School Name
Mathematics Test 2017

Year 7

Area of Plane Shapes

Non Calculator Section

Name_____

Skills and Knowledge Assessed:

- Find ~~perimeters and~~ areas of parallelograms, trapeziums, rhombuses and kites (ACMMG196)
- Investigate the relationship between features of circles such as ~~circumference,~~ area, radius and diameter. Use formulas to solve problems involving ~~circumference and~~ area (ACMMG197)
- Choose appropriate units of measurement for area ~~and volume~~ and convert from one unit to another (ACMMG195)
- Establish the formulas for areas of rectangles, triangles and parallelograms and use these in problem solving (ACMMG159)

Answer all questions in the spaces provided on this test paper by:

Writing the answer in the box provided.

or

Shading in the bubble for the correct answer from the four choices provided.

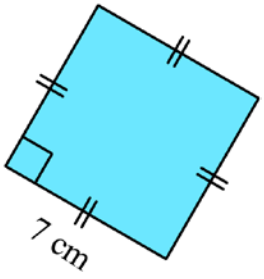
Show any working out on the test paper. Calculators are **not** allowed.

1. A rectangle measures 5 cm by 8 cm.

   What is the area of the rectangle?

   (Remember to give the units as a part of your answer.)

2. What is the area of this shape?

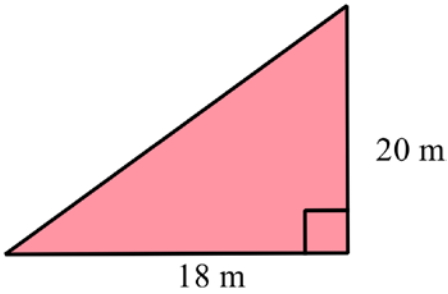
   ☐ 14 cm^2

   ☐ 28 cm^2

   ☐ 35 cm^2

   ☐ 49 cm^2

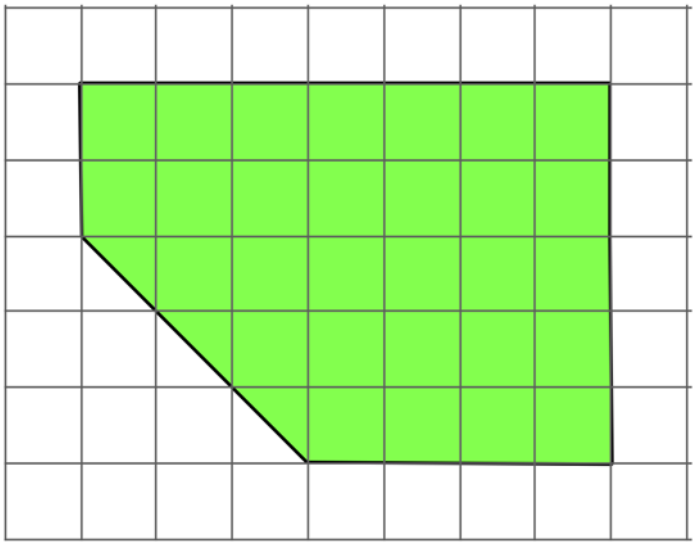
3. Find the area of this triangle.



- ☐ 38 m^2
- ☐ 180 m^2
- ☐ 360 m^2
- ☐ 724 m^2

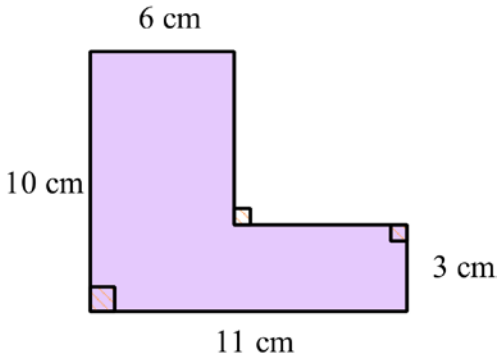
4. The shaded shape is drawn on 1 cm grid.

What is the area of the shape?



