

2 Marks

(1) (a)  $d = 13 - 7 = 6$

(b)  $x_{11} = 7 + 10d$   
 $= 7 + 10 \times 6$   
 $= \underline{\underline{67}}$

(6)



(2) 54, 55, 56, 58, 60, 62, 64,  
 65, 66, 68, 70

Median = 62

(7)

$l + b = 40$

$l \times b = 351$

$x^2 - 40x + 351 = 0$

$x^2 - 40x = -351$

$x^2 - 40x + 20^2 = -351 + 400$

$(x - 20)^2 = 49$

$x - 20 = \pm 7$

$x = 20 \pm 7$

$x = 27 \text{ or } 13$

$l = \underline{\underline{27}} \quad b = \underline{\underline{13}}$

(4)

$45 : 45 : 90$

$1 : 1 : \sqrt{2}$

$3 : 3 : 3\sqrt{2}$

$AB = \underline{\underline{3\sqrt{2}}}$

(8)

(a) Slope =  $\frac{11-5}{8-4} = \frac{6}{4} = \underline{\underline{\frac{3}{2}}}$

(b)  $y - 5 = \frac{3}{2}(x - 4)$

$2y - 10 = 3x - 12$

$3x - 2y - 12 + 10 = 0$

$3x - 2y - 2 = 0$

3 Marks

(5) (a) B(8, 9)  
 D(3, 12)

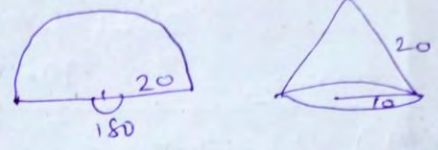
(b)  $AB = 5, BC = 3$   
 $CD = 5 \quad AD = 3$

(9)  $x_6 = 46$   
 $d = 8$

(a)  $x_{16} = x_6 + 10d$   
 $= 46 + 80$   
 $= \underline{\underline{126}}$

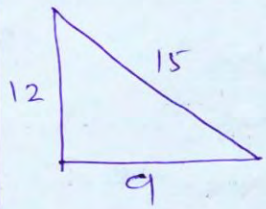
(b)  $x_{21} = 126 + 5d$   
 $= 126 + 40$   
 $= \underline{\underline{166}}$

(12)



(a) 20  
 (b) 10  
 (c) C.S.A =  $\pi r l$   
 $= \pi \times 10 \times 20$   
 $= \underline{\underline{200\pi \text{ cm}^2}}$

10.



(a)  $A = \frac{1}{2} \times 9 \times 12$   
 $= \underline{\underline{54}}$

(b)  $r = \frac{A}{s}$   
 $= \frac{54}{18} = \underline{\underline{3}}$

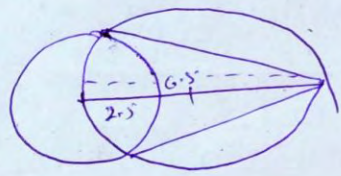
4 Mark

(11) (a)  $P(x) = (x^2 - 4x) + 4$   
 $= 1 - 4 + 4 = \underline{\underline{1}}$

(b)  $p(x) - p(1)$   
 $= x^2 - 4x + 4 - 1$   
 $= x^2 - 4x + 3$

(c)  $(x-1)(x-3)$

(13)



(14)

$S_7 = 140$   
 $S_{11} = 440$

(a)  $x_4 = \frac{140}{7} = \underline{\underline{20}}$

(b)  $x_6 = \frac{440}{11} = \underline{\underline{40}}$

(c)  $d = \frac{40 - 20}{6 - 4} = \frac{20}{2}$   
 $= \underline{\underline{10}}$

(d)  $x_1 = x_4 - 3d$   
 $= 20 - 30$   
 $= \underline{\underline{-10}}$

15

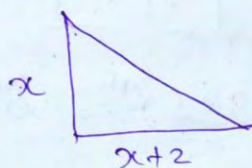
$$\boxed{1,2,3,4} \quad \boxed{1,2,3,4,5}$$

