F.6 Mathematics 2026 Mock Exam Paper I & II

Paper 2

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1.	B	26.	B
2.	C	27.	D
3.	C	28.	A
4.	A	29.	A
5.	D	30.	B
6.	D	31.	D
7.	B	32.	B
8.	D	33.	D
9.	C	34.	C
10.	D	35.	D
11.	A	36.	C
12.	A	37.	C
13.	D	38.	B
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17.	C	42.	B
18.	D	43.	C
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F.6 Mathematics 2026 Mock Exam Paper I & II

Section A

1. B

$9^{444} \cdot 16^{222} = 3^{888} \cdot 2^{888} = 6^{888}$

2. C

$$\frac{2a}{bx} + a = \frac{2}{b}$$

$$\frac{2a + abx}{x} = 2$$

$$2a + abx = 2x$$

$$2a = 2x - abx$$

$$2a = x(2 - ab)$$

$$\frac{2a}{2 - ab} = x$$

$$x = \frac{2a}{2 - ab}$$

3. C

$3mn + m^2 - ml + m - 3nl + 3n$

$= 3mn - 3nl + 3n + m^2 - ml + m$

$= 3n(m - l + 1) + m(m - l + 1)$

$= (3n + m)(m - l + 1)$

$= (m + 3n)(m - l + 1)$

4. A

Max error = 0.01

Lower limit = 2.34 – 0.01 = 2.33

Upper limit = 2.34 + 0.01 = 2.35

$\therefore \quad 2.33 \le x < 2.35$

5. D

$(x - \alpha)^2 - 4 \equiv (x - 3)(x - 11) + \beta$

$x^2 - 2\alpha x + \alpha^2 - 4 \equiv x^2 - 14x + 33 + \beta$

By comparing the coefficient of x, we have $-2\alpha = -14$

$\alpha = 7$

By comparing the constant term, we have $\alpha^2 - 4 = 33 + \beta$

$7^2 - 4 = 33 + \beta$

$\beta = 12$

6. D

$\frac{6-x}{2} \le x-3$ or $9-2x \ge 1$

$6-x \le 2x-6$ or $-2x \ge -8$

$-3x \le -12$ or $x \le 4$

$x \ge 4$

$\therefore$ All real values of x.

7. B

$5x^2 - 3x + 4 = 0$ … (*)

Since, m is a root of the equation (*),

$\therefore$ $5m^2 - 3m + 4 = 0$

$5m^2 - 3m = -4$

$15m^2 - 9m = -12$

$15m^2 - 5m - 4m = -12$

$15m^2 - 5m = 4m - 12$

8. D

$P(x) = (x + 3)Q(x) + ax + 6$

$P(-3) = (-3 + 3)Q(-3) + a(-3) + 6$

$0 = -3a + 6$

$a = 2$

The required remainder

$= P(1)$

$= (1 + 3)Q(1) + 2(1) + 6$

$= (4)(2) + 2(1) + 6$

$= 16$

9. C

$f(x - 3) = x^2 - 8x + 7$

$f(x) = (x + 3)^2 - 8(x + 3) + 7$

$f(2x) = (2x + 3)^2 - 8(2x + 3) + 7$

$f(2x) = 4x^2 + 12x + 9 - 16x - 24 + 7$

$f(2x) = 4x^2 - 4x - 8$

10. D

Let f and m be the number of female runners and male runners respectively.

$70\% \times f + 30\% \times m = 40\% \times (f + m)$

$0.7f + 0.3m = 0.4f + 0.4m$

$0.3f = 0.1m$

$m = 3f$

The required percentage

$= \frac{m}{f+m} \times 100\%$

$= \frac{3f}{f+3f} \times 100\%$

$= 75\%$

11. A

P(–3, 4)

Thus, the height of $PQRS = 4$

Put $y = 0$ into $y = 4 - (x + 3)^2$,

$4 - (x + 3)^2 = 0$

$x + 3 = 2$ or $x + 3 = -2$

$x = -1$ or $x = -5$

Thus, the base length of $PQRS = -1 - (-5) = 4$

The required area

$= 4 \times 4$

= 16 sq. units

12. A

Let $a = 2k$ and $b = 5k$, where k is a constant.