☐

5. What is the area of this shape?



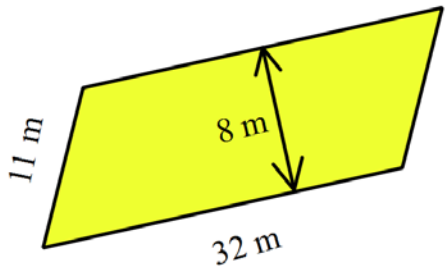
- ☐ 75 cm^2
- ☐ 92 cm^2
- ☐ 93 cm^2
- ☐ 110 cm^2

6. Which unit would be best to use for the area of a room in a house?

- ☐ Hectares
- ☐ Square centimetres
- ☐ Square millimetres
- ☐ Square metres

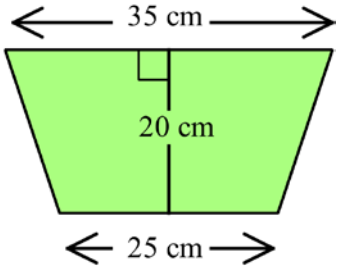
7. What is the area of the parallelogram shown?

- ☐ 128 m^2
- ☐ 176 m^2
- ☐ 256 m^2
- ☐ 352 m^2

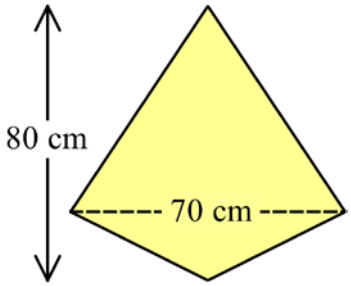


8. What is the area of this trapezium?

- ☐ 300 cm^2
- ☐ 600 cm^2
- ☐ 900 cm^2
- ☐ 1200 cm^2

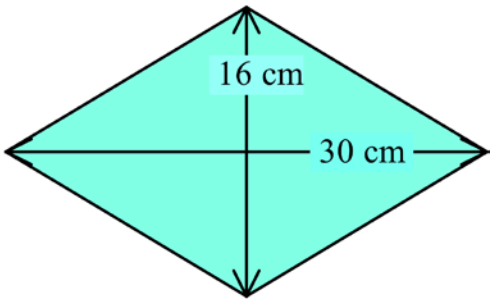


9. What is the area of the kite?

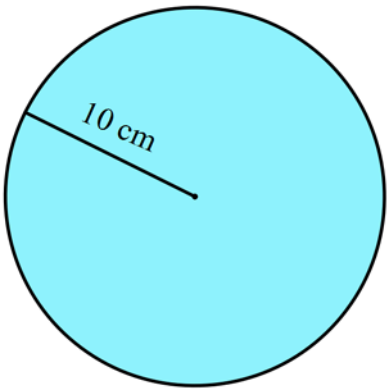


10. What is the area of this rhombus?

- ☐ 240 cm^2
- ☐ 360 cm^2
- ☐ 400 cm^2
- ☐ 480 cm^2

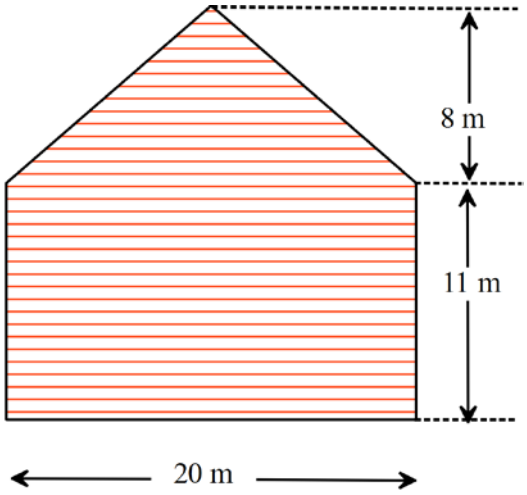


11. What is the area of this circle, in terms of π?

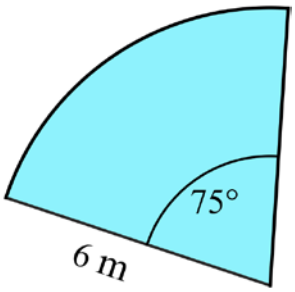


- ☐ 50π cm^2
- ☐ 75π cm^2
- ☐ 100π cm^2
- ☐ 400π cm^2

12. Find the area of the side of the building which is shown.



