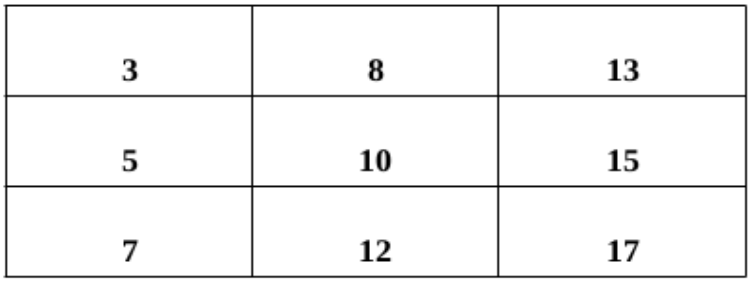
S S L C EXAMINATION , MARCH - 2021

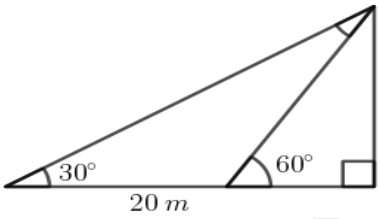
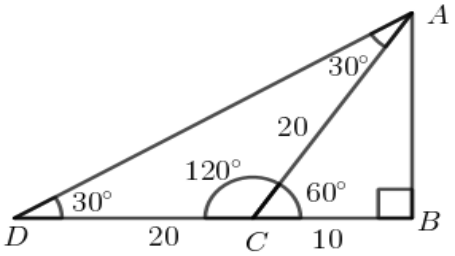
S1635 **MATHEMATICS – ANSWER KEY**

Qn no.	Key	Score	
	For questions from 1 to 5 one score each .		
1	7 , 9 , 11 , . . .	**1**	**1**
2	**Square**	**1**	**1**
3	$(2 , 0)$	**1**	**1**
4	12	**1**	**1**
5	2	**1**	**1**
	For questions from 6 to 10 carries 2 scores each .		
6	**First term = 3 + 2 = 5** **Common difference = 3**	**1** **1**	**2**
7	$\angle ACB = 90^0$ $\angle ADB = 45^0$	**1** **1**	**2**
8	**a)** $\frac{5}{9}$ **b)** $\frac{5}{9}$	**1** **1**	**2**
9	**a)** $(0 , 0)$ **b)** $(0 , 3)$	**1** **1**	**2**
10	$(x + 1)(x - 1)$	**2**	**2**

For questions from 11 to 20 carries 3 scores each .			
11	**a)** $a + 10$ **b)** 1 **c)** $a + n$	**1** **1** **1**	**3**
12	**Construction**	**3**	**3**
13	**a)** 2 , 4 , 6 , . . . **b)** $x(x+2)+1 = 289$ $(x+1)^2 = 289$	**1** **1** **1**	**3**
14	**a)** 6 *cm* **b)** $3 \times PD = 6 \times 4$ $PD = \frac{6 \times 4}{3} = 8\ cm$	**1** **1** **1**	**3**
15	**a)** 2 **b)** $\sqrt{13^2-5^2}=\sqrt{169-25}=\sqrt{144}=12\ cm$	**1** **2**	**3**
16	**Coordinates of B =** $(6 , 0)$ **Coordinates of C =** $(1 , 5)$ **Coordinates of D =** $(-4 , 0)$	**1** **1** **1**	**3**
17	**a)** 25 **b)** $\cos C = \frac{24}{25}$ $\tan C = \frac{7}{24}$	**1** **1** **1**	**3**
18	**a) Slant height of the cone = 12 cm .** **b)** $\frac{120}{360} = \frac{r}{12}$ $r = \frac{12\times120}{360} = 4\ cm$	**1** **1** **1**	**3**

19	**a)** $\angle OAP = 90^0$ **b) Construction**	**1** **1** **1**	**3**
20	**a)** $\frac{Area\ of\ APB}{Area\ of\ the\ rectangle}=\frac{1}{2}$ **b)** $Area\ of\ triangle\ ADP = \frac{1}{4} \times Area\ of\ the\ rectangle$ **c)** $\frac{Area\ of\ the\ triangle\ ADP}{Arae\ of\ the\ rectangle}=\frac{1}{4}$	**1** **1** **1**	**3**
For questions from 21 to 30 carries 4 scores each .			
21	**a)** 100 **b)** $\frac{20}{2} \times (5 + 100) = \frac{20 \times 105}{2} = 1050$ **c)** $1050 - 20 \times 1 = 1030$	**1** **2** **1**	**4**
22	$<ECG = 110^0$ $<EBG = 120^0$ $<EAG = 60^0$	**4**	**4**
23	 **3** **8** **13** **5** **10** **15** **7** **12** **17**	**4**	**4**
24	**a)** 2 **b)** $\sqrt{3}$ **c)** 30^0 **d)** $\frac{\sqrt{3}}{2}$	**1** **1** **1** **1**	**4**

