

# FIRST TERMINAL EVALUATION - 2024 - 2025

## MATHEMATICS - ANSWER KEY

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1. a) 4

b)  $x_{11} = 3 + 10 \times 4 = 43$

2. a)  $\angle ADC = 70^\circ$

b)  $\angle AOC = 140^\circ$

3.

a) 16

b)  $\frac{2}{16} = \frac{1}{8}$

4.  $(x-3)^2 = 81$

$x-3 = \sqrt{81} = 9$

$x = 9 + 3 = 12$

$\therefore \text{Number} = 12$

5.

a) 4 cm

b)  $p = 2 + 4 + 2\sqrt{3}$

$= 6 + 2\sqrt{3}$

6.  $d = \frac{x_{13} - x_7}{13 - 7}$

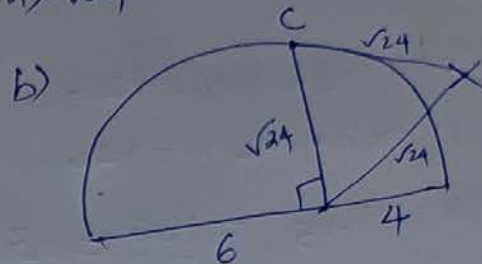
a)  $d = \frac{66 - 48}{13 - 7}$

$= \frac{66 - 48}{6} = \frac{18}{6} = 3$

b)  $x_{10} = x_7 + 3d$

$= 48 + 9 = 57$

7. a)  $\sqrt{24}$



8. Let the consecutive odd numbers be  $x, x+2$

a)  $x(x+2) = 143$

$x^2 + 2x + 1 = 143 + 1$

b)  $(x+1)^2 = 144$

$x+1 = \sqrt{144} = \pm 12$

$x+1 = 12, x+1 = -12$

$x = 12 - 1, x = -12 - 1$

$x = 11, -13$

If  $x = 11$  Number 11, 13

If  $x = -13$  Number -13, -11

9. a)  $\frac{30 \times 31}{2} = 465$

b)  $4[1 + 2 + 3 + \dots + 30] = 4 \times 465$   
 $= 1860$

c)  $1 + 5 + 9 + \dots + 117$

$= 1860 - 3 \times 30$

$= 1860 - 90$

$= 1770$

10. Radius of the large circle = 2

Area =  $\pi(2r)^2 = 4\pi r^2$

Radius of the small circle =  $r$

Area =  $\pi r^2$

Probability that the dot is the shaded region =  $\frac{\pi r^2}{4\pi r^2} = \frac{1}{4}$

11. a)  $100^\circ$

b)  $\leftarrow$  Draw  $\rightarrow$

12.  $x_{12} + x_{18} = 126$

a)  $x_1 + x_{29} = 126$

b)  $x_{15} = \frac{126}{2} = 63$

c)  $S_{29} = \frac{29}{2} [x_1 + x_{29}]$   
 $= \frac{29}{2} \times 126 = 1827$

13. a) Length + Breadth =  $\frac{120}{2} = 60$

b) If length =  $x$ , breadth =  $60 - x$

$$x(60 - x) = 896$$

$$60x - x^2 = 896$$

$$x^2 - 60x = -896$$

c)  $x^2 - 60x + 900 = -896 + 900$

$$(x - 30)^2 = 4$$

$$x - 30 = \sqrt{4} = \pm 2$$

$$x - 30 = 2, \quad x - 30 = -2$$

$$x = 32, 28$$

Sides of the rectangle = 32cm, 28cm

14 a)  $\angle ABC = 65^\circ$

b)  $\angle AEC = 65^\circ$

c)  $\angle BCF = 180 - (100 + 55) = 25^\circ$

d)  $\angle DAE = 180 - 125 = 55^\circ$

15. a)  $\frac{36-12}{36} = \frac{24}{36} = \frac{2}{3}$

b) Let the number of blue balls added =  $x$

$$\frac{24}{36+x} = \frac{1}{2}$$

$$48 = 36 + x \quad \therefore x = 12$$

$\therefore$  Number of blue balls =  $12 + 12 = 24$

16. a)  $\frac{68}{4} = 17$

b)  $\sin 40 = \frac{DE}{17}$

$$0.643 \times 17 = DE$$

$$DE = 10.931 \text{ cm}$$

c) Area =  $17 \times 10.931$   
 $= 185.827 \text{ cm}^2$

17. a) 5

b) 3

c)  $\frac{2024}{5}$ , Here remainder is 4

So 2024 is not a term in this sequence.

