PRIMARY MATHS SERIES

REVISION GUIDE FOR STANDARDS 7 AND 8

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MEASUREMENTS

2.1 Objectives

Length, Perimeter and Area

Specific objectives:

a) Work out problems involving conversions of units of length

b) Work out problems involving perimeter and circumference.

c) Work out area of triangle, circles cuboids and quadrilaterals.

d) Work out surfaced area of cubes, cuboids and cylinders.

2.2 Worked Exercise

1. Tracy used a piece of wire $8\frac{1}{2}$m long to support tomato plants in the garden. The wire was cut into pieces of 28cm long. How many complete pieces were obtained?

A. 85 B. 30 C. 20 D 30.10

Working

1. Meter = 100cm

$8\frac{1}{2}$ m = ?

$8\frac{1}{2} \times 100 = 850$cm

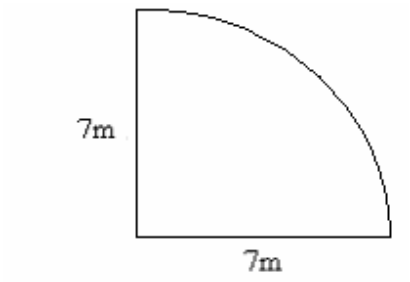
1 piece = 28 cm

? = 850cm

$= \frac{850}{28}$

= 30 complete pieces remainder 10cm

2. The figure below represents a flower garden



What is the perimeter of the garden?

A. 25m B. 38.5m C.11m D. 44m

Working

$P = \frac{1}{4}\Pi d + r + r$

$= (\frac{1}{4} \times \frac{22}{7} \times 14) + (7+7)$

$= 11 + 14$

$= 25$ m

The correct answer is A (25)

3. The parallel sides of a trapezium measure 10cm by 18cm respectively. If the distance between the parallel sides is 8cm, what is the area of the trapezium in cm^2?

A. 224 B. 112 C. 108 D. 84

Working

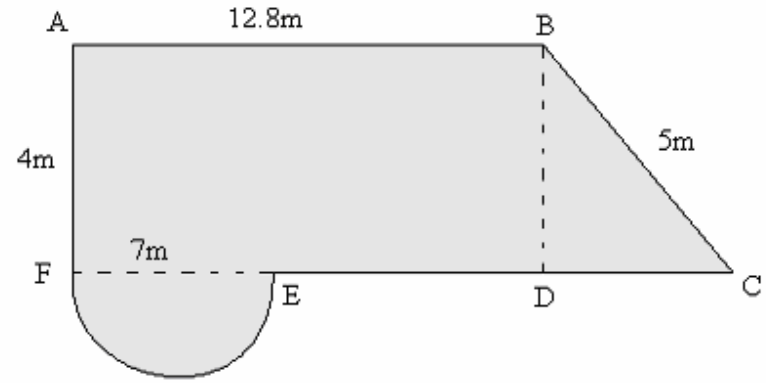
Area of a trapezium $= \frac{1}{2} h (a + b)$

$= \frac{1}{2} \times 8 \times (10+18)$

$= \frac{1}{2} \times 8 \times 28$

$= 112cm^2$

4. The figure below shows vegetable garden.



What is the perimeter?

A. 0.526m B. 5.26m C. 52.6m D. 526m

Working

Perimeter of semi circle

$= \frac{1}{2} \times 2 \times \frac{22}{7} \times 7$

$= 22m$

To get DC $= \sqrt{25} - \sqrt{16}$

$= \sqrt{9}$

$= 3$

Length DE $=$ AB – ED

$= 12.8 - 7$

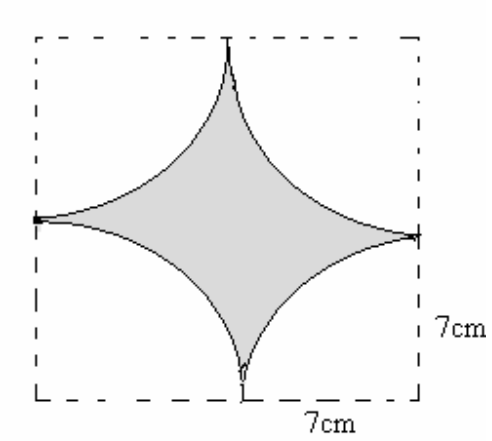
$= 5.8m$

Total length $12.8 + 5 + 3 + 5.8 + 22 + 4$

$= 52.6$ m

The correct answer is (52.6)

