High School
Mathematics Test 2013

Year 9

Area of Plane Shapes

Non Calculator

Skills and Knowledge Assessed:

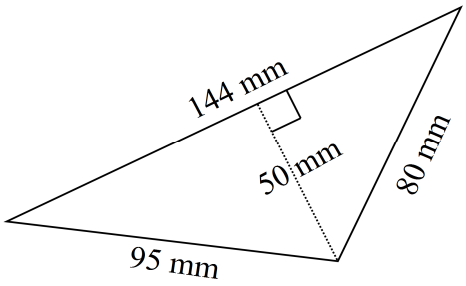
- Find perimeters and areas of parallelograms, trapeziums, rhombuses and kites (ACMMG196)
- Calculate the areas of composite shapes (ACMMG216)

Name_____

Section 1 Short Answer Section

Write all working and answers in the spaces provided on this test paper.

1. Find the area of the triangle.



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2. A sketch of an irregular garden plot is shown.
Find the area of the plot.

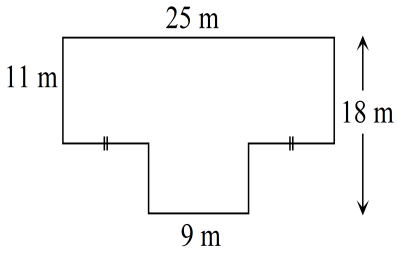

Diagram not to scale.

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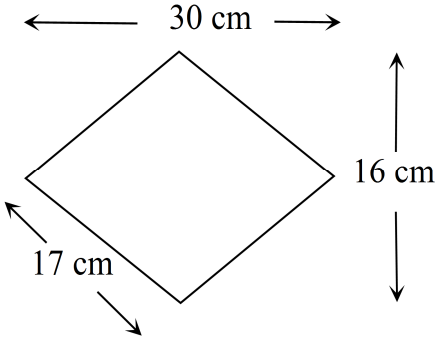
3. A sign is in the shape of a rhombus.
What is the area of the sign?



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4. A rectangular airstrip measures 3 km by 500 m. What is its area in hectares?

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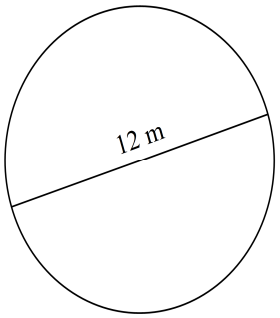
5. Give the area of the circle shown in terms of π.



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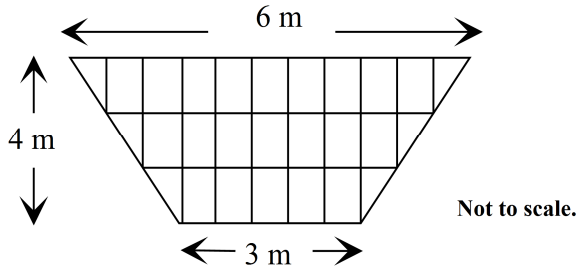
6. A grate at the end of a storm water drain is trapezoidal in shape. What is the area of the grate?



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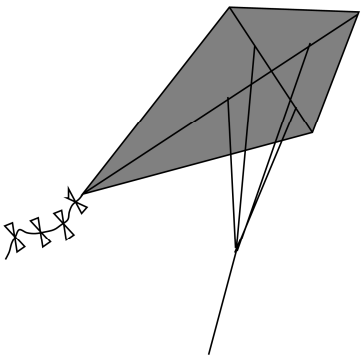
7. The kite shown has diagonals which measure 45 cm and 200 cm.
Find the area of the kite.



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8. A parallelogram has opposite sides which measure 12 cm.
The area of the parallelogram is 108 cm^2.
What is the shortest distance between the 12 cm opposite sides?

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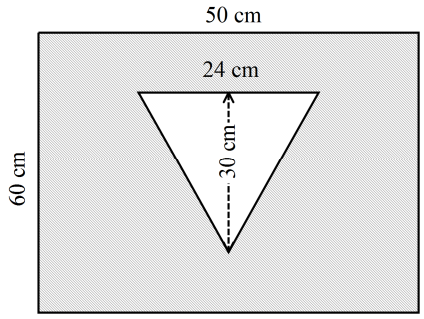
9. A triangle has been cut out of a rectangular piece of card. What area of card remains?



