Answer : (2)
Solution:
Pairs are DE, RS, RT, ST, AB, DB, RN and EA.

(118) Answer : (2)
Solution:
$180° = 30 \times 8 \ -\frac{11}{2} \mathrm{M}$
$\mathrm{M} = 10\frac{10}{11} \ \mathrm{min}$

(119) Answer : (4)
Solution:
Today will be Monday, there are 2 odd days after 65 days
⇒ Required day is Wednesday.

(120) Answer : (1)
Solution:
By counting, we get total number of triangles.
5 + 5 + 2 = 12