5. What is the perimeter of the following shape?



A. 88cm B. 44cm C.176cm D56cm

Working

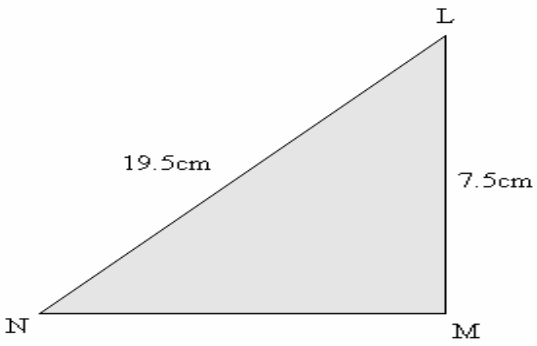
P = circumference of a circle of radius 7cm

= $2\prod r$

= $2 \times \frac{22}{7} \times 7$

= (44 cm)

6. The figure below shows a right angled triangle LMN in which LM = 7.5cm and LN = 19.5cm



What is the area of the triangle in cm^2?

A. 18 B. 67.5 C. 27 D. 34.5

Working

Apply Pythagoras relation in triangle LMN

$LN^2 = LM^2 + NM^2$

$Nm^2 = LN^2 - LN^2$

$= 19.5^2 - 7.5^2$

$= 380.25 - 56.25$

$= 324$

$NM = \sqrt{324}$

$= 18$ cm

Area of triangle LMN

$= \frac{1}{2}$ Base x height

$= \frac{1}{2} \times 18 \times 7.5$

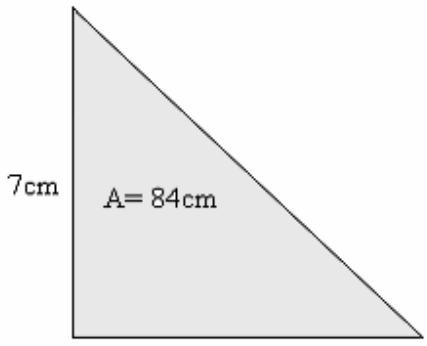
$= 67.5cm^2$

The correct answer is B ($67.5cm^2$)

7. The area of a right-angled triangle is $84cm^2$. If the height of the triangle is 7cm, what is the length of the longest side?

A. 25cm B. 24cm C. 19cm D. 12cm

Working



The Pythagoras relationship states that

$H^2 = b^2 + h^2$

But Area = ½ bh

84 = ½ x b x 7

84 x 2 = 7b

24 = b

$\therefore H^2 = 24^2 + 7^2$

$H^2 = 576 + 49$

$H^2 = 625$

H = 25

Therefore the correct answer is 25cm (A)

8. What is the surface area of an open cylinder whose radius is 6.3cm and height of 25cm.

A 114.74cm² B1239.48cm² C 3118.50cm² D 619cm²

Working

Total surface area = $\prod r^2 + 2\prod r^2h$

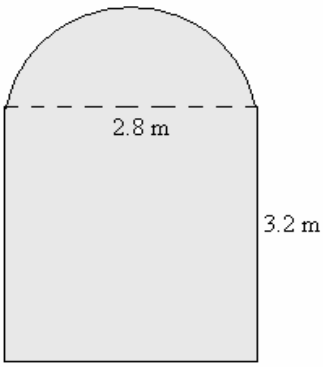
$= (\frac{22}{7} \times 6.3 \times 6.3) + 2 \times \frac{22}{7} \times 6.3 \times 25$

= 124.74 + 990

= 1114.74 cm²

The correct answer is 1114.74 cm² (A)

9. A Welder made a door with a design as shown below.



What is its area? (Take $\prod = \frac{22}{7}$)

