# Sample EduNgr.com JAMB Past Questions

# JAMB » Mathematics » 2014

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1 Find the value of $110111_2 + 10100_2$

A $1101011_2$

B $1001001_2$

C $1001011_2$

D $1001111_2$

---

2 A woman bought a grinder for N60,000. She sold it at a loss of 15%. How much did she sell it?

A N53,000

B N52,000

C N51,000

D N50,000

---

3 Express the product of 0.00043 and 2000 in standard form.

A $8.6 \times 10^{-3}$

B $8.3 \times 10^{-2}$

C $8.6 \times 10^{-1}$

D $8.6 \times 10$

---

4 A man donates 10% of his monthly net earnings to his church. If it amounts to N4,500, what is his net monthly income?

A N40,500

B N45,000

C N52,500

D N62,000

---

5 If log7.5 = 0.8751, evaluate 2 log75 + log750

A 6.6252

B 6.6253

C 66.252

D 66.253

---



6 Solve for x in $8x^{-2} = 2/25$

A 4

B 6

C 8

D 10

7 Simplify $\frac{2\sqrt{2}-\sqrt{3}}{\sqrt{2}+\sqrt{3}}$

A $3\sqrt{6}-7$

B $3\sqrt{6}-7$

C $3\sqrt{6}-1$

D $3\sqrt{6}+1$



---

8 Evaluate $Log_2 8 + Log_2 16 - Log_2 4$

A 3

B 4

C 5

D 6

9 If P = {1,2,3,4,5} and P ∪ Q = {1,2,3,4,5,6,7}, list the elements in Q

A {6}

B {7}

C {6,7}

D {5,6}

---

10 If $gt^2$ - k - w = 0, make g the subject of the formula

A $\frac{k+w}{t^2}$

B $\frac{k-w}{t^2}$

C $\frac{k+w}{t}$

D $\frac{k-w}{t}$

11 Factorize $2y^2 - 15xy + 18x^2$

A $(2y - 3x)(y + 6x)$

B $(2y - 3x)(y - 6x)$

C $(2y + 3x)(y - 6x)$

D $(3y + 2x)(y - 6x)$

---

12 Find the value of **k** if **y - 1** is a factor of $y^3 + 4y^2 + ky - 6$

A -6

B -4

C O

D 1

---

13 $y$ varies directly as $w^2$. When y = 8, w = 2. Find y when w = 3

A 18

B 12

C 9

D 6

---

14 P varies directly as Q and inversely as R. When Q = 36 and R = 16, P = 27. Find the relation between P, Q and R.

A $P = \frac{Q}{12R}$

B $P = \frac{12Q}{R}$

C $P = 12QR$

D $P = \frac{12}{QR}$



---

15 What is the solution of $\frac{x-5}{x+3} < -1$?

A -3 < x < 1

B x < -3 or x > 1

C -3 < x < 5

D x < -3 or x > 5

---



16 Evaluate the inequality $\frac{x}{2} + \frac{3}{4} \leq \frac{5x}{6} - \frac{7}{12}$

A $x \geq 4$

B $x \leq 3$

C $x \geq -3$

D $x \leq -4$

---

17 The 4th term of an A.P. is 13 while the 10th term is 31. Find the 24th term.

A 89

B 75

C 73

D 69

---

18 What is the common ratio of the G.P.

$(\sqrt{10} + \sqrt{5}) + (\sqrt{10} + 2\sqrt{5}) + \ldots ?$

A $\sqrt{2}$

B $\sqrt{5}$

C 3

D 5

---

19 A binary operation * is defined by $x * y = x^y$. If $x * 2 = 12 - x$, find the possible values of x

A 3,4

B 3,-4

C -3,4

D -3,-4

---

20 Find y, if $\begin{pmatrix} 5 & -6 \\ 2 & -7 \end{pmatrix} \begin{pmatrix} 5 \\ 2 \end{pmatrix} = \begin{pmatrix} 7 \\ -11 \end{pmatrix}$

A 8

B 5

C 3

D 2

---

## EduNgr.com JAMB Past Questions

21 If $\begin{vmatrix} -x & 12 \\ -1 & 4 \end{vmatrix} = -12,$ find x

A -6

B -2

C 3

D 6



---

22 Find the value of $\begin{vmatrix} 0 & 3 & 2 \\ 1 & 7 & 8 \\ 0 & 5 & 4 \end{vmatrix}$

A 12

B 10

C -1

D -2

---

23 How many sides has a regular polygon whose interior angle is $135^{o}$

A 12

B 10

C 9

D 8

---

24 A cylindrical tank has a capacity of $6160m^3$.

What is the depth of the tank if the radius of its base is 28cm?