25	**Construction**	**4**	**4**
26	**a)** $Mean = \frac{11+32+33+35+39+41+45+47+48+49}{10} = \frac{380}{10} = 38$ **b)** 11 , 32 , 35 , 39 , 41 , 45 , 47 , 48 , 49 $Median = \frac{39+41}{2} = \frac{80}{2} = 40$	**2** **1**	**4**
27	**Construction**	**4**	**4**
28	**a)** $20 - 7 = 13\,cm$ **a) If length =** $10+x$ **then breadth =** $10 - x$ $(10 + x)(10 - x) = 96 \Rightarrow 100 - x^2 = 96$ $x = \sqrt{100-96} = \sqrt{4} = 2$ **length =** $10 + 2 = 12\,cm$ **, breadth =** $10 - 2 = 8\,cm$	**1** **1** **1** **1**	**4**
29	**a) Total number of two digit numbers =** 90 **Probability of both digits being the same =** $\frac{9}{90}$ **b) Favourable results = 21 , 42 , 63 , 84** **Probability of the first digit being twice the second =** $\frac{4}{90}$	**1** **1** **1** **1**	**4**
30	**a)** $p(2) = 2^2-5\times2+9 = 3$ $p(3) = 3^2-5\times3+9 = 3$ $p(x) - p(2) = x^2-5x+9-3 = x^2-5x+6$ $p(x) - p(2) = (x-2)(x-3)$	**1** **1** **1** **1**	**4**

For questions from 31 to 45 carries 5 scores each .			
31	**a)** 11 12 13 14 15	**1**	**5**
	b) 10	**1**	
	c) $1 + 2 + 3 + \ldots\ldots + 10 = \frac{10 \times 11}{2} = 55$	**2**	
	d) $55 + 1 = 56$	**1**	
32	**a)** $8\ sq.cm$	**1**	**5**
	b) Construction	**4**	
33	**a)** 	**1**	**5**
	b) $<ACD = 120^0$	**1**	
	$<D = <CAD = 30^0$	**1**	
	$CD = AC = 20\,m$ 	**1**	
	Width of the river = BC = 10 m		
34	**a) Coordinates of B =** $(6, 4)$	**1**	**5**
	Coordinates of D = $(2, 12)$	**1**	
	b) $(\frac{2+6}{2}, \frac{4+12}{2}) = (4, 8)$	**2**	
	c) $2a$	**1**	
35	$<AZY = <ZXY = 60^0$	**1**	**5**
	$<A = 180 - (60 + 60) = 60^0$	**1**	
	$<CXY = <XZY = 50^0$	**1**	
	$<C = 180 - (50 + 50) = 80^0$	**1**	
	$<B = 180 - (60 + 80) = 40^0$	**1**	

36	**a)** $h=\sqrt{13^2-5^2} = \sqrt{169-25} = \sqrt{144} = 12\,cm$	**2**	
	b) Volume of the cone = $\frac{1}{3}\times\pi\times5^2\times12 = 100\pi\ cm^3$	**1**	
	c) Volume of the small cone = $\frac{1}{3}\times\pi\times1^2\times1=\frac{\pi}{3}\ cm^3$	**1**	**5**
	Number of cones = $100\pi \div \frac{\pi}{3} = 300$	**1**	
37	**a) Radius** = $\sqrt{(4-1)^2+(5-1)^2} = 5$	**1**	
	b) $(x-1)^2+(y-1)^2 = 5^2$	**2**	**5**
	c) $(6-1)^2+(y-1)^2 = 5^2$	**1**	
	$y=1$	**1**	
38	**a)** 1 : 2	**1**	
	b) $r_1 = 1r$, $r_2 = 2r$	**1**	
	Ratio of the surface areas = $4\pi r^2 : 4\pi(2r)^2$	**1**	**5**
	= 1 : 4	**1**	
	c) $4\times10\pi = 40\pi\ sq.cm$	**1**	
39	**a)** 1	**1**	
	b) 108 , 117 , 126 , . . .	**1**	
	Algebraic form = $9n + 108 - 9 = 9n + 99$	**1**	**1**
	` $9n + 99 = 999$	**1**	
	$n = 100$	**1**	
40	**a)** 30^0	**1**	
	b) $2\,cm$	**2**	
	b) $BC = 4\sqrt{3}\,cm$	**1**	**5**
	Area of the triangle = $\frac{1}{2}\times4\sqrt{3}\times2 = 4\sqrt{3}\ sq.cm$	**1**	

41	**a)** $\angle PQR = 180 - 50 = 130^0$ **b) Construction**	**1** **4**	**5**
42	**a)** $\angle ACB = 40^0$ $\angle ADB = 40^0$ $\angle ADP = 140^0$ **b)** $\angle BCP = 140^0$ $\angle CQD + \angle P = 360 - 280 = 80^0$	**1** **1** **1** **1** **1**	**5**
43	**a)** 10 *cm* **b) If the base edge of the box is taken as x ,** $x^2 \times 10 = 1000$ $x^2 = \frac{1000}{10} = 10$ $x = \sqrt{10}0 = 10$ **Length of the side of the square thick paper** = $10+20=30$ *cm*	**1** **1** **1** **1** **1**	**5**
44	**Median = Score of the 23rd child** = x_{23} **Median comes between 20 and 30 .** **a)** $x_{14} = \frac{20+21}{2} = 20.5$ **c) Median** = $x_{23} = 20.5 + 9 \times 1 = 29.5$	**1** **1** **1** **1** **1**	**5**

Score	Number of children
Below 10	5
Below 20	13
Below 30	23
Below 40	36
Below 50	45

45	**a) Incircle** **b) Circumcircle** **c)** $r \times s$ **d)** 20 **e)** 2	**1** **1** **1** **1** **1**	**5**