A. 15.12m² B. 12.04m² C 13.36m² D. 21.28m²

Working

Area of the semi- circle = ½ $\prod$ r²

= ½ x $\frac{22}{7}$ x 1.4 x 1.4

= 3.08m²

Area of the rectangle = L x w

= 3.2 x 2.8

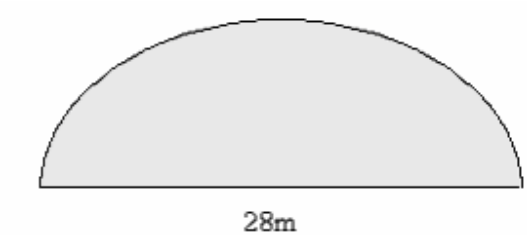
= 8.96 m²

Total area = (3.08 + 8.96)m²

= 12.04 m²

The correct answer is B (12.04m²)

10. The diagram below represents a plot with a diameter of 28 meters.



The plot was fenced by erecting posts 4m apart. How many posts were used ? ($\prod = \frac{22}{7}$)

A. 12 B. 17 C.18 D 19

Working

Perimeter = ½ Π d + d

= $(\frac{1}{2} \times \frac{22}{7} \times 28 + 28)$

= 72 m

No of posts = $\frac{\text{Perimeter}}{\text{Interval}}$

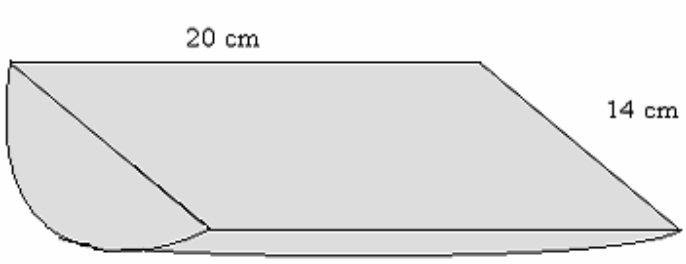
= $\frac{72}{4}$

= 18 posts

The correct answer is C (18)

2.3 Practice Test Paper 2

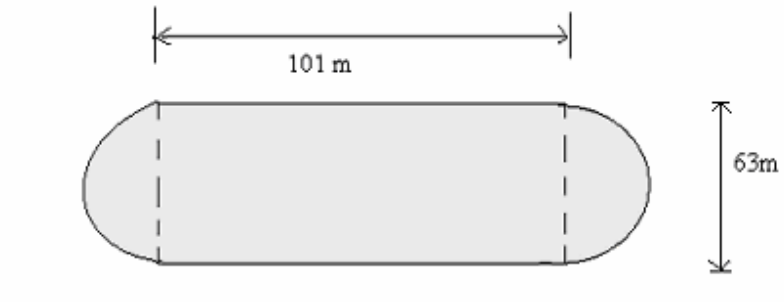
1. The figure below represents a half cylindrical solid whose dimensions are as shown



What is the surface area of the solid?

A. 44Ocm² B. 594cm² C. 797cm² D. 874cm²

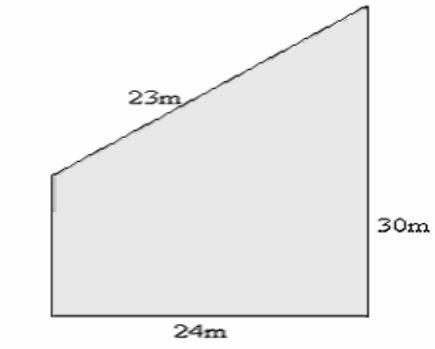
2. The diagram below shows a track whose dimensions are shown.



What is the perimeter of the track?