A 8.0m

B 7.5m

C 5.0m

D 2.5m

---

25 The locus of a dog tethered to a pole with a rope of 4m is a

A circle with diameter 4m

B circle with radius 4m

C semi-circle with diameter 4m

D semi-circle with radius 4m

---

26 Find the mid point of S(-5, 4) and T(-3, -2)

A -4, 2

B 4, -2

C -4, 1

D 4, -1

---

27 The gradient of a line joining (x,4) and (1,2) is $\frac{1}{2}$. Find the value of x

A 5

B 3

C -3

D -5

---

28 Calculate the mid point of the line segment y - 4x + 3 = 0, which lies between the x-axis and y-axis.

A $(3 \quad -3\,8 \quad 2)$

B $(3 \quad 3\,8 \quad 2)$

C $(-2 \quad 2\,2 \quad 2)$

D $(-2 \quad 3\,3 \quad 2)$



---

29 Find the equation of the straight line through (-2, 3) and perpendicular to 4x + 3y - 5 = 0

A 3x - 4y + 18 = 0

B 3x + 2y - 18 = 0

C 4x + 5y + 3 = 0

D $5x - 2y - 11 = 0$

---

30 If $\sin\theta = \frac{12}{13}$, find the value of $1 + \cos\theta$

A $\frac{25}{13}$

B $\frac{18}{13}$

C $\frac{8}{13}$

D $\frac{5}{13}$

---



31 If $y = 4x^3 - 2x^2 + x$, find $\frac{\delta y}{\delta x}$

A $8x^2 - 2x + 1$

B $8x^2 - 4x + 1$

C $12x^2 - 2x + 1$

D $12x^2 - 4x + 1$

---

32 If y = cos 3x, find $\frac{\delta y}{\delta x}$

A $\frac{1}{3}\sin 3x$

B $-\frac{1}{3}\sin 3x$

C 3 sin 3x

D -3 sin 3x

---

33 Find the minimum value of $y = x^2 - 2x - 3$

A 4

B 1

C -1

D -4

---

34 Evaluate $\int \sin 2x dx$

A $\cos 2x + k$

B $\frac{1}{2}\cos 2x + k$

C $-\frac{1}{2}\cos 2x + k$

D -cos 2x + k

---

35 Evaluate $\int (2x+3)^{\frac{1}{2}} \delta x$

A $\frac{1}{12}(2x+3)^6 + k$

B $\frac{1}{3}(2x+3)^{\frac{1}{2}} + k$

C $\frac{1}{3}(2x+3)^{\frac{3}{2}} + k$

D $\frac{1}{12}(2x+3)^{\frac{3}{4}} + k$

---

## EduNgr.com JAMB Past Questions

36 The mean of 2 - 4, 4 + t, 3 - 2t and t - 1 is

A t

B -t

C 2

D -2

---

37

| $Values$ | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| $Frequency$ | 1 | 2 | 2 | 1 | 9 |

Find the mode of the distribution above

A 1

B 2

C 3

D 4

---

38 Find the median of 5,9,1,10,3,8,9,2,4,5,5,5,7,3 and 6

A 6

B 5

C 4

D 3

---

39 Find the standard deviation of 5, 4, 3, 2, 1

A $\sqrt{2}$

B $\sqrt{3}$

C $\sqrt{6}$

D $\sqrt{10}$

---

40 In how many ways can a team of 3 girls be selected from 7 girls?

A $\frac{7!}{3!}$

B $\frac{7!}{4!}$

C $\frac{7!}{3!4!}$

D $\frac{7!}{2!5!}$

---



41

| $Numbers$ | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| $Frequency$ | 18 | 22 | 20 | 16 | 10 | 14 |

The table above represents the outcome of throwing a

die 100 times. What is the probability of obtaining at least a 4?