$17a = 5b + 13c$

$17(2k) = 5(5k) + 13c$

$34k = 25k + 13c$

$c = \frac{9}{13}k$

$a : c = 2k : \frac{9}{13}k = 26 : 9$

13. D

$q \propto \frac{r^2}{\sqrt{p}}$

$q = \frac{kr^2}{\sqrt{p}}$, where k is a non-zero constant.

$\therefore \quad k = \frac{q\sqrt{p}}{r^2} = \text{constant}$

→ $\frac{1}{k} = \frac{r^2}{q\sqrt{p}} = \text{constant}$

→ $k^2 = \frac{q^2 p}{r^4} = \frac{pq^2}{r^4} = \text{constant}$

14. B

$a_{n+2} = 2a_{n+1} - a_n$

$a_5 = 2a_4 - a_3$

$34 = 2a_4 - a_3$

$2a_4 = 34 + a_3$ ……(1)

$a_4 = 2a_3 - a_2$

$a_4 = 2a_3 - 10$

$2a_4 = 4a_3 - 20$

$34 + a_3 = 4a_3 - 20$ [From (1)]

$3a_3 = 54$

$a_3 = 18$

15. A

Let r cm and x° be the radius and the angle of sector respectively.

$\pi r^2 \times \frac{x^\circ}{360^\circ} = 12\pi$ ……(1)

$2\pi r \times \frac{x^\circ}{360^\circ} = 4\pi$ ……(2)

By solving (1) and (2), we have $r = 6$ and $x = 120$

Thus, the radius of the sector OPQ is 6 cm and the angle of the sector OPQ is 120°.

$\therefore$ I and II are correct.

Since the radius of the circle passing through O, P and Q = 6 cm

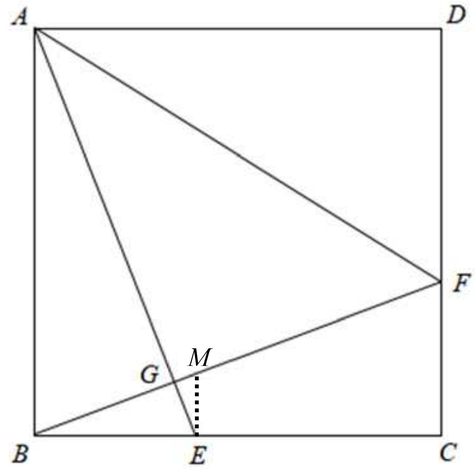
The circumference of the circle passing through O, P and Q

$= 2\pi \times 6$

$= 12\pi$ cm

$\therefore$ III is incorrect.

16. B



Draw EM sush that EM is parallel to FC.

$\Delta BEM \sim \Delta BCF$ (AAA)

$\frac{BE}{BC} = \frac{EM}{CF} = \frac{2}{5}$

Since $CF : FD = 2 : 3$, then $CF : CD = CF : AB = 2 : 5$

$\therefore \frac{EM}{CF} = \frac{2}{5}$ and $\frac{CF}{AB} = \frac{2}{5}$

→ $\frac{EM}{AB} = \frac{4}{25}$

$\Delta GEM \sim \Delta GAB$ (AAA)

$\frac{GE}{GA} = \frac{EM}{AB} = \frac{4}{25}$

Area of $\Delta GAB = \frac{GA}{GE} \times 8 = \frac{25}{4} \times 8 = 50$ cm^2

Area of ΔEAB = Area of ΔFBC = 50 + 8 = 58 cm^2

Area of $\Delta DAF = \frac{FD}{CF} \times 58 = \frac{3}{2} \times 58 = 87$ cm^2

Area of ΔFAB = Area of ΔDAF + Area of ΔFBC = 58 + 87 = 145 cm^2

Area of ΔAGF = Area of ΔFAB – Area of ΔGAB = 145 + 50 = 95 cm^2

17. C

Let $\angle ABE = \angle CBD = x$

Consider ΔEAB,

$\tan x = \frac{5}{AB}$

Consider ΔBCD,

$\tan x = \frac{CD}{5+15} = \frac{CD}{20}$

$\therefore \frac{CD}{20} = \frac{5}{AB}$

$\frac{CD}{20} = \frac{5}{CD}$ (Since $CD = AB$)