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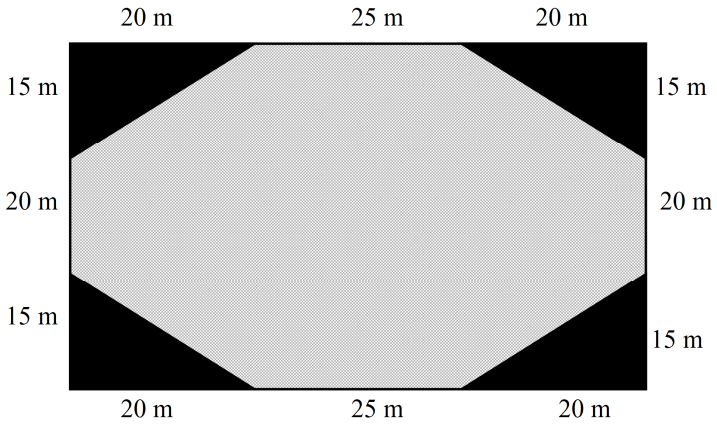
10. Aaron's back yard is rectangular with triangular garden beds in each corner.

The remainder of the yard is sown to lawn.

What is the area of lawn?



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High School
Mathematics Test 2013
Area of Plane Shapes

Year 9

Calculator Allowed

Name_____

Section 2 Multiple Choice Section

Mark all your answers on the accompanying multiple choice answer sheet, not on this test paper. You may do any working out on this test paper. Calculators are allowed for this section.

1. Ben calculates the area of a table top to be 6 500 mm^2. What is the area in cm^2?

   A. 0.65 cm^2 B. 6.5 cm^2 C. 65 cm^2 D. 650 cm^2

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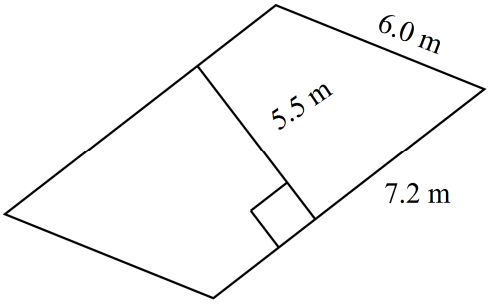
2. What is the area of the parallelogram shown?

   A. 33.0 m^2
   B. 39.6 m^2
   C. 43.2 m^2
   D. 86.4 m^2



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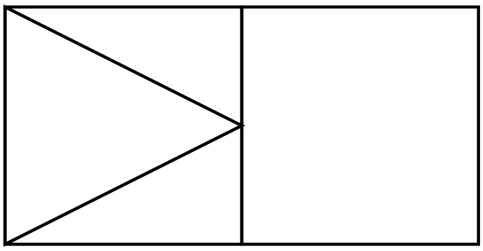
3. A board game has square pieces and two different sized triangular pieces. The triangular pieces fit against the square pieces as shown.

   If the area of the smaller triangular pieces is 18 cm^2, what is the combined area of the four pieces shown?



   A. 90 cm^2 B. 108 cm^2 C. 126 cm^2 D. 144 cm^2

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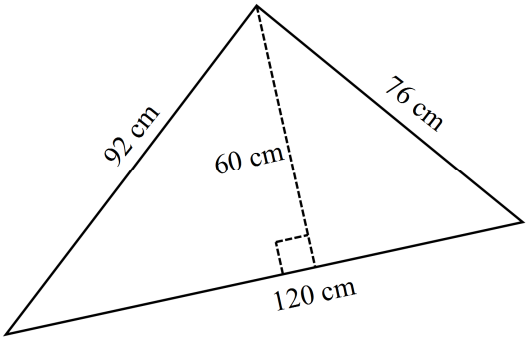
4. What is the area of the triangle shown?

   A. 3 600 cm^2
   B. 4 560 cm^2
   C. 5 520 cm^2
   D. 7 200 cm^2



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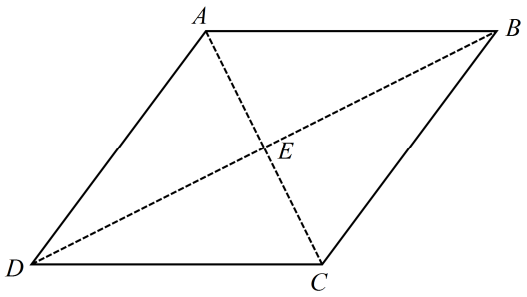
5. Find the area of the rhombus $ABCD$, given that $AB = 52$ cm, $EB = 48$ cm and $EC = 20$ cm.



