High School Mathematics Test 2013

Year 8

Area

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. ***You will need a ruler.***

1. A square has sides which are 0.9 m long. Its area in square centimetres is:

   ☐ 0.81 cm^2 ☐ 81 cm^2 ☐ 810 cm^2 ☐ 8 100 cm^2

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2. Which unit would be the most appropriate to measure the area of carpet in a room.

   ☐ Hectares ☐ Square centimetres

   ☐ Square metres ☐ Square millimetres

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3. A rectangular curtain measures 2 m by 3.5 m. What is its area in square metres?

   ☐ m^2

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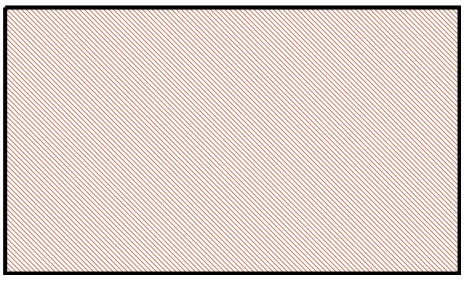
4. By measuring the dimensions, find the area of the shaded rectangle below.



Area = ☐ cm^2

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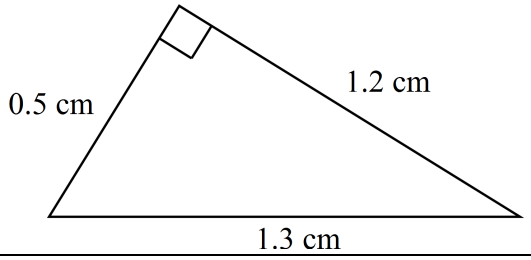
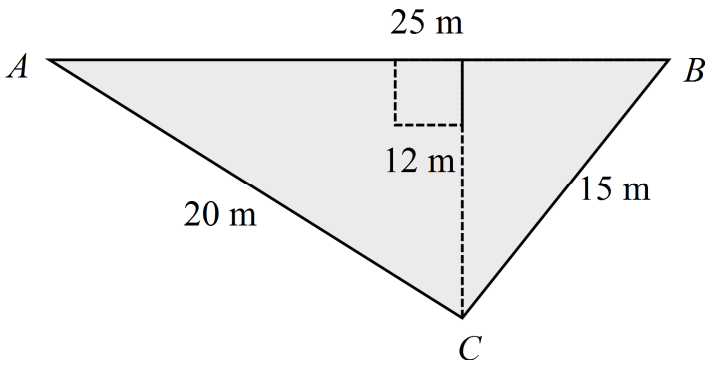
5. Which calculation could be used to find the area of the triangle?

- ☐ Area $= 0.5 \times 0.5 \times 1.2$
- ☐ Area $= 0.5 \times 0.5 \times 1.3$
- ☐ Area $= 0.5 \times 1.2 \times 1.3$
- ☐ Area $= 0.5 + 1.2 + 1.3$

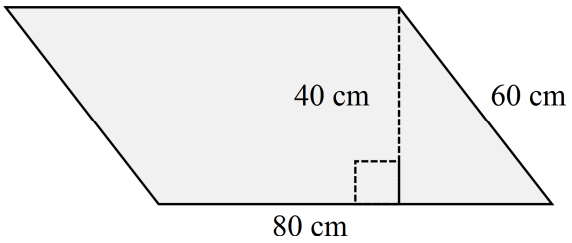


6. Calculate the area of the triangle *ABC*.



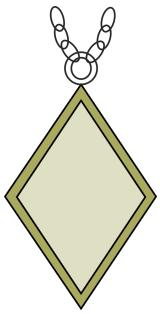
Area = ☐ m^2

7. Find the area of the parallelogram shown.



- ☐ 1 600 cm^2
- ☐ 2 400 cm^2
- ☐ 3 200 cm^2
- ☐ 4 800 cm^2

8. A pendant is made in the shape of a rhombus with a stone set inside it.
The rhombus has inner diagonals of 24 mm and 16 mm.
What is the area of the rhombus in which the stone is set?

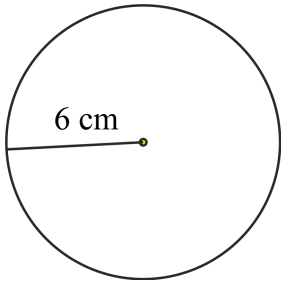


Area = ☐ mm^2

9. A sign is in the shape of a trapezium with parallel sides 100 cm and 140 cm, which are 60 cm apart. The area of the trapezium is:

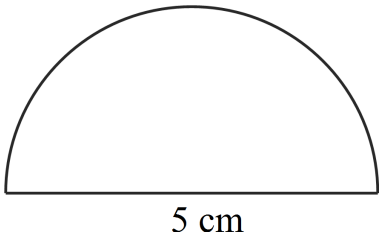
- ☐ 5 600 cm^2
- ☐ 7 200 cm^2
- ☐ 10 000 cm^2
- ☐ 14 400 cm^2