(a)  $4 \times 5 = 20$

(b)  $\frac{2 \times 3}{20} = \frac{6}{20}$

(c)  $\frac{4}{\underline{\underline{20}}}$

16



$$\text{Area} = \frac{1}{2} (x(x+2)) = 24$$

$$x^2 + 2x = 48$$

$$x^2 + 2x + 1 = 48 + 1$$

$$(x+1)^2 = 49$$

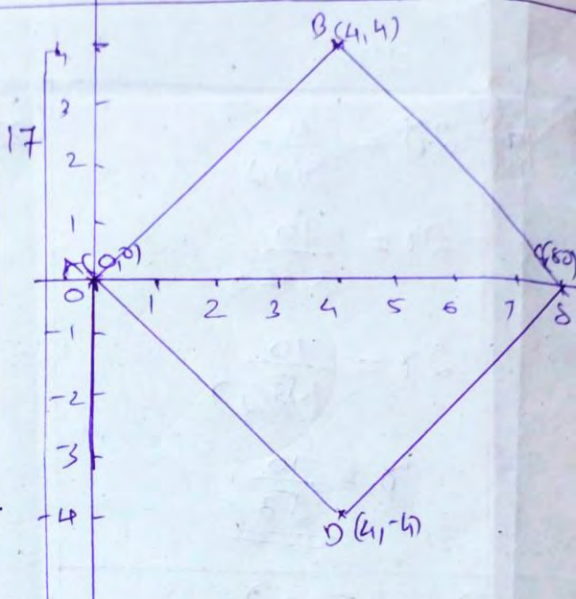
$$x+1 = \pm 7$$

$$x = \pm 7 - 1$$

$$x = \underline{\underline{6}}$$

Sides 6, 8

17



(a) Square

(b)  $BD = 8$

18 (a)  $11 - x$

(b)  $12 \times 2 = x(11 - x)$

$$24 = 11x - x^2$$

$$x^2 - 11x + 24 = 0$$

$$x = \frac{11 \pm \sqrt{121 - 4 \times 1 \times 24}}{2}$$

$$= \frac{11 \pm \sqrt{121 - 96}}{2}$$

$$= \frac{11 \pm \sqrt{25}}{2} = \frac{11 \pm 5}{2}$$

$$= \underline{\underline{8}} \text{ or } \underline{\underline{3}}$$

$$\underline{\underline{PD = 8}} \quad \underline{\underline{PB = 3}}$$

19  $2r = \frac{a}{\sin A}$   
 $2r = \frac{10}{\sin 60}$   
 $2r = \frac{10}{(\sqrt{3}/2)}$   
 $r = \frac{10}{\sqrt{3}}$

20 (a)  $C(15, 13)$

(b)  $AC = \sqrt{(15-7)^2 + (13-5)^2}$   
 $= \sqrt{8^2 + 8^2}$   
 $= \sqrt{64 + 64}$   
 $= \sqrt{128} \text{ cm}$

(c)  $(11, 9)$

21 (a)  $h = 25$

(b)  $h = \sqrt{25^2 - 20^2}$   
 $= \sqrt{625 - 400}$   
 $= \sqrt{225}$   
 $= \underline{\underline{15}} \text{ cm}$

(c)  $V = \frac{1}{3} a^2 h$   
 $= \frac{1}{3} \times 40 \times 40 \times 15$   
 $= \underline{\underline{8000}} \text{ cm}^3$

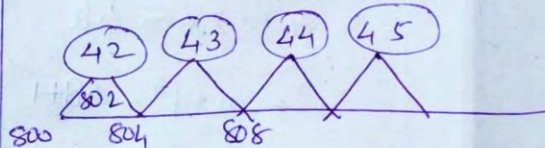
(22)

5 Mark

Daily wages	No. of work
600	8
700	21
800	41
900	66
1000	85
1100	99

$M = \left(\frac{99+1}{2}\right)^{\text{th}} = 50^{\text{th}}$

$d = \frac{900 - 800}{66 - 41} = \frac{100}{25} = 4$

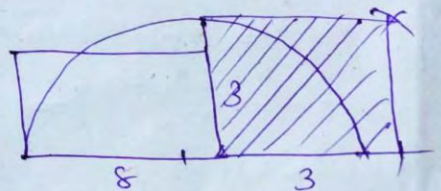


(a) 50

(b)  $800 - 900$

(c)  $M = X_{42} + 8d$   
 $= 802 + 8 \times 4$   
 $= 802 + 32$   
 $= \underline{\underline{834}}$

(23)



24 (a) Centre = (4, 3)

(b)  $r = \sqrt{8^2 + 6^2}$   
 $= \sqrt{64 + 36} = \sqrt{100}$   
 $r = 10 \text{ cm}$

(c)  $(x-4)^2 + (y-3)^2 = 10^2$

$(x-4)^2 + (y-3)^2 = 100$

(25) (a) 75

(b) 150

(c) 30

(d) 75

(e) 15

26 (a)  $V = \pi r^2 h$

$= \pi \times 30 \times 30 \times 60$   
 $= 54000 \text{ cm}^3$

(b)  $V = \frac{1}{3} \times 54000$   
 $= 18000 \text{ cm}^3$

(c)  $r = 30 \text{ cm}$

(d)  $V = \frac{4}{3} \pi \times 30^3$   
 $= 36000 \text{ cm}^3$

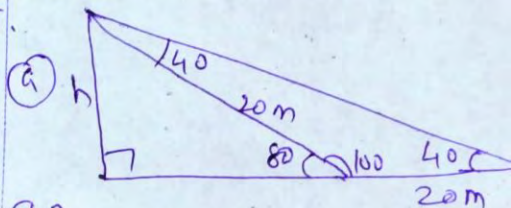
(e)  $54000 : 36000$   
 $3 : 2$

27 (a)  $\frac{20 \times 21}{2} = \underline{\underline{210}}$

(b)  $X_n = \underline{\underline{4n+1}}$

(c)  $\frac{20}{2} [5+81]$   
 $= 86 \times 10$   
 $= \underline{\underline{860}}$

28.



(b)  $\sin 80 = \frac{h}{20}$   
 $h = 20 \times 0.98$   
 $= \underline{\underline{19.6 \text{ m}}}$

29

Heptagon	7	4	14
Decagon	10	7	35
n sided poly	n	n-3	$\frac{n(n-3)}{3}$

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