$CD = 10$ cm

18. D

$AB = BC$ and $DE = BE$ (properties of rhombus)

Consider ΔBCE,

$$\cos\theta = \frac{BE}{BC} = \frac{DE}{AB}$$

$$\frac{AB}{DE} = \frac{1}{\cos\theta}$$

19. C

Let $\angle ABD = \angle DBE = x$

$\angle BDE = \angle DBE = x$ (base $\angle$s, isos. Δ)

$\angle BEC = \angle BDE + \angle DBE = 2x$ (ext. $\angle$ of Δ)

$\angle ECD = \angle EDC$ (base $\angle$s, isos. Δ)

$= \dfrac{180° - 2x}{2} = 90° - x$ ($\angle$ sum of Δ)

Consider ΔBCA,

$\angle ECD + \angle BAC + \angle ABD + \angle DBE = 180^{\circ}$ ($\angle$ sum of Δ)

$90^{\circ} - x + 62° + x + x = 180^{\circ}$

$x = 28^{\circ}$

Thus, $\angle BDE = 28^{\circ}$

20. D

$$(n-2)\times 180° = 3960°$$

$$n = \frac{3960°}{180°} + 2$$

$$n = 24$$

Each interior angle of the polygon $= \dfrac{3960°}{24} = 165°$

Each exterior angle of the polygon $= 180° - 165° = 15°$

21. B

$\angle SQT = \angle STQ$ (base $\angle$s, isos. Δ)

Let $\angle SQT = \angle STQ = x$

$\angle QSP = \angle SQT + \angle STQ = 2x$ (ext. $\angle$ of Δ)

$\angle SRT = \angle SQT + \angle QSR = x + 31°$ (ext. $\angle$ of Δ)

$\angle QPS = \angle SRT = x + 31°$ (ext. $\angle$, cyclic quad.)

Consider ΔPSQ,

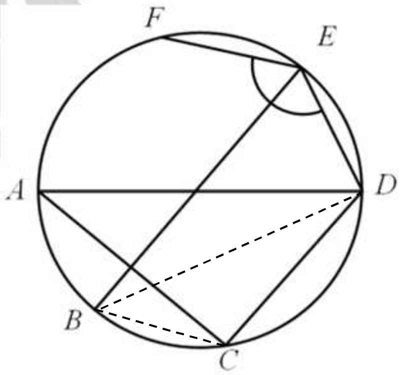
$\angle QPS + \angle QSP + \angle PQS = 180^{\circ}$ ($\angle$ sum of Δ)

$x + 31° + 2x + 65° = 180^{\circ}$

$x = 28^{\circ}$

Thus, $\angle QPS = 28^{\circ} + 31° = 59^{\circ}$

22. A



Let $\angle BED = x$

Join BC and BD.

$\angle BDE = 90^{\circ}$ ($\angle$ in semi-circle)

$\angle DBE = 180^{\circ} - 90^{\circ} - x = 90^{\circ} - x$ ($\angle$ sum of Δ)

$\angle CDB = \angle DBE = 90^{\circ} - x$ (alt. $\angle$s, BE // CD)

$\angle DBC = \angle DAC = 44°$ ($\angle$s in the same segment)

$\angle BDE + \angle CDB + \angle DBE + \angle DBC = 180^{\circ}$ (opp. $\angle$s, cyclic quad.)

$90^{\circ} + 90^{\circ} - x + 90^{\circ} - x + 44° = 180^{\circ}$

$x = 67^{\circ}$

Thus, $\angle FED = 67^{\circ} + 34° = 101^{\circ}$

23. D

Since, $\angle AFD = \angle ADF$

$\therefore$ $AF = AD$ (sides opp. equal $\angle$s)

$\therefore$ $AF = AD = BC$ (properties of rectangle)

Thus, I is correct.