A.198m B.301m C.328m D. 400m

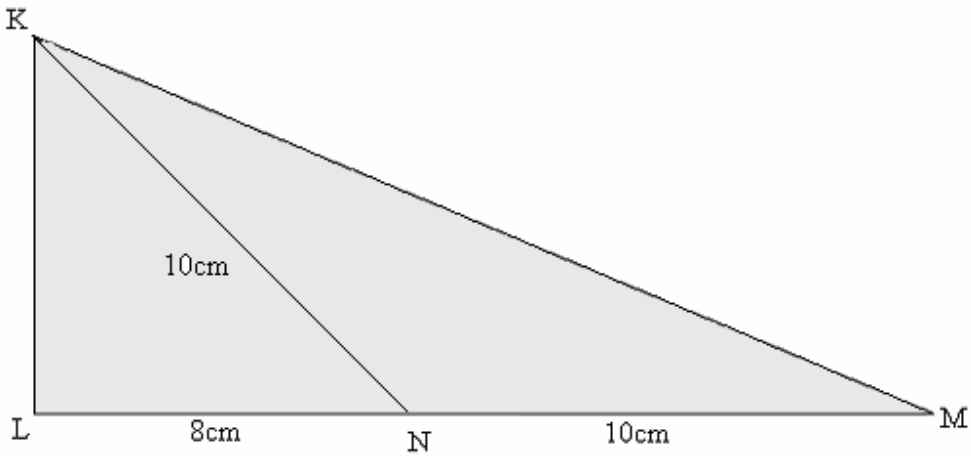
3. The diagram below represents Elomi's garden



He intends to fence it using four strands of wire. What length of wire, in metres, do he require?

A. 408m B. 404m C 308m D 2102m

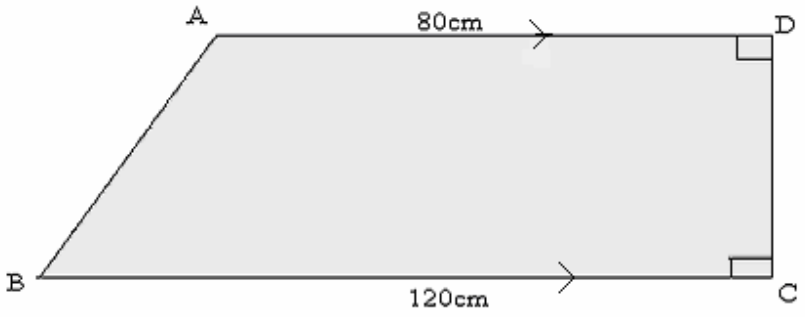
4. In the figure below, angle KLM is 90º, LN = 8cm, KN = NM = 10cm. and LNM is a straight line.



What is the area of triangle KNM in cm²

A. 50 cm^2 B. 54cm^2 C. 30cm² D. 24cm^2

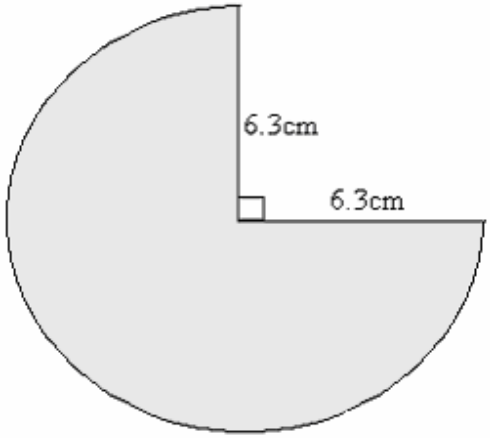
5. The area of a trapezium below ABCD is 3000cm^2. The length of AD is 80cm and that of BC is 120 cm. AD is parallel to BC and CD is parallel to AD and BC.



What is the length of the CD?

A.50cm B.30cm C.25cm D.15cm

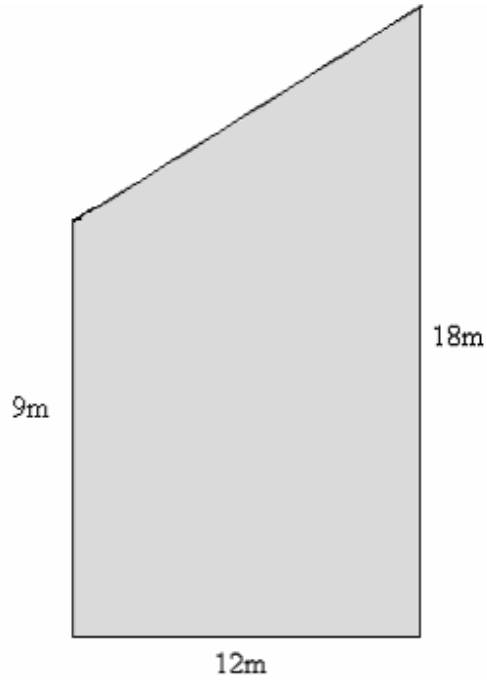
6. An agricultural club own a piece of plot of the shape as shown.