13. What is the area of this sector of a circle, in terms of π?



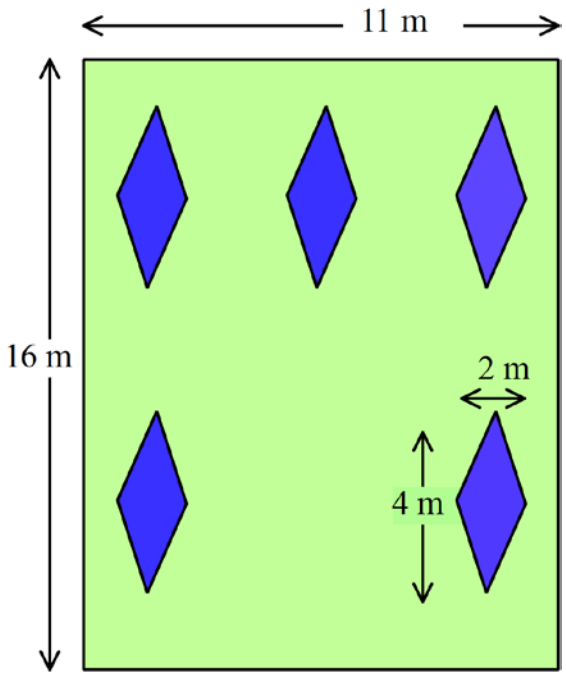
- ☐ $\frac{7\pi}{2}$ m^2
- ☐ $\frac{15\pi}{4}$ m^2
- ☐ $\frac{15\pi}{2}$ m^2
- ☐ 15π m^2

14. The rectangular wall shown, has five identical windows.

Each window is a rhombus with diagonals which measure 2 m by 4 m.

The wall is to be painted, leaving the windows untouched,

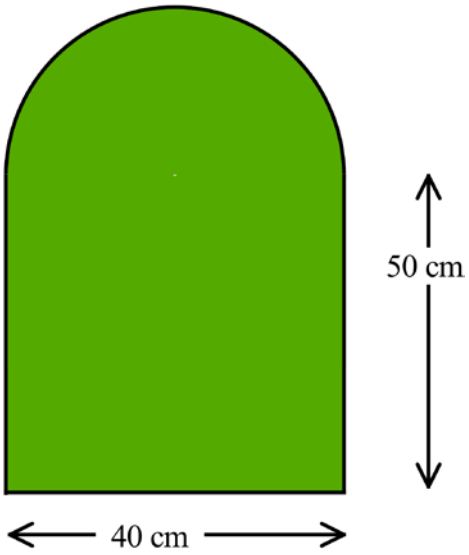
What is the area to be painted?



15. One side of a boogie board has the dimensions shown below.

What is the area of the side shown (in terms of π)?

- ☐ $2000 + 100\pi \text{ m}^2$
- ☐ $2000 + 200\pi \text{ m}^2$
- ☐ $2800 + 200\pi \text{ m}^2$
- ☐ $2000 + 800\pi \text{ m}^2$



School Name

Mathematics Test 2017

Area of Plane Shapes

Year 7

Calculator Allowed
Short Answer Section

Name_____

Answer all questions in the spaces provided on this test paper by:

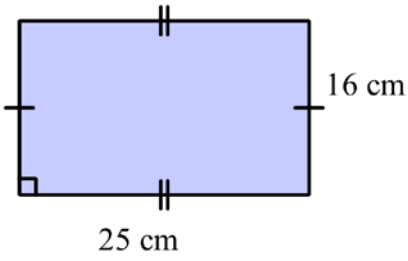
Writing the answer in the box provided.

or

Shading in the bubble for the correct answer from the four choices provided.

