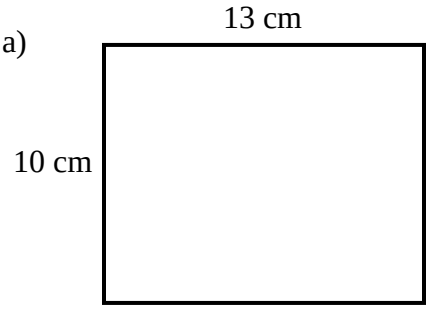
Area and Perimeter

Level 1 – 2

1. Calculate the area of the following shapes:

a)



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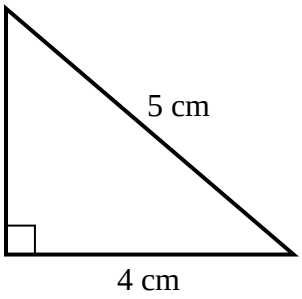
b)



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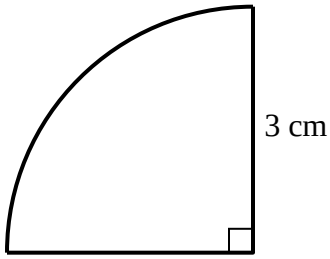
c)



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2. The area of a square is 121 cm^2. Calculate the perimeter.

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Level 3 – 4

3. Explain, with the help of a diagram, why the area of a parallelogram is equal to the length of one of the parallel sides multiplied by the distance between them.

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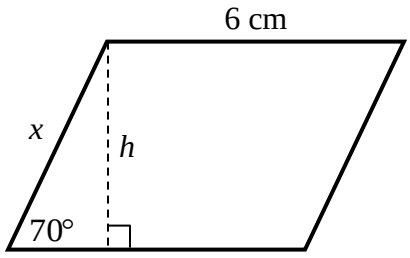
4. The area of the parallelogram is 24 cm^2.



a) Calculate the value of *h*.

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b) Calculate the value of *x*.

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c) Calculate the perimeter of the parallelogram.

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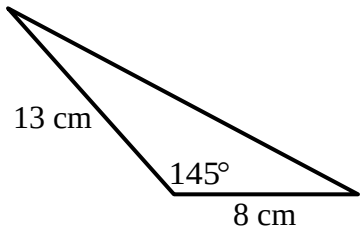
5. Calculate the area of the triangle.



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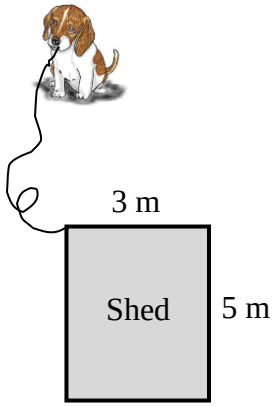
Level 5 – 6

6. Bob the beagle is attached to the corner of a shed in the middle of a large garden with a lead which is 6 m in length. Calculate the area of the garden where Bob is free to roam.



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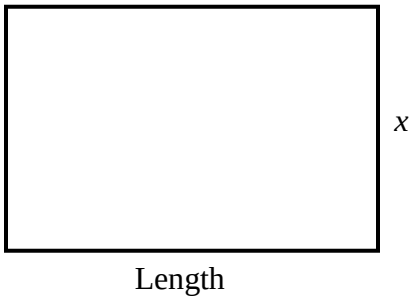
7. The perimeter of a rectangle is 20 cm. Its width is x cm.



a) Write down an expression for the length of the rectangle in terms of x.

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b) Write down an expression for the area of the rectangle in terms of only x.

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c) Calculate the area of the rectangle when i) $x = 2$ cm, ii) $x = 5$ cm and iii) $x = 10$ cm.

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8. The perimeter of a square, in cm, is equal to its area, in cm^2. Use this information to write down an equation. Solve the equation to determine the length of one side of the square.

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9. If the length of a square is increased by 5 cm the area of the rectangle is 50 cm^2 greater than the area of the square. Determine the area of the original square. Do not use guess and check.

