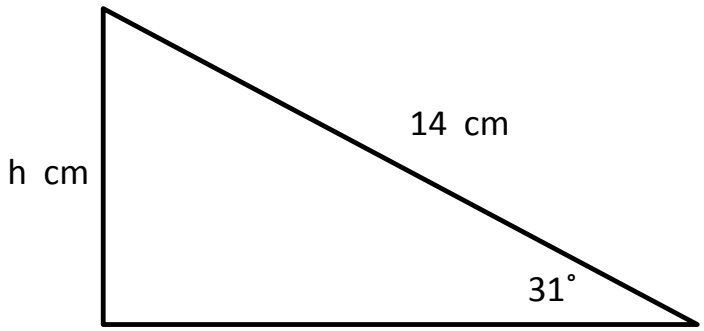
Geometry - Calculator

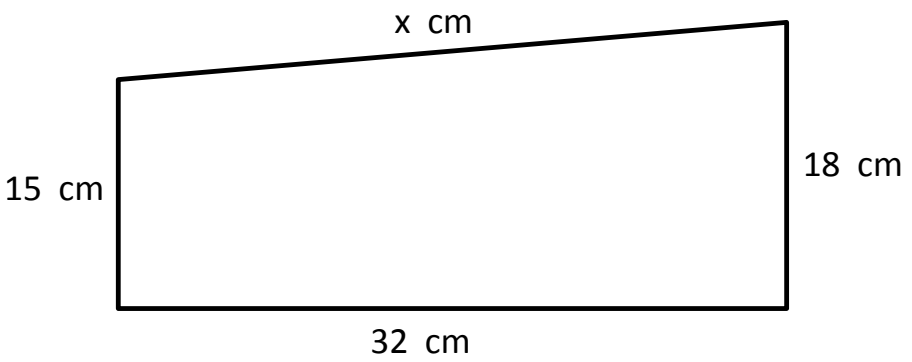
1) The diagram shows a right-angled triangle.



Not drawn accurately

What is the value of h, to 1dp?

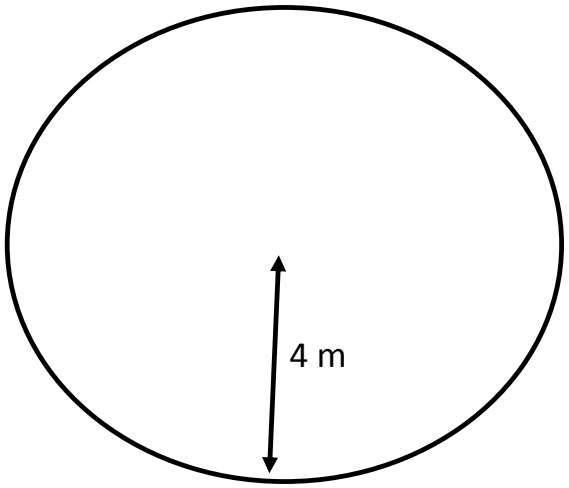
2) Here is a trapezium



Not drawn accurately

Use Pythagoras' theorem to find the value of x.

3) The diagram shows a plan for a circular lawn



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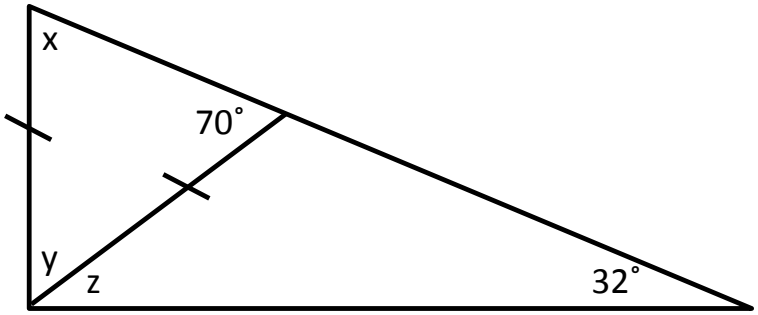
The lawn has a radius of 4m.

Work out the area of the lawn.

4) Look at triangle ABC.