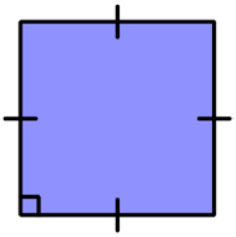
Show any working out on this test paper. Calculators are allowed.

1. Find the area of this rectangle.



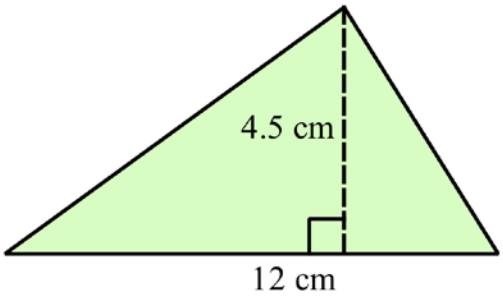
2. What is the area of the square shown?

- ☐ 6.25 cm^2
- ☐ 10 cm^2
- ☐ 12.5 cm^2
- ☐ 20 cm^2

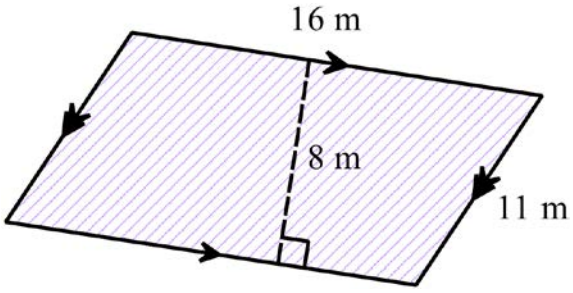


3. What is the area of the triangle in square metres?

- ☐ 13.5 cm^2
- ☐ 27 cm^2
- ☐ 54 cm^2
- ☐ 81 cm^2

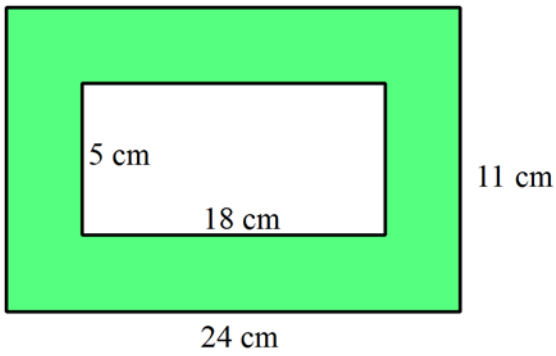


4. What is the area of the parallelogram?

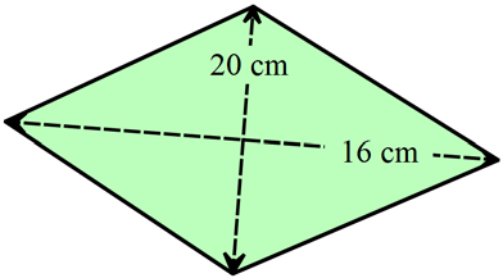


5. What is the area of the shaded section?

- ☐ 36 cm^2
- ☐ 90 cm^2
- ☐ 174 cm^2
- ☐ 264 cm^2

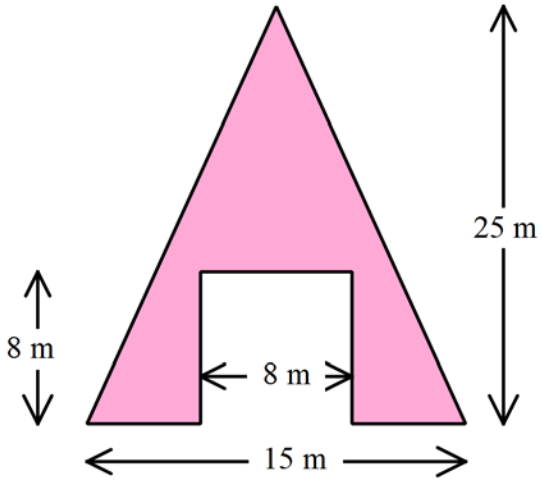


6. What is the area of this rhombus?

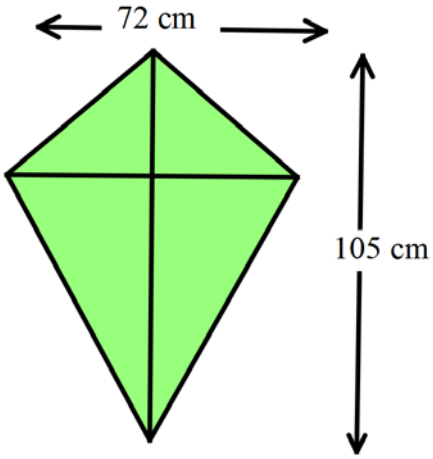