$\angle ABC = \angle CED = 90^{\circ}$ (given)

$\angle BAC = \angle ECD$ (alt. $\angle$s, AB // CD)

$\therefore$ $\Delta ABC \sim \Delta CED$ (AA)

Thus, II is correct.

$\angle ADE = \angle AFE$ (given)

$\angle AED = \angle AEF = 90^{\circ}$ (given)

$AF = AD$ (sides opp. equal $\angle$s)

$\Delta ADE \cong \Delta AFE$ (AAS)

Thus, III is correct.

24. C

The equation of L_1

$$y+5=2.5(x-4)$$
$$y=2.5x-15$$

Thus, x-intercept of $L_1=6$

The equation of L_2

$$y+5=-\frac{1}{2.5}(x-4)$$
$$y+5=-0.4(x-4)$$
$$y=-0.4x-3.4$$

Thus, y-intercept of $L_1=-3.4$

The required area

$$=\frac{1}{2}\times 6\times 3.4+\frac{1}{2}\times\sqrt{(4-0)^2+(-5+3.4)^2}\times\sqrt{(6-4)^2+(0+5)^2}$$
$$=10.2+\frac{1}{2}\times\sqrt{18.56}\times\sqrt{29}$$
$$=10.2+11.6$$
$$=21.8$$

25. B

Let $P(a, b)$.

$a+2b-10=0\Rightarrow a+2b=10$ ……(1)

$AP=BP$

$$(a+3)^2+(b-2)^2=(a-5)^2+(b+4)^2$$
$$a^2+6a+9+b^2-4b+4=a^2-10a+25+b^2+8b+16$$
$4a-3b=7$ ......(2)

By solving (1) and (2), we have $a=4$, $b=3$.

Thus, the y-coordinates of P is 3.

26. B

Let $A(p, q)$ and $B(m, n)$

Consider I,

$PA^2 + PB^2 = k$

$(x - p)^2 + (y - q)^2 + (x - m)^2 + (y - n)^2 = k$

$2x^2 + 2y^2 - (2p + 2m)x - (2q + 2n)y + p^2 + q^2 + m^2 + n^2 - k = 0$ which is not a straight line.

Thus, I is false.

Consider II,

$PA^2 + AB^2 = k$

$(x - p)^2 + (y - q)^2 + (p - m)^2 + (q - n)^2 = k$

$x^2 + y^2 - 2px - 2qy + (p - m)^2 + (q - n)^2 + p^2 + q^2 - k = 0$ which is not a straight line.

Thus, II is false.

Consider III,

$PA^2 - PB^2 = k$

$(x - p)^2 + (y - q)^2 + (x - m)^2 + (y - n)^2 = k$

$(2m - 2p)x + (2n - 2q)y + p^2 + q^2 - m^2 - n^2 - k = 0$ which is a straight line.

Thus, III is correct.

27. D

$x^2 + y^2 - 4x + 10y + 21 = 0$

Centre = (2, –5)

Radius = $\sqrt{2^2 + 5^2 - 21} = 2\sqrt{2}$

The required distance

$= \sqrt{(7-2)^2 + (-10+5)^2} + 2\sqrt{2}$

$= 5\sqrt{2} + 2\sqrt{2}$

$= 7\sqrt{2}$

28. A

Expected value

$= \frac{5}{36} \times \$252 + \frac{31}{36} \times \$36$

$= \$66$

29. A

The required probability

$= 2\times\frac{1}{5}\times\frac{1}{6}+2\times\frac{1}{5}\times\frac{2}{6}$

$= \frac{1}{5}$

30. B

$\frac{5+7\times3+8+x+2y}{8}=6$

$x+2y=14$

For y = 1, x = 12, median = 7 ; For y = 2, x = 10, median = 7

For y = 3, x = 8, median = 7 ; For y = 4, x = 6, median = 6.5 (rejected)

For y = 5, x = 4, median = 6 (rejected) ; For y = 6, x = 2, median = 6.5 (rejected)

∴ The possible values of x and y are $\begin{cases} x=12 \\ y=1 \end{cases}$, $\begin{cases} x=10 \\ y=2 \end{cases}$ and $\begin{cases} x=8 \\ y=3 \end{cases}$.