10. What is the area of the circle (in terms of π)?



- ☐ 9π cm^2
- ☐ 12π cm^2
- ☐ 36π cm^2
- ☐ 144π cm^2

11. Which calculation could be used to find the area of the semicircle?

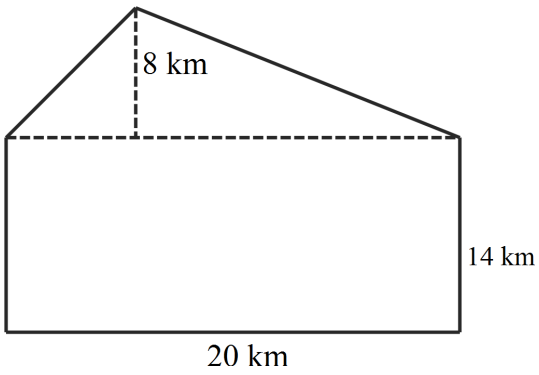


- ☐ $Area = \pi \times 2.5^2 \div 2$
- ☐ $Area = \pi \times 2.5^2$
- ☐ $Area = \pi \times 5^2 \div 2$
- ☐ $Area = \pi \times 5^2$

12. A sheet of paper has an area of 250 000 cm^2.
What is its area in m^2?

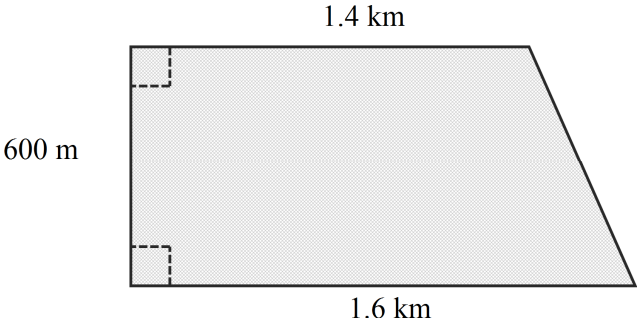
☐ 25 m^2 ☐ 250 m^2 ☐ 2 500 m^2 ☐ 25 000 m^2

13. A wheat crop is planted in this field.
The field can be divided into a rectangle and an isosceles triangle as shown.
Find the area of the field.



Area = ☐ km^2

14. A local park is in the shape of a trapezium, with the measurements shown.
What is the area of the park in hectares? (1 hectare = 10 000 m^2)



Area = ☐ hectares

High School Mathematics Test 2013

Year 8

Area

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 the test paper. Calculators are allowed.

1. A paddock has an area of 0.6 hectares. What is its area in square metres?

   ☐ 60 m^2 ☐ 600 m^2 ☐ 6 000 m^2 ☐ 60 000 m^2

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2. An advertising sign at a cricket game 12 m long and 855 mm wide. Its measurements in centimetres is

   ☐ 120 cm by 8.55 cm ☐ 120 cm by 85.5 cm

   ☐ 1 200 cm by 8.55 cm ☐ 1 200 cm by 85.5 cm

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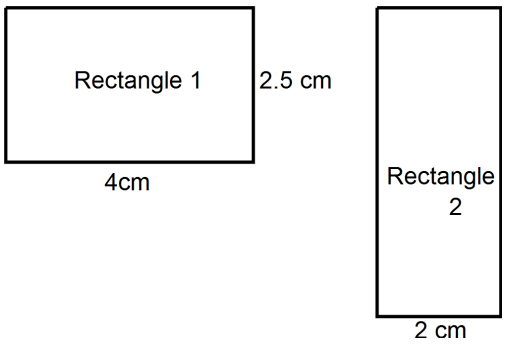
3. The two rectangles have the same area. Which statement is true?



   ☐ Their perimeters must be the same.

   ☐ Rectangle 2 has a height of 4.5cm.

   ☐ Rectangle 1 has a greater perimeter.

   ☐ Rectangle 2 has a greater perimeter.

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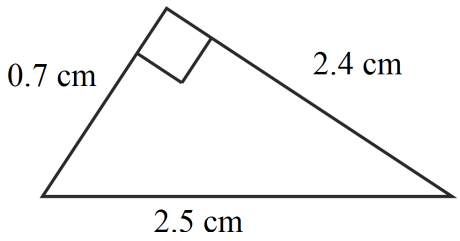
4. What is the area of this triangle?