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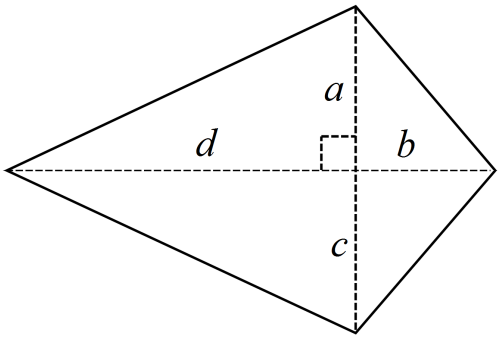
A. 480 cm^2

B. 1 920 cm^2

C. 2 704 cm^2

D. 3 840cm^2

6. The distances *a, b, c* and *d* are measured from the point of intersection of the diagonals of this kite, to the nearest vertex. The area of the kite could be found using the calculation:



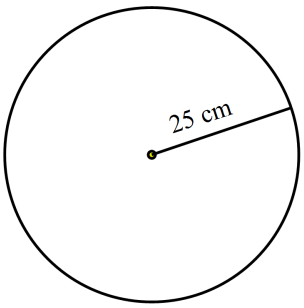
A. Area = ab

B. Area = $a(b + c)$

C. Area = cd

D. Area = $c(b + d)$

7. What is the area of the circle, correct to the nearest cm^2?



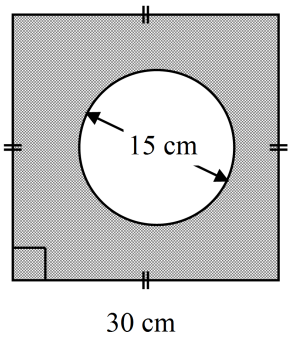
A. 1 963 cm^2

B. 3 142 cm^2

C. 6 283 cm^2

D. 7 854 cm^2

8. What is the area of the shaded section?



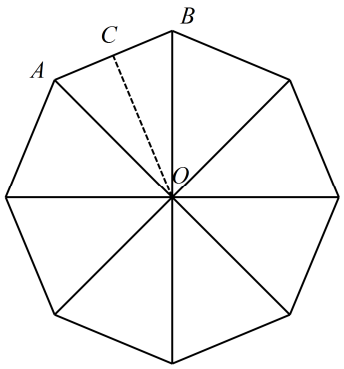
A. 193.4 cm^2

B. 675.0 cm^2

C. 723.3 cm^2

D. 852.9 cm^2

9. A regular octagon is shown, in which $AB = 20$ cm, $CO = 24.2$ cm and $AO = BO = 26.1$ cm.



What is the area of the hexagon?

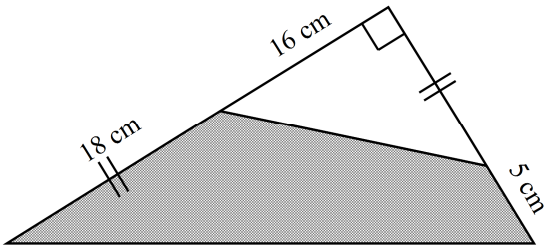
A. 968 cm^2

B. 1 936 cm^2

C. 2 088 cm^2

D. 2 526 cm^2

10. What is the area of the shaded region in the diagram?



A. 103 cm^2

B. 148 cm^2

C. 247 cm^2

D. 494 cm^2

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Calculator Allowed

Name_____

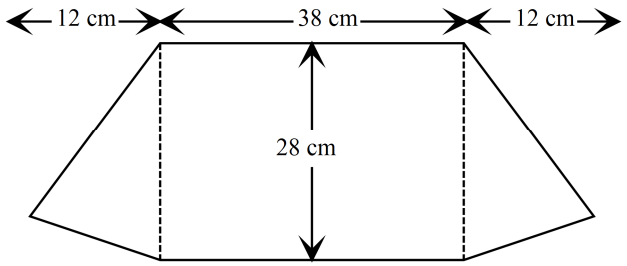
Section 3 Longer Answer Section

Write all working and answers in the spaces provided on this test paper.