7. The figure shows a triangle with a square section cut from it.

Calculate the area of the resulting polygon.



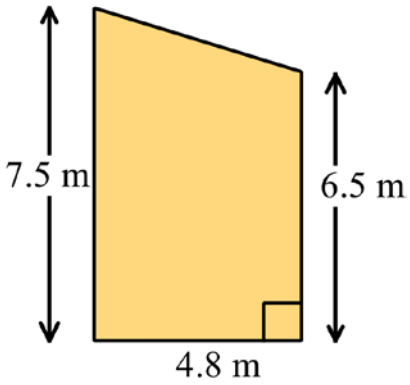
8. A kite is constructed with the dimensions shown.



What is the area of the kite?

- ☐ 3780 cm^2
- ☐ 5841 cm^2
- ☐ 7560 cm^2
- ☐ 16 209 cm^2

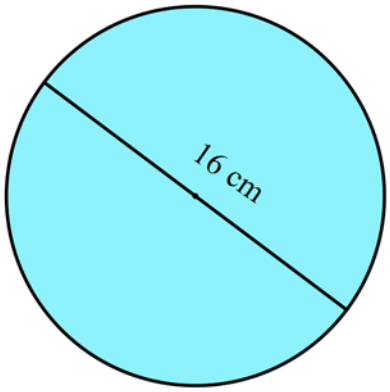
9. A trapezium has the dimensions shown.



What is its area?

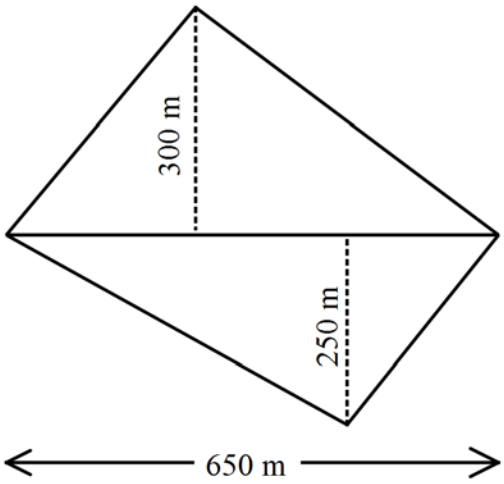
10. What is the area of the circle shown?

Answer to the nearest cm^2.



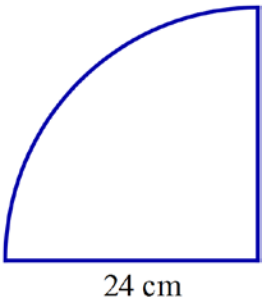
11. The field shown has been divided into two triangles.

What is the area of the field?



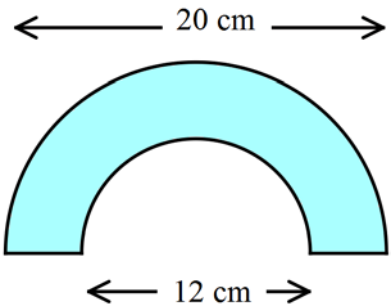
12. Find the area of this sector, to the nearest square centimetre.