ABD is an isosceles triangle where AB=AD



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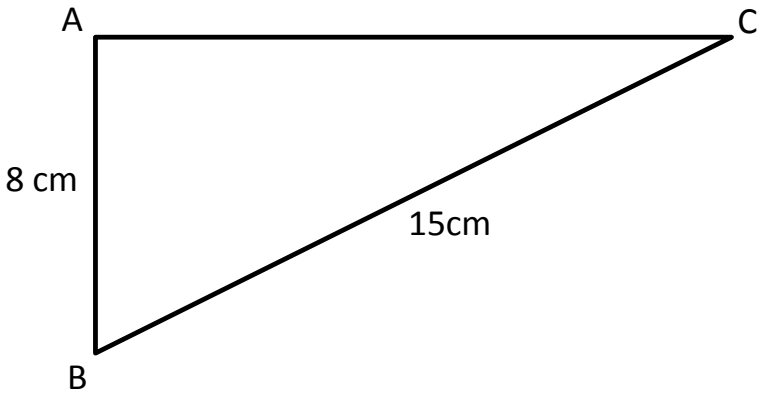
Work out the sizes of angles x, y and z.

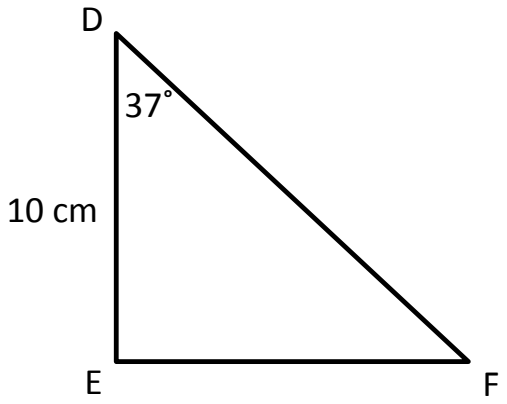
5) a) Look at this triangle



Not drawn accurately

Work out the length of AC.

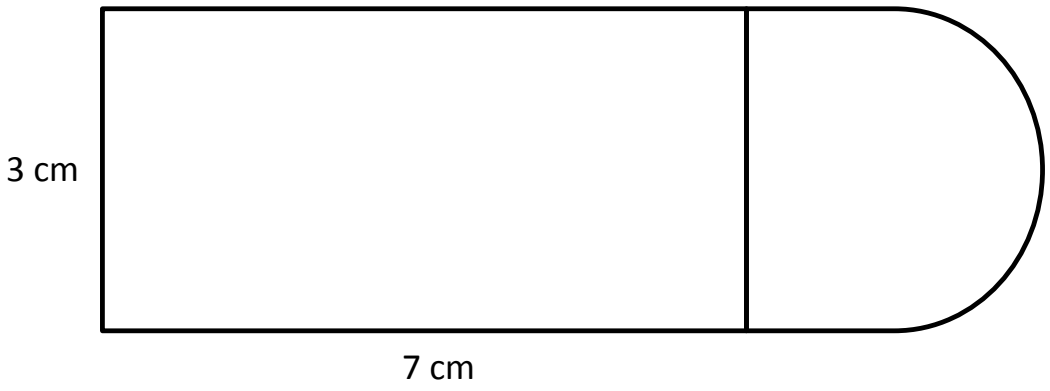
b) Look at this triangle



Not drawn accurately

Work out the length of EF

6) The shape below is made up of a rectangle and a semicircle.

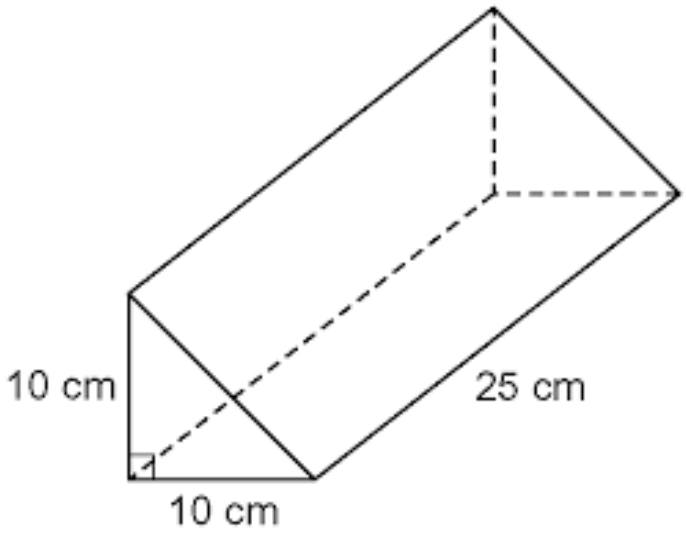


Not drawn accurately

Find the area of the shape.