What is the total length of the plot? ($\Pi = \frac{22}{7}$)

A. 12.6cm B. 29.7cm C.39.6cm D. 42.3cm

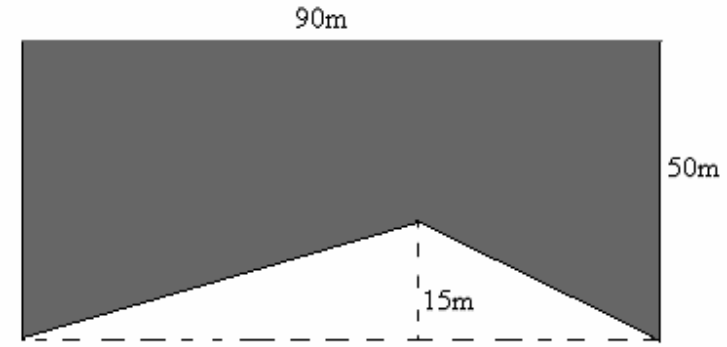
7. The diagram below shows a vegetable garden



What is the perimeter of the garden?

A. 39m B. 51m C. 54m D.60m

8. The diagram below shows a piece of Kamau's land



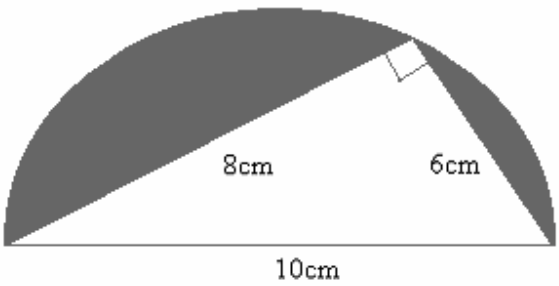
What is the area of the shaded part, in hectares.

A. 0.00675 B 0.315 C. 0.45 D. 0.03825

9. The base of a right-angled triangle is 12cm and the longest side is 13 cm. What is the area of the triangle?

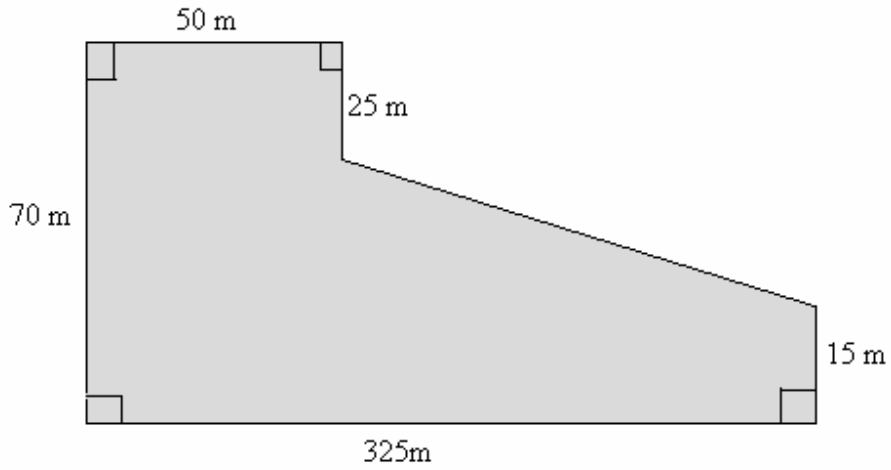
A. 78cm² B. 60cm² C. 30cm² D.25cm²

10.What is the area of the shaded part in the figure below?