∴ Mode = 7

Take y = 1, x = 12, the greatest possible range = 12 – 1 = 11

Take y = 3, x = 8, the least possible variance = 3.75

Thus, I and III is true.

Section B

31. D

$$\begin{aligned}5\times2^8+17-48\times2^3&=5\times2^8-48\times2^3+17\\&=5\times2^8-(2^5+2^4)\times2^3+2^4+1\\&=5\times2^8-2^8-2^7+2^4+1\\&=4\times2^8-2^7+2^4+1\\&=2^7(4\times2-1)+2^4+1\\&=2^7(2^2+2+1)+2^4+1\\&=2^9+2^8+2^7+2^4+1\\&=1110010001_2\end{aligned}$$

32. B

$\alpha+\beta=8,\ \alpha\beta=4$

$$\begin{aligned}\log_{\alpha+\beta}\alpha^2+2\log_{\alpha+\beta}\beta&=\log_{\alpha+\beta}\alpha^2+\log_{\alpha+\beta}\beta^2\\&=\log_{\alpha+\beta}(\alpha^2\beta^2)\\&=\frac{\log(\alpha\beta)^2}{\log\alpha+\beta}\\&=\frac{\log16}{\log8}\\&=\frac{4}{3}\end{aligned}$$

33. D

$$u=\frac{1+ai}{1-i}=\frac{1+ai}{1-i}\times\frac{1+i}{1+i}=\frac{1+i+ai-a}{2}=\frac{1-a}{2}+\frac{1+a}{2}i$$

$$v=\frac{a-3i}{1+i}=\frac{a-3i}{1+i}\times\frac{1-i}{1-i}=\frac{a-3i-ai-3}{2}=\frac{a-3}{2}-\frac{a+3}{2}i$$

Since, $\frac{1-a}{2}=\frac{a-3}{2}$, we have $a=2$

$$\begin{aligned}u-v&=\frac{1-a}{2}+\frac{1+a}{2}i-(\frac{a-3}{2}-\frac{a+3}{2}i)\\&=-\frac{1}{2}+\frac{3}{2}i-(-\frac{1}{2}-\frac{5}{2}i)\\&=-\frac{1}{2}+\frac{3}{2}i+\frac{1}{2}+\frac{5}{2}i\\&=4i\end{aligned}$$

34. C

$r = \frac{a_5}{a_4} = \sqrt{2}$

$a_1 + a_2 + a_3 + \ldots + a_8 = \sqrt{2} + 1$

$\frac{a_1(\sqrt{2}^8 - 1)}{\sqrt{2} - 1} = \sqrt{2} + 1$

$a_1 = \frac{1}{15}$ (which is rational)

Thus, I is true.

$a_{20} = \frac{1}{15}(\sqrt{2})^{20-1} = \frac{512\sqrt{2}}{15} < 50$

Thus, II is true.

$a_1 + a_2 + a_3 + \ldots + a_{20} = \frac{1}{15} \times \frac{(\sqrt{2}^{20} - 1)}{\sqrt{2} - 1} = \frac{1023}{15(\sqrt{2} - 1)} > 150$

Thus, III is false.

35. D

Since the graph of $y = a^x$ is increasing while that of $y = b^x$ is decreasing.

So that $a > b$

Thus, I is false.

Let $y = k$ be the equation of L.

$\therefore$ $A(\frac{\log k}{\log a}, k)$, $B(\frac{\log k}{\log b}, k)$ and $C(0, k)$

$AC = \frac{\log k}{\log a} - 0 = \frac{\log k}{\log a}$, $BC = 0 - \frac{\log k}{\log b} = -\frac{\log k}{\log b}$

$AC < BC$

$\frac{\log k}{\log a} < -\frac{\log k}{\log b}$

$\frac{1}{\log a} < -\frac{1}{\log b}$

Since, $\log a > 0$ and $\log b < 0$, we have $\log a > -\log b$, so that $ab > 1$.