Give your answer in cm^2 to the nearest whole number.

7) Look at the triangular prism



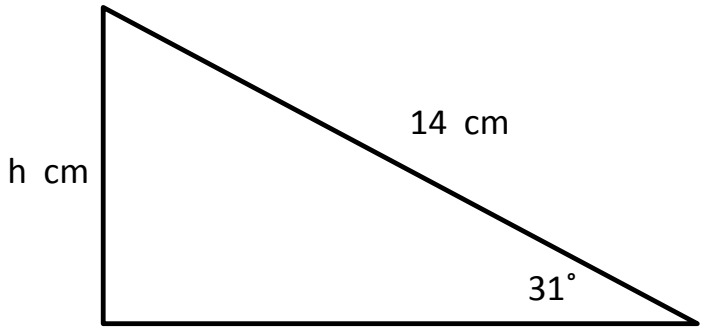
Not drawn accurately

a) Work out the surface area of the prism.

b) Work out the volume of the prism.

Answers

1) The diagram shows a right-angled triangle.



Not drawn accurately

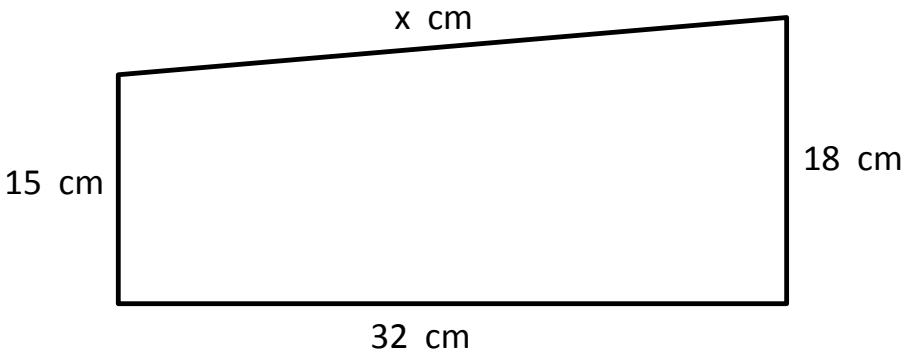
What is the value of h, to 1dp?

sin 31 = h/14

h = 14 X sin 31

h = 7.2cm

2) Here is a trapezium



Not drawn accurately

Use Pythagoras' theorem to find the value of x.

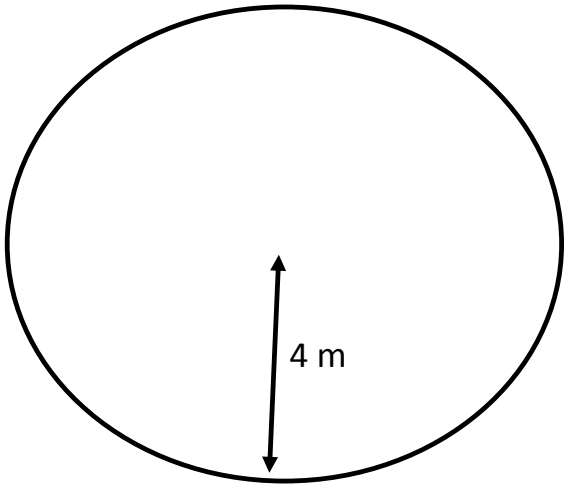
18cm – 15cm = 3cm

$x^2 = 3^2 + 32^2$

$x^2 = 1033$

$x = 32.1$cm

3) The diagram shows a plan for a circular lawn



Not drawn accurately

The lawn has a radius of 4m.