Area = ☐ cm^2

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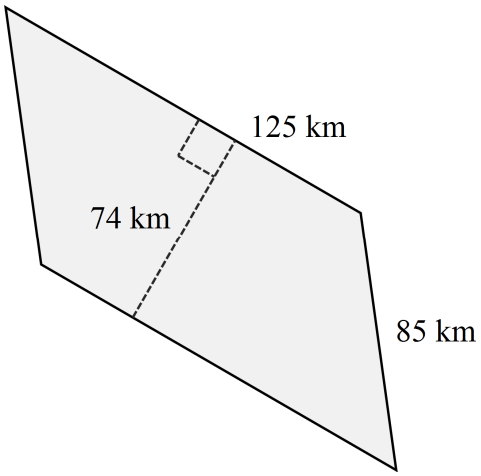
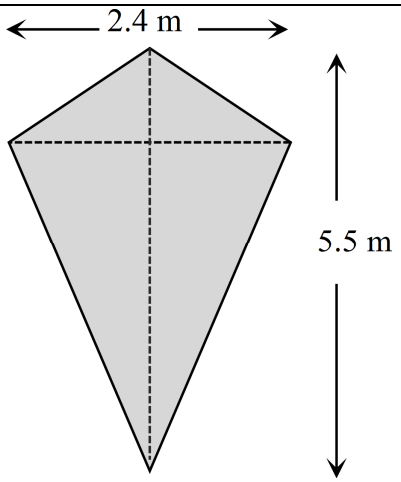
5. A paddock on a cattle station is in the shape of a parallelogram with the dimensions shown.
Find the area of the paddock.



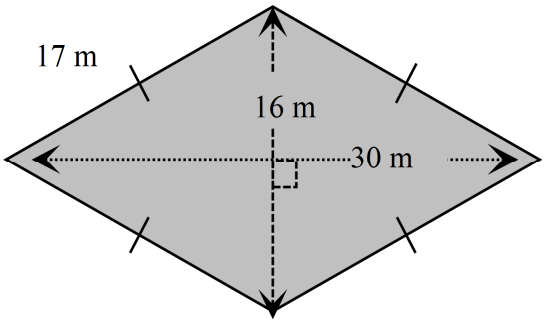
Area = ☐ km^2

6. A window in a museum of modern art is in the shape of a kite, as shown. Find the area of glass needed for the window.



Area = ☐ m^2

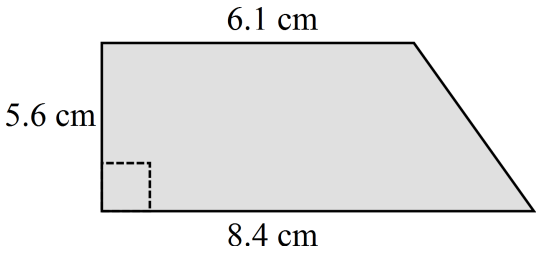
7. The rhombus shown has an area of:



Drawing not to scale.

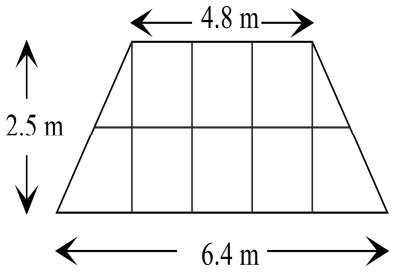
☐ 136 m^2 ☐ 240 m^2 ☐ 255 m^2 ☐ 480 m^2

8. A trapezium is shown below. Calculate its area.



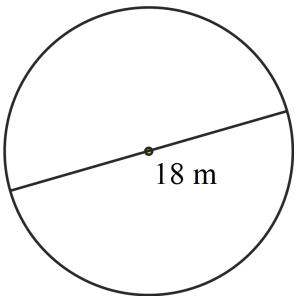
Area = ☐ cm^2

9. A window on a ship is shown.
What is the area of glass needed for the window?



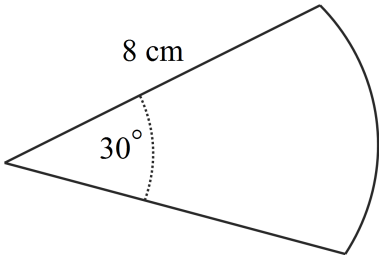
☐ 13.7 m^2 ☐ 14.0 m^2 ☐ 21.4 m^2 ☐ 28.0 m^2

10. What is the area of the circle shown?



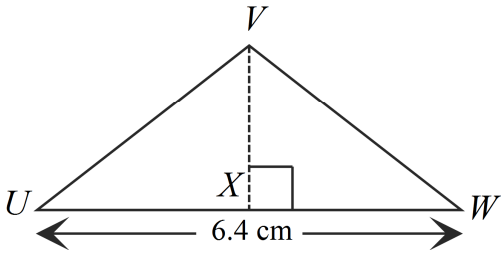
Area = ☐ cm^2

11. What is the area of the sector of the circle (correct to one decimal place)?



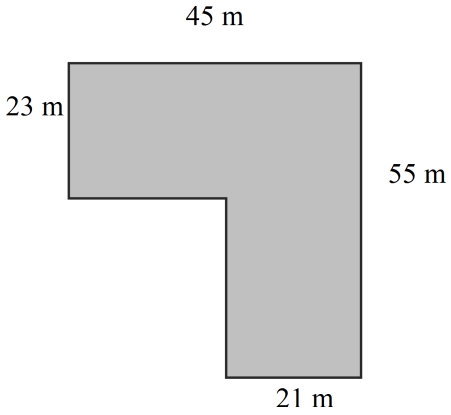
☐ 11.2 cm^2
☐ 16.8 cm^2
☐ 33.5 cm^2
☐ 201.1 cm^2