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10. If the length of each side of a shape is multiplied by *n* determine an expression for the new area in terms of the area, *A*, of the original shape. Give some examples to support your answer. Does your rule work for any shape?

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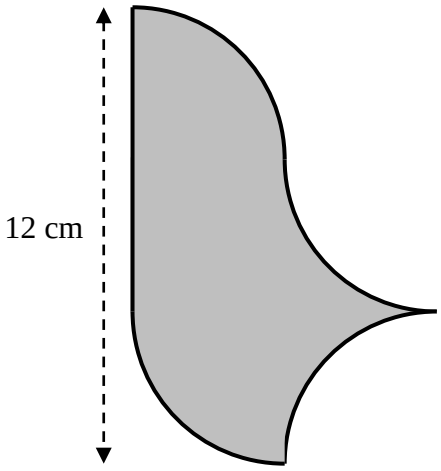
11. The following shape is made from four quarter-circles and a straight line. Calculate the perimeter and area.



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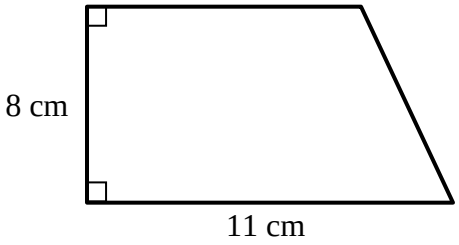
Perimeter: …… Area:……

Level 7 – 8

12. The perimeter of the following trapezoid is 34 cm. Calculate the area.



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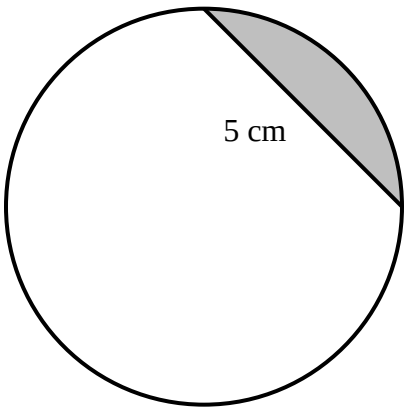
13. The following circle has a radius of 4 cm. Calculate the area of the shaded region.



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14. a) Determine the area of the smallest decagon which contains a circle of radius 10 cm.

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b) Does your answer seem reasonable? Explain.

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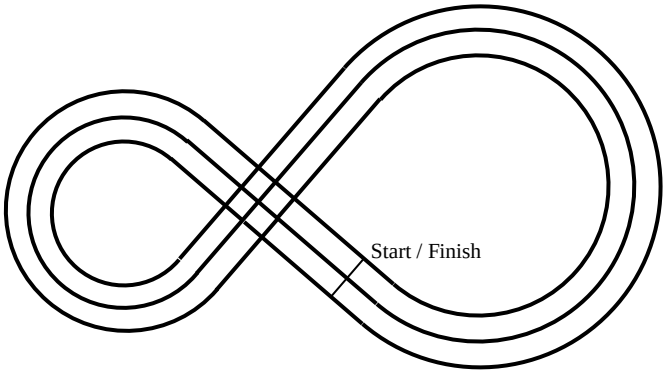
15. A running track with two lanes of the same width is in the shape of a number eight as shown in the diagram. Two runners have a race – one in each lane. They both start and finish at the same point. Does each runner run the same distance? Justify your answer.



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16. As a man climbs a spiral staircase he walks in a circle of radius 2 m, rotates through $720°$ and his altitude increases by 10 m. How far did he walk altogether?

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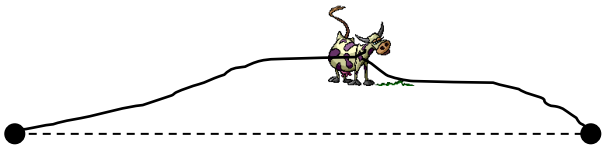
17. A cow is attached with rope to two different poles which are situated 20 m apart. The length of one rope is 15 m and the length of the other rope is 10 m. Calculate the area of land where the cow is free to roam.



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