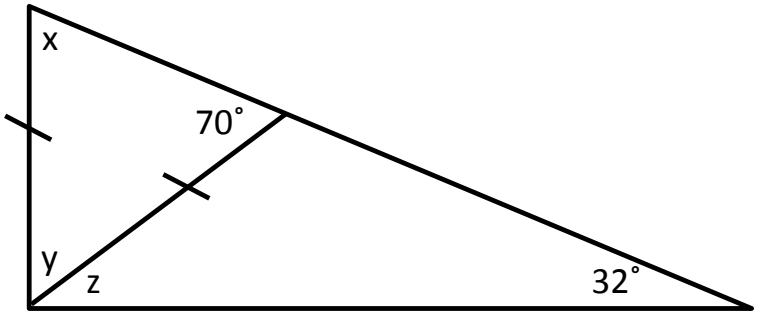
Work out the area of the lawn.

Area of a circle = πr^2

$\pi \times 4^2 = 16\pi = 50.3\ m^2$

4) Look at triangle ABC.

ABD is an isosceles triangle where AB=AD



Not drawn accurately

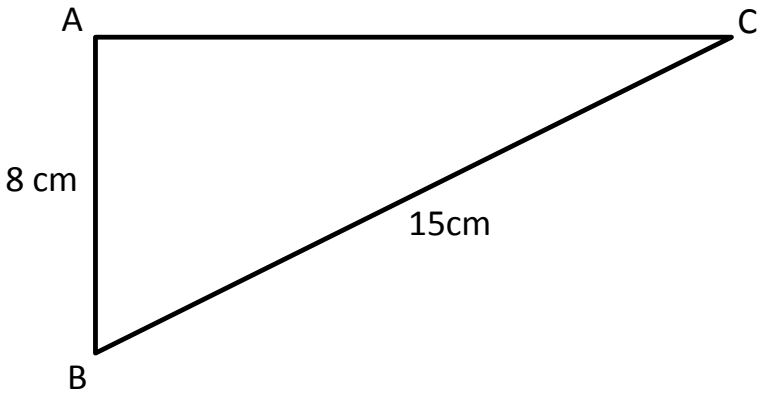
Work out the sizes of angles x, y and z.

x = 70°

y = 40°

z = 50°

5) a) Look at this triangle



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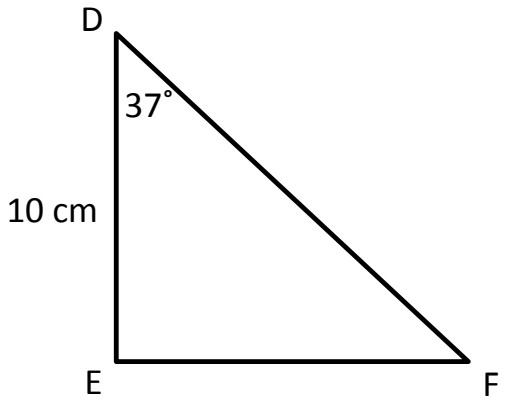
Work out the length of AC.

$AC^2 = 15^2 - 8^2$

$AC^2 = 161$

$AC = 12.7cm$

b) Look at this triangle



Not drawn accurately

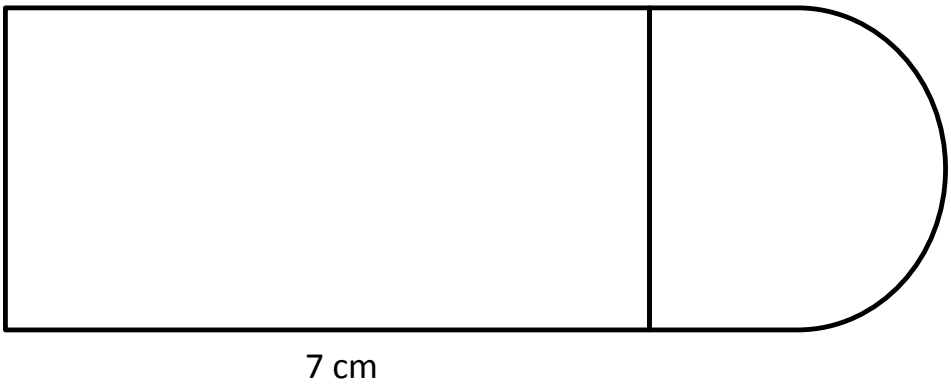
Work out the length of EF

tan 37 = EF / 10

EF = 10 X tan 37

EF = 7.5cm

6) The shape below is made up of a rectangle and a semicircle.