12. The triangle *UVW* has an area of 11.52 cm^2.
What is the length of *VX*?



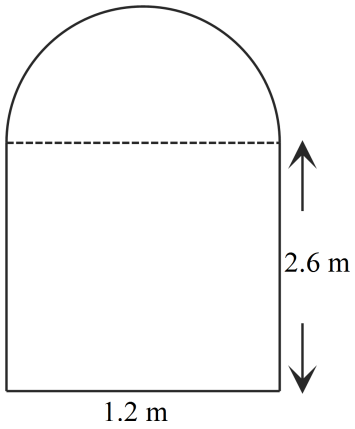
VX = ☐ cm

13. A block of suburban land is in the shape shown.
All of the boundaries meet at right angles.
Find the area of the block.



- ☐ 144 m^2
- ☐ 1 707 m^2
- ☐ 1 727 m^2
- ☐ 1 992 m^2

14. Theo is ordering glass for the arched window shown.
What area of glass will be needed?
(Answer to one decimal place)



Area = ☐ m^2

High School Mathematics Test 2013

Year 8

Area

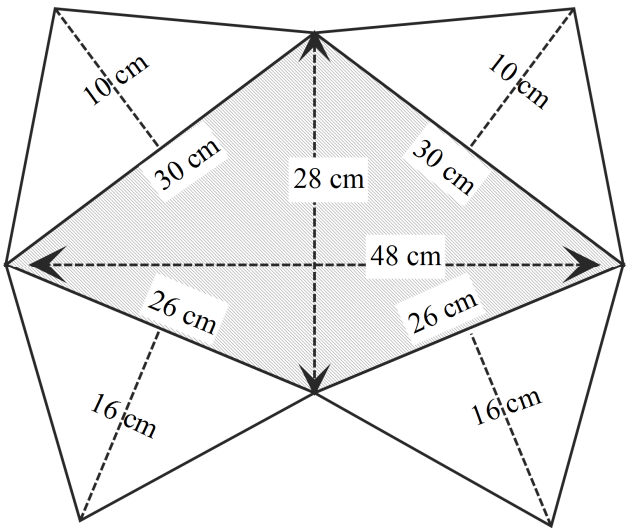
Calculator Allowed Longer Answer Section

Name_____

Write all working and answers in the spaces provided on this test paper.
Marks may not be awarded if working out and/or answers are not clear.
Marks allocated are shown beside each question.
Calculators are allowed.

Marks

1. Sally paints an artwork on an irregular shaped canvas.
It has a central section (shaded) in the shape of a kite, surrounded by four isosceles triangles.



(a) What is the area of the shaded section? **1**

……..

(b) What is the total area of all the isosceles triangles? **2**

……..

……..

(c) What is the total area of the canvas? **1**

……..

……..

Year 8

Area

ANSWERS

Non Calculator Section

1.	8 100 cm^2
2.	Square metres
3.	7 m^2
4.	21 cm^2
5.	Area $= 0.5 \times 0.5 \times 1.2$
6.	150 m^2
7.	3 200 cm^2
8.	192 mm^2

9.	7 200 cm^2
10.	36π cm^2
11.	$Area = \pi \times 2.5^2 \div 2$
12.	25 m^2
13.	360 km^2
14.	90 hA

Calculator Allowed Section

1.	6 000 m^2
2.	1 200 cm by 85.5 cm
3.	Rectangle 2 has a greater perimeter
4.	0.84 cm^2
5.	9 250 km^2
6.	6.6 m^2
7.	240 m^2
8.	40.6 cm^2

9.	14.0m^2
10.	254.5 m^2
11.	16.8 cm^2
12.	3.6 cm
13.	1 707 m^2
14.	3.7 m^2

Calculator Allowed Longer Answer Section		
1.	a) $Area = \frac{1}{2} \times 28 \times 48$ $= 672\ m^2$	
	b) Top triangles $= 2 \times \frac{1}{2} \times 30 \times 10$ $= 300\ m^2$ Lower triangles $= 2 \times \frac{1}{2} \times 26 \times 16$ $= 416\ m^2$ Total Triangles $= 300 + 416$ $= 716\ m^2$	
	Total Area $= 716 + 672$ c) $= 1\ 388\ m^2$	