A. 54.50 cm² B. 39.25 cm² C. 24.00 cm² D. 15.25 cm²

11. Mwau owns a piece of land with a shape as shown below.



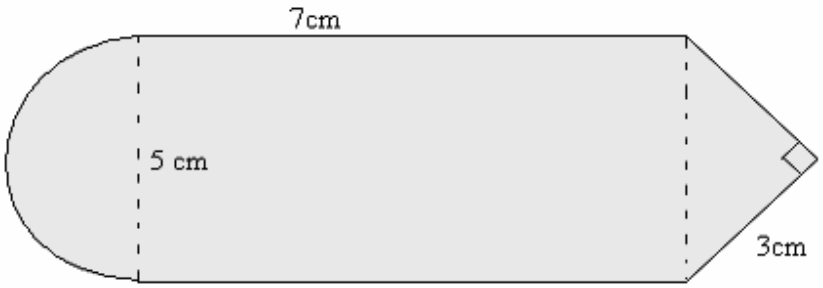
What is the area of the land, in hectares?

A.1.175 B.1.325 C.20 D.11.75

12. A cuboid measures 6cm by 5cm by 4cm. What is the total length of the edges in centimeters?

A.30 B. 60 C. 90 D.120.

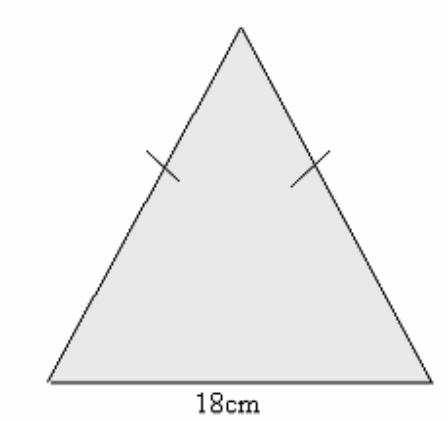
13. The figure below is made of a semicircle a rectangle and a right-angled triangle.



What is the area of the figure? (Take $\Pi = 3.14$)

A. 50.8125 cm^2 B. 56.8125 cm^2 C. 60.6250 cm^2 D. 80.2500 cm^2

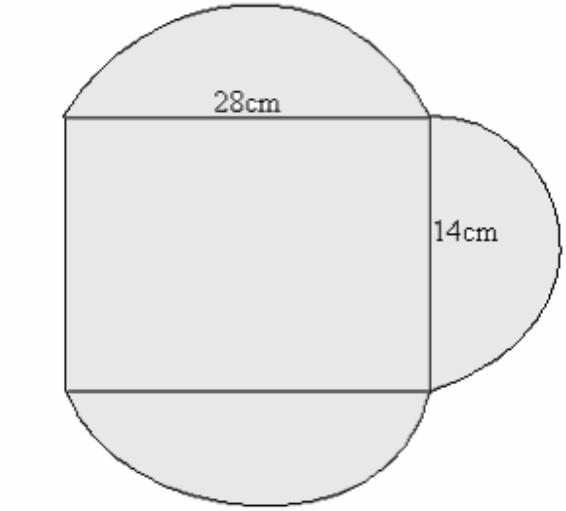
14. The perimeter of an isosceles triangle PQR below is 48cm. The base of the triangle is 18cm.



What is the area of the triangle?

A. 54cm B.108cm C.135cm D.435cm

15. A vegetable garden is represented by the figure below.



What is its area?

A. 693 B. 1008 C. 1085 D. 1165

16. The square has an area of 3844cm². What is the length of the square?

A.1922cm B.961cm C. 67cm D.62cm

17. How many fencing posts, spaced 5m apart, are required to fence a rectangular piece of land measuring 230m by 745m?

A.391 B.390 C.195 D.196

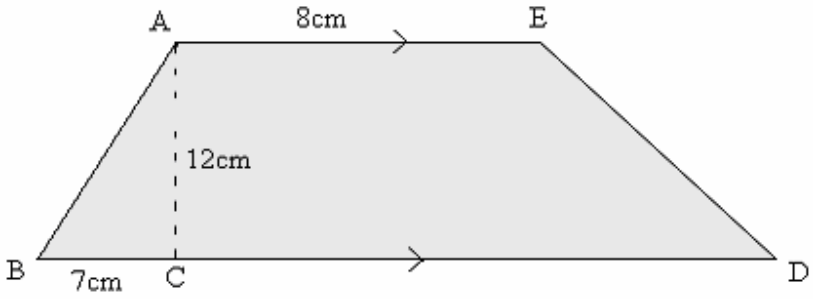
18. Each of the diagonals of a rectangle garden is 65m. One of the sides measures 25m. What is the measurement of the other side?