Not drawn accurately

Find the area of the shape.

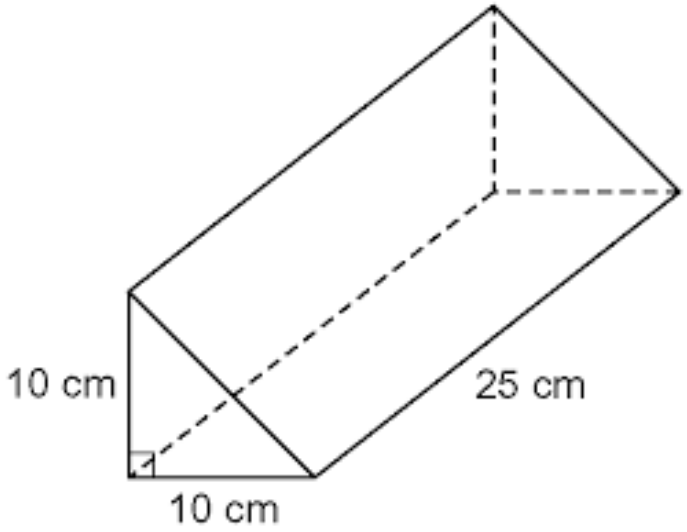
Give your answer in cm^2 to the nearest whole number.

Area of rectangle = 3 X 7 = 21 cm^2

Area of semicircle = (π X 1.5^2) ÷ 2 = 3.5cm^2

Total area = 21 + 3.5 = 24.5 = 25cm² to the nearest whole number

7) Look at the triangular prism



Not drawn accurately

c) Work out the surface area of the prism.

$10^2 + 10^2 = 200$

(10 X 10) ÷ 2 = 50

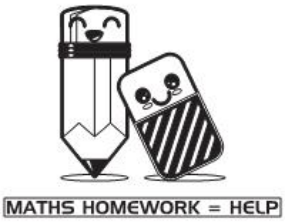
Total surface area = (50 X 2) + (√200 X 25) + (10 X 25 X 2)

= 953.55

= 954 cm² to the nearest whole number

d) Work out the volume of the prism.

Volume = (0.5 X 10 X 10) X 25 = 1250



Tips and Techniques

1. Read each question slowly. You may find it helpful to underline the numbers and important information that will affect your answer.
For example: Find 23 more than 57?

2. If you do not understand the question straightaway, try reading it through a couple of times until it makes sense.

3. Make sure you read the question carefully. Often, the words highlighted in bold in the question will be the part you need to pay the most attention to, *e.g. Which country had the* ***greatest increase*** *in visitors from 2005 to 2006?*

4. Even if you know the answer to the question without working it out on paper, it is important to always show your working out in the box provided. You will lose marks if you do not do this.

5. Always use a ruler when drawing shapes, symmetry or graphs.

6. Topics that are useful to revise;

* **Time** - 24 hour clock, adding a length of time e.g. 45 minutes to a certain time. An example of a question where time is used is - *"The time is one thirty in the afternoon. Write this as it would be shown on a twenty-four hour clock?"*
* **Money** - find the total amount of shopping items, how much change will you get from a £5, £10 note etc.
* **Number calculations** - times tables, addition, subtraction, multiplication and division methods.
* **Measurement** - how many metres in a kilometre, millilitres in a litre and grams in a kilogram?
* **Percentages and fractions** - 1/2=0.5 or 50%, 1/4=0.25 or 25%, 3/4=0.75 or 75%, 1/3=0.33 or 33%, 1/5=0.2 or 20%

7. Check to see how many marks the question is worth. If it is worth more than one mark, make sure you show your working out.

8. Use everyday objects to help your child practice certain topics. For example; a shopping receipt can be good revision for money questions - adding totals and finding change. Other useful objects that you could use are;

* **Television Guide** - Practice the time a programme starts, what time will it finish? how long does the programme last?
* **Weather Chart** - Change in temperature - *e.g. The temperature fell from 3 degrees celsius to -4 degrees celsius. By how many degrees did the temperature fall?*
* **Measure yourself and other family members to practice height** (in cm, metres), weight (in grams, kilograms), area of hands and feet. You could also calculate the average family height, weight etc.