A $\frac{1}{5}$

B $\frac{1}{2}$

C $\frac{2}{5}$

D $\frac{3}{4}$

---

42 A number is chosen at random from 10 to 30 both inclusive. What is the probability that the number is divisible by 3?

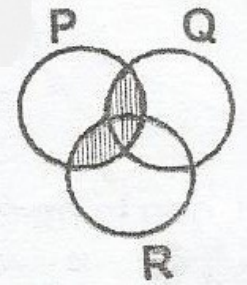
A $\frac{2}{15}$

B $\frac{1}{10}$

C $\frac{1}{3}$

D $\frac{2}{5}$

43




From the venn diagram above, the shaded parts represent

A $(P \cap Q) \cup (P \cap R)$

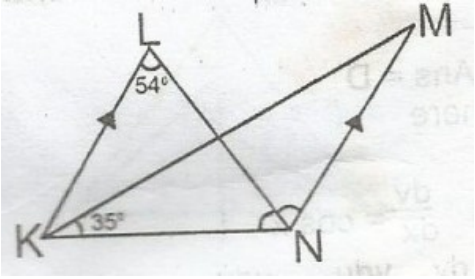
B $(P \cup Q) \cap (P \cap R)$

C $(P \cup Q) \cup (P \cup R)$

D $(P \cap Q) \cup (P \cup R)$

---

44




In the figure above, KL//NM, LN bisects < KNM. If angles KLN is $54^o$ and angle MKN is $35^o$, calculate the size of angle KMN.

A $91^o$

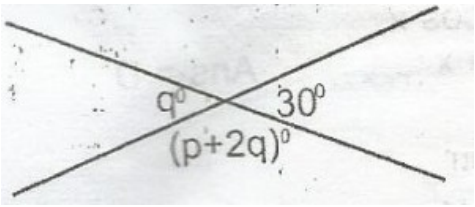
B $89^o$

C $37^o$

D $19^o$

---

45



From the figure above, what is the value of p?

A $135^o$

B $90^o$

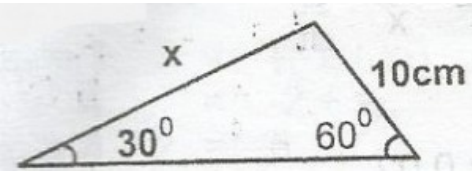
C $60^o$

D $45^o$

---



46




Find the value of x in the figure above

A $20\sqrt{3}$cm

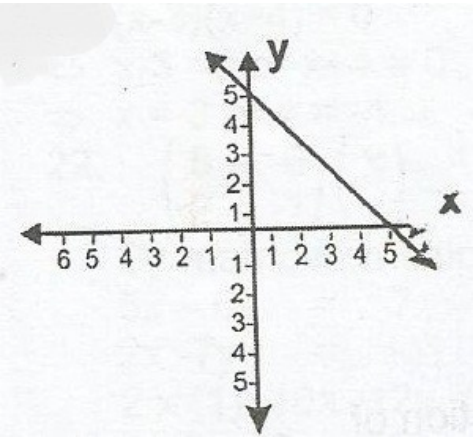
B $10\sqrt{3}$cm

C $5\sqrt{3}$cm

D $4\sqrt{3}$cm

---

47




in the figure above, what is the equation of the line that passes the y-axis at (0,5) and passes the x-axis at (5,0)?

A $y = x + 5$

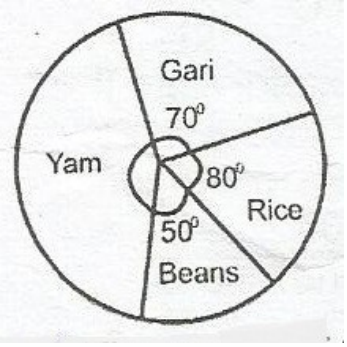
B $y = -x + 5$

C $y = x - 5$

D $y = -x - 5$

---

48




The pie chart above shows the monthly distribution of a man's salary on food items. If he spent N8,000 on rice, how much did he spent on yam?