Thus, II is true.

$$\frac{AC}{BC} = \frac{\frac{\log k}{\log a}}{-\frac{\log k}{\log b}} = -\frac{\log b}{\log a} = -\log_a b$$

Thus, III is true.

36. C

$a^{\log_3 7}=27$, $b^{\log_7 11}=49$, $c^{\log_{11} 25}=\sqrt{11}$

$a^{\log_3 7}=27$	$b^{\log_7 11}=49$	$c^{\log_{11} 25}=\sqrt{11}$
$\log_3 7\times\log_3 a=\log_3 27$	$\log_7 11\times\log_7 b=\log_7 49$	$\log_{11} 25\times\log_{11} c=\log_{11}\sqrt{11}$
$\log_3 a=\dfrac{3}{\log_3 7}$;	$\log_7 b=\dfrac{2}{\log_7 11}$;	$\log_{11} c=\dfrac{1}{2\log_{11} 25}$
$a=3^{\frac{3}{\log_3 7}}$	$b=7^{\frac{2}{\log_7 11}}$	$c=11^{\frac{1}{2\log_{11} 25}}$

$a^{(\log_3 7)^2}+b^{(\log_7 11)^2}+c^{(\log_{11} 25)^2}$

$=3^{\frac{3}{\log_3 7}\times(\log_3 7)^2}+7^{\frac{2}{\log_7 11}\times(\log_7 11)^2}+11^{\frac{1}{2\log_{11} 25}\times(\log_{11} 25)^2}$

$=3^{3\log_3 7}+7^{2\log_7 11}+11^{\frac{1}{2}\log_{11} 25}$

$=3^{\log_3 7^3}+7^{\log_7 11^2}+11^{\log_{11} 5}$

$=7^3+11^2+5$

$=469$

37. C

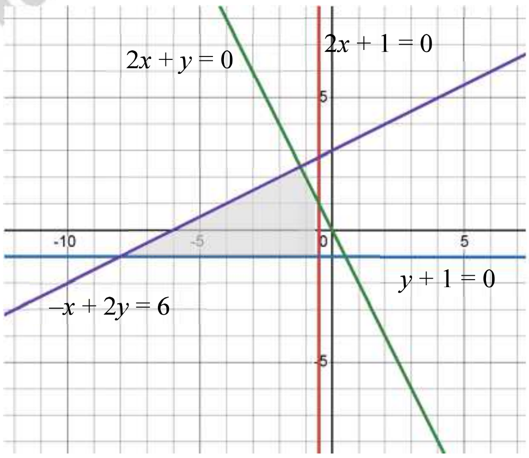
Let F(x, y) = $2x + 4y + 5$

F(–8, –1) = 2(–8) + 4(–1) + 5 = –15

F(–0.5, –1) = 2(–0.5) + 4(–1) + 5 = 0

F(–0.5, 1) = 2(–0.5)+ 4(1) + 5 = 8

F(–1.2, 2.4) = 2(–1.2) + 4(2.4) + 5 = 12.2



38. B

$\angle OAP = \angle OBP = 90^{\circ}$ (tangent properties)

$\angle OAP + \angle OBP = 180^{\circ}$

$\therefore$ O, A, P and B are concyclic. (opp. $\angle$s, supp.)

Thus, I is correct.

$\Delta APE \cong \Delta BPE$ (SAS)

$AE = BE = 8 \div 2 = 4$ (corr. sides, $\cong\triangle$s)

$OE = \sqrt{5^2 - 4^2} = 3$ (Pyth. theorem)

Since $\Delta OEA \sim \Delta OAP$ (AAA)

$\frac{OE}{OA} = \frac{OA}{OP}$ (corr. sides, $\sim\Delta$s)

$\frac{3}{5} = \frac{5}{OP}$

$OP = \frac{25}{3}$

$\therefore$ $PE = OP - OE = \frac{25}{3} - 3 = \frac{16}{3}$

Thus, II is false.

Let X and Y be points on PA and PB respectively such that $DX \perp PA$ and $DY \perp PB$.