Marks

1. Find the areas of the composite shapes below.

a) **2**



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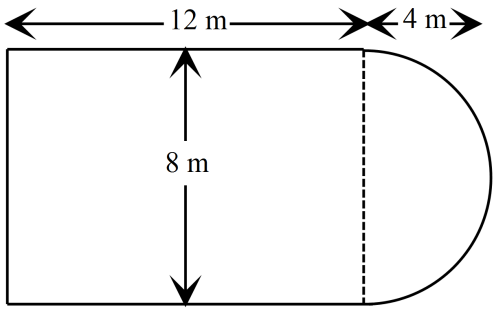
b) **2**



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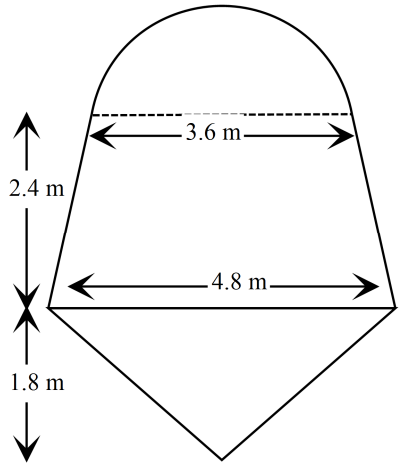
c) **3**



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Multiple Choice Answer Sheet

Name _____

Completely fill the response oval representing the most correct answer.

1.	A ⬭	B ⬭	C ⬭	D ⬭
2.	A ⬭	B ⬭	C ⬭	D ⬭
3.	A ⬭	B ⬭	C ⬭	D ⬭
4.	A ⬭	B ⬭	C ⬭	D ⬭
5.	A ⬭	B ⬭	C ⬭	D ⬭
6.	A ⬭	B ⬭	C ⬭	D ⬭
7.	A ⬭	B ⬭	C ⬭	D ⬭
8.	A ⬭	B ⬭	C ⬭	D ⬭
9.	A ⬭	B ⬭	C ⬭	D ⬭
10.	A ⬭	B ⬭	C ⬭	D ⬭

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Area of Plane Shapes

ANSWERS

Section 1	
1.	Area $= \frac{1}{2}bh$ $= \frac{1}{2} \times 50 \times 144$ $= 50 \times 72$ $= 3\,600 \text{ mm}^2$
2.	Area $= 11 \times 25 + (18 - 11) \times 9$ $= 11 \times 25 + 7 \times 9$ $= 275 + 63$ $= 338\ m^2$
3.	Area $= \frac{1}{2}xy$ $= \frac{1}{2} \times 30 \times 16$ $= 8 \times 30$ $= 240 \text{ cm}^2$
4.	Area $= 3000 \times 500\ m$ $= 1\,500\,000\ m^2$ $= 1\,500\,000 \div 10\,000\ hA$ $= 150\ hA$
5.	Area $= \pi r^2 = \pi \times 6^2 = 36\pi$
6.	Area $= \frac{h}{2}(a + b)$ $= \frac{4}{2}(6 + 3)$ $= 2 \times 9$ $= 18\ m^2$
7.	Area $= \frac{1}{2}xy$ $= \frac{1}{2} \times 45 \times 200$ $= 45 \times 100$ $= 4\,500 \text{ cm}^2$

8.	Area $= bh$ $108 = 12h$ $h = \frac{108}{12}$ $h = 9$ cm They are 9 cm apart.
9.	Area $= 60 \times 50 - \frac{1}{2} \times 24 \times 30$ $= 3\,000 - 12 \times 30$ $= 3\,000 - 360$ $= 2\,640 \text{ cm}^2$
10.	Area $= 65 \times 50 - 4 \times \frac{1}{2} \times 15 \times 20$ $= 3\,250 - 600$ $= 2\,650 \text{ m}^2$

Section 2	
1.	C
2.	B
3.	D
4.	A
5.	B
6.	D
7.	A
8.	C
9.	B
10.	C

Section 3	
1.	a) Area $= 38 \times 28 + 2 \times \frac{1}{2} \times 12 \times 28$ $= 1400 \text{ cm}^2$
	b) Area $= 12 \times 8 + \frac{1}{2} \times \pi \times 4^2$ $= 96 + 25.1$ $= 121.1 \ m^2$
	c) Area $= \frac{1}{2} \times \pi \times 1.8^2 + \frac{2.4}{2}(3.6 + 4.8) + \frac{1}{2} \times 4.8 \times 1.8$ $= 5.1 + 10.08 + 4.32$ $= 19.5 \ m^2$

High School
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Multiple Choice Answer Sheet

Name Marking Sheet

Completely fill the response oval representing the most correct answer.

1.	A ○	B ○	C ●	D ○
2.	A ○	B ●	C ○	D ○
3.	A ○	B ○	C ○	D ●
4.	A ●	B ○	C ○	D ○
5.	A ○	B ●	C ○	D ○
6.	A ○	B ○	C ○	D ●
7.	A ●	B ○	C ○	D ○
8.	A ○	B ○	C ●	D ○
9.	A ○	B ●	C ○	D ○
10.	A ○	B ○	C ●	D ○