A.90m B.60m C.40m D.20m

19. What is the surface area of a cylindrical log of height 17m and diameter 14cm.in m²?

A.748 B.902 C.1056 D.2728

20. The diagram below represents a trapezium of area 198cm²



If AB = 8cm, BC = 7cm and the perpendicular height is 12cm, what is the distance CD?

A.32cm B.15cm C.25cm D.18cm

21. The perimeter of a rectangle is 280m. The length of the rectangle is 80m. What is the width of the rectangle?

A.70m B.60m C.110m D 160M

22. A triangle whose base is 10cm has the same area as a triangle measuring 25cm by 12cm. What is the height of the triangle?

A.15cm B.30cm C.60cm D.300cm

23. A tria²ngle has a height of 4cm. Calculate its area if its longest side is 5cm.

A.6cm² B.12cm² C.15cm² D.24cm²

24. A rectangle has a perimeter of 24cm. The width is 2cm more than the length. What is the area of the rectangle?

A.15cm B.20cm C.35cm D.143cm

25. What is the area of a square plot whose perimeter is 116m, in hectares?

A.0.0029 B.0.0058 C.0.0841 D.0.3364

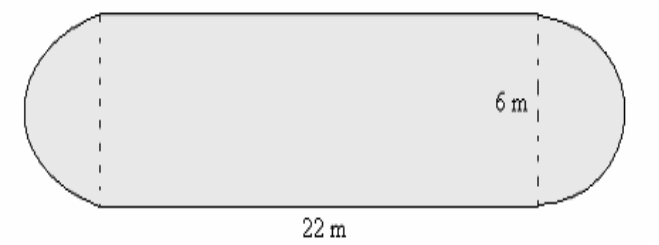
26. An open cylindrical tin has a diameter of 14cm and height of 10 cm. What is the surface area in cm²?

A.594 B.748 C.1496 D. 1540

27. A circular plot was fenced by the two equal strands of wire whose total plot length was 440m.. What was the radius of the plot? ($\Pi = \frac{22}{7}$)

A.17.5m B.3.5m C.70m D.140m

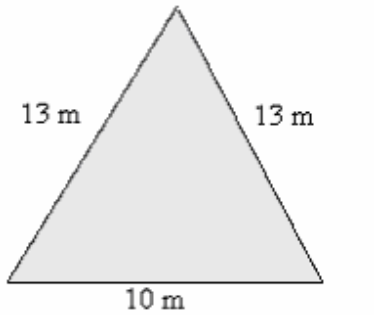
28. The diagram below represents a glass lawn



What is the area of the lawn in m^2 ($\Pi = \frac{22}{7}$)

A.$245\frac{1}{7}$ B.$188\frac{4}{7}$ C.$160\frac{2}{7}$ D.$28\frac{2}{7}$

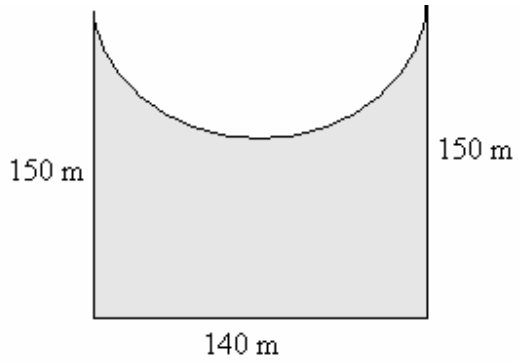
29. The diagram below represents the face of a roof.



Find its area in m^2.