A N42,000

B N18,000

C N16,000

D N12,000

# Answers: JAMB Past Questions: JAMB » Mathematics » 2014

1. **C**

2. **C**

SP = Nx
CP = N60,000
Percentage loss = 15%
Using percentage loss...

$$\frac{CP-SP}{CP} = 100\%$$

$$15\% = \frac{60000-x}{60000} \times 100\%$$

$$15\% \times 60000 = (60000 - x)100\%$$

$$60000 - x = \frac{15\% \times 60000}{100\%}$$

60000 - x = 3 x 3000

60000 -x = 9000

x = 60000 - 9000

x = N51,000

3. **C**

0.00043 x 2000

$= 43 \times 10^{-5} \times 2 \times 10^{3}$

$= 43 \times 2 \times 10^{-5+3}$

$= 86 \times 10^{-2}$

$= 8.6 \times 10^{1} \times 10^{-2}$

$= 8.6 \times 10^{-1}$

4. **B**

Let;
M = Man monthly net earnings

Then;

$\text{N}4500 = \frac{10\%}{100\%} \times M$

$$M = \frac{\text{N4500} \times 100\%}{10\%}$$

M = N45,000

5. **B**

If log 7.5 = 0.8751
Then 2log75 + log750
= 2(1.8751) + 2.8751
= 3.7502 + 2.8751
= 6.6253

6. **D**

$8x^{-2} = 2/25$

$x^{-2} = 2/25 \times 1/8$

$x^{-2} = 2/200$

$x^{-2} = 1/100$

$1/x^2 = 1/100$

$x^2 = 100$

$x = 10$

7. **A**

$$= \frac{2\sqrt{2}-\sqrt{3}}{\sqrt{2}+\sqrt{3}} \times \frac{\sqrt{2}-\sqrt{3}}{\sqrt{2}+\sqrt{3}}$$

$$= \frac{2\sqrt{2}(\sqrt{2})+(2\sqrt{2})(-\sqrt{3})-\sqrt{3}(\sqrt{2})-\sqrt{3}(-\sqrt{3})}{(\sqrt{2})^2-(\sqrt{3})^2}$$

$$= \frac{2\times 2-2\sqrt{6}-\sqrt{6}+3}{2-3}$$

$$= \frac{4-3\sqrt{6}+3}{-1}$$

$$= \frac{7-3\sqrt{6}}{-1}$$

$$= \frac{7}{-1} - \frac{3\sqrt{6}}{-1}$$

$$= -7 + 3\sqrt{6}$$

$$= 3\sqrt{6} - 7$$

8. **C**

$$= log_2 \frac{8\times 16}{4}$$

$$= log_2 32$$

$$= log_2 2^5$$

$= 5log_2 2$

$= 5 \times 1$

$= 5$

9. **C**

$Q = (P \cup Q) - P$
$\{6,7\}$

10. **A**

$gt^2 - k - w = 0$

$gt^2 = k + w$

$g = \frac{k+w}{t^2}$

---

11. **B**

$2y^2 - 15xy + 18x^2$

$2y^2 - 12xy - 3xy + 18x^2$

$2y(y - 6x) - 3x(y - 6x)$

(2y - 3x) (y - 6x)

12. **D**

if y - 1 is a factor of $y^3 + 4y^2 + ky - 6$, then

$f(1) = (1)^3 + 4(1)2 + k(1) - 6 = 0$ (factor theorem)