18.

a)  $\angle DAB = 30^\circ$

$$\angle ADP = 60^\circ$$

b)  $PD = 3 \text{ cm}$

$$PA = 3\sqrt{3} \quad \therefore AB = 2 + 3\sqrt{3}$$

$$PA \times PB = PC \times PD$$

$$3\sqrt{3} \times 2 = PC \times 3 \quad \therefore CD = 3 + 2\sqrt{3}$$

$$PC = 2\sqrt{3}$$

19.

a) 13

b) 2

c)  $n^2 + 12n = 364$

$$n^2 + 12n + 36 = 364 + 36$$

$$(n+6)^2 = 400$$

$$n+6 = \sqrt{400} = \pm 20$$

$$n+6 = 20 \quad \therefore n = 14$$

number of terms = 14

20. a)  $TQ = 10 - 6 = 4 \text{ cm}$

b)  $TP \times TQ = TR \times TS$

c)  $10 \times 4 = TR \times 5$

$$TR = 8$$

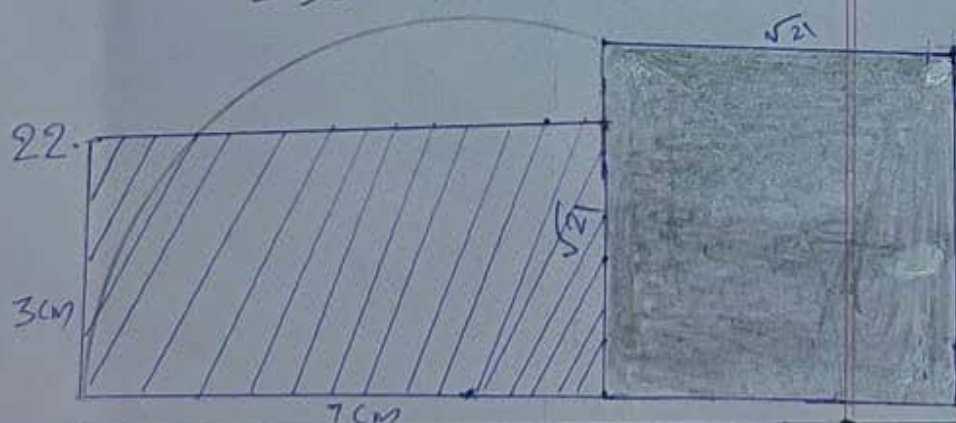
$$\therefore RS = 8 - 5 = 3 \text{ cm}$$

21. a) 101

b) 398

c)  $\frac{398-101}{3} + 1 = 99 + 1 = 100$

d.  $S_n = \frac{100}{2} [101 + 398]$   
 $= 50 \times 499 = 24,950$



23. a)  $45 \times 50 = 2250$

b)  $\frac{20 \times 35}{2250} = \frac{700}{2250} = \frac{14}{45}$

c)  $\frac{25 \times 15}{2250} = \frac{375}{2250} = \frac{1}{6}$

d)  $\frac{2250 - 700}{2250} = \frac{1550}{2250} = \frac{31}{45}$

25. a)  $PB = 22 - 6 = 16 \text{ cm}$

$$PC = x$$

b)  $PD = 20 - x$

$$PA \times PB = PC \times PD$$

$$6 \times 16 = x(20 - x)$$

$$96 = 20x - x^2$$

$$x^2 - 20x = -96$$

$$x^2 - 20x + 100 = -96 + 100 = 4$$

$$(x-10)^2 = 4$$

$$x-10 = \sqrt{4} = \pm 2$$

$$x-10 = 2, \quad x-10 = -2$$

$$x = 12, 8$$

$$PC = 12 \text{ cm}, 8 \text{ cm}$$

$$PD = 12 \text{ cm}, 8 \text{ cm}$$

24. a)  $9 \times x_5 = 225$

$$x_5 = \frac{225}{9} = 25$$

b)  $3 \times x_{11} = 372 - 225 = 147$

$$x_{11} = \frac{147}{3} = 49$$

c)  $d = \frac{49 - 25}{11 - 5} = 4$

d)  $S_{21} = 21 \times x_{11} = 21 \times 49 = 1029$

26 a) 6

b)  $6n+1$

c)  $6n+1=97$

$6n=96 \therefore n=\frac{96}{6}=16$

d)  $S_{16} = \frac{16}{2} [x_1 + x_{16}]$   
 $= 8 \times [7 + 97]$   
 $= 8 \times 104 = 832$

27. a)  $\angle ODB = 20^\circ$

b)  $\angle BOD = 180 - 40 = 140$

c)  $\angle BAC = 30^\circ$

d)  $\angle BCD = 180 - 70 = 110^\circ$

e)  $\angle COD = 80^\circ$

28. a)  $x+5$

b)  $\frac{1}{2} x(x+5) = 52$

$x^2 + 5x = 104$

$x^2 + 5x - 104 = 0$

$x = \frac{-5 \pm \sqrt{25 + 4 \times 104}}{2 \times 1}$

$= \frac{-5 \pm \sqrt{441}}{2}$

$x = \frac{-5 \pm 21}{2}$

$\therefore x = \frac{-5+21}{2}, \frac{-5-21}{2}$

$x = \frac{16}{2} = 8; x = \frac{-26}{2} = -13$

Perpendicular sides = 8cm, 13cm

29 a) Pentagon

b) 7

c)  $\frac{12 \times 9}{2} = 54$

d)  $n-3$

e)  $\frac{n(n-3)}{2}$