- ☐ 452 cm^2
- ☐ 576 cm^2
- ☐ 905 cm^2
- ☐ 1810 cm^2



13. What is the shaded area between the two semicircles?

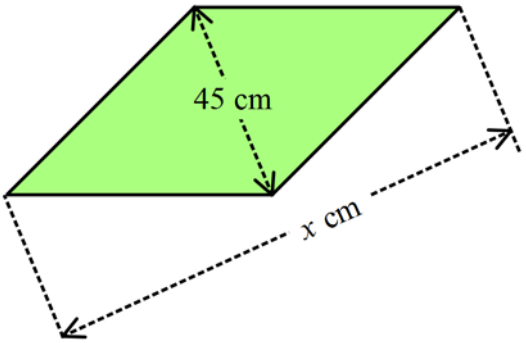
Answer to the nearest square centimetre.



14. The rhombus shown has an area of 1350 cm^2.

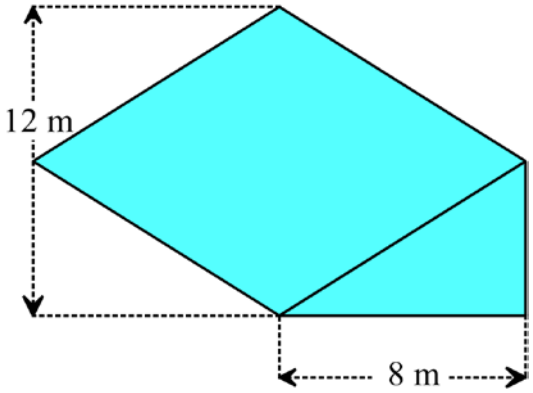
One diagonal is 45 cm and the other is x cm.

What is the value of x?



15. A rhombus and a triangle share a common side as shown.

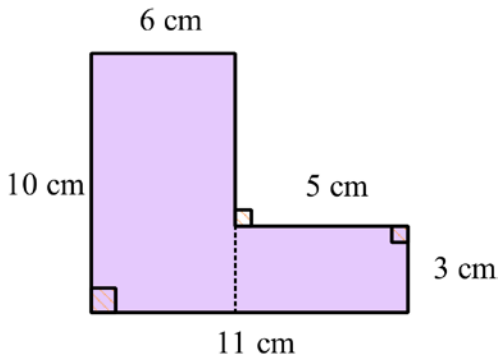
What is the area of the combined shape?



School Name
Mathematics Test 2017

Year 7 **Area of Plane Shapes** Non Calculator Section

ANSWERS

Question	Working and Answer
1.	Area = length × width = 5 × 8 = **40 cm^2**
2.	Area = 7^2 = 49 cm^2 **4th Answer**
3.	Area = $\frac{1}{2} \times 18 \times 20 = 9 \times 20 = 180$ m^2 **2nd Answer**
4.	Rows with complete squares = 7 + 7 + 6 + 5 + 4 = 29 cm^2 Three Half Squares = 1.5 cm^2 Area = 29 + 1.5 = **30.5 cm^2**
5.	Area = 6 × 10 + 5 × 3 = 60 + 15 = 75 cm^2 **1st Answer** 
6.	Hectares would be too large a unit (used for areas of land 1 ha = 10 000 m^2) , square centimetres and square millimetres are too small a unit, so square metres would be best. **4th Answer**