$DE = OD - OE$

$= 5 - 3$

$= 2$

Since $\Delta PXD \sim \Delta PAO$ (AAA)

$\frac{PD}{PO} = \frac{XD}{AO}$ (corr. sides, $\sim\Delta$s)

$$\frac{\frac{16}{3} - 2}{\frac{16}{3} + 3} = \frac{XD}{5}$$

$XD = 2$

$\therefore$ $XD = DE$

$\therefore$ PA and PB are tangents to the circle at X and Y respectively. (converse of tangent $\perp$ radius)

Thus, III is correct.

39. A

Let A be the intersections of $4x + 3y = 0$ and $y = a$.

$\therefore \quad A(\frac{-3a}{4}, a)$

Mid-point of $OA = (\frac{-3a}{8}, \frac{a}{2})$

Let B be the intersections of $4x - 3y = 0$ and $y = a$.

$\therefore \quad B(\frac{3a}{4}, a)$

Since B, centroid and mid-point of OA are colliner.

$$\frac{a+26}{\frac{3a}{4}-0} = \frac{\frac{a}{2}+26}{\frac{-3a}{8}-0}$$

$$8a = -312$$

$$a = -39$$

40. A

Let $s = \frac{6+x+x+2}{2} = x+4$

By Heron's formula,

$$\sqrt{(x+4)(x+4-6)(x+4-x)(x+4-x-2)} = \sqrt{216}$$

$$(x+4)(x-2)(4)(2) = 216$$

$$x^2 + 2x - 8 = 27$$

$$x^2 + 2x - 35 = 0$$

$$x = 5 \quad \text{or} \quad x = -7 \text{ (rej.)}$$

$BD = \sqrt{5^2 + 5^2} = \sqrt{50}$

$AD = \sqrt{7^2 + 5^2} = \sqrt{74}$

By cosine formula,

$$\cos \angle ADB = \frac{74 + 50 - 6^2}{2(\sqrt{74})(\sqrt{50})}$$

$$\angle ADB = 44°$$

41. A

g(x) = f($3x - 3$)

42. B

Number of ways

$= C_2^7 \times C_3^{10} + C_3^7 \times C_2^{10} + C_4^7 \times C_1^{10} + C_5^7$

$= 4466$

43. C

The required probability $= \dfrac{C_3^8 - C_3^6}{C_3^8} = \dfrac{9}{14}$

44. C

L_1: $y = \dfrac{1}{2}x + c_1$

$\Rightarrow$ $A(0, c_1)$, $B(-2c_1, 0)$

L_2: $y = \dfrac{1}{2}x + c_2$

$\Rightarrow$ $C(0, c_2)$, $D(-2c_2, 0)$

$BD = -2c_2 + 2c_1 = 2(c_1 - c_2)$

Consider the slope of L_2,

$$\sin(\tan^{-1}\frac{1}{2}) = \frac{10}{BD}$$

$$\frac{1}{\sqrt{5}} = \frac{10}{2(c_1 - c_2)}$$

$$c_1 - c_2 = 5\sqrt{5}$$

$AB = \sqrt{c_1{}^2 + (2c_1)^2} = \sqrt{5}c_1$

$CD = -\sqrt{c_2{}^2 + (2c_2)^2} = -\sqrt{5}c_2$

The required area $= \dfrac{(\sqrt{5}c_1 - \sqrt{5}c_2) \times 10}{2} = 5\sqrt{5}(c_1 - c_2) = 5\sqrt{5}(5\sqrt{5}) = 125$

45. A

Since, $T(3) = r^2 \times T(1)$, $T(4) = r^2 \times T(2)$, $T(5) = r^2 \times T(3)$, ……

Thus, each term in the group of numbers $\{T(3), T(4), T(5), \ldots, T(27)\}$ equals to r^2 times each term in the group of numbers $\{T(1), T(2), T(3), \ldots, T(25)\}$.

So that

$x_2 = r^2 x_1$

$y_2 = r^2 y_1$

Thus, I and II are correct.

Let s_1 and s_2 be the standard deviation of the two groups of numbers respectively.

Since, $s_2 = r^2 s_1$

$z_2 = (s_2)^2 = (r^2 s_1)^2 = r^4 {s_1}^2 = r^4 z_1$

Thus, III is false.