$1 + 4 + k - 6 = 0$

$5 - 6 + k = 0$

$-1 + k = 0$

$k = 1$

13. **A**

$y \propto w^2$

$y = kw^2$

$8 = k(2)^2$

$8 = k(4)$

$k = 8/4$

k = 2

Thus $y = 2w^2$
When w = 3, $y = 2(3)^2$

y = 2 x 9 = 18

14. **B**

$$P \propto \frac{Q}{R}$$

$$P = K\frac{Q}{R}$$

When Q = 36, R = 16, P = 27

Then substitute into the equation

$$27 = K\frac{36}{16}$$

$$K = \frac{27 \times 16}{36}$$

$$K = 12$$

So the equation connecting P, Q and R is

$P = \frac{12Q}{R}$

15. **A**

Consider the range -3 < x < -1

= { -2, -1, 0}, for instance

When x = -2,

$\frac{-2-5}{-2+3} < -1$

$\frac{-7}{1} < -1$

When x = -1,

$\frac{-1-5}{-1+3} < -1$

$\frac{-6}{2} < -1$

= -3 < -1

When x = 0,

$\frac{0-5}{0+3} < -1$

$\frac{-5}{3} < -1$

Hence -3 < x < 1

16. **A**

$\frac{x}{2} + \frac{3}{4} \leq \frac{5x}{6} - \frac{7}{12}$

$12\frac{x}{2} + 12\frac{3}{4} \leq 12\frac{5x}{6} - 12\frac{7}{12}$

$6x + 9 \leq 10x - 7$

$6x - 10x \leq -7 - 9$

$-4x \leq -16$

$-4x/-4 \geq -16/-4$

$x \geq 4$

17. **C**

a + 3d = 13 ..... (1)
a + 9d = 31 ..... (2)

(2) - (1): 6d = 18

d = 18/6 = 3

From (1), a + 3(3) = 13

a + 9 = 13

a = 13 - 9 = 4

Hence,
$T_{24} = a + 23d$
$T_{24} = 4 + 23(3)$
$T_{24} = 4 + 69$
$T_{24} = 73$

18. **A**

Common ratio r of the G.P is

$$r = \frac{T_n+1}{T_n} = \frac{T_2}{T_1}$$

$$r = \frac{\sqrt{10}+2\sqrt{5}}{\sqrt{10}+\sqrt{5}}$$

$$r = \frac{\sqrt{10}+2\sqrt{5}}{\sqrt{10}+\sqrt{5}} \times \frac{\sqrt{10}-\sqrt{5}}{\sqrt{10}-\sqrt{5}}$$

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

$$\frac{10-\sqrt{50}+2\sqrt{50}-10}{10-5}$$

$\frac{\sqrt{50}}{5}$

$\frac{\sqrt{25\times2}}{5}$

$\frac{5\sqrt{2}}{5}$

$\sqrt{2}$

19. **B**

$x * y = x^y$
$x * 2 = 12 - x$

Thus by comparison,

$x = x, y = 2$

But $x * y = x * 2$

$x^y = 12 - x$

$x^2 = 12 - x$

$x^2 + x - 12 = 0$

$x^2 + 4x - 3x - 12 = 0$

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

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

$x - 3 = 0$ or $x + 4 = 0$

So $x = 3$ or $x = -4$

20. **C**

$$\begin{pmatrix} 5 & -6 \\ 2 & -7 \end{pmatrix} \begin{pmatrix} 5 \\ 2 \end{pmatrix} = \begin{pmatrix} 7 \\ -11 \end{pmatrix}$$

By matrices multiplication;

$5x - 6y = 7$ .....(1)
$2x - 7y = -11$ .....(2)
2 x (1): $10x - 12y = 14$ .....(3)
5 x (2): $10x - 35y = -55$ .....(4)

(3) - (4): $23y = 69$

$y = 69/23 = 3$

---

21. **D**

$$\begin{vmatrix} -x & 12 \\ -1 & 4 \end{vmatrix} = -12$$

-4x - (-1)12 = -12

-4x + 12 = -12

-4x = -12 - 12

-4x = - 24

x = 6

22. **D**

$$0\begin{vmatrix} 7 & 8 \\ 5 & 4 \end{vmatrix} - 3\begin{vmatrix} 1 & 8 \\ 0 & 4 \end{vmatrix} + 2\begin{vmatrix} 1 & 7 \\ 0 & 5 \end{vmatrix}$$

= 0(28 - 40) - 3(4 - 0) + 2(5 - 0)

= 0(-12) - 3(4) + 2(5)