Question	Working and Answer
7.	$A = \text{bh} = 8 \times 32 = 256 \text{ m}^2$ **3rd Answer**
8.	$A = \frac{h}{2}(a+b) = \frac{20}{2} \times (25 + 35)$ $= 10 \times 60$ $= 600 \text{ cm}^2$ **2nd Answer**
9.	$A = \frac{1}{2}xy = \frac{1}{2} \times 80 \times 70$ $= 40 \times 70$ $= \mathbf{2800 \text{ cm}^2}$
10.	$A = \frac{1}{2}xy = \frac{1}{2} \times 16 \times 30$ $= 8 \times 30$ $= 240 \text{ cm}^2$ **1st Answer**
11.	$A = \pi \times 10^2$ $= 100\pi \text{ cm}^2$ **3rd Answer**
12.	$A = \frac{1}{2} \times 20 \times 8 + 20 \times 11$ $= 80 + 220$ $= \mathbf{300 \text{ m}^2}$
13.	$A = \frac{75}{360} \times \pi \times 6^2$ $= \frac{75}{360} \times \pi \times 36$ $= \frac{75}{10} \times \pi$ $= \frac{15\pi}{2} \text{ cm}^2$ **3rd Answer**

Question	Working and Answer
14.	$A = 11 \times 16 - \frac{1}{2} \times 2 \times 4 \times 5$ $= 176 - 20$ $= \mathbf{156\ m^2}$
15.	$\text{Area} = 40 \times 50 + \frac{1}{2} \times \pi \times 20^2$ $= 2000 + 200\pi\ \text{m}^2$ **2nd Answer**

School Name
Mathematics Test 2017

Area of Plane Shapes

Year 7

Calculator Allowed
Short Answer
Section

ANSWERS

Question	Working and Answer
1.	Area $= 25 \times 16$ $= \mathbf{400\ cm^2}$
2.	Area $= 2.5^2 = 6.25\ cm^2$ **1st Answer**
3.	Area $= \frac{1}{2} \times 12 \times 4.5 = 27\ cm^2$ **2nd Answer**
4.	Area $= bh$ $= 16 \times 8$ $= \mathbf{128\ m^2}$
5.	Area $= 24 \times 11 - 18 \times 5$ $= 264 - 90$ $= 174\ cm^2$ **3rd Answer**
6.	Area $= \frac{1}{2}xy = \frac{1}{2} \times 20 \times 16$ $= \mathbf{160\ cm^2}$

7.	$\text{Area} = \frac{1}{2} \times 15 \times 25 - 8^2$ $= 187.5 - 64$ $= \mathbf{123.5\ m^2}$
8.	$\text{Area} = \frac{1}{2}xy$ $= \frac{1}{2} \times 72 \times 105$ $= 3780\ \text{cm}^2$ **1st Answer**
9.	$\text{Area} = \frac{h}{2}(a + b)$ $= \frac{4.8}{2}(7.5 + 6.5)$ $= 2.4 \times 14$ $= \mathbf{33.6\ cm^2}$
10.	$\text{Radius} = \frac{16}{2} = 8$ $\text{Area} = \pi \times 8^2$ $= 706.8583$ $= \mathbf{201\ cm^2}$ (nearest cm^2)
11.	$\text{Area} = \frac{1}{2} \times 650 \times 300 + \frac{1}{2} \times 650 \times 250$ $= 97500 + 81250$ $= \mathbf{178\ 750\ \boldsymbol{m^2}}$
12.	$\text{Area} = \frac{\pi \times 24^2}{4}$ $= 452\ \text{cm}^2$ (one decimal place) **1st Answer**
13.	Radii of semicircles are 10 cm and 6 cm resp. $\text{Area} = \frac{1}{2} \times \pi \times 10^2 - \frac{1}{2} \times \pi \times 6^2$ $= 157.1 - 56.6$ $= \mathbf{101\ m^2}$ **(nearest $\boldsymbol{m^2}$)**

14.	$\text{Area} = \frac{1}{2}xy$ $\frac{1}{2} \times 45 \times x = 1350 \text{ cm}^2$ $\frac{45x}{2} = 1350$ $45x = 1350 \times 2 = 2700$ $x = \frac{2700}{45} = \mathbf{60}$
15.	$\text{Area of rhombus} = \frac{1}{2} \times 16 \times 12$ $= 96\ m^2$ $\text{Area of triangle} = \frac{1}{2} \times 8 \times 6$ $= 24\ m^2$ $\text{Total Area} = 96 + 24$ $= 120 \text{ m}^2$