A.120 B.65 C.36 D.60

30. A plot shown below was bounded by three strands of barbed wire?



What is the length, in metres, of the barbed wire? (Take $\Pi = \frac{22}{7}$)

A.660 B.1980 C.2640 D.24420

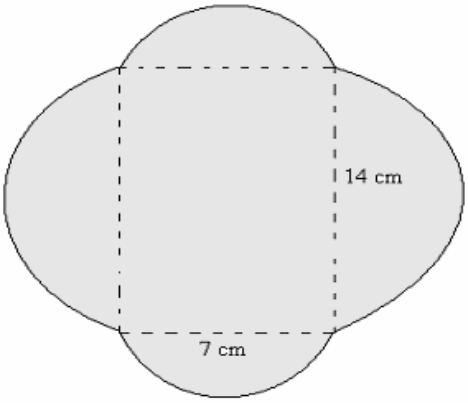
31. A rectangular plot of land measures 40m by 30m. A wall was erected on one of the longer sides. Four strands of wire used to face the three remaining sides of the plot. What length of wire is used?

A.4800m B.560m C.400m D.100m

32. An open cylindrical tin of radius 7cm and height 21cm was painted on the outside. What was the area painted (Take $\Pi = \frac{22}{7}$)

A.4800cm^2 B.560m C.400m D 100m

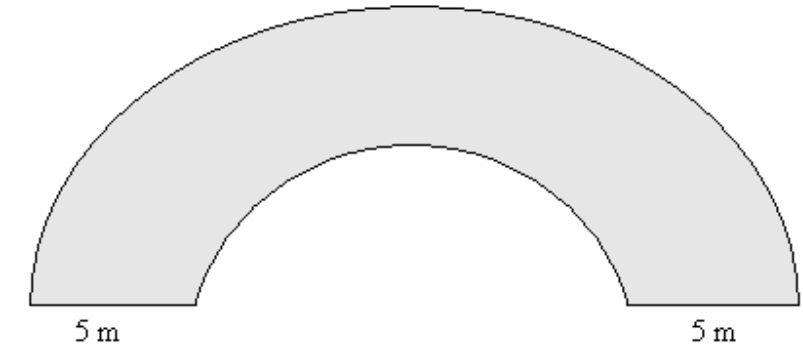
33. The figure below represents a table mat.



What is the area of the mat (Take $\Pi = \frac{22}{7}$)

A.192.5cm B.868cm^2 C.290.5cm^2 D.194.25cm^2

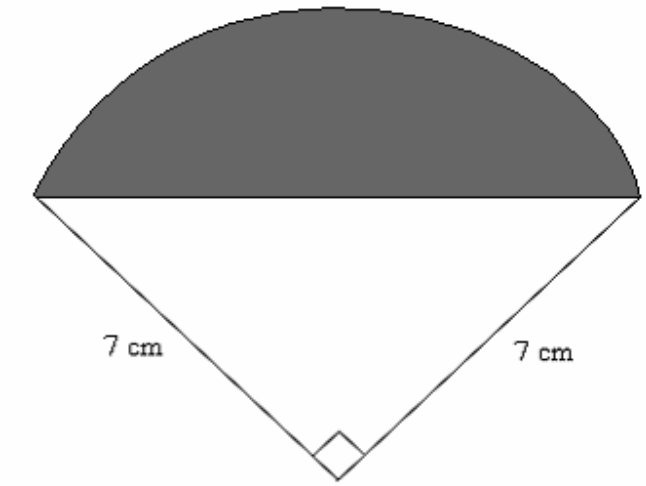
34. A section of a road is represented as below with two semi circle, 5m apart. The diameter of the larger semi-circle is 30m.



What is the perimeter of the road? (Take Π = 3.14)

A.78.5m B.88.5m C.83.5m D.96.35m

35. The diagram below represents a quarter a circle whose radius is 7cm.



What is the area of the shaded part? (Take Π = $\frac{22}{7}$)

A.24 ½ cm² B.14cm² C.281/2 cm² D.63cm²

2.4 Practice Paper 2 Answers

1	B	7	C	13	A	19	B	25	C	31	C
2	D	8	D	14	B	20	D	26	A	32	D
3	C	9	C	15	C	21	B	27	B	33	C
4	C	10	D	16	C	22	C	28	C	34	B
5	B	11	B	17	B	23	A	29	D	35	B
6	D	12	B	18	B	24	C	30	B		