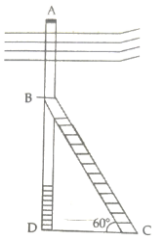
	COMMON PRE-BOARD EXAM MATH(041) - ANSWER KEY	
	Section - A	
	Section A consists of 20 questions of 1 mark each.	
1.	(b) xy^2	1
2.	(a) 3	1
3.	(a) 20	1
4.	(c) Intersecting or coincident	1
5.	(b) 27	1
6.	(b) DE = 12 cm, ∠F = 100°	1
7.	(b) $\frac{DE}{DF} = \frac{FE}{RP}$	1
8.	(b) 70°	1
9.	(c) $(0, \frac{7}{2})$	1
10.	(d) IV quadrant	1
11.	(d) 90°	1
12.	(d) $5\frac{1}{3}$	1
13.	(c) 75 √3	1
14.	(c) 616 m^2	1
15.	(a) 0.36 cm^3	1
16.	(c) 30 – 40	1
17.	(b) 25	1
18.	(d) $\frac{25}{36}$	1
19.	Option (b) is correct	1
20.	Option (b) is correct	1
	Section – B	
	Section B consists of 5 questions of 2 marks each.	
21.	x = $\frac{4a^2 \pm \sqrt{(16b^4)}}{8}$ x = $\frac{a^2 + b^2}{2}$ or x = $\frac{a^2 - b^2}{2}$ OR $x^2 - 28x + 160 = 0$ x = 8 or x = 20	1 1 1 1
22.	$\frac{PB}{PD} = \frac{PC}{PE}$ ΔPBC ~ ΔPDE	1 1
23.	PB = PD	1

	AB = CD	1
24.	$\frac{1}{\frac{1}{\sqrt{2}}+\frac{1}{2}}$	1
	$\frac{2\sqrt{2}+1}{2}$	1
	OR	
	$\frac{\sin\theta}{\cos\theta}=\frac{1}{\sqrt{3}}$	1
	θ = 30°	1
25.	OA = OB = 6	1
	Area = 9.42 cm^2	1
	Section - C	
	Section C consists of 6 questions of 3 marks each.	
26.	√5 = $\frac{p}{q}$	½
	$P^2 = 5q^2$	½
	$P^2 = 25r^2$	½
	Q is divisible by 5.	½
	√5 is an irrational number.	1
27.	$\alpha + 7\alpha = -(-\frac{8}{3})$	½
	$\alpha = \frac{1}{3}$	½
	$7(\frac{1}{3})^2 = \frac{2k+1}{3}$	1
	$K = \frac{2}{3}$	1
28.	Let the three consecutive natural numbers be x, x + 1 and x + 2.	½
	$(x+1)^2 = (x+2)^2 - (x)^2 + 60$	1
	x = 9 or x = -7	1
	Rejecting -7, we get x = 9	½
	Three numbers are 9, 10 and 11.	
	OR	
	$x(x + \frac{a}{a+b}) + \frac{a+b}{a}(x + \frac{a}{a+b}) = 0$	1
	$(x + \frac{a}{a+b})(x + \frac{a+b}{a}) = 0$	1
	$X = \frac{-a}{a+b}$ or $\frac{-(a+b)}{a}$	1
29.	AB = CD and AD = BC	½
	AP + PB + DR + CR = AS + BQ + DS + CQ	1
	AB + CD = AD + BC	½
	ABCD is a rhombus.	1
	OR	
	Figure	1
	AB + BC + CA = 2AQ – BQ + BQ + CR – CR	1
	$AQ = \frac{1}{2}(BC + CA + AB)$	1

30.	$\frac{\cos\theta}{\sin\theta}+\frac{1}{\sin\theta}-1$ ---------- $\frac{\cos\theta}{\sin\theta}-\frac{1}{\sin\theta}+1$ $\frac{\sin\theta(cos\theta-sin\theta+1)}{\sin\theta(cos\theta+sin\theta-1)}$ $\frac{sin\theta cos\theta+sin\theta-(1-cos^2\theta)}{sin\theta(cos\theta+sin\theta-1)}$ $=\frac{sin\theta(\cos+1)-[(1-cos\theta)(1+cos\theta)]}{sin\theta(cos\theta+sin\theta-1)}$	½ ½ 1 1
31.	$=\frac{No.of\ favourable\ outcomes}{No.of\ all\ possible\ outcomes}=\frac{81}{90}=\frac{9}{10}$ Perfect square numbers between 1 to 90 are 1, 4, 9, 16, 25, 36, 49, 64, 81 $=\frac{9}{90}=\frac{1}{10}$	1 1 1
	Section - D	
	Section D consists of 4 questions of 5 marks each.	
32.	2(a + 17d) = 3(a + 10d) $\frac{s_5}{s_{10}}=\frac{5}{2}$ (2a + 4d) ---------- $\frac{10}{2}$[2a +9d] The value of a = 4d $\frac{s_5}{s_{10}}=\frac{5}{2}$ (8d + 4d) ---------- 5(8d + 9d) $\frac{12d}{34d}=\frac{6}{17}$ OR Total distance to be covered by thief = (100n) metres Total distances to be covered by policeman = 100 + 110 + 120 + … + (n – 1) terms ∴ 100n = $\frac{n-1}{2}$ [200 + (n – 2)10] $n^2 – 3n – 18 = 0$ (n – 6)(n + 3) = 0 n = 6 A policeman takes 6 minutes to catch the thief.	1 1 1 1 1 ½ 1 1 ½ ½ ½ 1
33.	Proof of the theorem	5

34.	Volume of water in cone = $\frac{1}{3}\pi r^2 h$ $= \frac{1}{3}\pi \times (5)^2 \times 8$ $= \frac{200}{3}\pi$ cm^3 Volume of water flown out = $\frac{50}{3}\pi$ cm^3 Let the radius of one spherical ball be r cm $r = \frac{1}{2}$ = 0.5 cm OR Slant height of cone = 12.5 cm TSA of toy = $\pi rl + 2\pi r^2$ $= \frac{22}{7} \times 12.5 \times 3.5 + 2 \times \frac{22}{7} \times 3.5 \times 3.5$ = 22 (6.25 + 3.5) = 214.5 cm^2 ∴Total surface area of toy is 214.5cm^2	½ ½ ½ 1 1½ 1 1 ½ 1 1½ 1
35.	Table Median = 32.5, median class is 30 – 40. $32.5 = 30 + \frac{10}{12}(20 - 14 - f_1)$ $f_1 = 3$ $f_1 + f_2 + 31 = 40$ $f_2 = 6$	1 1 1 1 1
	Section - E	
	Case study based questions are compulsory.	
36.	X +2y = 16 X + 6y = 22 X + 4y = 16 Additional charges is y = ₹ 3. OR Total = ₹ 50	1 1 2 2
37.	Distance between house and bank = 5 km Distance between bank and daughter's school = 10 km Distance between house to office = 24.6 km Distance between daughter's school and office = 12 km Total distance (house + Bank + School + Office) travelled = 5 + 10 + 12 = 27 km	1 1 2
38.	BD = AD – AB = 3.7 m In ΔBDC, Sin 60° = $\frac{BD}{BC}$ BC = 4.28 m (approx.) 	1 1 1

	In ΔBDC, Cot 60° = $\frac{DC}{BD}$ DC = 2.14 (approx..) OR Sin 30° = $\frac{BD}{BC}$ BC = 7.4m	1 1 1 1