= 0 - 12 + 10

= -2

23. **D**

If each interior angle of the polygon is $135^o$, then each exterior angle is $180^o - 135^o = 45^o$. Hence, number of sides =

$$\frac{360^o}{\text{one exterior angle}}$$

$$\frac{360^o}{45^o}$$

$= 8$

24. **D**

Using $V = \pi r^2 h$

6160 = 22/7 x 28 x 28 x h

$$h = \frac{6160}{22 \times 4 \times 28}$$

$$h = 2.5m$$

25. **B**

26. **C**

Mid point of S(-5, 4) and T(-3, -2) is

$$[\tfrac{1}{2}(-5 + -3), \tfrac{1}{2}(4 + 2)]$$

$[\frac{1}{2}(x_1 + x_2), \frac{1}{2}(y_1 + y_2)]$

$[\frac{1}{2}(-8), \frac{1}{2}(2)]$

$[-4, 1]$

27. **A**

Gradient m $= \frac{y_2 - y_1}{x_2 - x_1}$

$\frac{1}{2} = \frac{2-4}{1-x}$

1 - x = 2(2 - 4)

1 - x = 4 - 8

1 - x = -4

-x = -4 - 1

x = 5

28. **A**

y - 4x + 3 = 0

When y = 0, 0 - 4x + 3 = 0

Then -4x = -3

x = 3/4

So the line cuts the x-axis at point (3/4, 0).

When x = 0, y - 4(0) + 3 = 0

Then y + 3 = 0

y = -3

So the line cuts the y-axis at the point (0, 3)

Hence the midpoint of the line y - 4x + 3 = 0, which lies between the x-axis and the y-axis is;

$$[\frac{1}{2}(x_1 + x_2), \frac{1}{2}(y_1 + y_2)]$$

$$[\frac{1}{2}(\frac{3}{4} + 0), \frac{1}{2}(0 + -3)]$$

$$[\frac{1}{2}(\frac{3}{4}), \frac{1}{2}(-3)]$$

$$[\frac{3}{8}, \frac{-3}{2}]$$

29. **A**

$4x + 3y - 5 = 0$ (given)

The equation of the line perpendicular to the given line takes the form $3x - 4y = k$

Thus, substitution $x = -2$ and $y = 3$ in $3x - 4y = k$ gives;

$3(-2) - 4(3) = k$

$-6 - 12 = k$

$k = -18$

Hence the required equation is $3x - 4y = -18$

$3x - 4y + 18 = 0$

30. **B**

---

31. **D**

If $y = 4x^3 - 2x^2 + x$, then;

$\frac{\delta y}{\delta x} = 3(4x^2) - 2(2x) + 1$

$= 12x^2 - 4x + 1$

32. **D**

$y = \cos 3x$

Let $u = 3x$ so that $y = \cos u$

Now, $\frac{\delta y}{\delta x} = 3,$

$\frac{\delta y}{\delta x} = -sinu$

By the chain rule,

$\frac{\delta y}{\delta x} = \frac{\delta y}{\delta u} \times \frac{\delta u}{\delta x}$

$\frac{\delta y}{\delta x} = (-\sin u)(3)$

$\frac{\delta y}{\delta x} = -3\sin u$

$\frac{\delta y}{\delta x} = -3\sin 3x$

33. **D**

$y = x^2 - 2x - 3,$

Then $\frac{\delta y}{\delta x} = 2x - 2$

But at minimum point, $\frac{\delta y}{\delta x} = 0$,

Which means 2x - 2 = 0

2x = 2

x = 1.

Hence the minimum value of $y = x^2 - 2x - 3$ is;

$y_{min} = (1)^2 - 2(1) - 3$

$y_{min} = 1 - 2 - 3$

$y_{min} = -4$

34. **C**

$\int \sin 2x dx = \frac{1}{2}(-\cos 2x) + k$

$-\frac{1}{2}\cos 2x + k$

35. **C**

$\int (2x+3)^{\frac{1}{2}} \delta x$

let u = 2x + 3, $\frac{\delta y}{\delta x} = 2$

$\delta x = \frac{\delta u}{2}$

Now $\int (2x+3)^{\frac{1}{2}} \delta x = \int u^{\frac{1}{2}} . \frac{\delta x}{2}$

$= \frac{1}{2} \int u^{\frac{1}{2}} \delta u$

$= \frac{1}{2} u^{\frac{3}{2}} \times \frac{2}{3} + k$

$= \frac{1}{3} u^{\frac{3}{2}} + k$

$= \frac{1}{3} (2x+3)^{\frac{3}{2}} + k$

36. **C**

Mean x = $\frac{\sum x}{n}$

= [(2 - t) + (4 + t) + (3 - 2t) + (2 + t) + (t - 1) ÷] 5

= [11 - 1 + 3t - 3t] ÷ 5

= 10 ÷ 5

= 2

37. **D**

38. **B**

First arrange the numbers in order of magnitude;
1,2,3,3,4,5,5,**5**,5,6,7,8,9,9,10

Hence the median = 5

39. **A**

Mean x = $\frac{\sum x}{n}$

= $\frac{5+4+3+2+1}{5}$

= $\frac{15}{5}$

= 3

| $x$ | $d = x - 3$ | $d^2$ |
|---|---|---|
| 5 | 2 | 4 |
| 4 | 1 | 1 |
| 3 | 0 | 0 |
| 2 | $-1$ | 1 |
| 1 | $-2$ | 4 |
| | | $\sum d^2 + 10$ |

Hence, standard deviation;

$= \sqrt{\frac{\sum d^2}{n}} = \sqrt{\frac{10}{5}}$

$= \sqrt{2}$

40. **C**

A team of 2 girls can be selected from 7 girls in ${}^7C_3$

$= \frac{7!}{(7-3)!3!}$

$= \frac{7!}{4!3!} ways$

## 41. C

Let E demote the event of obtaining at least a 4
Then n(E) = 16 + 10 + 14 = 40

Hence, prob (E) = $\frac{n(E)}{n(S)}$

$= \frac{40}{100}$

$= \frac{2}{5}$

## 42. C

Sample space S = {10, 11, 12, ... 30}

Let E denote the event of choosing a number divisible by 3

Then E = {12, 15, 18, 21, 24, 27, 30} and n(E) = 7

Prob (E) = $\frac{n(E)}{n(E)}$

Prob (E) = $\frac{7}{21}$

Prob (E) = $\frac{1}{3}$

## 43. A

44. **C**

In the diagram above, $\alpha = 54^o$(alternate angles; KL||MN) < KNM = $2\alpha$ (LN is bisector of < KNM) = $108^o$

$35^o$ + < KMN + $108^o$ = $180^o$(sum of angles of △)

< KMN + $143^o$ = $180^o$

< KMN = $180^o$ - $143^o$

= $37^o$

45. **B**

In the figure above, $q^o = 30^o$ (vertically opposite angles)

$(P + 2q)^o + 30^o = 180^o$(angles on a straight line)

p + 2 x $30^o$ + $30^o$ = $180^o$

p + $60^o$ + $30^o$ = $180^o$

p + $90^o$ = $180^o$

$p = 180^o - 90^o$

$= 90^o$

46. **B**

In the figure above, $\frac{x}{\sin 60^o} = \frac{10}{\sin 30^o}$ (Sine rule)

$x = \frac{10 \sin 60^o}{\sin 30^o}$

$= 10 \text{ x } \frac{\sqrt{3}}{2} \times \frac{1}{2}$

$= 10 \text{ x } \frac{\sqrt{3}}{2} \times \frac{2}{1}$

$= 10\sqrt{3}\text{cm}$

47. **B**

$(x_1, y_1) = (0,5)$

$(x_2, y_2) = (5, 0)$

Using $\frac{y-y_1}{y_1-y_1} = \frac{x-x_1}{x_1-x_1}$

$\frac{y-5}{0-5} = \frac{x-0}{5-0}$

$\frac{y-5}{-5} = \frac{x}{5}$

5(y - 5) = -5x

y - 5 = -x

x + y = 5

y = -x + 5

48. **C**

Angle of sector subtended by yam

= $360^o$ - $(70 + 80 + 50)^o$

= $360^o$ - $200^o$

= $160^o$

But $\frac{80^o}{360^o}$ x T = 8000

T = $\frac{8000 \times 360^o}{80^o}$

= N36,000

Hence the amount spent on yam = $\frac{160^o}{260} \times N36,000$

= N16,000